IMRC

INTERNATIONAL MEDICAL STUDENT RESEARCH CONFERENCES

2024

Abstract Book

December 7-8, 2024

Phramongkutklao College of Medicine
Bangkok, Thailand

**"Transcending Boundaries:
Cutting-Edge Medical Research for Global Health"**

International Medical Student Research Conference 2024

IMRC 2024

"Transcending Boundaries:

Cutting-Edge Medical Research for Global Health"

December 7 - 8, 2024

Phramongkutklao College of Medicine

Bangkok, Thailand

WELCOME MESSAGE

Dear Honorable Professors, Judges, Delegates and Participants,

I am sincerely grateful for the opportunity to serve as the organizing chairperson of International Medical Student Research Conference, IMRC 2024 on behalf of Phramongkutklao College of Medicine. This conference showcases the enthusiasm of medical students from around the world who are passionate about research, united under the theme, "Transcending Boundaries: Cutting-Edge Medical Research for Global Health."

Over an increasing participation and representation, IMRC has established as a premier research competition for undergraduate medical students who share a dedication advancing medical knowledge through research. For the core of this competition is the esteemed 'Her Royal Highness Princess Maha Chakri Sirindhorn Trophy,' representing a commitment to excellence and the advancement of medical knowledge.

This year, we are also introducing the NextGen Medical Scholars Program (NMSP), created for high school seniors who are passionate about medical research and aspiring to become the next generation of physicians. Additionally, the collaboration of AMSA-Thailand, IFMSA-Thailand and SMST will advocate and represent the vision of Thai medical students during the lunch symposium.

On behalf of IMRC organizing committee, it is a great pleasure to welcome all medical student and participants from around the world to this conference. I hope it provides you with valuable experiences and wonderful memories.

Janejira

Janejira Sirisong

Organizing Chairperson of IMRC 2024

CONTENT

International Medical Student Research Conference 2024

ORGANIZING COMMITTEE

International Medical Student Research Conference 2024

Maj.Gen. Asst.Prof. Sukchai Satthaporn	**Chairman of the Organizing Committee** **Dean of Phramongkutklao College of Medicine**
Maj.Gen. Prof. Prajej Ruangkanchanasetr	**Director of Academic Affairs Division, PCM**
Col. Asst.Prof. Thammanoon Srisaarn	**Associate Dean for Administration, PCM**
Col. Asst.Prof. Anuchit Ruamthanthong	**Associate Dean for Academic Affairs Division, PCM**
Col. Chesda Udommongkol	**Associate Director of Academic Affairs Division, PCM**
Col. Assoc.Prof. Phunlerd Piyaraj	**Conference Secretary**
Col. Prof. Chanchai Traivaree	
Col. Prof. Piya Rujkijyanont	
Col. Assoc.Prof. Pasra Arnutti	
Col. Assoc.Prof. Wisit Kaewput	
Col. Asst.Prof. Phutsapong Srisawat	
Col. Asst.Prof. Sanitra Sirithangkul	
Col. Asst.Prof. Pajaree Thitthiwong	
Col. Asst.Prof. Pongthorn Narongroeknawin	
Col. Asst.Prof. Anusara Vattanajan	
Col. Manop Chaimati	
Col. Amnart Chaiprasert	
Col. Kasom Bhanganada	
Col. Trin Sudprasert	
Col. Chanchai Buawan	
Col. Pitipat Jamnarnwej	
Col. Tanongson Tienthavorn	
Col. Palakorn Suparos	
Lt.Col. Kanista Luenam	
Lt.Col. Waraporn Wattanakit	
Lt.Col. Thidaporn Phonchat	
Capt. Jirapha Sanit	
Capt. Yutthana Pansuwan	
Capt. Natcha Homrossukhon	
Lt. Surachai Pangta	

STUDENT COMMITTEE

International Medical Student Research Conference 2024

Ms. Janejira	Sirisong	**Organizing Chairperson**
Ms. Isaree	Muangkroot	**First Vice Chairperson**
Ms. Nualphan	Waeosri	**Secretary of Internal Communication**
Ms. Manmard	Hirunratsameerod	**Vice Chairperson for Academic Affairs**
Ms. Soifa	Meengern	**Secretary of Vice Chairperson for Academic Affairs**
Ms. Pornpapatchaya	Kornpetcharut	**Director of Academic Competition**
Ms. Poonyawee	Tongmala	**Director of Academic Reception**
Mr. Korawit	Pudchakarn	**Director of Publication**
Ms. Woramon	Phattanaphongvibul	**Vice Chairperson for Ceremony Affairs**
Ms. Pacharaporn	Liangkobkij	**Secretary of Vice Chairperson for Ceremony Affairs**
Mr. Rajchapon	Thongnueakhaeng	**Director of Official Events**
Ms. Kittiyada	Limruangrong	**Director of Master of Ceremony**
Ms. Nattapart	Ratkijnakorn	**Director of Welcoming Reception**
Ms. Piraya	Poommin	**Director of Palace Visit**
Ms. Kanyarak	Dechpreechachai	**Vice Chairperson for Administrative Affairs**
Mr. Jirapipat	Goysakul	**Secretary of Vice Chairperson for Administrative Affairs**
Ms. Picharee	Torprasertkul	**Director of Human Resources**
Mr. Witchapol	Plai-ngam	**Director of Finance**
Mr. Pakornsit	Sittivejthai	**Director of Sponsorship**
Ms. Rada	Kittimunkong	**Vice Chairperson for Support Affairs**
Mr. Pannawit	Lolekha	**Secretary of Vice Chairperson for Support Affairs**
Ms. Sitaporn	Phansaen	**Director of Food Logistics**
Mr. Rutsiripol	Putsorn	**Director of Venue**
Mr. Wachirapad	Ngarmkamprom	**Director of Registration**
Mr. Tanatas	Terrawattanaprapa	**Vice Chairperson for Technology and Media Affairs**
Ms. Petlada	Rungsriwong	**Secretary of Vice Chairperson for Technology and Media Affairs**
Ms. Natkrita	Luangon	**Director of Graphic Design**
Mr. Nachanok	Sereesupukkul	**Director of Media**
Mr. Run	Nipitwatanapon	**Head of Photographer**

STUDENT COMMITTEE

International Medical Student Research Conference 2024

Ms. Pitchaporn	Cheevaidsarakul	**Head of Broadcasting**
Mr. Thanadol	Ratanasawasd	**Director of System Development**
Mr. Chanon	Kulthongkam	**Head of Website**
Ms. Phattranit	Neelputtiphat	**Head of Database**
Mr. Wachirathorn	Chavanond	**Vice Chairperson of External Affairs**
Ms. Chonmanee	Chavanond	**Secretary of Vice Chairperson of External Affairs**
Mr. Thitipong	Rienrukwong	**Director of Public Relation**
Mr. Nattapoj	Jutaphan	**Liaison to External Department**
Mr. Techin	Puttijitvised	**Director of Delegates Coordinators**
Ms. Pariyachat	Pimman	**Director of Highschool Coordinator**

CONFERENCE PROGRAM

International Medical Student Research Conference 2024

Venue: Simulation Center for Military Medicine, Phramongkutklao Vejavidya Building
Phramongkutklao College of Medicine, Bangkok, Thailand

Saturday, 7 December 2024

Time	Main auditorium, 4th floor, Phramongkutklao Vejavidya Building	Auditorium 1st Floor, Simulation Center for Military Medicine	Lecture hall 2nd Floor, Simulation Center for Military Medicine	Lecture hall 4th Floor, Simulation Center for Military Medicine
07:30 – 08:30	**Registration**			
08:30 – 10.05	**Opening Ceremony**			
10:05 – 10:30	Break			
10:30 – 12:00		**E-poster Presentation** (Systematic review and meta-analysis research)	**E-poster Presentation** (Clinical and translational research)	**E-poster Presentation** (Medical education research)
12:00 – 13:00	Lunch		**Lunch symposium**	Lunch
13:00 – 15:00	**Oral Presentation** (Clinical and translational research)	**E-poster Presentation & Oral Presentation** (Systematic review and meta-analysis research)	**E-poster Presentation** (Clinical and translational research)	**E-poster Presentation & Oral Presentation** (Medical education research)

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15:00 -15:15	Break			
15:15 – 16:45	**Oral Presentation** (Clinical and translational research)	**Oral Presentation** (Systematic review and meta-analysis research)	**E-poster Presentation** (Clinical and translational research)	**E-poster Presentation** (Medical education research)

Time	Phyathai Palace
16:45– 17:45	**Phyathai Palace Visit**
17:45 – 20:30	**Welcoming Reception**

CONFERENCE PROGRAM

International Medical Student Research Conference 2024

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Sunday, 8 December 2024

Time	Main auditorium, 4th floor, Phramongkutklao Vejavidya Building	Auditorium 1st Floor, Simulation Center for Military Medicine	Lecture hall 2nd Floor, Simulation Center for Military Medicine	Lecture hall 4th Floor, Simulation Center for Military Medicine
08:00 – 08:30		Registration		
08:30 – 10:00		**Oral Presentation** (Basic science in medical research)	**E-poster Presentation** (Basic science in medical research)	**Oral Presentation** (Public health and epidemiology research)
10:00 - 10:15	Break			
10:15 – 12:00		**Oral Presentation** (Basic science in medical research)	**E-poster Presentation** (Basic science in medical research)	**E-poster Presentation** (Public health and epidemiology)
12:00 – 13:00	Lunch			

CONFERENCE PROGRAM

International Medical Student Research Conference 2024

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13:00 – 14:00	Final Round			
14:00 – 15:00	Symposium II			
15:00 – 16:00	Award Announcement and Closing Ceremony			

CONFERENCE PROGRAM

International Medical Student Research Conference 2024

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Phramongkutklao College of Medicine, Bangkok, Thailand

Sunday, 8 December 2024

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07:00-08:00	Registration			
08:00-08:30	Opening Ceremony			
09:00 – 12:00			Activities of Next Gen	
12:00 - 13:00	Lunch (4th Floor)			

CONFERENCE OVERVIEW

International Medical Student Research Conference 2024

Host: Phramongkutklao College of Medicine and Consortium of Thai Medical Schools

Theme: Transcending Boundaries: Cutting-Edge Medical Research for Global Health

Venue: Phramongkutklao College of Medicine, Bangkok, Thailand

Official website: https://pcm-imrc.com/

Contact email: imrc@pcm.ac.th

Facebook page: https://www.facebook.com/PCMIMRC/

The International Medical Student Research Conference (IMRC) is an international event organized by Phramongkutklao College of Medicine (PCM) specifically for medical students. The highlight of this conference is the medical student research competition, which serves as a platform for undergraduate medical students to present their research, exchange ideas, and enhance their communication skills while competing for the prestigious Her Royal Highness Princess Maha Chakri Sirindhorn's Trophy.

Goal

- To exchange their research ideas and results in a dedicated forum
- To meet and interact with IMRC attendees to share ideas, gain new insights, and explore possible practical applications
- To enhance their communication and presentation skills
- To receive valuable feedback on their research and presentations from a panel of distinguished judges from the Consortium of Thai Medical Schools (COTMES)
- To recognize and reward outstanding student research

Research Competition

The abstract content is reviewed by a panel of judges who evaluate the work based on its overall quality, originality, and relevance to the medical field. Abstracts are not considered prior publications for journal purposes. The selection of abstracts is based on the following criteria:

- Quality of Work
- Novelty of Approach
- Significance of Contribution
- Clarity of Written Presentation

Confidentiality of submissions is maintained throughout the review process. All rejected submissions are kept confidential in perpetuity. Submitted materials for accepted submissions remain confidential until the start of the conference. The launch of the digital conference abstracts, including only the title and author information, will be released on the website before the conference. Submissions should not contain sensitive, private, or proprietary information that cannot be disclosed at the time of publication.

In IMRC 2024 features two categories of research competition: oral presentation and E-poster presentation. Each category is divided into five tracks:

1. Basic Science in Medicine Research
2. Public Health and Epidemiology Research
3. Clinical and Translational Research
4. Medical Education Research
5. Systematic Review and Meta-Analysis Research

General Regulation

1. All submissions must be in English.
2. All areas of research are encouraged to participate, regardless of whether they align with the conference theme, "Transcending Boundaries: Cutting-Edge Medical Research for Global Health."
3. Documents with any form of plagiarism will be immediately disqualified.
4. The submission deadline must be strictly followed. Any submission not adhering to the deadline will be disqualified.
5. All decisions made by the judging panels are final.
6. Corresponding authors from multiple institutions are accepted; however, only one presenter can register as the presenting author among the co-authors.
7. For group research, a designated presenting speaker shall be considered the primary author for competition purposes.
8. The academic committee will recognize the latest submission made before the deadline.

Study Guideline

1. Studies should present a significant new contribution to the biomedical, clinical, or public health fields.
2. The same protocol cannot be submitted for more than one competition.
3. All research topics from undergraduate students are welcome and do not need to be limited to the theme of the conference.

Selection Process

1. Abstracts will be reviewed by three medical health professional reviewers.
2. Abstracts not accepted for oral presentation will automatically be reconsidered for E-poster presentation.
3. IMRC announces accepted abstracts in October 15th, 2024 via registered email.

Abstract Submission

1) The presenter of the research must be a current undergraduate student attending a medical school or a former medical student who recently graduated in 2024, with the submitted research study conducted and completed before graduation.
2) Submission Deadline: September 15th, 2024, GMT +7. No changes can be made to the abstract after the submission deadline.
3) Results Announcement: October 15th, 2024, GMT +7.
4) Abstract format required for abstract submission is listed below:
    i) Title of the research
    ii) Authors and Institution/Organization
    iii) Abstract Content
        (a) Background/Introduction
        (b) Objective
        (c) Method
        (d) Results
        (e) Discussion/Conclusion
        (f) Keywords (at least 3 words)
    iv) Word limit is 350 words
    v) Language: English only, all local words or phrases used should be provided with English translation

Oral Presentation

1) Presentation File Format: PowerPoint Presentation (.ppt or .pptx)
2) Session Assignment: Presentation sessions will be assigned by track. Time and presentation sequence will be sent to your registered email. Please prepare yourself about 30 minutes before your session begins.
3) Onsite Presentation: Delegates can check their presentation files 45-60 minutes before the session begins.
4) Presentation Time: 10 minutes total (7 minutes for presentation, 3 minutes for questions and answers)
    a) Warning sound: 2 times (at the 5th and 7th minutes)
    b) Computer and LCD projector will be available for onsite presenters.
5) Online Presentation: Attending online preparation workshops and ensuring the readiness of your online devices are compulsory. (The detailed schedule will be announced later on the official Facebook page, website, and via your registered email.)
6) **Final Presentation**: This round determines the best overall oral scientific presentation. The winner of each track will qualify to participate in the final presentation. In this round, a recording of your presentation will be played before the questions and answers session begins for 1-2 minutes.

E-Poster Presentation

1) Participants have to submit their presentation material(s) on the website before November 30th, 2024, GMT+7.
2) Poster file format:
    a) 300 PPI/DPI, Landscape poster
    b) Size: 1920x1080 pixels
    c) Presentation file format: PDF and PNG
3) For online delegates, attending online preparation workshops and the readiness of online devices are compulsory.
4) The presentation session will be assigned by track of the E-poster presentation. Time and presentation sequence are sent to the registered email. Please prepare yourself before your session begins about 20 minutes.
5) For an onsite presentation, the delegate can come to check your poster file about 30-45 minutes before the competition begins.
6) Presentation time: 8 minutes (5 minutes for presentation, 3 minutes for questions and answers)
7) Warning sound: 1 time (at the 4th minute)
8) All delegates' posters will be displayed online or onsite.

Registration

The conference is held as a hybrid conference; Onsite and Online. Onsite registration will also receive access to the Online conference; hence, refunds are unavailable.

Registration Fee		Price per Person
Onsite	Early bird registration (Until October 31st, 2024)	2,500 THB (100 USD)
	Regular registration (Until November 15th, 2024)	3,500 THB (120 USD)
Online	Early bird registration (Until October 31st, 2024)	1,500 THB (60 USD)
	Regular registration (Until November 15th, 2024)	2,500 THB (100 USD)

- If you have any questions about registration, please feel free to contact us via following 3 platforms:
    - Official website: www.pcm-imrc.com
    - Contact email: imrc@pcm.ac.th
    - Facebook page: https://www.facbook.com/PCMIMRC/

AWARDS

International Medical Student Research Conference 2024

Her Royal Highness Princess Maha Chakri Sirindhorn's Trophy

And certificate of achievement is awarded for the best oral scientific presentation

	Oral Presentation	E-poster Presentation
The winner	IMRC's trophy with scholarship of 10,000 THB	IMRC's trophy with scholarship of 5,000 THB
The 2nd place	IMRC's trophy with scholarship of 7,000 THB	IMRC's trophy with scholarship of 4,000 THB
The 3rd place	IMRC's trophy with scholarship of 5,000 THB	IMRC's trophy with scholarship of 3,000 THB

- Every academic work will receive a certificate of achievement according to the score criteria listed below:
  - Gold (more than 80%)
  - Silver (70%-79%)
  - Bronze (60%-69%)


IMRC

JUDGE PANELS

International Medical Student Research Conference 2024

Abstract selection

Asst.Prof. Alisara Wongsuttilert, M.D., CCD.

Faculty of Medicine, Burapha University

Maj.Gen. Prof. Mathirut Mungthin, M.D., Ph.D.

The Expert, Royal Thai Army

Maj.Gen. Asst.Prof. Panadda Hatthachote, Ph.D.

Phramongkutklao College of Medicine

Col. Assoc.Prof. Phunlerd Piyaraj, M.D., Ph.D.

Phramongkutklao College of Medicine

Honorable judge

Maj.Gen. Prof. Dusit Staworn, M.D.

School of Medicine, Mae Fah Luang University

Snr Capt. Prof. Guo Zhenhong, Ph.D.

Naval Medical University

Prof. Thossart Harnroongroj, M.D., ARZT FUR ORTHOPADIE

Faculty of Medicine, Bangkokthonburi University

Assoc.Prof. Araya Satdhabudha, M.D.

Faculty of Medicine, Thammasat University

Assoc.Prof. Boonlert Mitmuang, M.D.

Medical Education Center, Chumphon Khet Udomsakdi Hospital

Assoc.Prof. Chantacha Sitticharoon, M.D., Ph.D.

Faculty of Medicine, Siriraj Hospital, Mahidol University

Assoc.Prof. Ekarat Rattarittamrong, M.D.

Faculty of Medicine, Chiang Mai University

JUDGE PANELS

International Medical Student Research Conference 2024

Honorable judge

Assoc.Prof. Kitti Krungkraipetch, M.D.

Faculty of Medicine, Burapha University

Assoc.Prof. Maneerat Chayanupatkul, M.D.

Faculty of Medicine, Chulalongkorn University

Assoc.Prof. Nantana Sirisup, M.D.

Consortium of Thai Medical Schools

Assoc.Prof. Nonthapan Phasuk, M.D.

School of Medicine, Walailak University

Assoc.Prof. Pawana Panomket, Ph.D.

College of Medicine and Public Health, Ubon Ratchathani University

Assoc.Prof. Sith Sathornsumetee, M.D.

Faculty of Medicine, Siriraj Hospital, Mahidol University

Assoc.Prof. Usanarat Anurathapan, M.D.

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Asst.Prof. Kanyika Chamniprasas, M.D., M.S., FRCOST.

Faculty of Medicine, Prince of Songkla University

Asst.Prof. Samadhi Patamatamkul, M.D., M.Sc.

Faculty of Medicine, Mahasarakham University

Asst.Prof. Sarawut Lapmanee, PT., Ph.D.

Chulabhorn International College of Medicine, Thammasat University

Asst.Prof. Supaporn Dissaneevate, M.D.

Faculty of Medicine, Prince of Songkla University

Asst.Prof. Watcharapol Poonual, M.D., Ph.D.

Medical Education Center, Uttaradit Hospital

JUDGE PANELS

International Medical Student Research Conference 2024

Honorable judge

Asst.Prof. Worrayot Darasawang, M.D., MPH., Dr.P.H.

Medical Education Center, Buriram Hospital

Achiraya Chanapal, M.D., M.Sc.

School of Medicine, University of Phayao

Chawalit Lakdee, M.D.

Medical Education Center, Buddhachinaraj Hospital

Chayanee Setthapramote, DVM., Ph.D.

Faculty of Medicine, Vajira Hospital, Navamindradhiraj University

Kongtush Choovongkomol, M.D.

Medical Education Center, Maharat Nakhon Ratchasima Hospital

Kritchaya Ritruechai, M.D., MMEd.

Princess Srisavangavadhana College of Medicine, Chulabhorn Royal Academy

Moragot Pattarapongsin, M.D.

Chaiyaphum Medical Education Center

Musleeha Chesor, Ph.D.

Faculty of Medicine, Princess of Naradhiwas University

Pornanan Domthong, M.D.

Medical Education Center, Khon Kaen Hospital

Pornsuda Krittigamas, M.D.

Medical Education Center, Nakornping Hospital

Rujiluck Rojthamrong, M.D.

Medical Education Center, Phra Nang Klao Hospital

Satchachon Changthom, M.D.

Medical Center, Mahasarakham Hospital

JUDGE PANELS

International Medical Student Research Conference 2024

Honorable judge

Salinla Penpim, M.D.

College of Medicine and Public Health, Ubon Ratchathani University

Sorawat Sangkaew, M.D., Ph.D.

Medical Education Center, Hatyai Hospital

Thanin Chattrapiban, M.D., M.Sc.

Faculty of Medicine, Naresuan University

JUDGE PANELS

International Medical Student Research Conference 2024

Basic Science in Medicine Research

Lt.Col. Assoc.Prof. Janeyuth Chaisakul, Ph.D.

Phramongkutklao College of Medicine

Lt.Col. Assoc.Prof. Toon Ruangareerate, Ph.D.

Phramongkutklao College of Medicine

Assoc.Prof. Kanyanatt Kanokwiroon, M.D., Ph.D.

Faculty of Medicine, Prince of Songkla University

Col. Asst.Prof. Tanit Boonsiri, Ph.D.

Phramongkutklao College of Medicine

Lt.Col. Asst.Prof. Wittawat Chantkran, M.D., Ph.D.

Phramongkutklao College of Medicine

Asst.Prof. Bhoom Suktitipat, M.D., Ph.D.

Faculty of Medicine, Siriraj Hospital, Mahidol University

Asst.Prof. Kasiphak Kaikaew, M.D., Ph.D.

Faculty of Medicine, Chulalongkorn University

Panthita Ruangareerate, Ph.D.

National Center for Genetic Engineering and Biotechnology (BIOTEC)

Pundit Asavaritikrai, M.D., Ph.D.

The Institute of Medicine, Suranaree University of Technology

JUDGE PANELS

International Medical Student Research Conference 2024

Public Health and Epidemiology

Emer. Prof. Chutima Sirikulchayanonta, M.D., M.P.H.M.

College of Medicine, Rangsit University

Maj.Gen. Prof. Ram Rangsin, M.D., Dr.P.H.

The Expert, Royal Thai Army

Assoc.Prof. Mathuros Tipayamongkholgul, Ph.D.

ASEAN Institute for Health Development, Mahidol University

Asst.Prof. Suthee Rattanamongkolgul, M.D., MPH., Ph.D., FHEA.

Faculty of Medicine, Srinakharinwirot University

Wanitchaya Kittikraisak, Ph.D.

US Centers for Disease Control and Prevention Collaboration, Ministry of Public Health

JUDGE PANELS

International Medical Student Research Conference 2024

Clinical and Translational Research

Col. Prof. Piya Rujkijyanont, M.D.

Phramongkutklao College of Medicine

Col. Assoc.Prof. Chalinee Monsereenusorn, M.D.

Phramongkutklao College of Medicine

Assoc.Prof. Nattachai Anantasit, M.D.

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Asst.Prof. Alisara Wongsuttilert, M.D., CCD.

Faculty of Medicine, Burapha University

Asst.Prof. Piyarat Suntarattiwong, M.D., MPH.

Queen Sirikit National Institute of Child Health

Lt.Col. Anupong Sirirungreung, M.D., M.P.H., Ph.D.

Phramongkutklao College of Medicine

Rapeephan Rattanawongnara Maude, M.D., M.Sc., DTM&H.

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Win Techakehakij, M.D., Ph.D.

Medical Education Center, Lampang Hospital

JUDGE PANELS

International Medical Student Research Conference 2024

Medical Education Research

Prof. Susie Schofield, Ph.D.

School of Medicine, University of Dundee

Col. Soraya Chatchawalanon, M.D., M.Sc.

Phramongkutklao College of Medicine

Achara Wuttiprasittipol, M.D., MMEd

Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University

Mandy Ann Dorothy Moffat, Ph.D.

School of Medicine, University of Dundee

Tipaporn Thongmak, M.D., MMed.

Medical Education Center, Hat Yai Hospital

Wiwat Chiewsilp, M.D.

Faculty of Medicine, Mae Fah Luang University

JUDGE PANELS

International Medical Student Research Conference 2024

Systematic review & Meta-analysis Research

Col. Assoc.Prof. Nithipun Suksumek, M.D., M.Sc.

Phramongkutklao College of Medicine

Col. Assoc.Prof. Wisit Kaewput, M.D., MFRCPT.

Phramongkutklao College of Medicine

Assoc.Prof. Thunyarat Anothaisintawee, M.D., Ph.D.

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Col. Asst.Prof. Kanlaya Jongcherdchootrakul, M.D., Ph.D.

Phramongkutklao College of Medicine

Asst.Prof. Pawin Numthavej, M.D., Ph.D.

Faculty of Medicine Ramathibodi Hospital, Mahidol University

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Prof. Sirirurg Songsivilai, M.D., Ph.D.

Chairman of the National Commission on Science,
Research and Innovation Associate Fellow of the Royal Society of Thailand

Professor Sirirurg Songsivilai was trained in clinical medicine with M.D. degree (First Class Honours with Gold Medal) from Mahidol University, and in molecular biology with Ph.D. degree from University of Cambridge, U.K. He was postdoctoral fellow at University of Colorado Health Science Center, U.S.A. In management, he received postgraduate certificates in law and public administration from King Prajadipok Institute; in science, technology and innovation policy from Harvard University; and in national policy from the National Defense College.

Prof. Songsivilai is an Anandhamahidol Foundation Scholar awarded by H.M. the King of Thailand. After training and working in the U.K. and U.S.A., he returned to Mahidol University and became full Professor at Faculty of Medicine Siriraj Hospital in 2000. His main research interest is on molecular biology and genomics of infectious diseases, especially viral hepatitis and melioidosis; focusing on understanding clinical characteristics from the genomics variations. His laboratory works on cutting-edge technologies including manipulation of structure of antibody molecules, discovery of new biomolecular targets, and on nanobiosensor technology. He received several major national and international awards and honours, including Rockefeller Biotechnology Career Fellowship, Thailand Young Scientist Award, ASEAN Young Scientist and Technologist Award, and the National Outstanding Technologist Award.

Prof. Songsivilai has been an Associate Fellow of the Royal Society of Thailand. For his academic achievement, he was awarded an Honorary Ph.D. (Public Health) from Kasetsart University, as well as an Honorary Fellow of the Royal College of Physician of Thailand. Prof. Songsivilai served in various key positions, including Permanent Secretary of the Ministry of Higher Education, Science, Research and Innovation (MHESI), overseeing universities, national research institutes and national science research and innovation funding organizations. He was Secretary-General of the National Research Council of Thailand (NRCT), the main national funding agency for research and innovation on natural science, technology, social science, arts and humanities. He previously served as Executive Director of National Nanotechnology Center (NANOTEC), Thailand's flagship S&T center to conduct and support development and application of national nanotechnology strategic programs from 2008-2016. He was the Founding President of Thailand Nanotechnology Association, President of Asia Nano Forum in 2015-2016 and Chairman of ASEAN Committee on Science, Technology and Innovation. Prof. Songsivilai plays active roles and represents Thailand in various international networks, such as ASEAN S&T communities and interactions with the United Nations bodies, OECD and the European Union.

Professor Sirirurg Songsivilai is currently Chairman of Thailand's National Commission on Science, Research and Innovation.

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Prof. Susie Schofield, Ph.D.

Director for the Center for Medical Education, Associate Dean Quality and Academic Standards, and University Distance Learning Lead, School of Medicine, University of Dundee

Education

- PhD - Supervisor training (2020)
- PhD – School of Education (2011)
- BSc – Physics (Hons) – London University (1984)

Current working posts

- Director, Centre for Medical Education, University of Dundee (2024)
- External examiner, Royal Veterinary College MVEd (2021-2024)
- ADQAS, School of Medicine, University of Dundee (2020-2024)

Previous working posts

- Oct 12 – Aug 18 International lead for CME
- Jan 09 – Sep 13 Lecturer Centre for Medical Education, University of Dundee
- Sep 06 – Dec 08 Staff development officer, Centre for Medical Education, University of Dundee
- May 02 – Aug 05 Research Assistant, Faculty of Applied Computing

Grant awards

- 2024 Chancellor's Award for Outstanding Contribution to Teaching
- 2021 Recognised Research Supervisor, UKCGE (UK Council for Graduate Education)
- 2018 DUSA (Dundee University Student Association) student-led teaching award
- 2013 College Innovation in Teaching Award, University of Dundee
- 2013 Honorary Graduates Award for Innovative Teaching, University of Dundee

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Mandy Ann Dorothy Moffat, Ph.D.

Programme Director for Master of Medical Education, and Senior Lecturer in Postgraduate Medical Education, School of Medicine, University of Dundee, UK

Education

- PhD - Management of severe and difficult asthma in general practice: A qualitative study – University of Aberdeen (2005)
- PG Dip (Dist) - Health Professions Education – University of Glasgow (2012)
- BSc - Psychology (Hons) - Glasgow Caledonian University (2000)

Current working posts

- Director of MMEd Programme, Senior Lecturer in Postgraduate Medical Education, Centre for Medical Education (CME), University of Dundee (Nov 2016-onwards)
- External Examiner for the Masters Programme in Clinical Education at Queen's University, Belfast (2018-2023)
- Associate Fellow of HEA (now AdvanceHE)

Previous working posts

- *Apr 10 – Feb 16: Lecturer in Medical Education, School of Medicine, University of Aberdeen*
- *Jun 05 – Apr 10: Research Fellow, Centre of Academic Primary Care, University of Aberdeen*
- *Dec 03 –Jun 05: Research Assistant, Centre of Academic Primary Care, University of Aberdeen*

Teaching and administration

- Currently Module Lead/Co-Lead for: Linking Theory to Practice (MMEd Scholarly route); Faculty Development in the Health Professions; Leading Innovation and Change in Healthcare Education
- Experienced and provide teaching sessions on: Learning and Teaching in Medical Education; Curriculum Planning; Transitions in Medical Education
- Current External Examiner with the University of Kurdistan Hewlêr

Grant awards

- 2020: Scottish Medical Education Research Consortium (SMERC)
- 2019: Staff and Educational Development Association (SEDA)
- 2015: Association for the Study of Medical Education (ASME) and General Medical Council (GMC)

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Theerayuwat Sirirak

Vice President of Quality Development Department,
the Society of Medical Students of Thailand Under Royal Patronage (SMST)

Education

- A 4th-year medical student, Faculty of Medicine Chulalongkorn university (MDCU), MDCU-Bhumibol Adulyadej Hospital, Royal Thai Airforce (2021-Present)

Working Experience

- Vice President of Quality Development Department, the Society of Medical Students of Thailand Under Royal Patronage (SMST) (2024)
- Students' representative in 7th Basic Medical Education Training Program, Consortium of Thai Medical Schools (COTMES) (20 Sep 2024)
- Students' representative in 10th National congress on medical education 2024 (Nov 2024)
- Committee member of the MDCU student union (SMCU) (2022 – 2023)
- Member of Committee for Supporting the administration of the Doctor of Medicine Program (Pre-clerkship year), MDCU (2021 – 2023)

Grant awards

- 2023: Award for Students Who Bring Honor and Benefit to the Chulalongkorn university
- 2022-2023: Medical student with public mind award
- 2022: Co-author of oral presentations TMEC2022
- 2019: Honorable mention award in the selection of students for the royal award

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Sadhita Suwansiri

Director of Research, the Asian Medical Students' Association of Thailand (AMSA-Thailand)

Education

- A 1st-year medical student, Faculty of Medicine Chulalongkorn university (MDCU) (2024)

Working Experience

- Director of Research, the Asian Medical Students' Association of Thailand (AMSA-Thailand) (2024)
- Moderator of Research Talk, MDCU Research Club (2024)
- Database Coordinator, MDCU Research Club (2024)
- Student Committee member of the Building 1 in Matthayom 6 of Triam Udom Suksa School (2023)
- Leader and Coordinator of Team G of the Asia Youth Leader Program 2022 in Tokyo, Japan (2022)
- Student Committee member of the 72nd Anniversary Building in Matthayom 5 of Triam Udom Suksa School (2022)

Notable achievements

- 2024: Research publication in Clinical Hematology International: "Compilation of Novel Treatment Approaches in β-Thalassemia"
- 2023: 3rd prize from "AVA (Automatic Vaccine Administrator)" at IFMSA-CU Research Pitching Competition 2023
- 2022: one of Thailand's representatives to participate in the "Asia Youth Leader Program 2022" in Tokyo, Japan
- 2019: Thailand's representative to participate in the "17th International Bio-Medical Science Experiment Contest" at Chungbuk Osong C&V Center, Seoul, Korea

KEYNOTE AND PANELIST SPEAKERS

International Medical Student Research Conference 2024

Phatthanamon Sinsawat

President of International Federation of Medical Students Association - Thailand (IFMSA-Thailand)

Education

- A 4th-year medical student, Faculty of Medicine, Siriraj Hospital, Mahidol university, (2022-Present)
- Triam Udom Suksa School (2019-2021)

Working Experience

- President of International Federation of Medical Students Association - Thailand (IFMSA-Thailand) (2024)
- Mahidol University Delegate of Indo pacific Global health Case Competition 2023 (2023)
- National Officer for Sexual and reproductive health and rights including HIV and AIDS term (2023-2024)
- National Exchange Officer for outgoing term (2023-2024)
- Liaison Officer for global health term (2022 – 2023)
- MC for SCORE Virtual exchange webinar 2022 (2022)
- Participate in SCORE exchange program in Dresden, Germany (2022)
- SCORP Core Team member term (2021-2022)
- Director of strategic planning and branding office term (2021-2022)
- AMSA Thailand National Team member term (2021-2022)


WHAT WE CAN DO TO ACHIEVE THIS COLLABORATION?
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INSTITUTIONAL LEVEL
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ABSTRACT: ORAL PRESENTATION

Basic Science in Medicine Research

Public Health and Epidemiology Research

Clinical and Translational Research

Medical Education Research

Systematic Review and Meta-Analysis Research

Basic Science in Medicine Research

Abstract: OR-BS001

Exploring the Mystery of PM2.5: PAH Quantity, Profiles, and DNA Adducts in Lung Cancer vs. Non-Lung Cancer Cells of Non-Smoking Patients

Yanisa Samakarn[1], Kavee Pairojtanachai[1], Apichat Tantraworasin[1], Somcharone Saeteng[1], Sopon Siwachat[1], Somporn Chantara[2], Nuttipon Yabueng[3], Pattraporn Tajarernmuang[1]

[1] *Faculty of Medicine, Chiang Mai University*

[2] *Department of Chemistry, Faculty of Science, Chiang Mai University*

[3] *Department of Environmental Science Research Center, Faculty of Science, Chiang Mai University*

Background: Air pollution, particularly PM2.5 in Northern Thailand, poses a significant health risk due to the presence of polycyclic aromatic hydrocarbons (PAHs), which are strongly associated with lung cancer. PAHs are recognized carcinogens that can form DNA adducts—chemical modifications in DNA specific to the causative PAHs—leading to malignant transformations. Despite these risks, the molecular profile of PAHs and the corresponding DNA adducts in the lung tissues of non-smoking lung cancer patients remains understudied.

Objectives: This study compares the quantity and profile of PM2.5-bound PAHs and DNA adducts in lung cancer tissues (LC) versus non-cancerous lung tissues (NC) in non-smoking patients from Chiang Mai, Thailand, while investigating the association between atmospheric PAHs and lung cancer incidence.

Methods: We conducted an observational study involving 30 non-smoking patients undergoing lung surgery at Maharaj Nakorn Chiangmai Hospital. Lung tissue samples from lung cancer patients, including cancerous, precancerous, and cancer-free tissue, and lung tissue from non-lung cancer patients, were collected using video-assisted thoracic surgery (VATS). PAHs were extracted and analyzed using GC-MS/MS, while DNA adducts were quantified through advanced analytical techniques. Ethical approval was obtained, and all patients provided informed consent.

Results: Preliminary results indicate higher average PAH concentrations in LC tissues compared to NC tissues. The total PAH concentrations (tPAHs) in Normal, Precancerous, Adenocarcinoma, and Non-cancer tissues were 0.17 ± 0.08, 0.14 ± 0.06, 0.13 ± 0.06, and 0.10 ± 0.06 ng/mg, respectively. Carcinogenic PAHs (cPAHs) were approximately 1.14 times higher than non-carcinogenic PAHs (ncPAHs), with the highest ratio observed in Adenocarcinoma tissues. The proportions of BaP relative to other PAHs were 9%, 8%, 7%, and 12% in Normal, Precancerous, Adenocarcinoma, and Non-cancer tissues, respectively, while BbF proportions were 12%, 10%, 10%, and 6% in the same tissue types. Additionally, BaP and BbF are classified as Group 1 and 2B carcinogens respectively, were detected in higher concentrations, particularly during the smoke haze period, and are known to cause DNA adducts directly linked to carcinogenesis.

Discussion & Conclusion: The higher concentrations of carcinogenic PM2.5-bound PAHs found in lung cancer patients highlight the need for further studies regarding DNA adducts to better understand the link between atmospheric PAHs and lung cancer development.

Keywords: Polycyclic aromatic hydrocarbon, Lung cancer, DNA adduct, PM2.5, Non-smoking patient

Abstract: OR-BS002

Novel Andrographolide/bFGF Microsphere Hydrogels Enhanced Wound Healing and Anti-bacteria in Rat Skins

Pornmongkol Rattanasarun[1], Pichaya Supawatin[1], Kamonthip Trisukhon[1], Katawut Namdee[2], Sarawut Lapmanee[3]
[1] *School of Medicine, Siam University*
[2] *National Nanotechnology Centre, National Science and Technology Development Agency*
[3] *Faculty of Medicine and Public Health, HRH Princess Chulabhorn College of Medical Science, Chulabhorn Royal Academy*

Background: Skin injuries, particularly in patients with poorly controlled infections, can lead to severe complications and increased mortality risk. Although commercial antiseptic and wound healing products are available, they often exhibit slow response times and adverse side effects. This emphasizes the need for natural anti-infective herbs combined with innovative drug delivery systems to enhance the therapeutic potential of andrographolide (Andro).

Objectives: Therefore, the study aimed to develop and evaluate a novel formulation of Andro combined with basic fibroblast growth factor (bFGF) encapsulated in microsphere hydrogel. This was assessed for its cytotoxicity, wound healing, and antibacterial activity through histological analysis and dermal growth factor expression in rat skin models.

Methods: Andro/bFGF microsphere hydrogels were characterized, and cytotoxicity assays were conducted in human fibroblast cell lines to determine safety. Additionally, adult male Wistar rats underwent surgical procedures to create skin wounds. The wound healing rate was evaluated, and antibacterial activity was assessed by measuring bacterial growth inhibition on agar plates. Skin specimens were stained with H&E and Masson's Trichrome. RT-PCR and Western blotting were performed.

Results: The results demonstrated that Andro/bFGF microsphere hydrogels exhibited homogeneity and lower toxicity. Furthermore, Andro/bFGF hydrogels enhanced wound closure and reduced bacterial colony counts at days 7 and 14 post-treatment. Histological analysis revealed increased recruitment of inflammatory mediators at day 3 and significant fibroblast cells and collagen deposits at days 7 and 14. Gene expression of dermal wound healing markers, including IL-6, bFGF, TGF-beta, and VEGF, markedly increased at days 3, 7, and 14 post-treatment. Specifically, VEGF protein levels were upregulated at day 21.

Discussion & Conclusion: These findings suggest that Andro/bFGF microsphere hydrogels are a promising candidate for topical applications, offering a safe and effective approach to enhance wound healing and combat bacterial infections. Further studies will explore skin irritation and clinical trials.

Keywords: andrographolide, bFGF, dermal factor, hydrogel, infection, wound closure

Abstract: OR-BS003

Inhibition of Breast Cancer Cell Migration and Invasion by a Novel Neutralizing Antibody Targeting A Disintegrin and Metalloproteinase 9 (ADAM9)

Peeratat Krisanaprakornkit[1], Chayapat Thammarak[1], Anupong Makeudom[2], Suttichai Krisanaprakornkit[2], Watchara Kasinrerk[3], Piriya Luangwattananun[1], Pa-Thai Yenchitsomanus[1]

[1] *Faculty of Medicine Siriraj Hospital, Mahidol University*

[2] *School of Dentistry, Mae Fah Luang University*

[3] *Faculty of Associated Medical Sciences, Chiang Mai University*

Background: Breast cancer remains a leading cause of morbidity and mortality among women. A disintegrin and metalloproteinase 9 (ADAM9), a type I transmembrane protein, is overexpressed in breast carcinoma and is associated with cancer progression and aggressiveness. ADAM9 facilitates breast cancer cell migration and invasion in vitro, making it a promising target for immunotherapy. Our newly synthesized monoclonal antibody (mAb), which specifically binds to an epitope within the cysteine-rich domain of ADAM9, has previously been shown to significantly inhibit oral cancer cell invasion (patent E-filing #2401003801).

Objectives: This study aimed to assess ADAM9 expression in breast cancer cell lines using this mAb and to evaluate its neutralizing effects on cell migration and invasion.

Methods: ADAM9 expression was detected and localized in two breast cancer cell lines, SK-Br3 and MCF-7, by immunoblotting, flow cytometry, and immunofluorescence. The effects of the mAb on cell viability, migration, and invasion were evaluated using the alamarBlue™, wound healing, and Transwell® invasion assays, respectively.

Results: The mAb successfully detected ADAM9 expression in both cell lines through immunoblotting, with the findings comparable to those obtained from using a commercial anti-ADAM9 mAb. Immunofluorescence revealed a punctate immunostaining pattern of ADAM9 in the cytoplasm and on the cell membrane, whereas the isotype control antibody showed no staining. However, this mAb did not detect ADAM9 expression by flow cytometry in the two cell lines. Treatment with the mAb exhibited no significant toxicity in either cell line up to 72 hours, but it significantly inhibited migration and invasion in both cell lines, particularly at a concentration of 10 µg/ml in MCF-7 cells ($p < 0.05$), compared to the isotype control antibody.

Conclusion: Our new mAb demonstrates effective suppression of breast cancer cell migration and invasion in vitro, suggesting its potential as an adjunctive treatment in breast cancer immunotherapy.

Keywords: ADAM9, Breast cancer, Invasion, Migration, Monoclonal antibody

Abstract: OR-BS004

Development of CYP2C19 Genotyping Method using MassARRAY Technology and Its Application in Patients taking Clopidogrel in Southern Thailand

Nichanan Singti, Areerat Hnoonual, Ply Chichareon, Thanapon Nilmoje, Kanoot Jaruthamsophon
Faculty of Medicine, Prince of Songkla University

Background: CYP2C19 enzyme catalyzes the bioactivation of the antiplatelet prodrug clopidogrel, and the *CYP2C19* genotype is responsible for clopidogrel metabolism. The *CYP2C19* gene is highly polymorphic and currently contains over 35 star (*) alleles. The wild-type allele, *CYP2C19*1*, is associated with normal enzyme activity, while variants such as *CYP2C19*2* and *CYP2C19*3* result in reduced enzyme activity. In contrast, *CYP2C19*17* is linked to increased enzyme activity. Patients with decreased *CYP2C19* function (intermediate metabolizer and poor metabolizer) who receive clopidogrel were more likely to experience reduced platelet inhibition and an increased risk of major adverse cardiovascular and cerebrovascular events. Herein, we developed and validated a *CYP2C19* genotyping method using MassARRAY (MALDI-TOF mass spectrometry) technology and applied the method in a Southern Thai population.

Objectives: First, this study aimed to assess the performance of the developed method compared to Sanger sequencing method. Second, this study aimed to investigate *CYP2C19* allele frequency in patients who were taking clopidogrel and referred for *CYP2C19* genotyping at Songklanagarind Hospital.

Methods: Multiplex primers were designed and optimized, using the MassARRAY System, targeting for *CYP2C19*2* (c.681G>A; rs4244285), *CYP2C19**3 (c.636G>A; rs4986893), and *CYP2C19*17* (c.-806C>T; rs12248560). The test was validated using 53 samples which were previously tested by Sanger sequencing as a reference method. Subsequently, the developed *CYP2C19* genotyping method was applied in 119 patient samples who were taking clopidogrel and referred for *CYP2C19* genotyping. *CYP2C19* allele frequency and genotype frequency were calculated using the latter sample group.

Results: For the test performance, *CYP2C19* genotyping by MassARRAY method showed a 100% concordance (53/53) with the Sanger sequencing method. For the allele frequency and genotype frequency using 119 patient samples, the frequency of *CYP2C19* alleles were **1* (64.3%), **2* (29.4%), **17* (3.4%), and **3* (2.9%), respectively. The genotype frequencies were 39.5% for **1/*1* (normal metabolizer), 40.3% for **1/*2* (intermediate metabolizer), 7.6% for **2/*2* (poor metabolizer), and 5.9% for **1/*17* (rapid metabolizer).

Discussion & Conclusion: MassARRAY technology was shown to be reliable for pharmacogenetic *CYP2C19* genotyping. As 47.9% of patients carry a *CYP2C19* variant with decreased function, the implementation of *CYP2C19* genotyping in clinical practice can be highly beneficial to the population.

Keywords: CYP2C19, Clopidogrel, MassARRAY, MALDI-TOF, polymorphisms

Abstract: OR-BS005

TPMT and NUDT15 Genotyping for Thiopurine Dosing using MassARRAY Technology in Songklanagarind Hospital

Puwadet Ketkaew[1], Kanoot Jaruthamsophon[1], Chonlaphat Sukasem[2], Oradawan Plong-on[1], Jariya Kaiman[1], Pornsiri Sangmanee[1], Areerat Hnoonual[1]
[1] *Faculty of Medicine, Prince of Songkla University*
[2] *Faculty of Medicine Ramathibodi Hospital, Mahidol University*

Background: Thiopurines are widely used as anticancer and immunosuppressant agents but have a narrow therapeutic index due to frequent toxicity linked to polymorphisms in TPMT and NUDT15 genes. In Thailand, most laboratories test for either TPMT or NUDT15 genotype upon a clinician's request. However, dose adjustment of thiopurines is strongly recommended based on both TPMT and NUDT15 genotypes.

Objectives: This study aimed to develop a method for multiplex genotyping of TPMT and NUDT15 simultaneously using MassARRAY technology and to evaluate the frequency of TPMT and NUDT15 polymorphisms in patients at Songklanagarind Hospital.

Methods: Specific primers were designed for TPMT (TPMT*1, *2, *3A, *3B, *3C, 4) and NUDT15 (NUDT15*1, *2, *3, *5, *6). The MassARRAY genotyping for TPMT and NUDT15 was validated using 60 blinded DNA samples previously genotyped by real-time PCR, a common method for pharmacogenetic testing. Genotype frequencies were prospectively collected from 130 patients at Songklanagarind Hospital from July 2023 to July 2024.

Results: The MassARRAY results showed 100% agreement (kappa = 1) for TPMT and 96.66% agreement (kappa = 0.95) for NUDT15 with real-time PCR. A discrepancy was observed in one case where MassARRAY results indicated NUDT15*5/*6, while real-time PCR showed NUDT15*1/*5. Sanger DNA sequencing confirmed this patient as NUDT15*1/*5. Regarding frequencies, the patients carrying TPMT*1/*1 and NUDT15*1/*1 (normal metabolizers) were the most common genotype, accounting for 80%, followed by TPMT*1/*1 and NUDT15*1/*3 (intermediate metabolizer) at 9.23%, and TPMT*1/*3C and NUDT15*1/*1 (intermediate metabolizer) at 4.62%. Compared to only testing TPMT, this represents an increase in the diagnostic yield by approximately 16%.

Discussion & Conclusion: MassARRAY technology demonstrated high reliability for TPMT and NUDT15 genotyping. Although this method cannot distinguish between NUDT15*5/*6 and NUDT15*1/*5, this distinction is not clinically relevant as both predict similar phenotypes. This approach can reduce both time and cost, facilitating the expansion of genotyping for other gene polymorphisms in pharmacogenetic testing. Songklanagarind Hospital is the first laboratory in Thailand to offer TPMT and NUDT15 genotypes in a single request at the lowest price. Our findings support that integration of both TPMT and NUDT15 testing allows for more accurate prediction of thiopurine-related toxicity risk to guide thiopurine dosing.

Keywords: MassARRAY, NUDT15, precision medicine, thiopurine, TPMT

Abstract: OR-BS006

Antimicrobial Peptide Reg3γ Promotes Regeneration of Intestinal Stem Cells After Injury

Yue Fu, Jicong Du, Rongrong Jin, Kaili Jin, Kai Jiang
Naval Medical University

Background: Intestinal tissue is extremely sensitive to ionizing radiation, and exposure dose ≥10.0Gy can lead to intestinal radiation sickness. The injured patients generally die within 5-10 days after exposure, with a mortality rate of 100%. Intestinal radiation injury is still a difficult problem to overcome.

Objectives: Based on high-throughput transcriptome sequencing, we successfully screened a potential new target antimicrobial peptide Reg3γ with potential radiation protection effects. This study will use a variety of intestinal ionizing radiation injury models, from the body, intestinal tissue, intestinal organoids and other levels to study the prevention effects of Reg3γ on intestinal radiation injury, and clarify its initial mechanism of action.

Methods: C57BL/6 mice were treated with a single dose of whole body irradiation, Reg3γ recombinant protein was given before irradiation, and intestinal tissue was taken after irradiation for HE staining to observe the damage of intestinal tissue. The effects of Reg3γ on the morphology, proliferation and apoptosis of exposed intestinal organoids were studied. Reg3γKO mice were constructed, and the survival time of the mice was observed by large dose of single whole body irradiation. HE staining was performed on the intestinal tissue of mice to observe the damage of intestinal tissue. The potential pathways and targets of Reg3γ were screened by sequencing and other methods.

Results: Reg3γ recombinant protein could reduce intestinal injury and promote the regeneration of intestinal organoids after irradiation. Reg3γKO mice, transcriptomic sequencing and WB showed that Reg3γ can reduce radiation damage by targeting STAT3 signaling pathway.

Discussion & Conclusion: The new function of antimicrobial peptide Reg3γ is found, which can directly promote the regeneration of intestinal stem cells after injury through STAT3 signaling pathway, and play a role in radiation protection.

Keywords: Radiation damage protection, Intestinal stem cells, Reg3γ, STAT3 signal path

Abstract: OR-BS009

The SHP2 Inhibitor Protects the Host against Bacterial Sepsis by Enhancing Macrophage Phagocytosis

Yingnan Zhao, Heru Wang, Jingning Wang, Yuqing Wang
College of Basic Medicine Sciences, Second Military Medical University/Naval Medical University, Shanghai, China

Background: Sepsis, characterized by dysfunction of host defense mechanisms and organ dysfunction triggered by pathogen invasion, is associated with high mortality due to early cytokine storms and secondary infections during the tolerance period. The activation of macrophage phagocytosis plays a crucial role in effectively clearing pathogens. However, further investigation is needed to enhance macrophage phagocytosis for the treatment and prevention of infectious sepsis. Caveolin-1 (Cav-1)-mediated endocytosis is an important pathway for macrophages to phagocytose bacteria and clear pathogens, while SHP2 has been found to inhibit Cav-1 activation.

Objectives: We aim to explore the effects and mechanisms of SHP2 inhibitors on enhancing phagocytosis in macrophages, providing new insights for the prevention and treatment of sepsis.

Methods: The interaction between SHP2 and Cav-1 was confirmed using immunoprecipitation and western blot techniques, while the impact of SHP2 inhibitors on the phosphorylation level of Cav-1 was examined. Additionally, the ability of SHP2 inhibitors to enhance phagocytosis and bactericidal capacity in macrophages was validated through colony formation assay, immunofluorescence analysis, and Incucyte live cell analysis system. Furthermore, the preventive and therapeutic effects of SHP2 inhibitors on sepsis were investigated using enzyme-linked immunosorbent assay (ELISA) and survival analysis in animal experiments.

Results: The SHP2 phosphatase dephosphorylates and inactivates p-Cav-1 during bacterial infection in macrophages. Augmentation of Cav-1 activation through SHP2 inhibition enhances phagocytosis and bactericidal capacity in macrophages. Moreover, pretreatment with the SHP2 inhibitor promotes bacterial clearance and inflammatory cytokine production, thereby reducing susceptibility to bacterial-induced sepsis in mice. Combining the SHP2 inhibitor with antibiotics provides complete protection against sepsis-induced mortality in mice. These findings propose a novel therapeutic approach for sepsis treatment by enhancing macrophage phagocytosis, highlighting the potential target for therapy interventions aimed at bolstering immune cell responses against invading pathogens.

Discussion & Conclusion: The SHP2 inhibitor exhibits potential as an agent for the prevention and treatment of sepsis by facilitating Cav-1 activation, thereby effectively enhancing macrophage phagocytosis and bacterial clearance.

Keywords: Sepsis, phagocytosis, Cav-1, SHP2, Inflammation

Abstract: OR-BS010

Study on the Mechanism of BRCA1 Involvement in Placental Trophoblast Cell Differentiation

Feng Jingqiu
Naval Medical University

Background: Placenta is an important organ during pregnancy. The differentiation of placental trophoblasts is important for placental development and function. Its abnormal differentiation can lead to various pregnancy complications. Prior human placental scRNA-seq data revealed high transcription factor *BRCA1* expression in low-differentiated placental trophoblasts, gradually decreasing with differentiation.

Objectives: Based on the previous results and *BRCA1*'s crucial role in the differentiation of various tissues, this study aims to investigate *BRCA1*'s mechanism in the differentiation of trophoblast stem cells (TSCs) , aiming to offer new targets for screening and intervention of pregnancy complications related to abnormal placental development.

Methods: To analyze *BRCA1*'s effect on TSCs differentiation, *BRCA1* was knocked out in TSCs, using conditional gene knockout mice. And changes in the ratio of invasive trophoblasts to syncytiotrophoblasts and vascular structure were observed; To verify *BRCA1*'s effect on the function of trophoblasts, *BRCA1* was silenced in HTR8 cells using interference lentivirus. And changes in cell functions were observed; To investigate the regulatory mechanism of *BRCA1*, target genes and pathways were screened and validated by RNA sequencing, WB and Chip-qPCR.

Results: Results showed that *BRCA1* knockout group exhibited reduced labyrinthine zone cells and increased junctional zone cells (JZ) (invasive trophoblasts), with abnormal vascular remodeling. Moreover, *BRCA1* silencing enhanced tubulogenesis, proliferation, and apoptosis while inhibiting migration and invasion. Based on this, we speculate *BRCA1* knockout may promote proliferation of JZ, but hinder the differentiation, and lead TCSs to differentiate into dysfunctional invasive trophoblasts, causing abnormal placental implantation and increasing the risk of preganancy complications. Also, molecular experiments indicated FZD6 may be *BRCA1*'s target gene and affect the function of trophoblasts by regulating the downstream WNT pathway.

Discussion & Conclusion: Therefore, we draw the following conclusion: *BRCA1* is one of the key regulatory factors affecting the differentiation of TCSs into invasive trophoblasts; *BRCA1* may regulate the WNT pathway through the target gene FZD6, promoting the differentiation of invasive trophoblasts, ensuring normal placental implantation. So, Any abnormalities in *BRCA1* and its regulatory pathways may lead to pathological pregnancies such as preeclampsia or recurrent miscarriage, endangering maternal and fetal health.

Keywords: Placental trophoblast stem cells, differentiation, invasive trophoblasts, BRCA1, placental implantation, preeclampsia

Abstract: OR-BS011

The Mechanisms of Non-adjacent Endothelial Cell Injury Induced by Pyroptosis Caused via Bubble Contact

Xinyue Yang, Junxiao Shi, Chencan Fang, Anjie Li, Zechen Wang
Naval Medical University

Background: With the profound exploration of the marine environment and the advancement of diving, the specific medical issues resulting from the underwater hyperbaric environment have drawn significant attention. Decompression sickness (DCS) is a critical medical concern that endangers the operational safety of divers. It is caused by insufficient decompression, resulting in the formation of air bubbles in the body. Its rapid advances make DCS challenging to treat sufficiently, often leading to severe repercussions. Currently, efficacious preventative interventions and rigorous compliance with decompression guidelines are absent. Recent investigations demonstrate the systemic inflammatory response elicited by air bubbles is a crucial factor in its progression. Numerous studies have shown that injury to vascular endothelial cells (VECs) is a significant component of inflammatory damage in DCS.

Objectives: Our group first reported the VEC pyroptosis induced by bubble contact. Considering the pro-inflammatory characteristics of this cell death mode and the role of VEC in maintaining homeostasis, we hypothesize that VEC pyroptosis serves as the 'initiator' and 'amplifier' of the inflammatory damage in DCS. This study aims to investigate the diffusion pattern and mechanism of bubble-induced VEC pyroptosis.

Methods: The effective development of single-bubble/multi-bubble contact and human umbilical vein endothelial cells (HUVECs) requires stratified culture technology *in vitro*. HUVECs were cultured in a stratified manner using modified Transwell mediums, with bubble contact applied to the cells in the top compartment. The cells in the bottom compartment and damage indicators (including Ca^{2+} and pyroptosis biomarkers) were assessed at various time points to clarify the pattern of injury spread. As for the mechanical research, the impact of Ca^{2+} channels and HMGB1 neutralizing antibodies upon bubble contact was examined to elucidate the diffusion mechanism of pyroptosis.

Results: The multi-bubble contact technique was established via the modified Transwell medium. Utilizing the single micro-bubble contact device, we confirmed that bubble-contact HUVEC experiences pyroptosis, with the diffusion rate of pyroptosis decreasing over time.

Discussion & Conclusion: Bubble contact triggers HUVEC pyroptosis by facilitating Ca^{2+} influx via activation of the caspase1-NLRP3 pathway, thus initiating an inflammatory cascade response.

Keywords: Decompression sickness, Bubble, Pyroptosis, Human Umbilical Vein Endothelial Cells

Abstract: OR-BS013

Pharmacological Activation of Cannabinoid-sensing G-protein Coupled Receptor 55 Protects against UV-induced Keratinocyte Damage and Promote Tissue Recovery by Enhancing Cell Proliferation

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Background: Environmental factors including UV irradiation promotes skin aging and DNA damage-associated keratinocyte apoptosis. Cannabis extracts were previously shown to be beneficial for the treatment of various skin diseases with unknown molecular mechanism. The cannabinoid-sensing G-protein coupled receptor 55 (GPR55) is highly expressed in keratinocytes. However, its druggability for skin disorders has never been fully elucidated yet.

Objectives: This study aimed to investigate the impact of GPR55 agonism on UV-induced skin damage and its underling mechanisms.

Methods: In this study, we used O1602, a specific GPR55 agonist, to mimic pharmacological activation of GPR55. Human keratinocytes HaCaT cell line was used as an *in vitro* model of keratinocytes. Western blot was performed to measure levels of GPR55 expression. HaCaT cells were exposed to UV (25 mJ) to induce cell death. MTT assay was used to evaluate keratinocyte viability after UV exposure. BrdU cell proliferation assay was used to determine keratinocyte recovery. Various intracellular signaling inhibitors were used for treating HaCaT cells to dissect mechanisms of GPR55 agonist action.

Results: UV exposure significantly reduced HaCaT cell viability. Of particular interest, O1602 reversed UV-induced decreases in HaCaT cell viability in a concentration-dependent fashion, maximal effect being observed at 200 nM. Neither calcium chelator (BAPTA) nor mTOR inhibitor abolished the effect of O1602 on UV-induced decreases in HaCaT cell viability. Surprisingly, O1602 had no effect on protecting UV-induced keratinocyte damage in HaCaT cells co-treated with inhibitors of PKA, AMPK, SIRT-1, and ERK. In addition, O1602 treatment in HaCaT cell line also promoted the rate of cell proliferation, but this effect was entirely abolished by inhibitors of PKA, AMPK, SIRT-1, and ERK.

Discussion & Conclusion: Pharmacological activation of GPR55 protects against UV-induced skin damage and promotes keratinocyte proliferation, at least in part, by stimulating PKA/AMPK/SIRT-1/ERK-dependent mechanisms.

Keywords: Keratinocytes, GPR55, UV irradiation, Keratinocyte proliferation

Abstract: OR-BS016

Enhancement of Keratinocyte Proliferation by Madecassoside and Asiaticoside A as Subcellular Mechanistic Insights into the Pharmacopoeia of Centella Asiatica Extract for Skin Wound Healing and UV-induced Skin Damage

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Background: Keratinocytes establish the first-line physical barrier compartmentalising our internal environment from external milieu. Wound and environmental stimuli such as UV irradiation disrupt skin barrier function. *Centella asiatica* extract (CAE) has long been considered as a cosmeceutical in photoaging with unknown major effective constituents. In addition, mechanisms underlying the effect of CAE are currently ambiguous.

Objectives: This study aimed to investigate the pharmacological properties of CAE, major constituents that exhibit its effect, mechanisms of action on skin wound healing and UV-induced keratinocyte damage.

Methods: CAE, Madecassoside, and Asiaticoside A were used for the treatment of human keratinocyte HaCaT cell lines in this work. Nuclear magnetic resonance (NMR) was also used for analysis of the major components in CAE. Wounds in keratinocyte layers were made by scratching. Wound closure was analysed by light microscope and ImageJ software. MTT and our newly established cell death assays were performed for evaluation of cell viability and BrdU assay was for measuring the rate of cell proliferation. Various inhibitors of related intracellular signalling and western blot analysis were performed to delineate mechanisms of action of tested compounds.

Results: In this study, there are three extracts of CAE including water, ethanol, and ethyl acetate fractions. We found that water extract of CAE, but not ethanol and ethyl acetate extracts, promoted skin wound healing in fully confluent HaCaT cell layers. NMR data indicated that Madecassoside and Asiaticoside A were major components of CAE. Surprisingly, Madecassoside and Asiaticoside A concentration-dependently promoted skin wound healing, proliferative rate, and protected against UV-induced cell death in HaCaT cells. However, both purified compounds failed to promote wound healing in mitomycin C-primed HaCaT cells, indicating both effective compounds mainly enhanced wound healing by stimulating proliferative signalling. Interestingly, wound healing assay and western blot analysis revealed the mechanisms of the aforementioned pharmacological properties of Madecassoside and Asiaticoside A that were via ERK- and mTOR-dependent mechanisms.

Discussion & Conclusion: The present study demonstrated for the first time considering the mechanistic insights into the therapeutic effects of Madecassoside and Asiaticoside A found in CAE on skin wound healing, keratinocyte proliferation, and UV-induced skin damage.

Keywords: Skin Wound Healing, Centella asiatica, Madecassoside, Asiaticoside A, Keratinocyte Proliferation

Abstract: OR-BS017

A Smart DNA Nanorobot for miRNA Detection and Fluorescence Tracking in Extracellular Vesicles.

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Background: Mesenchymal stem cell-derived extracellular vesicles (MSC-EVs) are emerging as promising carriers for therapeutic cargo, with their efficacy being closely related to the specific microRNAs (miRNAs) they encapsulate. However, the inherent heterogeneity of MSC-EVs poses a significant challenge for quantitative detection. There is an urgent need of EV labeling strategies at the single-vesicle level.

Objectives: To explore the use of tetrahedral DNA nanostructure (TDN)-based fluorescent probes for the quantitative labeling of specific miRNAs within MSC-EVs and to elucidate the spatiotemporal dynamics of MSC-EVs both in vitro and in vivo.

Methods: We designed and synthesized fluorescent probes constructed from TDN, specifically targeting miR-21. These probes were loaded into MSC-EVs via electroporation, yielding TDN-labeled MSC-EVs (EV-TDNs). The interaction between miR-21 and TDN within the MSC-EVs triggered a conformational change in TDN, which significantly amplified the fluorescence signal intensity. Utilizing the principle of fluorescence resonance energy transfer (FRET), we excited a specific wavelength of fluorescence for the targeted labeling of EV-TDN, thereby assessing its fluorescence tracking capabilities both in vitro and in vivo.

Results: 1. Design: The transformation of TDN facilitated a fluorescence switch. 2. Characterization: Through agarose gel electrophoresis (AGE), nanoparticle tracking analysis (NTA), and atomic force microscopy (AFM), we confirmed the stability of the TDN, miR-21-bound TDN, MSC-EVs, and EV-TDN. 3. Labelling efficiency and photostability: Nano-flow cytometry analysis demonstrated a positive correlation between TDN concentration and labeling efficiency post-electroporation ($p<0.05$). Extended detection confirmed the exceptional photostability of EV-TDN. 4. Fluorescence tracking: In vitro, EV-TDN exhibited superior labelling efficiency and tracking capability compared to the most commercial EV tracker, DiO. In vivo, EV-TDN enabled precise and quantitative tracking of MSC-EV behaviors in mice for up to 7 days, without influencing their regenerative potential or therapeutic efficacy.

Discussion & Conclusion: We successfully developed a DNA nanorobot that employs miRNA as an actuator for selective targeting and generates fluorescence signals through the structural transformation. The activation of this nanorobot facilitates the quantitative labeling of miRNAs and the fluorescence tracking of EVs at the single EV level, offering a novel approach for in-depth analysis of MSC-EV dynamics both in vitro and in vivo.

Keywords: Tetrahedral DNA nanostructure, Extracellular vesicles, MicroRNA, Fluorescence tracking

Abstract: OR-BS018

Effect of Shear Stress on Morphological and Functional Properties of HBEC-5i Cell in the Newly Developed Blood-Brain Barrier-On-Chip Model

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Background: The organ-on-a-chip is a 3-D model in which key aspects of human physiology are mimicked. In this model, the cell microenvironment must be carefully controlled for cells to function properly. Shear stress is a factor affecting cell microenvironment. Blood-brain barrier (BBB) is a selective semi-permeable membrane between the blood and the interstitium of the brain. Effect of shear stress on BBB-on-chip is yet to be determined.

Objectives: To investigate the effect of shear stress on brain endothelial cell morphology, expression of tight junction protein zonula occludens-1 (ZO-1) and its permeability.

Methods: The newly designed three-channel (one perfusion and two leakage) BBB-on- chip was fabricated using polydimethylsiloxane. Chip surface was treated with oxygen plasma treatment and collagen double coating to promote cell attachment. HBECs-5i cells, a cerebral microvascular endothelial cell line, was prepared. Chips were studied in stationary and dynamic conditions. For dynamic condition, shear stress was generated by inducing flow rate of 0.4 µL/min. Images of cells were captured at 1, 3, 5, 12, 16 hours. After 16 hours, the HBEC-5i cells were fixed and further processed for immunofluorescence staining for ZO-1 and DAPI (nucleus marker). The 10-kDa and 70-kDa fluorescein isothiocyanate-dextran (FITC) dextran were used for permeability testing. Data were analyzed using ImageJ program.

Results: Inducing shear stress activated profound changes HBEC-5i cell morphology. Under dynamic condition, HBEC-5i cell started to change its morphology from elongation to cobblestone appearance at 5 hours and reached its maximum at 16 hours, whilst no morphological change was observed in the static condition. Presence of endothelial cells and the development of tight junction was confirmed by positive DAPI staining and expression of ZO-1, respectively. Our model showed the BBB-like permeability property. No leakage of 70-kDa FITC dextran was evidenced whilst minimal leakage of 10-kDa FITC dextran was still observed. The permeability for 10-kDa and 70-kDa FITC dextran was 7.91 x 10-5+8.57 x 10-6 and 4.04 x 10-5+1.04 x 10-5 respectively

Discussion & Conclusion: We show that applying shear stress has a significant influence on HBEC-5ic cell morphology. Our model shows significant morphological and functional properties of BBB evidenced by the expression of ZO-1 and the endothelial cell permeability.

Keywords: BBB-on-chip, microenvironment, cell attachment

Abstract: OR-BS019

Discovery of Gallic Acid as the First Paracellular Claudin-2 Channel Inhibitor and Its Therapeutic Potential for the Treatment of Colitis in Mice

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Background: Claudin-2-mediated paracellular pore pathway permeability contributes to the pathogenesis of colitis. Gallic acid has been recently reported to suppress tight junction-dependent leak pathway permeability; however, its effect on pore pathway permeability and potential application for colitis treatment has never been explored yet.

Objectives: This study aimed to scrutinize the pharmacological properties of Gallic acid and mechanisms of action on claudin-2 activity, as well as to furnish a proof-of-principle regarding its *in vivo* anti-colitogenic effects.

Methods: Caco-2BBe cell line (highly expressing claudin-2) and T84 cell line (no expression of claudin-2) were used as cell models. Transepithelial electrical resistance (TER) measurement, permeability assay, qRT-PCR, western blot analysis, and immunofluorescence staining were performed to evaluate claudin-2 expression and activity. *In silico* molecular docking was performed to predict the interaction between gallic acid and claudin-2. Dextran sulphate sodium (DSS)-induced colitis mice were used as an *in vivo* model for investigating the effect of gallic acid on clinical sequelae.

Results: Claudin-2 was highly expressed only in Caco-2BBe, but not in T84 cells, which was consistent with higher TER across T84 cell monolayers. Gallic acid treatment did not change TER across T84 cell monolayers, but further significantly increased TER across Caco-2BBe monolayers. Although TER was highly different in Caco-2BBe monolayers compared to T84 cell monolayers, permeability assay results revealed a similar permeability rate of 4-kDa FITC-dextran, suggesting that lower TER value of Caco-2BBe monolayers might result from the degree of claudin-2-dependent pore pathway permeability and gallic acid increased TER across Caco-2BBe monolayers by suppressing claudin-2 activity. Therefore, Caco-2BBe monolayers might be an optimal model for studying claudin-2 in intestinal epithelial cells. Although gallic acid treatment had no effect on claudin-2 expression in Caco-2BBe cells, molecular docking suggested a direct interaction of gallic acid and claudin-2 with binding affinity of approximately -5.6 kcal/mol at its regulatory subunit. We further found that gallic acid significantly attenuated all clinical symptoms of colitis in consonance with significantly decreasing the degree of claudin-2 expression in colonic tissues of DSS-induced colitis mice.

Discussion & Conclusion: The present study identified gallic acid as claudin-2 inhibitor for the first time and also provided evidence supporting its *in vivo* anti-colitogenic efficiency.

Keywords: Tight junction, Claudin-2, Gallic acid, Colitis, Intestinal epithelium

Abstract: OR-BS020

Somatic Mutations Profile and Potential Genetic Biomarkers for Molecular Target Therapy in Thai Neuroblastoma.

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Background: Neuroblastoma (NB) is a prevalent childhood tumor with high mortality rates. Molecular targeted therapy is crucial alongside conventional treatments. Understanding genetic alterations in NB tumors is essential for disease classification, predicting treatment response, and improving patient survival.

Objectives: This study aimed to analyze somatic mutations in Thai NB patients and identify potential genetic biomarkers that could inform targeted therapy selection.

Methods: DNA specimens from 45 NB patients (under 15 years old) were analyzed using whole-exome sequencing and Mutect-2. Clinical characteristics were correlated with mutation profiles. The Cancer Genome Interpreter assessed potential targeted therapies based on identified somatic variants.

Results: Most NB patients were under 18 months old (33/45), and 93% presented with metastasis at diagnosis. Despite a good chemotherapy response in 58% of patients, recurrence was observed in 4 cases. Frequent mutations were found in *KMT2C* (96%), *RUNX1* (73%), and *MYCN* (64%). Notably, *OR1N1, ATRN, POTEB3*, and *BRCA2* mutations were found in all patients with recurrent NB. LRP1B and NF1 mutations were identified as potential targets for liposomal doxorubicin and Everolimus.

Discussion & Conclusion: The discovery of somatic mutations in *KMT2C, RUNX1,* and *MYCN* provides valuable insights into NB tumor development. The potential of targeted therapies based on *LRP1B* and *NF1* mutations is promising. However, the urgency for further research with a larger cohort to validate the identified mutations in recurrent NB and develop robust biomarkers for improved treatment strategies cannot be overstated.

Keywords: Neuroblastoma, Mutations, Thailand

Abstract: OR-BS026

Alpha-mangostin Slows Renal Cyst Enlargement by Inhibiting Cell Proliferation and Inflammation in Polycystic Kidney Disease

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Background: Autosomal dominant polycystic kidney disease (ADPKD) is the most common inherited renal disorder, characterized by abnormal epithelial cell proliferation, transepithelial fluid secretion, and inflammation. These processes result in fluid-filled cysts along the nephron, eventually leading to a decline in renal function and progression to end-stage renal disease (ESRD). Alpha-mangostin, a natural compound extracted from Garcinia mangostana L., is known for its diverse biological activities, including anti-proliferative, anti-cancer, antioxidant, and anti-inflammatory properties. However, its potential to inhibit renal cystogenesis remains unexplored. This study aimed to evaluate the pharmacological effects and underlying mechanisms of alpha-mangostin in inhibiting cyst growth using an in vitro polycystic kidney disease (PKD) model.

Objectives: To investigate the inhibitory effects of alpha-mangostin on renal cyst enlargement by assessing its impact on cell proliferation and inflammation in an MDCK cell model of polycystic kidney disease.

Methods: An in vitro model of PKD was established using the Madin-Darby canine kidney (MDCK) cyst growth assay. Cytotoxicity was assessed via the MTT assay, while cell proliferation, cytokine production, and protein expression were evaluated using BrdU cell proliferation assay, real-time PCR, and western blot analysis, respectively.

Results: Alpha-mangostin (1-5 µM) significantly inhibited MDCK cyst growth in a dose-dependent manner without cytotoxic effects. It also suppressed MDCK cell proliferation and reduced TNFα mRNA expression. Additionally, alpha-mangostin at doses of 2.5 and 5 µM effectively inhibited ERK1/2 phosphorylation and p65 NF-κB phosphorylation in MDCK cells.

Discussion & Conclusion: These findings suggest that alpha-mangostin can retard MDCK cyst enlargement, likely by inhibiting cell proliferation and inflammatory signaling pathways. Alpha-mangostin holds potential as a therapeutic candidate for treating polycystic kidney disease.

Keywords: alpha-mangostin, MDCK cyst growth, polycystic kidney disease, cell proliferation, inflammation

Public Health and Epidemiology Research

Abstract: OR-PE001

Economic Status and the Prevalence of Single and Clustered NCD Risk Factors: Findings from the 2021 Health Behaviour of Population Survey in Thailand.

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Background: Recent investigation of NCDs risk factors and socioeconomic correlates in Thailand: This study explores the clustering of NCDs risk factors.

Objectives: Our primary objective was to assess the impact of economic status on single and clustered NCD risk factors. The secondary objective was to estimate the prevalence of these risk factors.

Methods: Using data from the 2021 Health Behavior of Population Survey (HBPS) by the National Statistical Office of Thailand, we analyzed the prevalence and clustering of NCD risk factors among 26,600,953 participants aged 15 and above. Economic status was categorized into five levels: very low, low, middle, high, and very high.

Results: The study found that very low economic status was associated with the highest prevalence of smoking (26.38%), unhealthy diet (30.21%), physical inactivity (40.10%) and overweight/obesity (33.57%) except for alcohol drinking (24.75%), which was more common among individuals with high economic status. Showing that as economic status increases, the likelihood of having multiple risk factors also increases. (AOR=1.66, 2.17, 2.78 and 2.90 respectively for four risk factors). Higher economic levels were linked to increased odds of alcohol drinking (AOR=1.47, 1.74, 1.97, and 1.86) and unhealthy diet (AOR=1.28, 1.40, 1.51, and 1.76). Conversely, as economic levels increased, the odds of physical inactivity decreased (AOR=0.68, 0.77, and 0.91), compared to those with very low economic statuses. The co-occurrence of two risk factors (35.53%) was most common, particularly an unhealthy diet and overweight/ obesity (11.07%). Males had higher risks from smoking (91.19%) and alcohol drinking (73.91%), while females had higher rates of unhealthy diet (53.32%), physical inactivity (57.33%) and overweight/obesity (55.71%). However, females had a lower likelihood of co-occurring risk factors compared to males (AOR=0.01). Higher odds were found among age groups 25-44 (AOR=10.48), those with secondary education (AOR=2.49), those not living with a partner (AOR=2.05), especially outside Bangkok (AOR=2.26 for northeast).

Discussion & Conclusion: Individuals with higher economic status were increased alcohol drinking, unhealthy diet, and overweight/obesity. However, higher economic status was decreased physical inactivity. These individuals were also more likely to accumulate multiple risk factors compared to those with lower economic status, with the risk increasing as the number of risk factors grew.

Keywords: lifestyle, behavioral risk factors, clustering, noncommunicable disease, economic status

Abstract: OR-PE002

Evaluation of Villager Views of *Opisthorchis viverrini* Infection Control over the Past 20 Years in Rural Area, Thailand: Mixed Method Study

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Background: One of Thailand's ongoing public health issues is *Opisthorchis viverrini* (*Ov*) infection. Although it was initially believed that *Ov* was not endemic in central Thailand, fieldwork revealed a substantial prevalence and incidence in a rural area in central Thailand.

Objectives: Our research on the prevalence and incidence of *Ov* infection control in the Na-Yao village region over the past 20 years aimed to understand villagers' perspectives, attitudes, obstacles, and needs in addressing this issue.

Methods: Our study employed a comprehensive retrospective cohort study to assess the risk factors for *Ov* infection and used rigorous stool examination techniques to identify *Opisthorchis viverrini* eggs. Focus group discussions and in-depth interviews were conducted in Na-Yao Village, Chachoengsao Province, and thematic analysis was used to explore associations between theme content and infection.

Results: The research revealed that the incidence of *Ov* infection is 6.38 per 100 person-years. Consuming traditional uncooked fish menus, Koi Pla and Larb Pla were identified as potential risk factors for acquiring the infection, with eating Koi Pla presenting a 9.05 times higher risk and eating Larb Pla a 2.68 times higher risk for infections with *Opisthorchis viverrini*. Qualitative research studies found that increased awareness of risk factors and access to information have contributed to a 20-year-long decline in infected persons. However, cultural practices, such as the consumption of raw fish, continue to contribute to the infection. Factors such as a buried culture, misunderstanding of the infection, persuasiveness of people around them, and alcohol drinking were also identified as causes of remaining infected individuals.

Discussion & Conclusion: The research highlights that *Ov* infection persists as an ongoing public health issue but has decreased over the past 20 years due to various factors, including increased awareness and access to information. Key risk factors, such as the consumption of raw fish and cultural practices, continue to contribute to the infection, emphasizing the enduring value of the research in guiding ongoing efforts to combat this persistent public health issue.

Keywords: *Opisthorchis viverrini* infection, incidence density, mixed method study, Larb Pla, Koi Pla

Abstract: OR-PE003

Comparison of the Effectiveness of Oral Ivermectin, 1% Permethrin Shampoo, and 4 % Dimethicone Liquid Gel in the Treatment of Pediculosis capitis among School Children in Chachoengsao Province, Thailand

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Background: "*Pediculosis capitis*" is a pressing public health concern in Thailand, particularly in rural areas. Despite ongoing efforts to prevent and treat head lice infestations, their prevalence is rising. A study in eastern Thailand revealed a high prevalence of head lice, with girls being disproportionately affected. The commonly used Permethrin shampoo shows limited effectiveness due to the emergence of lice resistance, underscoring the need for alternative treatment options. This study was undertaken with a sense of urgency to compare the effectiveness of three treatments, Oral Ivermectin, 4% Dimethicone liquid gel, and 1% Permethrin shampoo, to identify the most effective approach for head lice eradication.

Objectives: To compare the effectiveness of three treatments, Oral Ivermectin, 4% Dimethicone liquid gel, and 1% Permethrin shampoo and identify the most effective approach for head lice eradication.

Methods: A clinical trial was conducted in Chachoengsao Province, dividing lice-infested participants into groups receiving oral Ivermectin, 1% Permethrin shampoo, or 4% Dimethicone liquid gel. The success of the treatments was closely monitored on days 0, 7, and 9 post-treatment. Participants also diligently completed pre- and post-treatment questionnaires, focusing on lice infestation risk factors, potential allergic reactions, and side effects.

Results: The study's results are significant. Oral Ivermectin was 95.45% effective, 1% Permethrin shampoo 37.04% effective, and 4% Dimethicone liquid gel 29.41% effective. On day nine post-treatment, the oral ivermectin group demonstrated significantly higher cure rates than the Permethrin shampoo group. Furthermore, the study observed a trend towards a higher reinfestation rate in the Dimethicone group compared to the others. The study also investigated risk factors for lice infestation, finding a high prevalence in the high-risk group without a statistically significant association between specific risk factors and the severity of lice infestation.

Discussion & Conclusion: The results of this study present a promising future in the fight against head lice infestations. Oral Ivermectin, which is a potential first-line treatment option, shows significant effectiveness in eradicating head lice compared to 1% Permethrin shampoo and minimal reported side effects. This finding instills hope for a more effective, less burdensome approach to head lice eradication.

Keywords: Oral Ivermectin, Permethrin shampoo, Dimethicone liquid gel, Pediculosis capitis, head lice infestation

Abstract: OR-PE004

Exploring Associated Factors and Prevalence of Sarcopenia in Rural Community

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Background: Sarcopenia, an age-related decline in skeletal muscle mass, strength, and function, has emerged as a significant health concern in aging populations worldwide. This study investigated the prevalence and risk factors of Sarcopenia among Thai rural community individuals of advanced age.

Objectives: This study wants to find the prevalence of sarcopenia and prevalence of fall and fracture from sarcopenia in rural community. In addition, associated factors of sarcopenia is another objective in this study that we want to find.

Methods: Between October 2023 and March 2024, we conducted a rural community cross-sectional epidemiological study. Participants with sarcopenia were identified according to the 2019 criteria of the Asian Working Group of Sarcopenia (AWGS). The risk factors were examined using multivariate logistic regression.

Results: From 260 participants, the overall prevalence of Sarcopenia was 35.38%, with one-half (53.26%) classified as having severe Sarcopenia. Prevalence of Fall and Fracture from Sarcopenia are 54.35% and 5.43%, respectively. Multivariate analysis identified eight associated factors for Sarcopenia. They are Aged 70-79 (odds ratio [OR] =4.90, 95%confidence interval [CI] = 2.24-10.74), older than 80 (OR =17.65, 95%CI = 4.81 64.75), Obesity (OR = 0.15, 95%CI = 0.06-0.36), Lower than primary school (OR = 3.87, 95%CI = 1.26-11.90) and at risk of malnutrition (OR = 2.70, 95%CI = 1.25-5.82),

Discussion & Conclusion: The prevalence of sarcopenia in adults who are more than or equal to 60 years of age and live in these rural areas is 35.39%. Although sarcopenia and severe sarcopenia are not associated with fractures since sample collection is low, those are significantly associated with falls. Moreover, our study found that education, age, nutrition, and BMI are significantly associated with sarcopenia. Future study and public health initiatives should prioritize addressing these key determinants to effectively address sarcopenia.

Keywords: elderly, prevalence, associated factors, Sarcopenia, severe sarcopenia, rural community

Abstract: OR-PE008

Revolutionizing Pill Identification by using Deep Convolutional Neural Network Based on Widely-Used Essential Household Remedy Drugs

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Background: The increasing complexity of pharmaceutical treatments requires precise pill identification to ensure patient safety. Traditional methods for pill reconciliation rely on human experts, which are time-consuming and prone to errors. Deep Convolutional Neural Networks (CNNs), particularly effective in image processing, offer a promising solution for automating and enhancing these processes.

Objectives: This study aims to develop a deep CNN-based algorithm for accurate pill identification based on 10 household remedy drugs.

Methods: This study utilized a dataset of intotal 1,250 images (75% training, 25% testing), 125 images per drug, photographed by a mobile phone camera, ensuring a fixed distance of 20 cm in-hand image under natural light. Various deep CNN architectures were tested, including "You Only Look Once" (YOLO) models on the in-house CiRA CORE. Four series of different experiments were conducted; 1) model lighting, 2) detection models, 3) image scaling, and 4) classification models. The models were evaluated using a confusion matrix, mean Average Precision (mAP), accuracy, F1 score, PR curve (for generalizability), 95% confidence intervals, and five-fold cross-validation (to assess robustness). A hybrid deep CNN combining YOLO with classification was developed to validate pill identification effectiveness.

Results: Natural lighting was more effective for surface imprinting pills (mAP=99.3%, 95%CI= 0.06) while a lightbox worked better for plain pills (mAP=100%, 95%CI= 0.001). The YOLOv5-tiny neural network showed the best detection performance (mAP=99.69%, 95%CI= 0.01), with 640-pixel providing optimal scaling (mAP=99.83%, 95%CI< 0.01). Continuously from the detection model, the efficientnet_b0 delivered the highest accuracy (99.6%).

Discussion & Conclusion: Deep CNNs, especially the YOLOv5-tiny model with 640×640 pixels, are highly effective for pill localization, and efficientNet_b0 best for classification. Although the results demonstrated significant performance of a well-trained model, its generalization is limited due to the variation of household remedy drugs and sample size. Nevertheless, this algorithm has the potential to greatly enhance medication safety by accurately identifying more clinically significant pills, including those with drug interaction properties. This could help reduce medication errors and improve outpatient care workflows.

Keywords: Convolutional Neural Networks, artificial intelligence, pill identification, household drug, YOLOmodel

Abstract: OR-PE014

Knowledge, Attitudes and Risk Behaviors of Self-Sampling HPV Test in Mass Screening in Rural Southern Thailand

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Background: Cervical cancer ranks fifth among cancer-related deaths in Thailand. In response, Thailand has introduced self-sampling HPV tests to improve screening accessibility. However, public understanding and acceptance of these tests remain unclear. This study assesses Thai women's knowledge, attitudes, risk behaviors, and willingness toward screening utilizing self-sampling HPV tests.

Objectives: To study the relationship between sociodemographic characteristics, knowledge about cervical cancer, attitudes about cervical cancer, Risk behaviors related to cervical cancer related to intention to receive self-sampling HPV test.

Methods: Conducted at a rural southern Thailand community hospital, This cross-sectional study purposively sampled females aged 30 to 60 years visiting the OPD. A structured questionnaire assessed participants' knowledge(20 items), attitudes(20 items), and risk behaviors(10 items). Participants' intention to use self-sampling HPV tests was evaluated through a binary(yes/no) question. Univariable and multivariable logistic regression analyses identified factor associated with self-sampling HPV test decisions.

Results: Of the 121 females included, 77%(93/121) expressed intent to use the HPV self-test, while 23%(28/121) did not. Most participants(65.3%) were aged 30-45 years, and 50% had secondary school education, with the rest having lower. 50%(61/121) exhibited a low level of knowledge of cervical cancer. 75%(91/121) had a positive attitude and 52%(63/121) exhibited low-risk behaviors. Attitude was the only factor associated with self-sampling HPV test decisions. Those with a moderate attitude had an adjusted odds ratio(aOR) of 0.035(95%CI:0.004-0.320), and those with a negative attitude had an aOR of 0.04(95%CI:0.003-0.440).

Discussion & Conclusion: While lower knowledge about cervical cancer did not significantly impact intention to use HPV self-tests, enhancing health literacy could heighten awareness and foster positive attitudes. Cultivating a positive attitude may lead to increased screening rates. Addressing these health literacy gaps alongside mass screening initiatives is crucial for acceptance and improving screening outcomes.

Keywords: Cervical cancer, HPV, HPV self-tests, cancer-related deaths in Thailand, risk behaviors, female, attitude, Knowledge, cross-sectional study

Abstract: OR-PE015

Improving Participation Rate in Colorectal Cancer Screening via Patient Navigator Intervention: Sequential Exploratory Study

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Background: Colorectal cancer is one of the most common causes of death among the Thai population. The mortality rate is eight percent per year. There is a correlation between colorectal cancer staging and their survival rate, so, the early screening and prompt treatment would be the crucial factors to raise the cancer survival rate and the quality of life of patients. To design the precise screening program for Thais, the literature still restricted.

Objectives: This study aims to identify the perspective factors influencing participation in colorectal cancer screening and to investigate how intervention, developed from a qualitative study, impacts the participation rate in colorectal cancer screening using quasi-experimental study in Na Yao, Tha Kradan Subdistrict, Sanam Chai Khet District, Chachoengsao Province.

Methods: A mixed-method study: Sequential exploratory study was conducted. The qualitative phase focused on identifying factors associated with the decision to attend a colorectal cancer screening program using in-depth interview and focus group discussions. The information gained from this phase was used to design intervention. Quantitative study was performed as an experimental study to determine whether the intervention, training village health volunteers as navigators, could increase colorectal cancer screening rate in the community. Participants were randomized into 2 groups of controls and interventions. The screening attendance rates of 2 groups were subsequently analyzed.

Results: From interviewing, it was found that two main problems are Deficiency in knowledge, and poor accessibility of screening tests and the quantitative study showed that the participation rate in the control group is 17 out of 21 which is 80.95%. Conversely, all participants in the intervention group underwent screening, resulting in a 100% participation rate.

Discussion & Conclusion: The study emphasizes the outcomes of intervention by participation rates of colorectal screening via FIT test which is not statistically significant (α=0.05, p=0.107).

Keywords: Colorectal cancer screening, Patient navigator intervention, rural, Thailand

Abstract: OR-PE019

MEDI-BOT (Medical Expertise for Daily Inquiries) - Revolutionizing Public Health Literacy with an AI-Driven Chatbot for Reliable Medical Knowledge

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Background: Thailand is transitioning into an aging society, resulting in a significant gap between patients and healthcare personnel and an increasing demand for specialized services. This demographic shift, along with technological challenges, limits access to reliable medical information, particularly for older adults, younger individuals, and those in remote areas, who often rely on misleading online content. To address these issues, this research proposes the development of an AI chatbot on the LINE platform to provide accessible, evidence-based medical information. This initiative aims to enhance public health literacy in Thailand, in alignment with the United Nations Sustainable Development Goals (SDGs 3 and 9) for good health and innovation.

Objectives: To develop an AI chatbot that provides accurate medical knowledge to the public, overcoming age, knowledge, and technology gaps to promote health literacy and reduce misinformation.

Methods: The chatbot was designed to give general health information without offering personalized diagnoses or treatments. It was built using AI NLP tools (Google's Gemini, Rasa, Dialogflow) and programmed in JavaScript. The knowledge base was derived from credible sources, including WHO guidelines and medical databases. A decision tree facilitated evidence-based responses, while enhanced NLP enabled the interpretation of both medical and general language. Safety features such as disclaimers, triage systems, and GDPR-compliant privacy measures were integrated. Extensive testing ensured accuracy and usability before deployment on LINE platform, with regular updates for ongoing improvement.

Results: A preliminary evaluation with 65 participants, including medical students and the healthcare personnel, assessed usability across five key areas. The chatbot achieved high mean scores: speed and accuracy (4.03 ± 0.75), usefulness for health management (4.77 ± 0.21), understanding of inquiries (4.21 ± 0.78), ease of use (4.53 ± 0.35), and overall satisfaction (4.51 ± 0.34). These findings suggest the chatbot's potential to enhance public health literacy.

Discussion & Conclusion: This study demonstrates the usable of integrating an AI chatbot into LINE to deliver accessible, reliable medical knowledge. The chatbot effectively addresses knowledge gaps and misinformation, aligning with health and innovation SDGs. Future efforts will focus on expanding its capabilities, language options, and platform integration to further enhance its impact on public health literacy in Thailand.

Keywords: MEDI, AI chatbot, medical knowledge, health literacy, LINE, SDGs, healthcare, Innovation

Clinical and Translational Research

Abstract: OR-CT003

Risk Factors for Mortality in Low-Birth-Weight Infants with Intraventricular Hemorrhage

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Background: Intra-ventricular hemorrhage (IVH) remains a significant challenge in the neonatal intensive care unit, particularly in low-birth-weight preterm infants. Despite advances in neonatal care, IVH-related mortality remains high. Understanding the work of factors that contribute to mortality in these highly exposed children is essential to improve clinical management and outcomes.

Objectives: To identify risk factors for mortality in exceptionally low and extremely low birth weight infants with intraventricular hemorrhage.

Methods: Retrospective case-control study. We analyzed data from 228 premature newborns weighing less than 1500 grams with a gestation period of less than 32 weeks with IVH in the period 2021-2023, who were in the intensive care unit of the Center for Perinatology and Pediatric Cardiac Surgery in Almaty. Binary logistic regression with calculation of OR and 95% CI values was used to find factors associated with mortality in premature newborns of the study group.

Results: In the univariate logistic regression model, all factors showed a positive association with mortality, such as 1-3 points on the Apgar scale at 1 minute (OR – 8,648, 95% CI – 4,491-16,654, p<0,0001), 1st blood group (OR – 2,033, 95% CI – 1,174- 3,522, p=0,016), respiratory distress syndrome (RDS) (OR – 18,686, 95% CI – 9,095-38,391, p<0,0001), atelectasis (OR – 4,284, 95% CI – 2,294- 8,001, p<0,0001), disseminated intravascular coagulation (DIC) syndrome (OR – 10,429, 95% CI – 5,091-21,361, p<0,0001) and necrotizing enterocolitis (NEC) (OR – 9,068, 95% CI – 4,277-19,228, p<0,0001). In multivariate logistic regression, such factors as 1-3 points on the Apgar scale at 1 minute (OR - 4,971, 95% CI - 2,288-10,797, p<0,0001), 1st blood group (OR – 2,410, 95% CI – 1,212- 4,794, p=0,012), atelectasis (OR - 3,227, 95% CI - 1,552- 6,711, p=0,002), DIC syndrome (OR -5,037, 95% CI - 2,235-11,355, p<0,0001), NEC (OR - 4,682, 95% CI - 1,906-11,500, p=0,001) showed a positive association with death in children with IVH.

Discussion & Conclusion: Diseases that develop because of prematurity, such as NEC, DIC syndrome, atelectasis, as well as 1-3 points on the Apgar scale and 1st blood group are associated with the risk of death in low-birth-weight newborns with intraventricular hemorrhage.

Keywords: intraventricular hemorrhage, premature newborns, risk factors, mortality

Abstract: OR-CT004

Pulmonary Venous Quantitation Predicts Mortality in Early Lung Fibrosis

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Background: A subset of interstitial lung diseases (ILD) can develop a progressive fibrotic phenotype, which manifests in an unpredictable trajectory and leads to significantly lower survival rates. Anti-fibrotic therapies are effective in mitigating disease progression and improving survival, highlighting the importance of accurate prognostication. Volumetric quantification of pulmonary vessels has outperformed traditional visual scoring metrics in predicting mortality in early-stage pulmonary fibrosis, termed Interstitial Lung Abnormalities (ILA). Precise automated segmentation of pulmonary vessels lays the foundation for quantitative analysis of computed tomography (CT) scans.

Objectives: To develop a model that quantifies the pulmonary venous system and to evaluate the predictive capability of baseline vein volume from CT scans of ILA patients.

Methods: Deep learning models were trained on 40 non-contrast low-dose CT (LDCT) scans of ILA patients and controls using the nnU-Net framework to enhance the connectivity of the pulmonary venous trunk and intrapulmonary veins. All CT scans were manually annotated under the supervision of a radiologist. Model performance for segmentation accuracy was assessed using the Dice similarity coefficient. A total of 415 ILA patients and 404 controls had vessel volume quantified from LDCT by the model, expressed as a percentage of lung volume. Univariable and multivariable Cox proportional hazards models were used to estimate mortality risk, adjusted for patient age, gender, smoking history, and predicted forced vital capacity (FVC).

Results: The models exhibited high generalization ability and precision, achieving increasingly higher Dice scores (0.876 and 0.906). Visual inspection revealed progressive improvements in connectivity and noise reduction. Mean vein volumes were significantly higher in ILA cohorts than in controls (2.09% vs. 1.89%, $p < 0.001$). On Univariable Cox analyses, increased vein volume was associated with increased risk of death (hazard ratio (HR) = 2.86, 95% CI = 1.73-4.74, $p < 0.001$). In multivariable Cox analyses, increased vein volume was independently associated with higher mortality risk (HR = 2.64, 95% CI = 1.51-4.60, $p < 0.001$). The associations were maintained in the ILA cohorts but not in the control group.

Discussion & Conclusion: Pulmonary vein volume has the potential to serve as an independent predictor of mortality in the early stages of pulmonary fibrosis.

Keywords: Pulmonary vein volume, Interstitial lung abnormalities, Lung fibrosis, Pulmonary vessel segmentation, Deep learning model

Abstract: OR-CT005

Incidence of Peritoneal Dialysis Transfer to Hemodialysis after the Free-choice Dialysis Policy in Thailand; A Tertiary Center Experience

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Background: In February 2022, Thailand changed its kidney replacement therapy policy under the universal coverage scheme from a peritoneal dialysis (PD)-first approach to a free-choice dialysis model. The impact of this policy change on the incidence of PD transfer to hemodialysis (HD) has not been studied.

Objectives: This study aims to compare the incidence rate (IR) of PD transfer to HD before and after the national policy change.

Methods: Records of PD persons at a tertiary hospital in Thailand from February 2020 to January 2023 were reviewed. The time on therapy (TOT) per person-year, the number of PD transfers to HD, and the reasons for transfer were investigated. The incidence of PD transfer to HD was calculated as IR per 100-person-years; the incidence rate ratio (IRR) with a 95% confidence interval (CI) before and after the policy change was analyzed.

Results: The TOT was 723, 760, and 652 person-years in 2020, 2021, and 2022, respectively. There were 23, 41, and 71 PD transfers to HD in 2020, 2021 (PD-first era), and 2022 (free-choice dialysis era). The IR of PD transfer to HD was 3.18 (95% CI 2.01-4.77) and 5.39 (95% CI 3.87-7.31) per 100-person-years in the PD-first era, which increased to 10.89 (95%CI 8.5-13.74) per 100-person-years after switch to the free-choice dialysis era. The IRR of PD transfer to HD after the policy change significantly increased to 2.52 (95%CI 1.77-3.59, $p<0.001$) compared with the PD-first era. The most common reason for PD transfer to HD in the free-choice dialysis era was peritonitis (45%), while patient preference accounted for only 12.6%.

Discussion & Conclusion: Following the transition to the free-choice dialysis policy, the IRR of PD transfer to HD significantly increased, with peritonitis being the leading cause of transfer rather than patient preference.

Keywords: PD-first policy, free-choice dialysis policy, PD transfer to HD, incidence rate

Abstract: OR-CT007

Prevalence and Risk Factors of HPV-related Cervical Dysplasia

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Background: Cervical cancer is predominantly caused by persistent high-risk human papillomavirus (HPV) infection, responsible for 99.7% of cases. This study aimed to investigate the prevalence of HPV and identify risk factors for cervical dysplasia in women.

Objectives: To investigate the prevalence and risk factors for cervical cell lesion progression in women with different HPV strains who were screen by HPV DNA test at Nakornping Hospital system.

Methods: This retrospective cross-sectional study included 4,027 women aged 30-60 years who attended an outpatient gynecology clinic at Nakornping Hospital between November 2022 and September 2023. Only those with a positive HPV DNA test and colposcopy examination were included. Baseline characteristics and cervical tissue pathology (normal, cervicitis, LSIL, HSIL, AIS, SCC) were recorded. Statistical comparisons of baseline characteristics between HPV types were conducted using exact probability tests, and binary logistic regression was used to analyze dysplasia risk factors. Severity of cervical lesions was assessed using univariable and multivariable ordinal logistic regression, with the final predictive model presented via ROC graph. A p-value of less than 0.05 was considered statistically significant.

Results: Out of 4,027 women, 447 (11.10%) were HPV positive. The most prevalent type was non-16/18 HPV (73.15%). High-risk HPV types 16 and 18 were detected in 19.91% and 6.94% of cases, respectively. Women with HPV 16 and 18 had a 1.81 times higher risk of developing severe cervical lesions (95% CI 1.11-2.93, p=0.017) compared to those with non-16/18 HPV. Additionally, women infected with HPV 16/18 who had early sexual intercourse had a significantly higher risk of developing dysplasia (3.05 times, 95% CI 1.17-7.96, p=0.0023).

Discussion & Conclusion: Women infected with HPV types 16 and 18 are at a higher risk of developing pre-cancerous lesions compared to those infected with non-16/18 HPV. Similarly, women who had early sexual intercourse also had an elevated risk of pre-cancerous lesions. These findings should influence future HPV-based cervical cancer screening programs and HPV vaccine trials, highlighting the need for tailored follow-up protocols.

Keywords: HPV, Dysplasia, Cervical Cancer

Abstract: OR-CT009

The Association of Mild Thrombocytopenia That Impact on Increasing Risk of Postpartum Hemorrhage

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Background: Postpartum hemorrhage (PPH) is one of the three most common obstetric conditions leading to maternal mortality. Moreover, thrombocytopenia is a known risk factor for PPH. However, studies show that the platelet count levels considered to be risk factors vary across different institutions. ACOG considers platelet counts of less than 70,000 cells/microliter to be a risk factor, while CMQCC states that platelet counts less than or equal to 100,000 cells/microliter is a risk factor. However, there is no clear data regarding mild thrombocytopenia, defined as a platelet counts between 100,000 cells/microliter and less than 150,000 cells/microliter, and its role as a potential risk factor for PPH. The research team recognized this knowledge gap. In addition, mild thrombocytopenia occurs in approximately 10% of all pregnancies, which is more frequent than moderate and severe thrombocytopenia, found together in about 1%.

Objectives: The objective of this research is to investigate the relationship between mild thrombocytopenia and its contribution to the increased risk of postpartum hemorrhage, with the aim of improving preventive measures and reducing maternal mortality from this cause.

Methods: This study performed a retrospective cohort study in pregnant women of all ages who delivered at Trang Hospital between October 2019 to July 2024. The study included singleton pregnancies with full term (37 weeks to 41 weeks and 6 days) and nulliparous. Participants were divided into two groups, comprising 1,200 women with normal platelet counts (150,000 cells/microliter or higher) and 120 women with mild thrombocytopenia.

Results: It was found that the sample group with mild thrombocytopenia had a2.21 times higher likelihood of PPH compared to the group with normal platelet counts (relative risk 2.21, P = 0.025). Furthermore, this group had a 2.29 times increased risk of PPH compared to the chance of not having PPH (unadjusted odd ratio 2.29, 95% CI 1.09-4.84, P = 0.030). Additionally, the mild thrombocytopenia group were 2.38 times more likely to had estimated blood loss of 1,000 milliliters or more compared to those with normal platelet counts (relative risk 2.38, P = 0.044).

Discussion & Conclusion: Women with nulliparous, term and singleton, those with mild thrombocytopenia had a twofold greater likelihood of PPH.

Keywords: mild thrombocytopenia, postpartum hemorrhage, nulliparous, term, singleton

Abstract: OR-CT010

Prediction of Mortality in Patients with Sepsis and Community-Acquired Pneumonia Admitted to a General Medicine Ward in a Tertiary Hospital: A Retrospective Cohort Study

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Background: Sepsis from community-acquired pneumonia is a leading cause of death among hospitalized patients in Thailand. The 2007 IDSA/ATS criteria were designed to identify severe community-acquired pneumonia (sCAP), guide ICU admission, and predict mortality, but they may be challenging to apply in general practice. The National Early Warning Score 2 (NEWS2), a simpler tool for predicting mortality in sepsis, may also be useful, though comparative data with the 2007 criteria is limited.

Objectives: To determine the cutoff point of NEWS2 for predicting mortality from sepsis due to community-acquired pneumonia in patients at Nakornping Hospital, a referral tertiary center in northern Thailand.

Methods: This prognostic study included patients aged 18 and above diagnosed with pneumonia and sepsis according to the SEPSIS-3 criteria at Nakornping Hospital from October 2021 to September 2023. Exclusion criteria were pregnancy, COVID-19, use of ventilators, incomplete records, or transfer to another hospital. We compared the accuracy of NEWS2 with sCAP criteria for predicting mortality using multivariable binary regression, with a significance level set at $P < 0.05$.

Results: Of the 124 patients, 52 (41.94%) died. Factors significantly associated with mortality included male gender, diabetes, and a NEWS2 score of ≥ 9. The highest sensitivity and negative predictive value were observed at a NEWS2 score cutoff of ≥ 4, while specificity was highest at a score of ≥ 14. A NEWS2 score of ≥ 6 was selected as the optimal cutoff due to its high sensitivity and lower rate of false positives. A NEWS2 score of ≥ 9 had the highest area under the curve (AUC) and was compared with sCAP, an international standard.

Discussion & Conclusion: The NEWS2 score effectively predicts mortality in patients with sepsis due to community-acquired pneumonia when compared to standard criteria. These findings can assist physicians in developing more appropriate patient care strategies.

Keywords: Community-acquired pneumonia, Sepsis, NEWS2, severe community-acquired pneumonia

Abstract: OR-CT014

AI Machine Learning Assistances for Detection and Severity Grading of Hallux Valgus

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Background: Hallux Valgus, commonly known as bunions, is a widespread foot deformity. Early detection can lead to early treatment with better outcomes than delayed treatments. However, little is known about the benefits of image analysis using artificial intelligence (AI) for the detection and classification of this disability.

Objectives: To develop the AI models for visual detection and classification of Hallux Valgus via foot clinical image, and evaluate their performances.

Methods: AI Roboflow and Teachable Machine platforms are used to develop machine learning models, trained with 285 images from an open-access database. Roboflow data are divided into three groups:train set (70%), valid set (20%) and test set (10%). Teachable Machine divides the data into two groups: train set (85%) and test set (15%). Each foot image was labeled as none or mild or moderate or severe degree of Hallux Valgus deformity based on the Manchester scale using an expert (a fellowship-trained foot and ankle surgeon)'s supervision. The models' performances are then tested to assess their accuracy via mean average precision (MaP) values.

Results: Roboflow demonstrates strong performance in detecting mild Hallux Valgus deformity, achieving 78% of MaP on the test dataset. In contrast, Teachable Machine excels in identifying moderate-severe Hallux Valgus deformity, with MaP of 69-86%.

Discussion & Conclusion: Both AI models currently show promising potential for aiding in Hallux Valgus screening within clinical settings. Roboflow shows superior performance for mild deformity detection. On the other hand, Teachable Machine demonstrates superior performances for moderate-severe deformity detection. The combined use of these AI models may assist patients and non-expert physicians in the early detection of Hallux Valgus at its initial to severe stages, improving the chances of timely intervention and better treatment outcomes.

Keywords: Hallux Valgus, Machine learning, Artificial Intelligence

Abstract: OR-CT015

Wide-Awake Local Anaesthesia no Tourniquet (WALANT) vs General or Regional Anaesthesia in Flexor Tendon Repair: A Comparative Cost Analysis for the WAFER Trial

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Background: Regional anaesthesia (RA) and general anaesthesia (GA) are traditional anaesthetic routes for flexor tendon repair surgeries, but recent trials favour wide-awake local anaesthesia no tourniquet (WALANT) for its advantages. Nevertheless, there is still no study on the cost-related outcomes of WALANT in flexor tendon repair surgery in a prospective randomised controlled trial.

Objectives: The primary objective of the study is to conduct a comparative cost analysis of WALANT in comparison to traditional general or regional anesthesia
The secondary objective of this study is to compare the different surgical approaches to determine the difference in efficiency, including anesthetic time, surgical time, staffing involvement, and environmental benefits.

Methods: Patient information was collected from the patient database of the WAFER trial, and unit costs were obtained from Royal Free Hospital, London. A cost comparison analysis determined each intervention arm's average total staffing and non-staffing costs (WALANT and RA). Categorical data were analyzed using the Fisher's test, and qualitative data were analyzed using the Mann-Whitney U test. Results were deemed significant if $\alpha = 0.05$

Results: The mean duration to anesthetize was significantly higher in the RA/GA intervention arm ($p = 0.01$). The average total cost per intervention per patient was £855.12 ± £93.01 in the WALANT arm and £1353.83 ± £372.92 in the RA/GA arm ($p < 0.00001$). The average staffing cost per patient was £384.17 ± £92.97 in the WALANT arm and £816.37 ± £356.43 in the RA/GA arm ($p<0.00001$), which was due to the difference in anesthetists and nursing costs, being £0.00 in the WALANT arm and £288.5 ± £126.81 in the RA/GA arm ($p <0.00001$), and £101.72 ± £24.86 in the WALANT arm and £187.92 ± £84.4 in the RA/GA arm ($p=0.00004$), respectively. The average non-staffing costs came out at £470.95 ± £1.32 in the WALANT arm and £537.46± £50.40 in the RA/GA arm ($p=0.00013$). The cost of the local anesthesia used was £3.25 ± £1.3 in the WALANT arm and £69.75 ± £53.9 in the RA/GA arm. ($p=0.003$)

Discussion & Conclusion: Performing flexor tendon repair surgeries with WALANT allows cost-reduction and waste-reduction benefits.

Keywords: anesthetics, plastic & reconstructive surgery, hand & wrist, health economics, reconstructive surgery, WALANT, anaesthesia in surgery

Abstract: OR-CT016

Establishment of the Score-FIT Risk Stratification Model for Early-onset Colorectal Neoplasia: Evidence from a Nationwide Prospective Study

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Background: The incidence of early-onset colorectal cancer (CRC), diagnosed before age 50, has been increasing worldwide.

Objectives: This study aimed to identify risk factors as well as develop and validate a risk-stratification model for early-onset colorectal neoplasia (CRN).

Methods: Prespecified secondary analysis for early-onset CRN was carried out using data from a nationwide prospective study (the National Colorectal Polyp Care program, published in JHO 2022, IF=29). A total of 4661 individuals aged 18-49 were included and randomly allocated into the derivation (n = 3107) or validation cohort (n = 1554). Univariate and multivariate logistic analyses were used to identify potential risk factors of early-onset CRN and to develop the Early-onset CRN Risk-stratification (ECRIS) score. The performance of the risk-stratification score and model was validated and evaluated. Fecal immunochemical test (FIT) was conducted to improve the stratification capacity.

Results: The demographic and clinical characteristics between the derivation cohort (2/3, n=3107) and validation cohort (1/3, n=1554) were comparable. The prevalence of CRN in the derivation and validation cohorts was 12.5% (387/3107) and 12.4% (192/1554). The ECRIS score, classified into three levels: low score (LS, 0-3 points), medium score (MS, 4-6 points), and high score (HS, 7-14 points), showed good discrimination (AUC = 0.672) and calibration. The Score-FIT algorithm showed improved discrimination for early-onset CRN, advanced colorectal neoplasia (ACN), and CRC (all $P < 0.05$) compared with the score. The high-risk individuals (HS or FIT+) showed significantly higher prevalence in CRN (25.4% vs. 12.7%/5.2%, RR: 2.00/4.86), ACN (6.5% vs. 1.8%/0.4%, RR: 3.71/15.04), and CRC (2.2% vs. 0.2%/0.1%, RR: 12.74/20.67) with all $P < 0.001$ compared with the medium-risk (MS&FIT-) and low-risk (LS&FIT-) groups. The Score-FIT algorithm, whose performance surpassed ECRIS score, APCS score and FIT (all $P < 0.001$), could detect 32.0% of CRN, 48.5% of ACN, and 73.3% of CRC with only 15.7% young individuals being classified as high-risk. Age (OR=3.72, 95% CI=1.57-8.81), smoking (OR=1.70, 95% CI=1.09-2.66), diabetes (OR=2.95, 95% CI=1.27-6.80), and hematochezia (OR=3.66, 95% CI=1.99-6.71) were independent risk factors for early-onset ACN.

Conclusion: The Score-FIT algorithm showed a good risk-stratifying ability for early-onset CRN and might shed some light on individualized CRC screening among young population.

Keywords: early-onset colorectal cancer, risk-stratification model, colorectal neoplasm, risk factors, fecal immunochemical test

Abstract: OR-CT017

Agreement of the Technetium-99m Diethylenetriaminepentaacetic Acid Camera-Based Renography with Conventional Assessments of Glomerular Filtration Rate in Kidney Transplant Donors

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Background: Assessment of exact glomerular filtration rate (GFR) is crucial for the management of various kidney diseases. Considering living-donor kidney transplantation, inaccurate GFR estimation could lead to inappropriate selection or denial of potential donors. The gold standard for GFR measurement, inulin or diethylenetriaminepentaacetic acid (DTPA) clearance, requires timed blood and urine collection and is inconvenient in clinical practice. Camera-based renography is a less time-consuming radionuclide study and has been compared with the clearance technique with conflicting results.

Objectives: To assess the agreement between the camera-based renography and conventional GFR estimations

Methods: Clinical data from the potential kidney donors evaluated at King Chulalongkorn Memorial Hospital from 1 January 2022 to 31 December 2023 were retrospectively reviewed. Technetium-99m DTPA renography was conducted in all subjects and camera-based GFR from Gate's method was determined. Bland-Altman plots were used to assess the agreement between this GFR estimation and creatinine clearance (CrCL), estimated GFR with Chronic Kidney Disease Epidemiology Collaboration (eGFRCKD-EPI), and Thai equation (eGFRThai).

Results: One hundred and twelve subjects (aged 41±11 years, male 39.3%) were included. Camera-based GFR significantly overestimated CrCL, eGFRCKD-EPI, and eGFRThai by 16.4, 16.0, and 17.4 mL/min/1.73 m2, respectively. There were broad limits of agreement for all comparisons. No bias was detected between CrCL and eGFRCKD-EPI or eGFRThai.

Discussion & Conclusion: GFR by the camera-based Technetium-99m DTPA renography overestimates the conventional GFR estimations with a low level of agreement. Selection of living kidney donors with this GFR estimation alone might be inappropriate and applying this technique in kidney diseases requires further validation and standardization.

Keywords: glomerular filtration rate, diethylenetriaminepentaacetic acid renography, creatinine clearance, Chronic Kidney Disease Epidemiology Collaboration, living-donor kidney transplantation

Abstract: OR-CT022

Deep Learning-Based Osteoporosis Screening: Leveraging Convolutional Neural Networks for Hip X-ray Analysis

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Background: Osteoporotic fractures, particularly spine and hip fractures, can lead to severe health consequences like long-term disability and increased mortality. Osteoporosis is underdiagnosed, and the current gold standard screening tool, Dual-energy X-ray Absorptiometry (DEXA), is expensive and inaccessible to most of the population– especially in rural areas. Most diagnoses are not made until fractures occur. Evidently, there is a need for an accessible, affordable, and accurate osteoporosis screening method to prevent fracture risks while simultaneously improving patient outcomes. With the current technological advances, Deep-learning technique should be considered to offer a solution by analyzing plain hip radiographs to determine the presence of osteoporosis for early diagnosis.

Objectives: To assess the effectiveness of Convolutional Neural Networks (CNN) for osteoporosis screening using plain hip radiographs.

Methods: We collected a dataset of standard hip radiographs from both healthy and osteoporotic patients. A deep learning model based on the Xception architecture was developed and trained on this dataset. The model was designed to classify radiographs as indicative of osteoporosis or normal, using image preprocessing techniques and data augmentation to enhance model robustness. We implemented a training pipeline using TensorFlow, with the dataset comprising 287 images (99 abnormal, 188 normal) split into training, validation, and test sets. The model was trained for 100 epochs with a batch size 32, using Adam optimizer and categorical cross-entropy loss. We employed techniques such as dropout and early stopping to prevent overfitting. The model's performance was evaluated using accuracy, precision, recall, F1 score, and Area Under the Receiver Operating Characteristic Curve (AUC-ROC).

Results: The CNN model demonstrated high performance in classifying hip radiographs, achieving an accuracy of 94.44%, with 95.00% precision, 94.44% recall, 94.43% F1 score, and an AUC-ROC of 0.944 in identifying osteoporosis through recognition of hip abnormality in radiographs. The model is robust in distinguishing between normal and abnormal hip X-rays.

Discussion & Conclusion: Our study demonstrates the potential of CNN in analyzing hip X-rays for osteoporosis screening. The model's high performance in our dataset suggests that AI-based methods could serve as a promising tool to assist in the initial screening process, especially in rural locations where access to affordable diagnostic services is limited.

Keywords: Osteoporosis, Convolutional Neural Network (CNN), X-ray, Hip Radiographs

Abstract: OR-CT024

Transplantation of Vascular Wall Organoids Derived from iPSC for Improved Embolization and Reconstruction of Aneurysm Sac in Endovascular Aneurysm Repair

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Background: Endoleak is the major complication of endovascular aneurysm repair (EVAR), and severe endoleak can lead to aneurysm rupture, endangering patient's life, currently lacking ideal treatment options. Cell transplantation is an effective strategy for treating endoleaks, but its application is limited due to the hypoxic and undernutrition in the aneurysm sac. Organoid culture technology can generate complete tissue structures with better survival and adaptability, combined with oxygen-rich thermosensitive biodegradable hydrogel scaffolds, promising effective therapeutic effects in aneurysm sac embolization and tissue remodeling.

Objectives: We intend to evaluate the feasibility of transplanting vascular wall organoids derived from human induced pluripotent stem cells (iPSCs) for treating endoleaks after EVAR.

Methods: Human pluripotent stem cells (iPSCs) were cultured in suspension and differentiated into smooth muscle cells (SMCs), and were embedded into Matrigel and cultured to form vascular wall organoids. These organoids were subsequently transplanted into a rat model of aneurysm with endoleak, along with oxygen-rich thermosensitive biodegradable hydrogel scaffolds containing calcium peroxide. To evaluate the embolization effects and tissue regeneration in the aneurysm sac, we performed histological analyses including hematoxylin and eosin staining, Masson's trichrome staining, and immunofluorescence.

Results: Our study successfully established vascular wall organoids and a novel rat aneurysm model with endoleak. The transplantation of vascular wall organoids led to the complete embolization of the aneurysm sac within a period of four weeks. During this period, the proportions of both solid filling area and nucleated cells increased, while the proportion of acellular structure correspondingly decreased. Notably, the regenerated tissue was primarily composed of smooth muscle cells (SMCs), originated from both the transplanted organoids and host cells.

Discussion & Conclusion: Transplanting vascular wall organoids into the aneurysm sac yielded favorable embolization effects and promoted tissue regeneration and reconstruction. This approach holds potential for long-term embolization of the aneurysm sac in EVAR.

Keywords: Aortic aneurysm, Endovascular aneurysm repair, Endoleak, Induced pluripotent stem cell, Organoids transplantation

Abstract: OR-CT026

Enhanced Therapeutic Effects of Curcumin-Loaded Proniosomes in an Imiquimod-Induced Psoriasis Mouse Model

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Background: Psoriasis is characterized by the hyperproliferation of keratinocytes and immune dysregulation. Curcumin, a bioactive compound found in turmeric (*Curcuma longa*), is recognized for its anti-inflammatory properties and has shown potential in managing psoriasis. However, its efficacy is often limited by poor bioavailability. Proniosome technology offers a promising delivery system to enhance the therapeutic effects of curcumin.

Objectives: This study aimed to investigate the efficacy of topical curcumin-loaded proniosomes (CPN) cream in alleviating psoriasis in an imiquimod-induced psoriasis mouse model.

Methods: Male mice were induced to develop psoriasis through daily topical application of imiquimod (IMQ) at a dose of 3.125 mg/day for 10 days. CPN, blank-loaded proniosomes (BNP) and curcumin were prepared into cream. Starting from day 3 of IMQ application, the mice were treated with BNP, clobetasol (a standard drug), curcumin at 50 mg, and CPN at doses of 5 mg and 50 mg, compared to an untreated control for 11 days. Skin thickness was measured daily. After the treatment period, the mice were euthanized for assessment of the splenic index and evaluation of psoriasis lesions. In addition, expression of proliferating cell nuclear antigen (PCNA) was stained in psoriasis-induced and negative control mice skin by an immunohistochemistry assay.

Results: Mice treated with topical CPN cream exhibited a significant reduction in skin thickness compared to the untreated control group. Additionally, the splenic index was notably lower in the CPN-treated mice, indicating a reduction in systemic inflammation associated with psoriasis. Interestingly, CPN dose 50 mg (equivalent to 8 mg) exhibited higher efficacy than native curcumin 50 mg as indicated by skin thickness and epidermal thickness, splenic volume also supported the results. The expression of PCNA was considerably lower in the treatment groups, especially CPN dose 5 and 50 mg, compared to the positive control.

Discussion & Conclusion: Curcumin-loaded proniosomes cream significantly reduce the severity of psoriasis in the imiquimod-induced mouse model, which is promising for clinical translation.

Keywords: Curcumin, Proniosome, Psoriasis, Imiquimod-induced mouse model

Abstract: OR-CT027

Clinical Efficacy of Ketamine in Treating Chronic Pain: A Randomized Controlled Trial in a Multidisciplinary Anesthesia Setting

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Background: Chronic pain is a frustrating condition that affects millions of people. It can last for months or even years and can negatively affect patients mental and physical health. This usually leads to reduced life quality and increase opioid usage. Ketamine, an NMDA receptor antagonist, has showed as a potential treatment option for chronic pain. However, its efficacy in multidisciplinary anaesthesia is still understudied. The purpose of this research is to evaluate the effectiveness of ketamine inrelieving chronic pain, particularly in the context of pain management, opioid usage, and patient-reported outcomes.

Objectives: The main objective is to evaluate the efficacy of ketamine in reducing chronic pain intensity in patients undergoing multidisciplinary anaesthesia. Secondary objectives include assessing the effect of ketamine on opioid use, functional outcomes and patient quality of life.

Methods: A randomised controlled trial involving 200 chronic pain patients treated in a multidisciplinary anaesthesia facility was conducted. Patients were randomised to receive intravenous administration of ketamine or placebo in combination with standard pain management protocols. Pain intensity was measured with a visual analogue scale (VAS) and opioid intake was recorded over a 12-week period. Secondary outcomes included functional improvement (assessed by the Brief Pain Inventory) and quality of life (assessed by the SF-36 survey). Results were analysed using a mixed-effects model and statistical significance was set at $p < 0.05$.

Results: After 12 weeks, the pain scores of the ketamine group were significantly lower than those of the placebo group (mean difference: 2.1 VAS points, $p < 0.01$). Opioid consumption also decreased by 25% in ketamine-treated patients ($p < 0.05$). Functional outcomes and quality of life indicators improved significantly in the ketamine group, with fewer reports of pain-related interference with daily activities.

Discussion & Conclusion: Ketamine has been shown to be an effective adjunct for chronic pain relief, resulting in significant pain relief, reduced opioid use and improved patient-reported outcomes in a multidisciplinary anaesthetic setting. These results confirm that ketamine can be used as part of a multimodal approach to chronic pain management and is a viable alternative for patients who do not respond to conventional treatment.

Keywords: Chronic pain, Ketamine, Opioid usage

Abstract: OR-CT029

Lumbar Disc Herniation Automatic Detection and Classification Base On Deep Learning Sagittal View of MRI

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Background: Lumbar disc herniation (LDH) is a common cause of lower back pain, often leading to significant discomfort and disability. Early and accurate diagnosis of disc herniations is crucial for effective treatment, but interpreting MRI images, especially for small herniations, can be complex and labor-intensive.To address this, machine learning and deep learning models. The YOLOv5 (You Only Look Once) object detection algorithm is widely recognized for its accuracy and real-time detection capabilities, making it a suitable tool for diagnosing LDH from MRI scans.

Objectives: This study is to develop a YOLOv5-based model for the real-time detection and visualization of lumbar disc herniations in MRI images. The aim is to enhance diagnostic accuracy and efficiency by automating the detection process, thereby assisting radiologists in identifying disc herniations more quickly and accurately compared to traditional manual interpretation methods.

Methods: The dataset, collected from Universitas Multimedia Nusantara and Liverpool John Moores University in 2019 and available on Mendeley Data, includes MRI images from over 500 anonymized patients with lower back pain. Images were preprocessed, resized to 384x384 pixels, and converted to .jpeg. Labeling was done using LabelImg, with bounding boxes for disc herniation and vertebral levels. The YOLOv5 model was trained on Google Colab with an 80/20 train-test split for 100 epochs, optimizing hyperparameters. Performance was evaluated with precision, recall, F1 scores, mAP@0.5, and real-time detection was tested.

Results: Our result showed that the 500 dataset, the YOLOv5 model performed excellently in detecting lumbar disc herniation. It achieved an overall accuracy of 96.3% and demonstrated high precision (0.951) and recall (0.955) for LDH detection, with F1 scores of 0.952. The mean average precision at an IoU threshold of 0.5 was 0.978. Additionally, the model showed effective real-time detection capabilities, significantly speeding up the diagnostic process compared to manual MRI interpretation.

Discussion & Conclusion: The YOLOv5 model effectively detects lumbar disc herniations in sagittal MRI scans with high precision, recall, and accuracy. Its real-time detection capabilities make it a valuable tool for radiologists, improving diagnosis speed and accuracy. This study underscores the potential of deep learning to advance medical diagnostics and alleviate diagnostic workload.

Keywords: Lumbar Disc Herniation, Real-Time Detection, YOLO models, Medical Imaging, Lower back pain, automic detection, MRI

Abstract: OR-CT033

Parameters Associated with Rheumatoid Arthritis during Pregnancy

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Background: Rheumatoid Arthritis (RA) is a chronic autoimmune disease that affects the joints, but can have extraarticular manifestations in multiple organs. It has a prevalence of 0.8% in Oman. Different parameters are implicated in RA pathogenesis. RA is associated with multiple genetic and environmental risk factors. Women are two to three times more prone to develop RA than men. During pregnancy, the disease activity was shown to be altered.

Objectives: To compare parameters associated with RA during pregnancy.

Methods: This is a retrospective case control study that has been conducted in the Microbiology and Immunology Department at the Sultan Qaboos University (SQU). It included 42 individuals divided into: 14 pregnant RA patients, 14 non-pregnant RA patients and 14 healthy pregnant women. The studied parameters were age, Erythrocyte Sedimentation Rate (ESR), C–Reactive Protein (CRP), White Blood Cells (WBC), neutrophils, basophils, eosinophils, monocytes, Rheumatoid Factor (RF), Anti–Citrullinated Protein antibody (Anti-CCP), free calcium, Albumin Adjusted Calcium (ACa), Alkaline phosphatase (ALP), Haemoglobin (Hb), and platelets. The data was analysed using SPSS program. Mann-Whitney test and Spearman rank correlation coefficient test were used.

Results: The average level of neutrophils in the RA non pregnant group was the lowest ($p = 0.002$ and $p = 0.012$). Significant correlations were found between different immune cells in the RA pregnant group only. They were between monocytes and neutrophils ($p = 0.012$), monocytes and basophils ($p = 0.021$), and eosinophils and basophils ($p = 0.032$). ACa significantly correlated with CRP ($p = 0.008$), WBC ($p = 0.031$), neutrophils ($p = 0.007$) and monocytes ($p = 0.038$) only in the RA pregnant group. Several correlations were found to be significant in the RA patients' group but not in the RA pregnant group.

Discussion & Conclusion: Neutrophils levels showed significant difference between the studied groups. Some immune cells showed significant correlations only in the RA pregnant group and some parameters showed significant correlations in RA patients' group but not in RA pregnant group suggesting that pregnancy impacted the factors implicated in RA. ACa significantly correlated with some inflammatory cells only in the RA pregnant group suggesting the implication of the cells in the bone damage during RA.

Keywords: Rheumatoid arthritis, Pregnancy, Neutrophils, CRP

Abstract: OR-CT034

Prognosis of Disc Herniated Patients using Back Pain Functional Scale

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Background: Spinal disc herniation is a common disease in the world and is the cause of about 72% of sciatica cases [Andrew J, 2006]. Lumbar disc herniation is one of the leading causes of lost productivity, disability, and care costs and is considered a health problem worldwide [9][10]. Around the world, lumbar spine pain and sciatica are often monitored and evaluated clinically based on the Oswestry, Quebec, SF-36, Roland - Morris scales, ... However, the BPFS back pain functional scale has not been widely researched and applied to clinical practice, although a few studies have shown low error and superior reliability of this scale based on correlation with other scales. The advantage of BPFS is that it is simple and easy to understand but still ensures comprehensiveness, including 12 factors according to 5 Likert levels to monitor movement limitations and daily activities. BPFS is a quantitative scale based on points, so it increases accuracy and can monitor small differences. This scale has a minimum detectable change of 22.2% with standard error is 6.5% at the 95% confidence interval. Another advantage is that patients can easily use and monitor back pain using this scale. Based on that, doctors can make clinical assessments and adjust specific treatment methods for each patient.

Objectives: Describe the clinical and magnetic resonance characteristics in patients with lumbar disc herniation and investigate the correlation between Back pain functional scale and clinical and magnetic resonance characteristics.

Methods: Cross-sectional descriptive study. Patients were examined clinically and had an MRI scan of the lumbar spine, assessed by the 12-factor Back pain functional scale (BPFS).

Results: There is a difference between BPFS scores in patients with or without clinical symptoms. Finger-to-ground distance, Valleix sign, VAS score have a strong correlation with BPFS score. BPFS score has a strong correlation with the degree of spinal stenosis and there is a statistically significant difference in BPFS score between stenosis degrees ($|r| = 0.97$, $p<0.05$).

Discussion & Conclusion: There is a clinical correlation between BPFS and the degree of spinal stenosis on MRI in patients with lumbar disc herniation.

Keywords: BPFS, disc herniation, low back pain, clinical, MRI

Abstract: OR-CT035

Suicidal Attempts and Self-poisoning: One Year Report from the Quaternary Hospital in Thai Metropolitan Area

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Background: In Thailand, suicide is the leading cause of death among middle-aged adults. We believe suicide characteristics depend on different cultural/socioeconomic status.

Objectives: This study aimed to describe characteristics and associated factors of suicidal attempts by self-poisoning in Bangkok, the metropolitan city of Thailand.

Methods: Records of all patients visiting the emergency department of King Chulalongkorn Memorial Hospital, Bangkok, Thailand, with self-poisoning suicidal attempts throughout 2021 were collected and analyzed.

Results: Self-poisoning accounted for 110 attempts (by 74 patients). Females aged 11-30 were the most prevalent group. Pharmaceutical agents were commonly used. Most patients (86.4%) had underlying psychiatric illness(es), mostly major depressive disorder. Female, history of psychiatric illness and follow-ups, personality comorbid, and previous attempts reached statistical significance by univariate regression for factors associated with re-attempting suicide, but only personality comorbid was significant from multivariate study (P value = 0.02). Re-attempting mostly recurred within 8 days after the prior attempt.

Discussion & Conclusion: Majority of self-poisoned patients in Bangkok were young adults taking medications, which differ from the overall Thai population where most instances involve patients of older patients (30-50 years) and ingestion of agricultural substances. Appropriate strategies are needed for specific psychosocial/socioeconomic contexts and within the critical period after previous non-fatal attempts.

Keywords: Suicide, Suicidal attempt, Poisoning, Self-poisoning, Overdose, Intentional overdose

Abstract: OR-CT037

Diagnostic Accuracy of Artificial Intelligence and Radiologists in Chest X-ray Interpretation for Suspected Pulmonary Tuberculosis

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Background: Tuberculosis (TB) remains a major global health issue, contributing to significant morbidity and mortality, including in Thailand. The World Health Organization (WHO) has prioritized TB control, aiming to end the epidemic by 2030. TB diagnosis typically relies on laboratory tests like AFB Smear microscopy, which has high specificity but low sensitivity; culture, which is accurate but time-consuming; and nucleic acid amplification tests (NAATs) such as Xpert MTB/RIF, which offer high accuracy but are costly. Chest X-ray (CXR) is commonly used for TB screening, with radiologist interpretation as the gold standard. However, the shortage of radiologists and high workloads may necessitate interpretations by other physicians, whose accuracy varies with their experience. Artificial intelligence (AI) has been explored as a tool to assist in CXR interpretation for TB. While previous studies have shown AI's potential, most were conducted in specific settings with particular software versions. No study has evaluated the accuracy of AI in Nakhonping Hospital.

Objectives: This study evaluates the accuracy of AI and radiologists in interpreting CXR images of patients suspected of having pulmonary TB, comparing both against laboratory test results as the reference standard.

Methods: This diagnostic test study assesses the performance of RediSen's AI software Radisen version 1.2.6.9 and radiologists in interpreting CXRs for pulmonary TB. The study uses a retrospective case-control design, analyzing patients (≥18 years old) with confirmed pulmonary TB via Sputum AFB, gene Xpert MTB, or Sputum culture at Nakhonping Hospital in 2023. Sensitivity, specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), and Area Under the Curve (AUC) at a threshold of 0.5 were compared.

Results: With laboratory test results as the reference, AI showed 64.1% sensitivity, 77.6% specificity, 74.1% PPV, 68.4% NPV, and an AUC of 0.71 (95% CI 0.66-0.76). Radiologists demonstrated 70.4% sensitivity, 87.4% specificity, 78.1% PPV, 82.2% NPV, and an AUC of 0.79 (95% CI 0.73-0.85).

Discussion & Conclusion: Radiologists significantly outperformed AI in CXR interpretation for suspected pulmonary TB.

Keywords: Tuberculosis, chest X-ray, artificial intelligence, diagnosis, accuracy, radiologist, laboratory test

Medical Education Research

Abstract: OR-ME002

Exploring Student Preferences in Project-Based Learning Formats: An Explanatory Mixed-Methods Study

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Background: Project-Based Learning (PrBL) is increasingly recognized in medical education for its immersive learning approach. However, a gap exists in understanding specific PrBL formats and associated qualities students prefer. This study examines the preferences and knowledge acquisition of 3rd-year medical students at Phramongkutklao College of Medicine across three distinct PrBL formats. It aims to identify the preferred format and assess its impact on knowledge acquisition while exploring perspectives on workload, evaluation, and mentorship.

Objectives: - To assess the impact of different PrBL formats on different domains
- To provide recommendations for improving PrBL implementation based on student feedback

Methods: Employing an Explanatory Mixed-method Study design, our investigation involved 71 3rd-year medical students. We used a Likert scale questionnaire divided into three domains: attitude toward student engagement (ASE), knowledge acquisition (KA), and alternation in learning behavior (ALB). The research explored student perspectives on PrBL formats (medical showcase, lifestyle-modification video, and PechaKucha), covering workload, evaluation, and mentorship. Content analysis of open-ended questions on students' preferences and thematic analysis of insights from 4 focus group interviews consisting of 14 participants provided additional depth.

Results: Overall Cronbach's alpha is 0.973. Students highly value PrBL for KA (4.54±0.45) and positive ALB (4.52±0.46). However, the overall ASE with PrBL is relatively lower (4.13±0.44), influenced by factors such as project timing coinciding with exam periods or heavy workloads. Despite this, the majority of students (94.78%) strongly agree/agree that PrBL enhances creativity, 94.37% that it aids understanding, 91.55% that it promotes knowledge sharing, and 95.77% acknowledge improved communication skills. Focus group interviews reveal a preference for projects encouraging wide audience interaction and doctor-like experiences. Specific skill requirements, such as video editing, leading to uneven workloads, are unpopular. Students prefer projects that emphasize creativity, detailed knowledge, clear evaluation criteria, and fairness in assessment while disfavoring rigid structures, heavy workloads, and limited creative opportunities.

Discussion & Conclusion: Building on past research emphasizing PrBL's efficacy, particularly in fostering creativity and teamwork, educators can strengthen student connections to future career roles. Aligning project timelines with lighter exam and workload periods enhances engagement, while steering clear of rigid structures and heavy workloads is advisable.

Keywords: project-based learning, medical education, co-creation

Abstract: OR-ME004

Preparing Global Health Leaders: Evaluating the Effectiveness of IMRC Participation in Developing Global Health Competency among Medical Students at Phramongkutklao College of Medicine

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Background: The International Medical Research Conference (IMRC) at Phramongkutklao College of Medicine (PCM) provides a unique platform for medical students to enhance their understanding of global health—an increasingly critical competency in today's interconnected healthcare landscape. The IMRC exposes students to a wide range of global health challenges, fostering the development of skills that are not typically covered in the standard medical curriculum.

Objectives: This study aims to assess the impact of IMRC participation on the development of global health competencies among PCM medical students. Additionally, it explores student perceptions of the IMRC's effectiveness in preparing them for future medical practice, particularly in the context of global health.

Methods: A mixed-methods, cross-sectional approach was employed, combining quantitative surveys with qualitative in-depth interviews. The study involved 234 PCM medical students who completed a survey evaluating their global health knowledge, preparedness to address global health challenges, and overall experience with the IMRC. Additionally, qualitative interviews were conducted with 20 students—15 males and 5 females—who expressed satisfaction with the IMRC, along with 5 students who were dissatisfied, to explore deeper insights into their experiences.

Results: Quantitative data showed most students rated their familiarity with global health topics—such as infectious diseases, health equity, and non-communicable diseases—at a high level (median score of 8). Students also expressed confidence in their preparedness to address global health issues, particularly pandemics and health inequities. Qualitative findings reflected positive views of the IMRC, with praise for its comprehensive coverage and potential to enhance education. However, both satisfied and dissatisfied groups noted that they had yet to apply IMRC knowledge to their medical training or career planning. Dissatisfied students called for clearer guidance on integrating global health concepts into practice.

Discussion & Conclusion: The IMRC is highly effective in raising global health awareness and competency among medical students, offering valuable learning experiences that extend beyond the traditional curriculum. However, there is room for improvement in helping students translate theoretical knowledge into practical application. Strengthening the integration of global health education into everyday medical training and providing clearer, more practical frameworks for applying IMRC experiences could lead to even greater long-term benefits for participants.

Keywords: Global health competency, medical education, IMRC, experiential learning

Abstract: OR-ME007

AVAMS: Automating Visual AI-Infused Mnemonics and Storytelling for Enhancing Memorization in Medical Education

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Background: Medical education requires innovative, personalized learning strategies to accommodate diverse learner preferences, particularly for visual learners. Traditional methods often struggle with enhancing long-term retention of complex topics like biochemical pathways. Incorporating storytelling into learning, along with generative AI, offers a compelling solution by transforming abstract concepts into engaging, visual mnemonics, potentially improving memory retention and learning outcomes. This study aims to align with Sustainable Development Goals (SDGs); specifically goal 4: quality education by enhancing accessibility and quality in medical education through AI-generated visual tools and storytelling skills.

Objectives: This study aims to evaluate the feasibility of implementing AI-generated visual mnemonics and storytelling in medical education and assess their potential to enhance student engagement, satisfaction, and memory retention in challenging fields such as biochemistry.

Methods: We employed an integration platform as a service (iPaaS) to automate the framework, using ChatGPT to generate mnemonic prompts, which were converted into visual storytelling representations by DALL-E 3.5. Usability testing with 80 medical students evaluated memorability, concept understanding, usability, engagement, and emotional impact through Likert scale feedback.

Results: The initial prototype was tested with medical students at Phramongkutklao College of Medicine. 96% of students showed improvements in memory retention, and 90% demonstrated enhanced understanding of complex biochemical concepts. Additionally, 95% of students reported this visual mnemonics increased engagement, while 98% expressed high satisfaction. The automated workflow also demonstrated strong potential for scalability in medical education.

Discussion & Conclusion: AI-infused visual mnemonics and storytelling show strong feasibility in enhancing personalized medical education. This approach aligns with SDG 4 by promoting equitable access to quality education. Future research will focus on refining the framework, expanding to other medical topics, and assessing long-term impacts.

Keywords: ChatGPT, Generative Artificial Intelligence, Memory retention, Mnemonic, Visual mnemonic, Storytelling, Medical Education, Personalized learning, Artificial Intelligence

Abstract: OR-ME009

Trends in Declining Empathy and Associated Factors among Medical Students and Residents Throughout Medical Curriculum

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Background: Empathy is an essential component of medical practice that significantly influences patient care, clinical competence, and outcomes. However, there is limited understanding of how empathy levels change across different stages of medical education, particularly from medical students to residents within a single institution.

Objectives: This study aims to assess the trends in empathy and identify factors associated with lower empathy in medical trainees, focusing on three core domains: Perspective Taking, Compassionate Care, and Walking in Patient's Shoes.

Methods: This cross-sectional study included second- to sixth-year medical students and first- to second-year residents (N = 520) from Phramongkutklao College of Medicine and Phramongkutklao Hospital. Empathy was measured using the Jefferson Scale of Empathy (JSE), and demographic and psychosocial data were collected through standardized questionnaires. Multivariable regression analyses examined associations between empathy scores and participant characteristics. Statistical tests included t-tests, ANOVA, Chi-square, and logistic/linear regression.

Results: The mean empathy score was 103.8 ± 15.0, with 27.1% of participants showing low empathy (JSE ≤91 for males, ≤97 for females). Empathy was highest among second-year students (114.5, 95% CI: 112.0-117.0) and decreased significantly, reaching the lowest levels in second-year residents (95.2, 95% CI: 92.2-98.2). Sixth-year students had the highest prevalence of low empathy (54.4%, 95% CI: 34.4-73.2%). Lower perspective-taking scores were associated with being a resident (β = -4.80, $P < 0.001$), a clinical student (β = -2.62, $P = 0.019$), and preferring procedure-oriented specialties (β = -5.78, $P = 0.001$). In the compassionate care domain, lower scores were linked to being female (β = 2.71, $P = 0.005$), non-binary (β = -14.12, $P < 0.001$), and a resident (β = -6.28, $P < 0.001$). For walking in patient's shoes, residents (β = 1.74, $P < 0.001$) and individuals with a GPA above 3.5 (β = -0.79, $P = 0.028$) scored lower.

Discussion & Conclusion: This study highlights a significant empathy decline during medical training, especially in the final year and among residents. Those in procedure-oriented specialties, non-binary, and female students show the most pronounced empathy deficits. Interventions like stress management and patient-centered workshops are essential for enhancing empathy, particularly among residents and at-risk groups.

Keywords: Empathy, Medical Education

Abstract: OR-ME012

ViSim: Virtual Simulation for Medical Clinical Learning – A Novel Sustainable Development Approach in Medical Education

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Background: The evolution of medical education requires innovative approaches that promote active engagement, enhance clinical skills, and promote critical thinking through personalized learning. Where learners control the pace and focus of their studies, has become central to modern medical training. Virtual simulation platforms like Gather Town create immersive environments that simulate real-world medical scenarios. aligning with Sustainable Development Goals (SDGs) 3: Good Health and Well-being and goal 4: Quality Education. These tools offer an equitable and high-quality learning experience, advancing the goals of modern medical training.

Objectives: This study implements a Virtual Simulation (ViSim) approach using Case-Based Learning (CBL) to enhance clinical decision-making, critical thinking, and clinical skills among medical students. It also evaluates student satisfaction and learning outcomes in response to this innovative model.

Methods: A virtual hospital environment was developed on the Gather Town platform, allowing students to interact with non-player characters (NPCs) simulating patients, doctors, and healthcare personnel. The pilot case focused on managing a patient with alcoholism, guiding students through key clinical procedures such as history-taking, physical examinations, investigations, and treatment planning. Personalized learning tools (e.g., videos, notes, and audio resources) were integrated into the system, offering students flexibility. The prototype was evaluated with 50 pre-clinical medical students in Phramongkutklao college of medicine, and data on their progress, satisfaction, and skill improvement were collected and analyzed.

Results: The study showed 96% of participants reporting that ViSim enhanced their clinical learning experience. 94% found it practical application, 94% expressed a desire for continued use, 88% noted improved clinical decision-making, and 98% show high satisfaction. Overall, ViSim effectively improved diagnostic reasoning, decision-making, and the integration of theoretical knowledge with clinical practice.

Discussion & Conclusion: ViSim is an effective tool for personalized medical education, accommodating diverse learning styles while fostering student engagement and skill development. Its scalability suggests potential for broader integration into the medical curriculum, promoting active learning across disciplines.

Keywords: ViSim, Virtual Simulation, Personalized Learning, Clinical Skills, Case-Based Learning, Medical Education

Abstract: OR-ME013

Assessing Smartphone Addiction: A Comprehensive Study of Prevalence, Behavioral Patterns, and Contributing Factors Among Medical Students at Phramongkutklao College of Medicine

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Background: Smartphone addiction can negatively affect mental health and sleep quality. In military medical education, cadets may use smartphones more frequently, yet there is limited research on this issue among medical cadets in Thailand.

Objectives: The main goal of this research is to determine the rate of smartphone addiction among medical students at Phramongkutklao College of Medicine. The study also seeks to explore and identify the factors associated with smartphone addiction in this group. The findings aim to offer valuable insights for developing effective strategies and interventions to address and reduce smartphone addiction among medical students.

Methods: This cross-sectional study was conducted in December 2023 with total invitation of 482 second-year to sixth-year Phramongkutklao college of Medicine medical cadets .A total of 197 medical cadets were surveyed using self-questionnaires, which included assessments of smartphone usage habits, the short version of the Smartphone Addiction Scale (SAS-SV), sleep problems assessed through the Pittsburgh Sleep Quality Index (PSQI), and mental health problems evaluation using the Thai Mental Health Indicator (TMHI). Statistical analysis was performed using Stata ver. 17.0 software, and the data were analyzed through descriptive statistics, Chi-square test, Mann-Whitney U test, and logistic regression.

Results: Of the 197 medical cadets, 82.74% were preclinical students. Smartphone addiction was found in 35.53%. Statistically significant factors of smartphone addiction were poor mental health(P = 0.009, ORadj = 4.20, 95%CI = 1.43-12.36), GPA ≥ 3.50(P=0.028, ORadj = 2.72, 95%CI = 1.11-6.65), using the smartphone for social networking(P=0.041, ORadj = 2.59, 95%CI = 1.04-6.44) and using smartphone > 6 hours per day(P=0.04, ORadj = 3.02, 95%CI = 1.05-8.67). The median score of the PSQI among those who identified themselves as smartphone addicts was 8 which was significantly higher compared to those of non-addicts (P=0.0313)

Discussion & Conclusion: This study found a high prevalence of smartphone addiction among Thai medical cadets .Poor mental health, poorer sleep quality, level of GPA, the purpose of smartphone use and daily smartphone usage time were statistically significant factors associated with the perceived addiction to smartphone. Future research may include a higher number of sample sizes, focusing on each associated factor and intervention.

Keywords: Smartphone addiction, medical cadet, addiction, assessment

Abstract: OR-ME015

Adapting Educational Approaches to Meet Dynamic Needs of Today's Students for More Enriching Learning Experience with Student Co-creation

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Background: As preventive medicine gains prominence, healthcare professionals are key in community health promotion. In the "Introduction to Community Medicine" course at Phramongkutklao College of Medicine, third-year students work in groups to create a teaching method for ten topics related to public health. Each group teaches the entire class before conducting surveys and health promotion in rural Thailand. This study compares outcomes between student co-creation and traditional learning methods.

Objectives: This study compares outcomes between student co-creation and lectured-based learning methods. To evaluate student feedback on the effectiveness of student co-creation within the context of health promotion education

Methods: Ninety-five medical students co-created their learning by defining study objectives, brainstorming, researching, and formulating examination questions. They refined their presentations based on expert feedback and presented to the class, then instructors provided additional knowledge. Students took an examination featuring questions drawn from their work, and an evaluation form was administered to gather feedback on the co- creation process.

Results: Survey results, with an 80% response rate (n = 76), indicated significant student skill development in collaboration, communication, and creativity. The project objectives aligned with student expectations at 92%, while internal team communication and individual contribution were rated highly at 91% and 92%, respectively. Perceived personal and academic development was rated at 90%, and overall satisfaction was 91%. Notably, 79% of respondents felt their opinions and ideas were valued, demonstrating the project's inclusivity. Regarding future implementation, 68% would recommend the co-creation approach to other students, suggesting its potential for broader adoption. While some faced time management and brainstorming challenges, the positive results highlight the efficacy of co-creation as a valuable educational tool for medical students. Exam results confirmed better performance with a 37% increase in average score. The co-creation exam result has a 19% lower relative variability. It also indicated 40%, 5%, 20%, 41.8%, and 30.2% upsurges in the median, minimum, maximum, first quartile, and third quartile scores, respectively.

Discussion & Conclusion: The results indicate positive perceptions of student co-creation, more consistent and higher performance, and notable recommendations. This engaging way of learning not only provides knowledge for preventing diseases but also skills required for conducting effective health promotion.

Keywords: Student co-creation, Health promotion education, Collaboration skills

Abstract: OR-ME017

Impact of IMRC Involvement on the Professional Development of Medical Students Serving as Student Taskforce Members

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Background: The International Medical Research Conference (IMRC) at Phramongkutklao College of Medicine (PCM) allows medical students to engage in leadership, coordination, and support roles. These roles foster key skills such as leadership, communication, and organization, essential for professional development. However, the long-term impact of sustained involvement on students' career trajectories has not been thoroughly studied.

Objectives: This study's primary objective was to assess the impact of IMRC taskforce participation on medical students' professional development, particularly in leadership, communication, and organizational skills. Secondary objectives included analyzing differences in outcomes across roles, long-term effects on professional identity and career planning, and motivations for role selection.

Methods: A mixed-methods approach was used, including quantitative surveys and qualitative interviews. Data were collected from 100-150 students across leadership, coordination, and support roles. Statistical analysis measured skill development, while thematic analysis of interviews provided insights into experiences and motivations.

Results: Quantitative data revealed that students in leadership roles showed the highest improvement in leadership and organizational skills, while support roles resulted in significant gains in communication skills. Coordination roles promoted balanced growth in communication and organizational skills. Qualitative interviews highlighted the role of sustained involvement in boosting professional confidence, refining career goals, and strengthening professional identities. Role progression, particularly from support to leadership, was key in enhancing skill development and career aspirations.

Discussion & Conclusion: Participation in the IMRC taskforce significantly contributes to medical students' professional development at PCM, particularly in leadership and organizational skills. All roles aid communication skill improvement, while leadership positions offer the greatest growth. These experiences help shape professional identity and career planning, offering long-term benefits beyond traditional medical education. Findings suggest extracurricular activities like the IMRC can be effectively integrated into medical education to support the comprehensive development of future healthcare professionals.

Keywords: Medical Education, Professional Development, Leadership Skills, Communication Skills, Organizational Skills, Extracurricular Activities, Career Planning, Student Taskforce, Skill Development

Abstract: OR-ME018

Enhancing Patient-Centered Care through Humanities: Exploring the Impact of Early Clinical Exposure and Patient Journey Mapping on Second-Year Medical Students

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Background: Integrating humanities into medical education is increasingly recognized for its role in fostering empathy, ethical reasoning, and patient-centered care. This study explores the impact of early clinical exposure and patient journey mapping on medical students at Phramongkutklao College of Medicine (PCM). The program combines reflective practices such as journaling and group discussions with clinical exposure to enhance students' communication, empathy, and professional identity.

Objectives: To evaluate how early clinical exposure and patient journey mapping enhance second-year medical students' empathy, ethical reasoning, communication skills, and professional identity at Phramongkutklao College of Medicine, preparing them for compassionate, patient-centered care in diverse settings.

Methods: This mixed-methods study involved 176 medical students who participated in the early clinical exposure program. A post-program survey, using a Likert scale, assessed changes in empathy, ethical reasoning, communication, and professional identity. Key areas measured included the ability to understand patient perspectives and apply ethical reasoning in clinical settings. In-depth interviews with a subset of students provided qualitative insights into their personal experiences with patient care, empathy, and ethical challenges. Thematic analysis was conducted on the qualitative data to identify key themes and reflections.

Results: Survey data showed that 76.8% of students reported an increased ability to empathize and communicate effectively with patients. The patient journey mapping activities enabled students to emotionally connect with patient experiences, significantly enhancing empathy. Ethical reasoning also improved, with 81.2% of participants regularly reflecting on ethical considerations in clinical settings. Qualitative interviews supported these findings, highlighting a deeper understanding of patient care and commitment to addressing health inequities. Furthermore, 83% of students expressed a strengthened professional identity and commitment to serving underserved populations, with reflective practices being central to these improvements.

Discussion & Conclusion: This study demonstrates that integrating humanities through early clinical exposure and patient journey mapping significantly enhances empathy, ethical reasoning, and professional identity in medical students. These findings highlight the potential for other institutions to adopt similar programs, adapting humanities-based approaches and reflective practices to cultivate compassionate, patient-centered physicians. Such programs can be instrumental in developing healthcare professionals who are better prepared to navigate the complexities of modern patient care, particularly in diverse and underserved settings.

Keywords: Patient-Centered Care, Humanities, Early Clinical Exposure, Patient Journey Mapping, Second-Year Medical Students, Medical education research

Abstract: OR-ME020

Understanding the Learning Preferences of Generation Z Medical Students: Implications for Teaching and Support Strategies

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Background: Generation Z medical students, born between 1997 and 2012, are digital natives who have grown up with advanced technology, shaping their distinct learning preferences and expectations. To optimize their educational experience, it is critical for medical schools to adapt teaching methods and support systems that align with these preferences.

Objectives: This study explores the learning preferences, challenges, and anticipated impact of emerging technologies on Generation Z medical students, with a particular focus on the role of digital tools, artificial intelligence (AI), and virtual reality (VR) in enhancing their academic success and engagement.

Methods: A mixed-methods study was conducted with 163 medical students. Quantitative data were collected via structured surveys utilizing a 10-point Likert scale to assess preferences for hands-on learning, problem-based learning (PBL), online education, and other instructional formats. Additional sections examined the effectiveness of current support strategies and the potential impact of AI and VR on learning. Thematic analysis of open-ended responses identified key themes in students' experiences, challenges, and expectations for future medical education trends.

Results: The results indicated that hands-on learning was the most preferred method (mean: 8.16), followed by PBL (mean: 7.65), with 29.4% of students identifying hands-on experiences as the most effective. Digital tools were found to significantly enhance academic performance (mean: 8.41), particularly in self-directed and flexible learning environments. Key challenges reported by students included balancing study-life demands (mean: 7.0) and maintaining focus during traditional long lectures (mean: 6.85). In terms of future educational trends, 89.7% of students expressed strong support for integrating AI and VR into their curriculum, citing their potential to enhance interactivity and provide personalized learning experiences.

Discussion & Conclusion: This study underscores the need for medical educators to evolve teaching strategies in alignment with the preferences of Generation Z students. Hands-on and self-directed learning, supported by digital tools and technologies like AI and VR, are key to fostering greater engagement and academic success. The findings suggest that future-proofing medical education will require integrating advanced technologies while addressing challenges like time management and adapting to diverse teaching styles. These insights provide strategies to make medical education more relevant and effective for Generation Z.

Keywords: generation Z, learning preferences, medical students, teaching and supporting strategies, understanding the learning preferences

Abstract: OR-ME022

Promoting Research Engagement Among Medical Students at Phramongkutklao College of Medicine (PCM): Identifying Barriers and Enablers to Foster a Culture of Inquiry and Innovation

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Background: Research engagement is essential in medical education, fostering critical thinking, evidence-based practice, and professional growth. At Phramongkutklao College of Medicine (PCM), while the value of research is recognized, students face challenges that limit their participation. Key barriers, such as limited time and inadequate resources, prevent the institution from fully cultivating a research-driven environment.

Objectives: This study explores the barriers and enablers to research engagement among PCM medical students and offers strategies to promote a more supportive research culture.

Methods: A mixed-methods approach was used, with quantitative data collected from 98 PCM students via a structured Likert-scale questionnaire. The survey assessed mentorship, institutional support, perceived barriers, and participation in research. Qualitative data were gathered from in-depth interviews with a subset of students, focusing on personal experiences, challenges, and suggestions for improvement. Descriptive statistics summarized the quantitative data, while thematic analysis identified patterns from the interview responses.

Results: The findings indicate that students see research as a crucial part of their education and careers (mean: 3.75, SD: 0.92). However, significant barriers were identified, including time constraints due to academic workload (mean: 3.89, SD: 1.01) and insufficient mentorship (mean: 3.02, SD: 1.06). Interviews reinforced these findings, with recurring themes of balancing research with academics, the need for structured mentorship, and challenges accessing research opportunities. Despite these obstacles, students expressed a strong interest in contributing to scientific knowledge (mean: 3.54, SD: 0.91) and engaging in research if better institutional support were provided.

Discussion & Conclusion: The study concludes that addressing time constraints and enhancing mentorship are crucial to fostering a research culture at PCM. Integrating research more systematically into the curriculum, providing dedicated research time, and increasing resource access are key strategies to improve engagement. These recommendations offer actionable insights that PCM and other institutions can adopt to better support student research involvement.

Keywords: Research engagement, Medical education, Mentorship

Abstract: OR-ME023

The Impact of Digital Health Tools on Burnout: An Evaluation of e-Health Literacy and Its Role in Reducing Stress among Medical Students

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Background: Burnout is a prevalent issue among medical students, often leading to emotional exhaustion, depersonalization, and diminished personal accomplishment. With the increasing demands of medical education, digital health tools such as apps for stress management, mindfulness, and mental health support have gained attention as potential solutions for reducing stress and improving wellbeing. The effectiveness of these tools may depend on the user's e-health literacy—the ability to find, understand, and use digital health information effectively.

Objectives: This study examines the relationship between e-health literacy, the use of digital health tools, and burnout among medical students.

Methods: A cross-sectional study was conducted with 158 medical students to evaluate their e-health literacy, stress levels, burnout, and usage of digital health tools. The eHealth Literacy Scale (eHEALS) was used to assess participants' digital health literacy, while the Perceived Stress Scale (PSS) and Maslach Burnout Inventory-Student Survey (MBI-SS) measured stress and burnout. Students also reported their academic performance (GPA) and their use of digital health tools, including mindfulness and mental health apps. Correlation analyses were performed to explore the relationships between e-health literacy, stress, burnout, and academic outcomes.

Results: Students with higher e-health literacy scores (mean: 30.06 out of 40) exhibited lower perceived stress levels (mean PSS score: 25.03) and reduced burnout (mean MBI-SS score: 35.44). Furthermore, students who frequently used digital health tools (mean usage score: 1.84 out of 5) reported higher effectiveness of these tools (mean effectiveness score: 5.06 out of 10) and better academic performance (mean GPA: 3.57). There was a moderate positive impact of stress and digital tool usage on academic performance (mean stress impact: 7.52, digital tool impact: 6.00).

Discussion & Conclusion: This study demonstrates that e-health literacy plays a crucial role in reducing stress and burnout among medical students. The effective use of digital health tools not only supports students' mental health but also contributes to improved academic performance. Enhancing e-health literacy through educational interventions and promoting the use of digital health tools in medical training can significantly improve student wellbeing and academic success. These findings have broad implications for other academic environments and professional settings where high stress and burnout are prevalent.

Keywords: E-health literacy, Burnout, Digital health tools

Abstract: OR-ME026

Using Systems Thinking to Analyze Engagement Challenges in RAMSC: Identifying Leverage Points for Improvement

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Background: Systems thinking is a powerful approach for addressing complex, multifaceted problems, providing tools to understand interconnections and dynamics within a system. In the case of Ramathibodi Medical Student Council (RAMSC), declining engagement among council members has become a pressing concern. This issue is a "wicked" challenge due to its complexity and interrelated causes, making it difficult to resolve through traditional means.

Objectives: This study aims to apply systems thinking to analyze and identify key challenges and leverage points within RAMSC's engagement problem. Specifically, we utilized behavior-over-time graphs (BOT) and causal loop diagrams (CLD) to synthesize aspects and provide guidelines for addressing these issues.

Methods: We employed a systems thinking approach through group model-building workshops involving 35 RAMSC members from diverse roles. The tools used, including BOT and CLD, facilitated a shared understanding of the dynamics at play. Data collected during these workshops informed the development of a CLD, which was analyzed using the COM-B model to identify critical system mechanisms.

Results: The analysis revealed three major insights based on the COM-B model: capability, opportunity, and motivation. First, enhancing members' capability through self-evaluation enables them to manage tasks effectively, improving their skills over time. Second, aligning activities with personal values creates opportunities that boost engagement, although time constraints often limit involvement. Third, fostering a sense of belonging enhances motivation, driving proactive engagement and satisfaction. However, constraints such as academic and extracurricular workloads, along with mismatched values, hinder further improvement. The identified system archetype was “Limit to Success,” indicating that improvements in engagement face constraints that inhibit further progress. To address these engagement issues, we recommend the following guidelines: 1. Implement a standardized self-assessment tool for members to identify areas for skill development. 2. Help members clarify their personal values to maximize the benefits of work opportunities. 3. Enhance the sense of belonging in student organizations to promote engagement.

Discussion & Conclusion: This study demonstrates how systems thinking can effectively analyze and address complex challenges, such as the engagement problem in RAMSC. By identifying key leverage points and addressing issues systematically, the guidelines provided can facilitate meaningful change. Systems thinking empowers effective intervention in complex challenges.

Keywords: Systems Thinking, Engagement, Medical Student Council

Systematic Review and Meta-Analysis Research

Abstract: OR-SM001

Vaccine Efficacy in Hematologic Cancer Patients: A Systematic Review and Public Health Perspective

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Background: Patients with hematologic cancers are at increased risk of infections due to both their underlying disease and the immunosuppressive treatments they undergo. Vaccination is a key component of reducing infection-related morbidity and mortality. Given the vulnerability of this population, it is essential to understand the efficacy of vaccines for public health planning. This systematic review examines the efficacy of various vaccines in patients with hematologic cancers and assesses implications for public health strategies.

Objective: The primary objective is to assess the effectiveness of vaccines in preventing infections among patients with hematologic cancers. Secondary objectives include identifying the factors influencing vaccine response, determining the safety of vaccines in this population, and providing guidelines for public health vaccination strategies.

Methods: A systematic review was conducted by searching PubMed, Embase, and Cochrane databases for studies published between January 2010 and June 2023. Studies included randomized controlled trials (RCTs), cohort studies, and observational data focusing on the efficacy of vaccines, such as influenza, pneumococcal, and COVID-19 vaccines, in patients with hematologic malignancies. Data on immune response, infection rates, and vaccine-related adverse effects were extracted and analyzed qualitatively.

Results: The review showed that vaccine efficacy in this population is significantly lower compared to healthy individuals and to those with solid cancers, with seroconversion rates ranging from 40% to 65% depending on the type of vaccine and cancer subtype. Factors such as active chemotherapy, the type of hematologic cancer, and timing of vaccination played a critical role in determining vaccine effectiveness. Vaccine safety profiles were similar to the general population, with no significant increase in severe adverse events.

Discussion & Conclusion: Vaccine efficacy in patients with hematologic cancers is diminished, particularly in those undergoing active treatment. Despite this, vaccination remains a crucial method for reducing infection risk in this vulnerable group. Public health recommendations should emphasize tailored vaccination schedules, potential use of booster doses, and close monitoring of immune responses to optimize protection in these patients.

Keywords: Hematologic cancers, Vaccine efficacy, Infection prevention

Abstract: OR-SM003

Long-Term Cognitive and Behavioral Outcomes of Neonatal Hypoglycemia: A Review of Early Detection and Intervention Strategies

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Background: Neonatal hypoglycemia is a common metabolic disturbance in newborns, particularly in preterm and low birth weight infants. While short-term outcomes are often managed effectively, concerns persist about the long-term cognitive and behavioral impacts of early-life hypoglycemia. Emerging evidence suggests that neonatal hypoglycemia, if undetected or inadequately treated, may lead to neurodevelopmental deficits, including impairments in attention, memory, and behavior. This review explores the long-term cognitive and behavioral outcomes associated with neonatal hypoglycemia and evaluates early detection and intervention strategies to mitigate these risks.

Objective: The primary objective is to review the long-term cognitive and behavioral outcomes in children with a history of neonatal hypoglycemia. Secondary objectives include assessing the effectiveness of current detection and intervention strategies and identifying areas for improvement in clinical practice to minimize neurodevelopmental impairments.

Methods: A systematic literature review was conducted using databases including PubMed, Scopus, and Cochrane Library for studies published between January 2005 and March 2023. Studies that examined the long-term cognitive, academic, and behavioral outcomes in children with a history of neonatal hypoglycemia were included. Additionally, research focusing on early detection methods (e.g., glucose monitoring protocols) and intervention strategies (e.g., early glucose administration) were reviewed. Data were synthesized to identify trends, gaps, and the overall effectiveness of interventions.

Results: The review included 30 studies with over 10,000 participants. Children with neonatal hypoglycemia exhibited a higher incidence of cognitive delays, particularly in executive functioning, working memory, and attention, compared to controls. Behavioral problems, such as increased rates of attention-deficit/hyperactivity disorder (ADHD) and learning difficulties, were also more prevalent. Studies that implemented early glucose monitoring and timely interventions reported improved neurodevelopmental outcomes, with early and aggressive management reducing the risk of significant cognitive impairments.

Discussion & Conclusion: Neonatal hypoglycemia is associated with long-term cognitive and behavioral challenges, underscoring the importance of early detection and intervention. Current strategies, including routine glucose monitoring and timely glucose administration, can significantly improve neurodevelopmental outcomes. Enhanced screening protocols and long-term follow-up for at-risk infants are recommended to minimize the risk of cognitive and behavioral deficits later in life. Further research is needed to refine these strategies and explore additional neuroprotective interventions.

Keywords: Neonatal hypoglycemia, Behavioral outcomes, Early detection, Intervention strategies

Abstract: OR-SM004

Assessing the Effectiveness of Comparative Psychological Interventions for Post-Traumatic Stress Disorder Patients Following Disasters: A Network Meta-analysis

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Background: Post-traumatic stress disorder (PTSD) is a prevalent mental health condition among individuals affected by disasters, significantly impacting their well-being and daily functioning. Despite various psychological interventions, their relative effectiveness in alleviating PTSD symptoms remains uncertain.

Objective: *Our study aims to compare the effectiveness of psychological interventions for post-disaster PTSD, providing crucial insights for evidence-based clinical decision-making and enhancing disaster response efforts.*

Methods: A systematic search of the PubMed and Scopus databases was conducted to identify randomized controlled trials (RCTs) comparing the effectiveness of psychological interventions for post-disaster PTSD from inception to 15 March, 2024. A two-stage network meta-analysis integrated direct and indirect evidence to estimate the Standardized Mean Difference (SMD) of post-treatment PTSD Score using a random effects model and ranked interventions based on their efficacy by Surface Under the Cumulative Ranking Curve (SUCRA). The study was registered with PROSPERO (CDR42024551122).

Results: Thirty-six RCTs (n = 6,664) met inclusion criteria across diverse disaster settings. A two-stage network meta-analysis demonstrated that Eye Movement Desensitization and Reprocessing (EMDR) [SMD -0.96; 95% CI -1.67, -0.26; p<0.01] and Cognitive Behavioral Therapy (CBT) [SMD -0.60; 95% CI -1.02, -0.18; p<0.01] significantly reduce post-disaster PTSD symptoms. The SUCRA analysis identified EMDR as the most effective treatment (SUCRA = 0.832), followed by Exposure Therapy (ET) (SUCRA = 0.610), Group Therapy (SUCRA = 0.569), CBT (SUCRA = 0.553), and Alternative Treatments (ATT) (SUCRA = 0.403), respectively. Notably, only EMDR and CBT achieved statistically significant reductions in PTSD symptoms, whereas other interventions did not demonstrate significant effects.

Discussion & Conclusion: Our study suggests that EMDR is the best method for treating post-disaster PTSD patients, but alternative treatments are also suggested. Clinicians should weigh these findings in patient care decisions to optimize mental health support for disaster-affected populations. Additionally, public health should prioritize evidence-based EMDR for community resilience against PTSD, integrating findings into treatment guidelines and disaster response.

Keywords: Disaster, Eye Movement Desensitization and Reprocessing, Post-Traumatic Stress Disorder, Psychological Interventions

Abstract: OR-SM005

Prevalance of Intracranial Hemorrhage after Recombinant Tissue Plasminogen Activator Treatment for Acute Myocardial Infarction: A Systematic Review and Meta-Analysis

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Background: The management goal of acute myocardial infarction is early restoration using thrombolysis strategy. In thrombolysis practice using Recombinant tissue-type plasminogen activator (rtPA), intracranial hemorrhage (ICH) became most feared complication over last two decades. This double-edged sword phenomenon needs to be evaluated.

Objectives: This review identifies the rate of ICH in rtPA-treated myocardial infarction patients.

Methods: We evaluated studies of rtPA-treated myocardial infarction patients that reported to have asymptomatic ICH or symptomatic ICH from PubMed, Google Scholar, and Cochrane Register. Studies from 1995-2024 with at least 100 subjects and are having The Newcastle-Ottawa quality assessment scale's score ranging 3 to 9 reviewed. The pooled prevalence rate of ICH in rtPA-treated patient are calculated and the association between different types of rtPA (Tenecteplase and Alteplase) to the rate of ICH in those patients are analyzed using R and Comprehensive Meta Analysis software. The protocol was published in PROSPERO.

Results: The pooled prevalence of ICH in myocardial infarction patients who get treated initialy with any type of rtPA from 4 studies was 3% (95% CI 0.003 – 0.267, I^2 99,75%, p=0.00). Because the number of studies included in meta-analysis is still relatively small, publication bias assessed with American Academy of Neurology (AAN) Guidelines. 3 studies classified into Class I (low risk of bias) and 1 study into Class II (moderate risk of bias) in AAN. The different types of rtPA regiments were not significantly associated with the presence of ICH (odds ratio, 0.00; 95% confidence interval, -0.31- 0.31; I^2 0%, p>1.00).

Discussion & Conclusion: This meta-analysis shows the low prevalence of ICH in myocardial infarction patients after fibrinolytic using rtPA. The different types of rtPA drugs did not alter the prevalence of ICH. Thrombolysis using rtPA considerably safe in brain haemorrhagic risk. More study needed to be included by extending publication time range.

Keywords: intracranial hemorrhage, myocardial infarction, rtPA, thrombolysis

Abstract: OR-SM007

Unraveling the Roles of ACTN3, ACE, and PPARGC1A in Power Performance for Athletic Excellence, Global Health, and Biodefense: A Systematic Review and Meta-Analysis

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Background: Power is a key factor in athletic performance, especially in explosive sports, unlike endurance which focuses on sustained effort. The ACTN3 RR genotype boosts fast-twitch muscle fibers for speed and power, the ACE DD genotype improves muscle efficiency, and the PPARGC1A SerSer variant enhances energy metabolism, affecting both power and endurance. These three genes were selected for their distinct roles in power performance and together offer a thorough understanding of the genetic basis for power-based athletic abilities.

Objectives: This study compares the impact of ACTN3 RR, ACE DD, and PPARGC1A SerSer genotypes on power performance, addressing a research gap. The findings may enhance athlete selection and training while contributing to global health through personalized medicine approaches for optimizing muscle function and rehabilitation.

Methods: The electronic databases PubMed, Scopus, and Web of Science were searched for studies on genetic polymorphisms related to power athletic status. A comprehensive search identified 14 ACTN3, 5 ACE, and 4 PPARGC1A studies, focusing on those published between 2014-2024. This systematic review consisted of 2763 power athletes and 8142 controls, which also conducted a meta-analysis. Study quality was assessed by three independent reviewers, with consensus on results. Data were analyzed using Review Manager, calculating odds ratios and 95% CI for each genetic variant. Heterogeneity was evaluated using random effects modeling and Chi-square based Q-statistics.

Results: Pooled odds ratio [95%CI] favoring athletes compared with controls was 1.08 [0.69–1.1.67] for ACE DD (I/D), 1.32 [1.15-1.53] for ACTN3 RR (rs1815739), and 1.20 [0.79–1.81] for PPARGC1A CC (rs8192678). Athletes are more likely to carry certain genetic variants compared to controls, specifically the ACTN3 RR (rs1815739) polymorphism, which is related to power performance. This supported by the results of low heterogeneity, narrower confidence intervals and not crossing 1.

Discussion & Conclusion: The ACTN3 RR (rs1815739) genotype had a significant association with improved athletic performance, particularly in sports requiring strength and speed, with a significant odds ratio (1.32 [1.15-1.53]) and low heterogeneity. Overall, the ACTN3 gene played a stronger role in enhancing fast muscle ability than the other two genes. However, ACE and PPARGC1A also influence power performance, contributing to the genetic foundation of explosive abilities.

Keywords: ACTN3, ACE, PPARGC1A, Power athletes, Muscle efficiency, Genetic polymorphisms, Athletic performance

Abstract: OR-SM010

A Network Meta-Analysis Comparing the Impact of Fecal Microbiota Transplantation, Medicines, and Supplements on Low-Density Lipoprotein Cholesterol

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Background: Low-density lipoprotein cholesterol (LDL-C) is a major risk factor for cardiovascular disease worldwide. Traditionally, statins and other treatments have managed it, but serious side effects compared with their efficacy remain a concern. Fecal microbiota transplantation (FMT) is a novel treatment that aims to fix gut dysbiosis. Researchers have linked it to lowering LDL-C and, if successful, could serve as a therapy.

Objectives: This network meta-analysis aims to compare the effectiveness of FMT, medicines, and supplements in managing LDL-C levels.

Methods: A network meta-analysis was conducted by systematically searching through PubMed, Embase, and the Cochrane Library for randomized controlled trials (RCTs) published up to August 2024. We included the studies focused on LDL-C outcomes. FMT, statin drugs, metformin, tafolecimab, and supplements were assessed for their impact using standardized mean differences and Bayesian network meta-analysis. The heterogeneity test and publication bias test were evaluated by funnel plot.

Results: The analysis included a total of 9 studies involving 9,760 participants. The network meta-analysis revealed that FMT led to a significant reduction in LDL-C compared to placebo, atorvastatin, rosuvastatin, ezesim, fish oil, and red yeast. FMT vs. placebo [SMD = -0.55, 95%CI (-0.96, -0.15)]; FMT vs. atorvastatin [SMD = -16.05, 95%CI (-17.69, -14.42)]; FMT vs. rosuvastatin [SMD = -1.89, 95%CI (-2.74, -1.03)]; FMT vs. ezesim [SMD = -0.72, 95%CI (-1.13, -0.31)]; FMT vs. fish oil [SMD = -2.4, 95%CI (-3.34, -1.46)]; FMT vs. red yeast [SMD = -3.49, 95%CI (-4.62, -2.36)]. However, FMT exhibited no significant LDL-C reduction when compared with metformin and tafolecimab [SMD = -0.53, 95%CI (-1.40, 0.35)], [SMD = -0.38, 95%CI (-1.37, 0.6)], respectively.

Discussion & Conclusion: FMT has the potential to lower LDL-C and reduce cardiovascular risk. However, more research is required to refine FMT protocols and identify the ideal patient profiles for this intervention.

Keywords: Fecal microbiota transplantation, Low-Density Lipoprotein Cholesterol, network meta-analysis

Abstract: OR-SM013

Risk of Incident Autoimmune Connective Tissue Diseases Following COVID-19 Infection: A Systematic Review and Meta-analysis of Cohort Studies

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Background: Despite the overall reduction in the severity of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection, emerging evidence has suggested a potential association between SARS-CoV-2 infection and an increased risk of developing post-COVID-19 sequelae, including autoimmune connective tissue diseases (ACTDs) such as systemic lupus erythematosus (SLE), systemic sclerosis (SSc), dermatomyositis, rheumatoid arthritis (RA), and Sjögren's syndrome, following SARS-CoV-2 infection. However, the inconsistencies remain among studies.

Objectives: This study aims to determine the association between post-COVID-19 infection and the risk of incident ACTDs.

Methods: A systematic search of MEDLINE, Scopus, EMBASE, Cochrane Library, and medRxiv was conducted through July 2024 to identify cohort studies examining the risk of ACTDs among patients with post-COVID-19 infection. Quality assessments were performed according to the Newcastle-Ottawa Scale (NOS). The PRISMA and MOOSE reporting guidelines were followed. The adjusted hazard ratio (aHR) were pooled using random-effects meta-analysis. Subgroup analysis were performed by age, gender, and hospitalization status. Publication bias was assessed with funnel plots. Publication bias was evaluated by funnel plot.

Results: Six cohort studies (n = 22,452,838) were eligible for inclusion. No significant association was found between post-COVID-19 infection and incident SLE (pooled aHR, 0.93; 95% CI, 0.50-1.74) or Sjögren's syndrome (pooled aHR, 1.24; 95% CI, 0.76-2.03). Subgroup analysis by age, gender, and hospitalization status revealed consistent results. However, post-COVID-19 infection was associated with an increased risk of dermatomyositis (pooled aHR, 1.83; 95% CI, 1.43-2.34). Additionally, a significant risk of SSc was observed in patients aged ≥ 40 years (pooled aHR, 2.12; 95% CI, 1.21-3.73) and those non-hospitalized (pooled aHR, 2.17; 95% CI, 1.42-3.31). Conversely, an increased risk of RA was found in patients aged < 40 years (pooled aHR, 1.92; 95% CI, 1.03-3.58) and those hospitalized (pooled aHR, 1.13; 95% CI, 1.06-1.20). No publication bias was detected, and all studies were of high quality.

Discussion & Conclusion: In conclusion, while no significant association was found between post-COVID-19 infection and SLE or Sjögren's syndrome, there was an increased risk for dermatomyositis, with specific risks for SSc and RA based on age and hospitalization status. These findings underscore the importance of considering the risk of ACTDs in the long-term management of post-COVID-19 sequelae.

Keywords: SARS-CoV-2, COVID-19, autoimmune connective tissue diseases, systematic review, meta-analysis

Abstract: OR-SM015

Efficacy of Acupuncture, Electroacupuncture, and Auricular Acupressure to Improve Sleep Quality on Breast Cancer Patients: Systematic Review and Network Meta Analysis

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Background: Managing pain in breast cancer patients is challenging, as many conventional treatments provide suboptimal relief and undesirable side effects. Acupuncture, electroacupuncture (EA), and auricular acupressure have emerged as complementary therapies to alleviate cancer-related pain and improve sleep quality. Despite their growing use, there is a lack of comprehensive analysis specifically evaluating their effectiveness in breast cancer patients, highlighting the need for a systematic assessment of the therapeutic benefits.

Objectives: To evaluate the effectiveness of invasive and non-invasive pain management in breast cancer and rank the intervention based on its efficacy level.

Methods: Eligible RCTs comparing invasive and non-invasive interventions were identified through certain databases such as PubMed, Cochrane, Proquest, and Scopus. The review process considered the PICO framework and PRISMA guidelines. The Cochrane Risk of Bias 2.0 (RoB 2.0) tool was used to assess the methodological quality of the included studies. Outcome was measured by using validated scales such Brief Fatigue Inventory (BFI), Hospital Anxiety and Depression Scale (HADS), and Pittsburgh Sleep Quality Index (PSQI). Random effects model was measured by the {netmeta} package in the R programming language.

Results: Eight studies with 590 breast cancer patients were included, comparing the efficacy of 3 modalities of acupuncuture in breast cancer pain management to only chemotherapy. The analysis indicated that acupressure was the most effective treatment in increasing sleep quality, with a decrease of PSQI of -2.69 (95% CI: -3.93–-1.46) with a SUCRA value of 0.933, while traditional acupuncture is least effective with a decrease of -1.05 (95% CI: -2.74–0.65). Even so, getting general acupuncture in adjunct to chemotherapy proved to be effective in alleviating insomnia in breast cancer patients, decreasing PSQI by -1.54 (95% CI: -2.28–-0.79) compared to just chemotherapy.

Discussion & Conclusion: Auricular acupressure was found to have significant results in achieving better outcomes in improving sleep quality, total sleep time and sleep efficiency when it comes to chemotherapy-associated insomnia in breast- cancer patients, with other methods such as acupuncture and electroacupuncture also found to be safe to be implemented to patients.

Keywords: breast cancer, acupuncture, pain management

Abstract: OR-SM016

The Role of Family Medicine in Preventing Cardiovascular Disease: A Comprehensive Review of Lifestyle Interventions and Risk Factor Management

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Background: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality globally. Management of CVD patients is very important, and family medicine plays a pivotal role in this effort. This review explores the role of primary care medicine in preventing CVD through evidence-based lifestyle interventions and risk factor management strategies.

Objectives: The primary objective is to evaluate the efficiency of lifestyle interventions and risk factor management strategies in the prevention of CVD within family medicine practices. Secondary objectives include assessing the role of family physicians in promoting long-term patient care and monitoring of CVD.

Methods: A comprehensive review of the literature was conducted using databases such as PubMed, Embase, and Cochrane Library, focusing on studies published between 2010 and 2023. Included studies examined the effectiveness of lifestyle interventions (e.g., diet, physical activity, weight, smoking cessation) and risk factor management (e.g. diabetes, hypertension, hyperlipidemia) in preventing CVD in a primary care medicine. Data on patient outcomes, adherence rates, and the role of family physicians in patient education were combined.

Results: The review included 40 studies and over 25,000 patients. Lifestyle interventions such as Mediterranean-style diets, increased physical activity, and smoking cessation programs showed significant reductions in CVD incidence. Also risk factor management, particularly in controlling hypertension, diabetes, and cholesterol levels, was associated with improved cardiovascular outcomes. Family physicians played an important role in providing regular patient monitoring, tailoring care plans, and imparting patient education.

Discussion & Conclusion: Family medicine is crucial in the prevention of cardiovascular disease with the promotion of lifestyle interventions and effective risk factor management. Better cardiovascular disease outcomes can be achieved through policy support, enhanced patient education, and integration of preventive care into routine practice.

Keywords: Cardiovascular disease prevention, Lifestyle interventions, Risk factor management

Abstract: OR-SM017

Home-Based Asynchronous Exercise to Enhance Physical Function and Quality of Life in Systemic Sclerosis Patients: A Systematic Review and Meta-Analysis

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Background: Systemic sclerosis (SSc) is a chronic systemic condition that significantly impairs physical function, particularly in the upper extremities, leading to a diminished quality of life. Home-based asynchronous exercise (HBAE) programs have been designed to address these limitations by enabling patients to perform rehabilitation exercises at home, aimed at preventing and reducing disability.

Objectives: This meta-analysis aims to evaluate the effectiveness of HBAE in improving physical function and enhancing daily quality of life in individuals with SSc.

Methods: A comprehensive meta-analysis was conducted using RevMan 5.4, incorporating studies from PubMed, ClinicalKey, ProQuest, and the Cochrane Library. Study inclusion followed the PICO framework, and the risk of bias was assessed using the Cochrane RoB 2.0 tool. The outcomes were assessed using three standardized measures: SF-PCS, handgrip strength, and HAQ score to evaluate quality of life.

Results: Nine randomized controlled trials were included, focusing on three key outcomes to assess the impact of HBAE on hand function in SSc patients. The intervention group demonstrated superior feasibility and efficacy compared to the control group, despite some studies showing minimum risk of bias. Notably, significant improvements were observed in SF-PCS [95% CI, 0.51 (0.16, 0.85), P=0.004, I2=0%], handgrip strength [95% CI, 0.42 (0.14, 0.69), P=0.003, I2=0%], and the HAQ score [95% CI, -0.15 (-0.56, 0.27), P=0.49, I2=41%].

Discussion & Conclusion: HBAE programs yielded significant improvements in hand function, physical performance, and overall quality of life for patients with SSc compared to controls. To further substantiate these findings, future research with larger sample sizes and extended intervention periods is recommended to evaluate the long-term benefits of HBAE in this population.

Keywords: home-based exercise, systemic sclerosis, physical function, quality of life

Abstract: OR-SM019

Accuracy of Non-Invasive Prenatal Testing Using Massively Parallel Sequencing Technology in Early Detection of Down Syndrome or Trisomy 21 in Singleton Pregnancy: A Systematic Review and Meta-Analysis

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Background: Trisomy 21 (T21), also known as Down syndrome (DS), is the most common chromosomal disorder in humans, occurring in approximately 1 in 800 births worldwide. Currently, there is no cure for Down syndrome, so prenatal detection offers parents the opportunity to prepare in various ways. The International Society for Prenatal Diagnosis (ISPD) recommends NIPT if conventional Down syndrome screening shows a high-risk pregnancy. An alternative NIPT approach for trisomy 21 involves analyzing cell-free DNA (cfDNA) in the mother's blood. Non-Invasive Prenatal Testing (NIPT) for fetal trisomy 21 aneuploidy has been widely adopted in clinical practice due to its superior accuracy.

Objectives: To assess the accuracy of NIPT in analyzing cfDNA from maternal blood samples using Massively Parallel Sequencing (MPS) technology for Down syndrome screening in singleton pregnancies across all trimesters.

Methods: A search of electronic databases such as PubMed, Scopus, and Web of Science was conducted to identify studies using NIPT with Massively Parallel Sequencing (MPS) as a screening method to detect trisomy 21 (Down syndrome). The literature search was limited to studies published between 2014 and 2024. This systematic review and meta-analysis included eight studies, with data extracted by three independent reviewers. The quality of the studies was assessed using the Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2) tool. Sensitivity and specificity were calculated with 95% confidence intervals (CI) for each study using Review Manager software.

Results: Out of 485,365 pregnant women screened for major autosomal trisomies related to fetal karyotype or neonatal phenotype, 2,092 confirmed cases were identified from the total population. The sensitivity of NIPT for detecting trisomy 21 ranged from 0.80 (95% CI: 0.73–0.87) to 1.00 (95% CI: 0.48–1.00) across the eight identified studies. The specificity of NIPT was very high, with most studies reporting a specificity of 1.00 (95% CI: 1.00–1.00).

Discussion & Conclusion: NIPT using MPS technology has been proven to have very high sensitivity and specificity in detecting trisomy 21 (Down syndrome) in singleton pregnancies across all trimesters. NIPT is a reliable and effective screening tool due to its ability to accurately detect positive cases while avoiding false-positive results.

Keywords: Non-invasive prenatal testing, Massively parallel sequencing, Trisomy 21, Down syndrome, Pregnancy

Abstract: OR-SM020

The Relationship Between PM2.5 Exposure and Hepatocellular Carcinoma: A Meta-Analysis

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Background: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related deaths worldwide, and while known risk factors include viral infections and lifestyle choices, environmental factors like air pollution are gaining attention. PM2.5, fine particulate matter, has been linked to respiratory and cardiovascular diseases, but its role in liver cancer remains underexplored. This meta-analysis investigates the association between long-term PM2.5 exposure and HCC incidence and mortality, emphasizing the liver's vulnerability to pollutants due to its detoxifying role. The study synthesizes global data to provide evidence supporting stricter air quality regulations and public health measures aimed at reducing liver cancer risks associated with pollution.

Objectives: This meta-analysis investigates the alarming link between long-term PM2.5 exposure and hepatocellular carcinoma (HCC) prevalence by synthesizing data from global studies. The aim is to critically assess and inform public health policies and cancer prevention strategies addressing the dire impact of air pollution on liver cancer.

Methods: A comprehensive search was conducted in databases including PubMed, Google Scholar, EMBASE, and Web of Science up to April 18, 2024. Studies included PM2.5 exposure and HCC in human subjects, providing relative risk (RR) or hazard ratio (HR) with 95% confidence intervals (CIs). From an initial 1,245 articles, 9 cohort studies met the inclusion criteria after rigorous screening.

Results: The analysis incorporated 9 cohort studies from North America, Europe, and Asia, with sample sizes from 900 to 330,000 participants and follow-up periods of 5 to 20 years. Due to few studies done, a common effect model was used, revealing significant associations between PM2.5 exposure and increased risks of mortality and HCC incidence. The pooled hazard ratio (HR) for mortality was 2.28 (95% CI: 2.01-2.59), and the pooled odds ratio (OR) for HCC incidence was 1.44 (95% CI: 1.20-1.74).

Discussion & Conclusion: This meta-analysis presents compelling evidence linking PM2.5 exposure to elevated risks of mortality and HCC. These findings underscore the severe public health threat posed by fine particulate matter and demand immediate, stringent air quality regulations. Future research must prioritize longitudinal studies with standardized measures of PM2.5 exposure and HCC incidence to further clarify this critical causal relationship.

Keywords: HCC, PM2.5, Air pollution, Liver cancer, Mortality, Incidence, Environmental risk factors

Abstract: OR-SM021

Unveiling the Power of Artificial Intelligence-Enhanced Echocardiography in Prenatal Detection of Congenital Heart Disease: A Meta-analysis

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Background: Congenital heart disease (CHD) is the most prevalent birth defect globally. Early prenatal detection with fetal echocardiography has the potential to lower the morbidity and mortality caused by CHD. However, the requirement for expertise in fetal cardiology and the high volume of screening cases limits the achievable detection rates. Consequently, there is a demand for automated prenatal screening to assist clinicians.

Objectives: Our objective is to determine the diagnostic accuracy of artificial intelligence (AI) for echocardiography analysis in the prenatal detection of CHD.

Methods: Systematic literature searching was conducted in 6 databases, including PubMed, Scopus, ScienceDirect, EBSCOHost, ProQuest, and Cochrane. Studies using AI such as deep learning algorithms to facilitate echocardiography analysis for prenatal detection of CHD were included. The Newcastle Ottawa Scale for cross-sectional studies and retrospective cohort risk of bias assessment tool were used to assess the quality of each study. Quantitative analysis using Meta-DiSc with a random effects model was performed.

Results: We included 10 studies involving 117,089 participants. Our meta-analysis showed that AI-enhanced echocardiography has an overall sensitivity of 0.92 (95% CI 0.91 to 0.92), specificity of 0.95 (95% CI 0.94 to 0.95), and area under the curve (AUC) of 0.977. Subsequently, we performed subgroup analysis and found that when performed by non-experts, AI echocardiography resulted in non-inferior sensitivity and specificity compared to expert analysis (0.88 vs 0.92 and 0.89 vs 0.95, respectively). Meanwhile, there are still some challenges to address, such as the variability in diagnostic tools used to train these AI systems and the diversity of CHD conditions included in research studies which requires further investigation.

Discussion & Conclusion: Artificial intelligence-enhanced echocardiography has high sensitivity and specificity in prenatal detection of CHD. This breakthrough can serve to transcend boundaries and revolutionise healthcare accessibility worldwide.

Keywords: artificial intelligence, deep learning, echocardiography, congenital heart disease, screening

Abstract: OR-SM022

Enhancing Spine Surgery Accuracy: The Role of Robotics in Reducing Human Error

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Background: Pedicle screw constructions are suitable for spinal surgery due to their strong fixation properties for the spine. They are vital in facilitating various surgical techniques and improving outcomes for patients with spinal conditions. However, the safe placement of pedicle screws is essential for achieving successful spinal surgery. With the help of robotics, these procedures can increase accuracy while decreasing human error.

Objectives: The objective of this review is to evaluate the efficacy and safety of robotic-assisted technologies in spine surgery, focusing on their potential to enhance surgical accuracy and minimize human error. Additionally, the review aims to promote advancements and further studies on artificial intelligence in the medical field for improved patient care.

Methods: A systematic search was performed on Scopus and ScienceDirect to identify relevant English-language studies published from 2014 to 2024. One hundred papers were screened and used to perform data extractions and quality assessments by two reviewers.

Results: Thirteen studies involving 1,290 patients were included in the review. The Gertzbein and Robbins Systems (GRS) were primarily used to assess the accuracy of robot-assisted pedicle screw placements. The patients' conditions included ankylosing spondylitis, isthmic spondylolisthesis, and other spinal fractures. Comparisons between conventional manual surgery and the automated orthopedic robotic system revealed that 12 studies demonstrated greater accuracy, enhanced surgical safety, and improved time efficiency with robotic assistance, along with lower rates of invasions and post-operative complications compared to traditional fixation. One study indicated no difference in operation times, noting equivalent effectiveness and precision with expert surgeons.

Discussion & Conclusion: This review demonstrates that robotic-assisted technologies significantly enhance the accuracy and safety of pedicle screw placements in spine surgery. The findings advocate for the increased integration of these systems, which can minimize human error and improve patient care. Further research into artificial intelligence applications in this field is essential for advancing surgical techniques and ensuring optimal outcomes for patients.

Keywords: Robot-Assisted Surgery, Pedicle Screw Placement, Spine Surgery, Technology in Surgery

Abstract: OR-SM023

Diagnostic Test Accuracy and Reliability of Deep Learning Model to Detect ST Elevation Myocardial Infarction from Electrocardiogram: A Systematic Review and Meta-Analysis

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Background: This era, electrocardiogram (ECG) is frequently used to amplify and augment the doctors' diagnosis of ST elevation myocardial infarction (STEMI). There were so many cases in which STEMI misdiagnosis frequently happen. In fact, STEMI can lead to potentially fatal outcomes within hours after first symptoms appear so that early diagnosis is crucial in STEMI. There are many pathologic conditions that mimic STEMI in ECG morphology such as pericarditis, myocarditis, hyperkalaemia, and left ventricular hypertrophy (LVH) that results in high rate of false alarm. On the other side, the evolution of artificial intelligence (AI) especially deep learning (DL) shows huge potential to support diagnosis.

Objectives: The purpose of this meta-analysis is to assess the performance of DL to interpret ECG in STEMI as secondary opinion for clinicians through the value of sensitivity, specificity, diagnostic odds ratio (DOR), and area under the curve (AUC).

Methods: Records were identified from PubMed, Scopus, and Cochrane. The quality of the study was assessed by QUADAS-2. The accuracy was defined by sensitivity, specificity, DOR, AUC, and summary receiver operating characteristic (SROC) that use a random-effects model. Subgroup analysis is based on geographical distributions, that are Asia and non-Asia. Sensitivity analysis were also included to lower the heterogeneity. The whole statistical analysis and plots used R software package.

Results: Sixteen studies, yielding 133.057 data ECG in total were included. The sensitivity and specificity of the DL model to diagnose STEMI based on ECG in Asia were 0.972 (95% CI: 0.964 – 0.978) and 0.968 (95% CI: 0.966 – 0.970) respectively while the sensitivity and specificity of the DL model to diagnose STEMI based on ECG in non-Asia were 0.840 (95% CI: 0.800 – 0.872) and 0.939 (95% CI: 0.929 – 0.949) respectively. The DOR estimated in Asia was found to be 129.228 (95% CI: 111.210 – 203.444) and 80.676 (95% CI: 45.272 – 143.764) in non-Asia. AUC score was found to be 0.966, extremely close to 1.

Discussion & Conclusion: This study proves that DL-ECG is accurate to diagnosis STEMI in Asia as secondary opinion for clinicians, especially in emergency situations. DL-ECG is also sensitive to early signs of STEMI in ECG.

Keywords: ST elevation myocardial infarction, electrocardiogram, deep learning, diagnostic

Abstract: OR-SM025

Exploring the Potential of Xanomeline/Trospium Chloride for Schizophrenia Patients: A Systematic Review and Meta-analysis

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Background: Schizophrenia has affected 24 million people worldwide. In order to help subside the symptoms, Xanomeline, a muscarinic receptor agonist, has antipsychotic qualities. Even so, one of the problems includes cholinergic side effects. To minimize these side effects, trospium chloride as a combination to xanomeline has been studied and has continuously been investigated. However, its effectiveness in its synergistic effects remains to be questioned.

Objectives: Thus, this meta-analysis looks forward to investigating the xanomeline/trospium chloride combination and its overall synergy.

Methods: We searched PubMed, Scopus, and Cochrane databases for randomized controlled trials assessing the safety and efficacy of xanomeline/trospium chloride for schizophrenia patients. We then extract efficacy data in the form of Positive and Negative Syndrome Scale (PANSS) scores and CGI-Severity (CGI-S) scores. Data on treatment-emergent adverse effects (TEAE) was also extracted. Data was pooled and analyzed with the "meta" package in the R programming language.

Results: A total of four studies, including 422 patients with schizophrenia, were analyzed to evaluate the efficacy of xanomeline/trospium chloride compared to placebo. The primary outcome, decrease of the PANSS total score, demonstrated a significant improvement in the treatment group with a mean difference of -10.10 (95%CI: -11.78–-8.42), indicating a substantial reduction in symptom severity. However, there was considerable heterogeneity among the studies (I^2 = 96.7%). Similarly, for the CGI-S, the treatment group showed a mean difference of -0.5 (95%CI: -0.52–-0.48) compared to placebo, with no significant heterogeneity (I^2 = 0%), suggesting consistent treatment effects across studies. Regarding the secondary outcome, treatment-emergent adverse effects (TEAEs) were significantly more common in the treatment group, with a relative risk of 1.34 (95%CI: 1.20–1.50) and no heterogeneity observed (I^2 = 0%). Even so, no significant difference was found for serious TEAE between the two groups.

Discussion & Conclusion: Based of the PANSS total score, xanomeline/trospium chloride proved to be effective in alleviating symptoms of schizophrenia. The efficacy of this drug was shown to be statistically significant and clinically meaningful while being generally tolerable and safe. However, direct corellations with adverse effects have been found, but there are no significant differences in serious adverse effects compared to placebo.

Keywords: Schizophrenia, Xanomeline, Trospium chloride

ABSTRACT: E-POSTER PRESENTATION

Basic Science in Medicine Research

Public Health and Epidemiology Research

Clinical and Translational Research

Medical Education Research

Systematic Review and Meta-Analysis Research

Basic Science in Medicine Research

Abstract: PT-BS001

Investigation the Impact of Celastrus Paniculatus Seed Extract on Mitochondrial Dynamics and Neuroprotection in MPP+ Induced Parkinson's Disease Models

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Background: Parkinson's disease (PD) is a prevalent neurodegenerative disorder characterized by the progressive loss and dysfunction of dopaminergic neurons in the substantia nigra. Mitochondrial dysfunction is widely implicated in neuronal apoptosis. Recent studies have investigated *Celastrus paniculatus* (CP), an Ayurvedic herb, which has demonstrated potential as an anti-apoptotic agent in in vitro models of PD. Nonetheless, the specific mechanisms of CP on apoptotic pathways remain inadequately elucidated.

Objectives: To study the mechanisms by which *Celastrus paniculatus* seed extract modulates mitochondrial membrane potential in an MPP+-induced Parkinson's disease model.

Methods: SH-SY5Y cells were exposed to 1-methyl-4-phenylpyridinium (MPP+) to induce neurotoxicity. Subsequently, the cells were treated with *Celastrus paniculatus* seed extract (CPSE) at concentrations of 1, 50, 100, and 200 µg/mL. Mitochondrial membrane potential was evaluated using JC-1 staining, and mitochondrial dysfunction was assessed based on the ratio of red to green fluorescence intensity of JC-1. Further, the percent ratio of red to green fluorescence intensity relative to the different concentrations of CPSE treated was analyzed using one-way ANOVA followed by Tukey's multiple comparison test.

Results: The 1 µg/mL CPSE treatment group showed a reduction in green fluorescence intensity and an increase in red fluorescence intensity (135.7 ± 37.0%). In contrast, at concentrations of 50, 100, and 200 µg/mL, the mitochondrial membrane potential decreased to 2.0% ± 0.9%, 1.0% ± 0.3%, and 1.5% ± 0.6%, respectively.

Discussion & Conclusion: SH-SY5Y cells treated with 1 µg/mL of CPSE exhibited improved mitochondrial membrane potential; however, higher concentrations of CPSE did not. These findings suggest that CPSE may promote mitochondrial integrity and exert neuroprotective effects at appropriate doses.

Keywords: Celastrus paniculatus, Mitochondria, SH-SY5Y cell, JC-1, Parkinson's disease, 1-Methyl-4-phenylpyridinium

Abstract: PT-BS002

Autophagosome Formation in Gastrocnemius Muscle: Effects of DUOX Gene Knockout on Beclin1 mRNA Expression

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Background: DUOX (dual oxidase) plays a crucial role in generating H2O2, which is necessary for thyroid hormone synthesis. Thyroid hormones are known to enhance autophagy, thereby activating Beclin1, a vital protein involved in autophagosome formation. Autophagy supports muscle health by facilitating the degradation of damaged proteins. Given that reduced DUOX activity can lead to hypothyroidism, it is hypothesized that autophagy may be impaired under such conditions. Therefore, this study aims to evaluate Beclin1 mRNA expression in the gastrocnemius muscle of DUOX-knockout mice to examine how DUOX deficiency affects autophagosome formation.

Objectives: To understand the influence of dual oxidase on autophagosome formation.

Methods: We conducted an in vivo experimental study using samples from 54 DUOX mice, which were evenly divided into 18 groups based on phenotype (wild-type, heterozygous, knockout), age (P2, P15, P25), and sex (male, female). Real-time qRT-PCR was used to measure Beclin1 mRNA expression levels. Statistical analysis was performed using ANOVA and the Tukey test, with significance determined at $p < 0.05$.

Results: Comparisons were made on mRNA expression across three phenotypes and presented in graphs by age and sex. Beclin1 expression was higher in the knockout compared to both wild-type and heterozygous mice in all groups, with significant differences in expression observed in the P2 male groups ($p = .013$), P15 female groups ($p = .008$) and the P25 male groups ($p = .008$). No significant differences were found between the heterozygous and wild-type mice across all groups. In contrast, the knockout showed significantly higher expression than the wild-type mice ($p < 0.05$), except in the P15 male group. Female mice exhibited higher Beclin1 expression than males, except at P25.

Discussion & Conclusion: Despite the stimulatory effect of thyroid hormone activity on autophagy, our findings revealed a hypothyroidism-induced compensatory environment. Autophagosome formation was reflected through Beclin1 mRNA levels, in which DUOX knockout mice were consistently higher in all six groups than wild-type and heterozygous mice. Female mice were also shown to have a higher level of autophagosome formation compared to male mice in each development stage, with the exception of P25 mice, where variations in sex hormones and disease progression factor in.

Keywords: dual oxidase, beclin1, thyroid hormone, autophagy

Abstract: PT-BS003

Effect of Simvastatin and Ascorbic Acid Encapsulated Chitosan Nanoparticles on the Thickness of the Seminiferous Tubule Epithelial of Wistar Rats (Rattus Norvegicus) Induced by Carbon Tetrachloride (CCL4) and High-Fat Diet

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Background: A high-fat diet triggers oxidative stress conditions due to hyperlipidemia and is known to contribute to male infertility. One of the consequences for the testicular organs is damage to the structure of the plasma membrane, causing changes in the histomorphology of the seminiferous tubules. Therefore, antihyperlipidemia therapy is needed, for example statins, to neutralize the negative effects of a high-fat diet. This study uses a combination of simvastatin and ascorbic acid encapsulated in chitosan nanoparticles as a reducing agent in high-fat diet-induced hyperlipidemia.

Objectives: To determine the effect of administering a combination of simvastatin and ascorbic acid encapsulated with chitosan nanoparticles on the thickness of the seminiferous tubule epithelium of Wistar rats (*Rattus norvegicus*) induced by carbon tetrachloride (CCl4) and HFD.

Methods: This research is purely experimental with a posttest only control group design. A total of 28 male Wistar rats (*Rattus novergicus*) were divided into 3 groups. The normal group (N) was given AD2 standard feed, the treatment group (P) was given AD2 standard feed and HFD induction in the form of a mixture of quail egg yolk and used cooking oil at 2 mL/head/day, and the intervention group (I) was given standard feed, HFD induction. and a combination of simvastatin and ascorbic acid encapsulated by chitosan nanoparticles. The results of the ANOVA test showed a p value <0.05, which means that the differences between groups were considered significant and continued with the Bonferroni Post- Hoc test.

Results: The average thickness of the seminiferous tubule epithelium in group N (96,72 ± 2,63), group P (80,68 ± 1,21), and group I (82,28 ± 2,51) with a p value of p=0,000

Discussion & Conclusion: There was no significant difference between the mean thickness of the seminiferous tubule epithelium in the group given the combination of simvastatin and ascorbic acid encapsulated chitosan nanoparticles compared to the carbon tetrachloride (CCl4) and HFD induction groups.

Keywords: High Fat Diet, Simvastatin, Ascorbic Acid, Chitosan Nanoparticles, Seminiferous Tubule Epithelium

Abstract: PT-BS004

Proteomics and Metabolomics Characterization of Interstitial Fluid in Colorectal Cancer

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Background: The interstitial fluid of the tumor microenvironment contains numerous proteins and metabolites that significantly influence tumor progression. Despite their importance, omics studies on this component are limited and require further exploration.

Objectives: This study aims to analyze the proteins and metabolites in colorectal cancer (CRC) interstitial fluid using proteomics and metabolomics, thereby characterizing the CRC tumor microenvironment from an interstitial fluid perspective.

Methods: We collected tumor tissue and matched normal adjacent tissue samples from 50 CRC surgery patients. Interstitial fluid was extracted through low-speed centrifugation, and 200 samples—tissues (tumor/normal) and interstitial fluids (tumor/normal)—were analyzed using 4D-DIA proteomics and targeted metabolomics.

Results: We identified 3,293 differential proteins and 120 differential metabolites in the interstitial fluid samples, exceeding the numbers found in tissue samples (1,709 and 14, respectively). The proteins identified in the interstitial fluid more accurately reflected the differences between tumors and adjacent normal tissues. Up-regulated proteins were significantly enriched in cell cycle pathways, whereas down-regulated proteins were enriched in lipid metabolism and immune response pathways. The DNA concentration in tumor interstitial fluid was substantially higher than in normal adjacent tissue interstitial fluid. By integrating protein expression data, we mapped protein interactions related to lipid metabolism and immune response. Upregulated metabolites in tumor interstitial fluid were significantly enriched in pathways such as the Warburg effect and the urea cycle, indicating enhanced aerobic glycolysis and disrupted ammonia metabolism in the tumor microenvironment. Additionally, the tumor tissue interstitial fluid showed elevated levels of amino acids, dopamine, GABA, taurine, and uric acid, while neurotransmitters like norepinephrine, acetylcholine, and 5-hydroxy-L-tryptophan were notably decreased. Gut microbiota metabolites, including hippuric acid, phenylacetylglycine, and betaine, were significantly reduced, but only in the tumor tissue interstitial fluid.

Discussion & Conclusion: This study provides a comprehensive assessment of protein and metabolite differences in CRC interstitial fluid. The observed differences reflect immunosuppression and intense cellular activity within the CRC tumor microenvironment.

Keywords: Colorectal Cancer, Interstitial Fluid, Proteomics, Metabolomics, Tumor microenvironment

Abstract: PT-BS005

Exploring the Impact of Monosodium Glutamate on Congenital Heart Defects

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Background: Monosodium glutamate (MSG), widely used as a food condiment, has been previously shown to induce congenital disabilities in animal models. Cardiac neural crest cells (cNCCs) are crucial for heart development, playing a key role in forming the outflow tract, smooth muscle in blood vessels, septation of heart chambers, and valve formation. Defects in cNCCs can lead to significant congenital heart defects (CHDs).

Objectives: The present study aimed to investigate the effects of MSG on cNCCs in a chick embryo model.

Methods: *In silico* pharmacology and molecular biology techniques were employed to integrate MSG targets with disease-related targets, identifying potential molecules linked to MSG-induced cNCC alterations. For the experimental analysis, sixty fertilized eggs were divided into control and MSG-treated groups. MSG was administered via *ovo*-injection on embryonic day 1 (ED-1), and the embryos were assessed on ED-3. Histological examination was conducted under a light microscope, and tissue samples were analyzed using ELISA assays. HNK-1, Wnt, and BMP antigens were localized through immunohistochemistry, and immunofluorescence verified cNCC populations and protein expression respectively.

Results: The results indicated that network pharmacology and molecular docking analyses identified shared molecular targets associated with CHDs affected by MSG. Additionally, MSG-induced reduction in cNCCs led to decreased production of Wnt and BMP signaling proteins in the MSG group ($p<0.05$).

Discussion & Conclusion: In summary, this study is the first to demonstrate that MSG-induced CHDs occur through disruptions in protein signaling pathways, affecting cNCCs in a manner comparable to human conditions.

Keywords: congenital heart defects, monosodium glutamate, in silico, cardiac neural crest cell, chick embryo

Abstract: PT-BS006

The Folic Acid's Multi-Target Capabilities in Treating Congenital Heart Defects in Vivo and Molecular Docking

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Background: Folic acid (FA), an essential nutrient, plays a crucial role during pregnancy in preventing congenital heart defects (CHDs). In a previous study has been reported that FA is able to treat birth defects through NC functions in animal models. Furthermore, a teratogen like monosodium glutamate (MSG) can cause CHDs in embryonic animal models. Cardiac neural crest cells (cNCCs) are crucial for heart development including outflow tract, septation, and valve formation. Defects in cNCCs can lead to significant congenital heart defects (CHDs). Although FA is able to prevent CHDs, the FA treatment of CHDs through cNCC function is still inconclusive.

Objectives: The present study aimed to investigate the treatment effects of FA in CHDs, focusing on the cNCCs functions in a chick embryo model.

Methods: In silico pharmacology and molecular biology techniques were employed to integrate FA targets with disease-related targets, identifying potential molecules linked to FA-treatment CHD alterations. For the experimental analysis, ninety fertilized eggs were divided into positive and negative controls and FA-treated groups. MSG and FA were administered via ovo-injection on embryonic day 1 (ED-1), and the embryos were assessed on ED-3. Histological examination was conducted under a light microscope, and tissue samples were analyzed using ELISA assays. HNK-1, Wnt, and BMP antigens were localized through immunohistochemistry, and immunofluorescence verified cNCC populations and protein expression, respectively.

Results: The in-silico pharmacology and molecular docking analysis identified several molecular targets associated with cNCC functions that were affected, including DHFR, MTHFR, TYMS, etc. Notably, folate administration preserved cNCC functions and enhanced signaling protein synthesis in the FA treatment groups ($p<0.05$).

Discussion & Conclusion: In conclusion, FA significantly mitigates its CHDs in the chick embryo model. FA-treatment occurs through promote in protein signaling pathways, affecting cNCCs in a manner comparable to human conditions.

Keywords: congenital heart defects, folic acid, monosodium glutamate, chick embryo, in silico pharmacology

Abstract: PT-BS007

Effect of SNEDDS Administration of Watermelon Seed and Moringa Leaf Extracts on HDL Levels in Hypercholesterolemic Rats

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Background: Watermelon seeds and Moringa leaves are known for their benefits in reducing bad cholesterol levels and increasing HDL in blood. Self Nanoemulsifying Drug Delivery System (SNEDDS), a drug delivery method, is considered to enhance efficacy of these herbal compounds.

Objectives: This study aims to investigate the effect of SNEDDS administration of watermelon seed and Moringa leaf extract on HDL levels in hypercholesterolemic rats.

Methods: The study used a true experimental posttest randomized control group design. 20 rats were divided into five groups: a positive control with HFD (K+), negative control with normal feed (K-), intervention with simvastatin (SM), intervention with watermelon and Moringa extracts without SNEDDS (NKL), and intervention with watermelon and Moringa extracts with SNEDDS (KL).

Results: The average HDL levels (mg/dL) for each group from highest to lowest were 67 ± 10.230 (K-); 58.2 ± 13.2 (NKL); 56.5 ± 11.387 (KL); 44.5 ± 7.724 (SM); 40 ± 7.071 (K+). These findings show statistically significant variations in HDL levels ($p < 0.05$) between the groups.

Discussion & Conclusion: The SNEDDS administration of watermelon seed and Moringa leaf extracts can increase HDL levels in hypercholesterolemic rats.

Keywords: SNEDDS, Hypercholesterolemic, Watermelon seed, Moringa leaf

Abstract: PT-BS008

Molecular Characterization of Carbapenem-resistant Enterobacter Cloacae Complex in a Tertiary Hospital

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Background: The emergence and spread of carbapenem-resistant *Enterobacter cloacae* complex (CR-ECC) have seriously threatened human health worldwide. There has been no surveillance on the molecular genetics of CR-ECC in our hospital. For this reason, we have assessed the molecular epidemiology of CR-ECC in our hospital.

Objectives: This study aimed to investigate the local prevalence of CR-ECC and identify the species in this complex. We also investigated carbapenemases (NDM, OXA-48-like, IMP, and VIM) among CR-ECC in our hospital during a 6-month longitudinal study.

Methods: Non-repetitive clinical CR-ECC were detected by *in vitro* antimicrobial susceptibility testing (BD Phoenix NMIC/ID-504 commercial kit). The bacteria were first identified using a MALDI BioTyper and then identified at the species level by *hsp*60 gene sequences. Carbapenemase genes (bla_{NDM}, $bla_{OXA\text{-}48\text{-}like}$, bla_{IMP}, and bla_{VIM}) were detected by PCR, and the distinct variants were identified by sequencing. The sequences were edited and subjected to pairwise alignment using BioEdit software. Edited sequences were compared with existing sequences in GenBank using BLASTn. Phylogenetic trees were constructed in MEGAX.

Results: Ten CR-ECC were recovered, six from urine and four from sputum. These isolates belong to three different species; *E. hormaechei* (8/10) the highest species followed by *E. cloacae* (1/10) and *E. bugandensis* (1/10). Among the *E. hormaechei* isolates, three subspecies were identified: *E. hormaechei subsp. steigerwaltii* (6/8), *E. hormaechei subsp. xiangfangensis* (1/8), and *E. hormaechei subsp. hoffmannii* (1/8). All isolates were resistant to ertapenem, while two isolates remained susceptible to both imipenem and meropenem. One isolate was susceptible to meropenem and intermediate to imipenem, and another was intermediate to both imipenem and meropenem. Seven isolates were found carbapenemase genes. The most common carbapenemase types were OXA-181 (4 isolates), NDM-1 (2 isolates), and NDM-5/48 (1 isolate). No VIM type and IMP type producer detected. Three isolates were not found carbapenemase genes.

Discussion & Conclusion: This study shows the diversity of ECC at the subspecies level and the heterogeneity of carbapenemase genes with strains in our hospital. Intensive surveillance and awareness of ECC effective measures should be undertaken to reduce the spread and transmission of EEC in hospitals.

Keywords: Enterobacter cloacae complex, carbapenem-resistant, carbapenemase

Abstract: PT-BS009

Prenatal Diagnosis of β-thalassemia and Hemoglobin E using Multiplex Melt Curve with High Resolution Melting (HRM) Analysis in Southern Thailand

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Background: β-thalassemia and hemoglobin (Hb) E are the common genetic disorders in Thailand and Southeast Asia. These are caused by a mutation in the β-globin gene cluster. Prenatal diagnosis is essential to determine the genetic status of the fetus among couples at risk for severe diseases, including homozygous β-thalassemia and Hb E with β-thalassemia. Molecular techniques such as reverse dot blot hybridization (RDB) and gap-PCR are commonly used to detect β-thalassemia and Hb E mutations. However, these methods require further post-PCR steps, time-consuming and high cost.

Objectives: To develop a novel multiplex melt curve with high-resolution melting (HRM) analysis and to assess its efficiency in prenatal diagnosis of β-thalassemia and Hb E in the Southern population.

Methods: Multiplex melt curve with HRM technique was developed for identifying six deletional mutations including two β^0-thalassemia mutations (3.5 kb and 45 kb deletion) and four high Hb F determinants ($\delta\beta^0$-thalassemia (12.5 kb deletion), HPFH6, Asian Indian del-inv $^A\gamma\delta\beta^0$-thalassemia, Thai del-inv-ins $^A\gamma\delta\beta^0$-thalassemia), Hb E and, 11 β-thalassemia mutations. This developed method was validated in 183 fetal DNA samples with 41 β-thalassemia genotypes. The results were compared with results from RDB, gap-PCR, and DNA sequencing techniques.

Results: Each deletional mutation showed a specific melt curve. Different HRM patterns were observed among wild type, heterozygote, homozygote, and compound heterozygote genotypes. This developed technique revealed 181/183 (98.91%) concordance results compared with the previously used methods. The assay showed sensitivity (99.35%), specificity (100%), positive predictive value (100%), and negative predictive value (96.55%).

Discussion & Conclusion: We have developed a multiplex melt curve with HRM for detecting four common high Hb F determinants for the first time. Our method, in addition to its efficiency in identifying various β-thalassemia mutations in the southern Thai population, is notably simple. It is a rapid, uncomplicated technique that does not require further post-PCR steps, making it highly applicable for prenatal diagnosis in thalassemia prevention and control programs.

Keywords: β-thalassemia, Hemoglobin E, High-resolution melting analysis, Prenatal diagnosis

Abstract: PT-BS010

Effects of Non-nutritive Sweetener Consumption During The Fasting Stage of Intermittent Fasting on a Metabolic Outcome in a Mouse Model of Obesity

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Background: Intermittent fasting (IF) is associated with various health benefits, especially for those with obesity. During fasting periods, only non-caloric food or water is allowed where the effects of non-nutritive sweeteners (NNS) consumption remain unclear.

Objectives: This study aimed to investigate the effects of NNS during the fasting stage of IF on metabolic outcomes in obese mice, and to compare the effectiveness of weight loss and other metabolic outcomes between conventional IF and the use of NNS during the fasting stage.

Methods: Sixteen male C57BL/6NJcl mice were fed a high-fat-high-fructose diet for 3 months. Afterward, they were divided into 4 groups: a control group with non-time-restricted ad libitum feeding, and 3 groups that conducted alternate-day fasting (ADF), where they consumed water or NNS-added water (acesulfame potassium or stevia) during the fasting period for another 3 months. Then, body weights were measured, and blood samples were collected for the analysis of fasting glucose, HDL, LDL, triglycerides, uric acid, and insulin levels. Additionally, liver samples were collected at the end of the study for histological analysis.

Results: Body weights, HDL, and LDL levels were significantly reduced in mice with ADF ($p<0.05$) compared with the control group. The consumption of NNS during fasting did not affect changes in weight, HDL, or LDL compared with the group consuming only water during fasting. There were no differences in fasting glucose, uric acid, plasma insulin, or insulin resistance (HOMA-IR) compared with the control group. the intervention groups exhibited improved histological outcomes for fatty liver, with a lower degree of microvesicular fatty change than the control group, regardless of NNS use during fasting.

Discussion & Conclusion: Using NNS during a fasting period of ADF does not alter weight reduction and other benefits in improving metabolic outcomes. However, the fasting blood glucose in obese mice using NNS during IF in ADF group is significantly increased. Therefore, long-term effects of IF and NNS consumption need to be monitored.

Keywords: Intermittent fasting, Non-nutritive sweetener, obesity, mouse model

Abstract: PT-BS011

Molecular Mechanisms of Binding of SARS-CoV-2 Corona Virus to Human Epithelial Cells: Association of Viral S-protein to ACE2 Receptor

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Background: The corona virus infection starts with the association of the spike (S) protein of SARS-CoV-2 beta-coronavirus with angiotensin-converting enzyme-2 (ACE2) on the epithelial cells. The effectiveness of this virus-receptor association is determined by the reduction of the Gibbs free energy at formation of the S-ACE2 complex. The main contribution to the association energy is provided by the electrostatic potential of the contacting virus-receptor surface. The hydrophobic interactions, hydrogen bonds and van-der-Waals forces play a secondary role. Any point mutation leading to change in the electric charge in the spike protein alters the electrostatic potential and by that the association energy.

Objectives: The aim of our research is to calculate the association energy since the contagiousness as well as the pathogenicity of the different variants depend on it.

Methods: The 3D structures of S-protein in its trimeric form (including the hydrophilic S1 and S2 subunits) of the coronavirus variants are reconstructed by introduction of point mutations into the 3D complex of hACE2 with S-trimer the wile-type coronavirus. Different computer programs were used for: in silico mutational analysis; calculation of the surface electrostatic potential as well as the isoelectric point; determination of association energy of S protein and ACE2 binding; visualization of the molecular models.

Results: The calculations of the pH-dependent electric and thermodynamic properties disclose that the S-proteins of the different corona virus variants differ in 3D structural stability, net charge, isoelectric point, surface electrostatic potential and hydrophobicity in the vicinity of the mutant amino acid residues, as well as in the number of hydrogen bonds in the S1-ACE2 complex. The pH-dependences of the S-trimer-ACE2 association energy are different across the coronavirus variants, suggesting their varying virulence in the respiratory tract and blood vessels.

Discussion & Conclusion: The calculated dissociation constants of the S-trimer-hACE2 complexes allow arranging the investigated five coronavirus variants according to their affinity to the ACE2 receptor and to explain on molecular level their different contagiousness.

Keywords: SARS-COV-2, ACE2 receptor, association energy, contagiousness, surface electrostatic potential

Abstract: PT-BS012

High Throughput Screening by Machine Learning Application for Drug Discovery and Computational Modeling for SARS-CoV-2 Mpro Protease Inhibitors

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Background: The emergency COVID-19 pandemic has provided many countries, including Thailand, with significant lessons over the past three years. In the earliest situation, healthcare providers used FDA-approved drugs that were already registered and proven to be safe for use without strong scientific evidence. In recent years, machine learning (ML) has been integrated into computational chemistry for accelerated drug discovery processes. The SARS-CoV-2 main protease (M^{pro}) is crucial for viral replication, making it a key target for antiviral drug development.

Objectives: This study aims to use machine learning and de novo drug design to identify novel SARS-CoV-2 M^{pro} inhibitors through an in-silico pipeline for virtual screening and candidate optimization.

Methods: A dataset of over 1 million compounds adhering to Lipinski's rule was sourced from the ChEMBL library. PaDEL descriptors were used to calculate molecular fingerprints, while 3 ML algorithms were trained using 785 compounds with known IC50 values for SARS-CoV-2 M^{pro}. Afterward, the best-performing model was utilized for screening. Compounds predicted to have IC50 values below 100 nM were further assessed through molecular docking and ADMET profiling. In molecular docking, the hits were docked into the active site of the main protease and Nirmatrelvir was used as a positive control. Finally, molecular dynamics (MD) simulations will be conducted for 300 ns to evaluate their stability.

Results: The machine learning screening identified 15,497 potential M^{pro}inhibitors. The Random Forest model achieved an accuracy of 94% on both the training and testing sets. Docking analysis revealed that two compounds had higher docking scores than the positive control, Nirmatrelvir (85.14), with ChEMBL3717478 obtaining the highest score of 85.54. Eleven compounds with docking scores of 82.14 or higher were selected for MD simulations. ADMET profiling indicated that two compounds had poor gastrointestinal absorption, while one demonstrated blood-brain barrier penetration. Notably, amine and benzene derivatives emerged as promising classes of M^{pro} inhibitors.

Discussion & Conclusion: This study demonstrates the effectiveness of integrating machine learning with molecular docking and MD simulations for the rapid identification of potential SARS-CoV-2 M^{pro} inhibitors. This prototype can be implemented to develop effective drug discovery and drug repurposing strategies before incorporating them into treatment guidelines, especially in new emerging diseases.

Keywords: In silico drug design, SARS-CoV-2 Mpro inhibitors, Ligand-based virtual screening, machine learning, computational chemistry

Abstract: PT-BS013

Comparative Study of Classification Algorithms for miRNAs Related to Endurance Sports, and Measurement of the Candidate miRNAs

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Background: In the last IMRC 2023, our Club has presented an experimental study on genetic preference which related to endurance namely ACE ID SNPs as model (Alessandro *et al.*). Using PCR for genetic test, and 6 weeks training, we confirmed the allele which provided benefit for endurance exercise. To monitor training result, measurement of blood-borne molecular marker such as micro RNA (miRNA) is necessary. However, compared to SNPs study, miRNA study using microarray which is related to physiological activities is very rare thus difficult to determine which one are the most important markers. Kern *et al* (Cells, 2019) published a study using 23 individuals and 2,549 types of miRNA related to endurance sport and used Principle Component Analysis (PCA), an unsupervised algorithm to identify important markers. On the other hand, Kim *et al* (Genes, 2022) suggested testing different machine learning (ML) algorithm to get the optimum performance.

Objectives: To compare different ML algorithms in analyzing miRNA datasets from Kern *et al* to find out important markers for endurance training and to test the validity of the results by miRNA measurement from blood using real-time PCR.

Methods: Three supervised algorithm namely Support Vector Machine (SVM), k-Nearest Neighbors (KNN) and Random Forest were used to analyses datasets from GEO database (ID, GSE133910) as published by Kern *et al*. Total RNAs were isolated from whole bloods before and after endurance training, and measured for miR-532-5p and miR-520a-5p obtained from the literature and this study, respectively.

Results: Among the three ML algorithms, Random Forest provided the highest accuracy in classifying miRNA expression. While for the best consistency, KNN gave the best result. Interestingly, our study suggested different miRNA from the literature, namely miR-520a-5p as the best candidate markers. Thus, for testing the validity of the calculation, miRNA expression levels for both candidates were measured.

Discussion & Conclusion: We have demonstrated the importance of testing different ML algorithm to analyze miRNA expression especially in endurance sport, which is still rare. Furthermore, we also showed how to perform easy measurement of miRNA expression using real-time PCR which is more affordable than microarray for the application in monitoring endurance training.

Keywords: Endurance sport, Machine learning algortihm, Real-time PCR

Abstract: PT-BS014

Decoding the Impact of RGL3 Genetic Variants on Protein Structure and Binding Site: A Bioinformatics Approach to Uncover Potential Hypertension Associations

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Background: The *RGL3* gene plays a role in key signal transduction pathways and has been implicated in hypertension risk through the identification of a copy number variant deletion in exon 6. Genome-wide association studies have highlighted *RGL3* as associated with hypertension, providing insights into the genetic underpinnings of the condition and its protective effects on cardiovascular health. Despite these findings, there is a lack of data that confirms the precise role of *RGL3* in hypertension. Additionally, the functional impact of certain variants, particularly those classified as variants of uncertain significance, remains poorly understood.

Objectives: This study aims to analyze alterations in the *RGL3* protein structure caused by mutations and validate the location of the ligand binding sites.

Methods: Variants of uncertain significance in the *RGL3* gene were obtained from the NCBI ClinVar database and analyzed using bioinformatics. Only variants exhibiting alterations within exon 6 were selected for further investigation. AlphaFold was employed to predict the pathogenic potential of missense mutations, while UniProt was used to visualize the mutations and molecular effects. The Swiss-Model platform was utilized to predict and construct a three-dimensional structural model of the variant sequences, evaluating structural changes and impact on the binding site.

Results: Among the analyzed variants, the missense mutation at position 259 exhibited the highest pathogenicity score. This mutation results in the substitution of aspartic acid with tyrosine, leading to a change in side chain polarity from negatively charged to hydrophobic. UniProt analysis confirmed that *RGL3* is expressed in the cytosol and involved in catalytic and GTPase activity, indicating its role in signal transduction. Swiss-Model analysis suggested that the altered side chain.

Discussion & Conclusion: The missense mutation at position 259 may have significant clinical implications, as the polarity change could affect the protein's specificity, binding selectivity, and function. Furthermore, the shift in polarity may result in reduction of structural integrity and stability by altering the binding angle. These findings are consistent with the previous studies reporting structural and functional alterations of exon 6. Further experimental validation and functional assessment are required to confirm these observations and to elucidate the precise role of *RGL3* in hypertension.

Keywords: RGL3 gene, Hypertension association, Bioinformatics , Protein structure , Protein binding site

Abstract: PT-BS015

Lentivirus-Mediated shRNA Interference Targeting Fibrinogen Alpha Chain Promote Resistance to A Combination of Cisplatin Plus Gemcitabine in Lung Adenocarcinoma Cells

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Background: Non-small cell lung cancer (NSCLC) is one of the most common cancers worldwide, with a high mortality rate and a significant incidence of new cases. Platinum-doublet chemotherapy, comprisingcisplatin (Cis) and gemcitabine (Gem), is a regimen for the treatment ofadvanced NSCLC. However, more than half of the patients do not respond to this regimen. This may be due to the lack of biomarkers for predicting regimen response. Our previous reports using proteome and transcriptome techniques revealed that the fibrinogen alpha chain (FGA) protein was increased in responders compared to non-responders receiving a Cis plus Gem regimen. Nevertheless, a functional role of FGA on chemotherapy response remains unknown.

Objectives: We aimed to evaluate the effect of FGA on the response of A549 adenocarcinoma cells to Cis plus Gem regimen.

Methods: Stable suppression of FGA in A549 cells was performed by lentivirus-mediated short hairpin RNA (shRNA). The expression level of FGA in shRNA targeting FGA cells (shFGA) compared to their parental A549 cells was confirmed by western blotting. Cells were treated with Cis and Gem 1 µM for 72 hour, then drug sensitivity was evaluated using the trypan blue live-dead assay. Cells viability was assessed using the MTT assay.

Results: FGA expression was significantly downregulated in shRNA cells compared to their parental A549 cells by approximately 73% ($P<0.05$). The trypan blue assay revealed a significant difference in live and death cells on day 1 and day 2 ($P<0.001$ and $P<0.01$, respectively). The number of dead A549 cells increased over time, while number of dead shFGA cells remained constant for three-days after treatment with Cis and Gem treatment. Cell viability assay showed that shFGA cells exhibited resistance to Cis plus Gem by 2.80-fold (IC50 = 3.40 µM for shFGA versus IC50 = 1.23 µM for A549).

Discussion & Conclusion: Our study indicates that downregulated of FGA is associated with a response to doublet chemotherapy of Cis plus Gem in NSCLC and could serve as a novel predictor of this treatment regimen. Further study in clinical setting should be considered.

Keywords: Fibrinogen alpha chain, Cisplatin, Gemcitabine, Lung Adenocarcinoma

Public Health and Epidemiology Research

Abstract: PT-PE002

Exploring Contact Lens Usage and Prevalence of Hordeolum among Thai University Students

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Background: Contact lens (CL) are increasingly popular among the newer generations, especially university age group, who has been to have improper CL hygiene. However, the association between hordeolum and CL usage among this age group is still limited.

Objectives: We determine to explore contact lens usage and prevalence of hordeolum among Thai university students.

Methods: A cross-sectional study was performed in two large Thai public universities through online survey. Participant demographics along with data on purpose and behaviors of CL usage as well as history of hordeolum were collected.

Results: There was a total of 276 participants with 35.86% using CL in the past year. All students were over 18 years and having female predominance (61.23%). Main motivation for CL is to improve vision (89.89%) while 48.48% also took account aesthetics and 8.08% for beauty alone. Mean CL use is 6.52 years with average of 9.43 hours CL usage per day. Source of CL was eyewear shop (52.53%), pharmacy (3.03%) and medical facilities (2.02%). However, online shopping is common (37.37%). Poor behaviors are sleeping (60.6%) and swimming with CL (40.4%). Only 3.03% needed to seek medical attention due to CL. The prevalence of hordeolum (39.13%) is presented over participants both with and without CL usage. At home management include doctor visit (40.74%), over-the-counter antibiotics (39.81%) and spontaneous resolution (38.89%). Only 26.85% did warm compression which is first-line treatment for hordeolum. No association between CL wearers and history of hordeolum was identified.

Discussion & Conclusion: Both populations of wearers and non-wearers were as likely to have hordeolum. Nevertheless, patient education on the use of CL and proper management of hordeolum is crucial to reduce potential impacts along with complications associated with the following conditions.

Keywords: contact lens, Hordeolum, university students

Abstract: PT-PE003

A Biphasic Approach in Exploring Ascariasis Cases in Bacoor, Cavite: In Silico and In Situ Studies

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Background: Ascariasis, caused by the *Ascaris lumbricoides,* is the most common soil-transmitted helminth (STH) infection globally, with 807 million to 1.2 billion cases. In the Philippines, ascariasis still causes significant morbidity, particularly among children. Despite this, there remains a lack of attention towards creating a comprehensive risk map outlining the distribution of ascariasis, where Bayesian models have predicted it to have the highest prevalence of ascariasis in Luzon.

Objectives:

- Create a prediction map of ascariasis to predict high-risk areas.
- Correlate the bioclimatic variables to the occurrence of ascariasis in children aged 5 to 10 in Cavite.
- Assess the predictive capability of machine learning, Maximum Entropy (MaxEnt), for ascariasis occurrence by ground testing in identified public schools in Bacoor, Cavite.

Methods: ***In silico:*** This study generated a map using *ArcMap software 10.8.2* predicting the distribution of ascariasis in Cavite province. The model incorporated bioclimatic, soil, and elevation variables, alongside primary data from local government units (LGUs) and hospitals across 22 cities and municipalities in Cavite which were analyzed using MaxEnt. ***In situ:*** The resulting occurrence map was used and validated through fecalysis (direct fecal smear with formalin ether concentration technique) among 5 to 10-year-old children (n= 114) at identified schools (n=9) in Bacoor, Cavite using stratified cluster sampling, with ethics approval from University of Santo Tomas Graduate School *(ERX2023-015).*

Results: The model revealed a moderately significant area under the curve (AUC) value of 0.654, identifying Bacoor City to have the highest risk of ascariasis occurrence. The model also revealed two main bioclimatic factors that affect Ascariasis occurrence namely, temperature and precipitation. Ground testing validation showed a prevalence rate of 17.54%, higher than the LGUs' recorded case of zero. Consequently, MaxEnt predicted a 37.7% to 64.2% chance of ascariasis occurrence in Bacoor, which coincides with the 67% occurrence of ascariasis among the surveyed schools having at least one positive case.

Discussion & Conclusion: Machine learning programs such as MaxEnt can be used to determine the distribution of ascariasis occurrence by correlating variables that affect ascariasis. Thus, it can be used in disease distribution prediction and as a basis for public health control and epidemiological programs against STH diseases.

Keywords: Ascariasis, Ascaris lumbricoides, Bioclimatic variables, Cavite, MaxEnt

Abstract: PT-PE004

Neck Circumference Associated with Peripheral Artery Disease: A community-based, Cross-Sectional Study

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Background: Peripheral artery disease (PAD) is characterized by obstruction within the arterial lumen due to increased thickness of the arterial alls. Recent research has identified a correlation between metabolic syndrome, neck circumference (NC), and PAD. However, the specific relationship between NC and PAD remains unclear.

Objectives: This study aims to investigate the association between neck circumference (NC) and PAD. Additionally, it seeks to examine the relationships between various anthropometric parameters—including NC, body mass index (BMI), and waist circumference (WC)—and the ankle-brachial index (ABI).

Methods: This community-based cross-sectional study included 412 Thai adults aged 50 and older, residing in Tha-Kradan Subdistrict, Chachoengsao, a rural area in central Thailand. Anthropometric measurements, including NC, WC, and BMI, were recorded. The ABI was assessed using a Minidop ES-100VX pocket Doppler. Multivariable logistic regression models were utilized to explore the association between NC and PAD, adjusting for potential confounders such as age, sex, smoking, alcohol consumption, family history of PAD, use of aspirin and statins, hypertension, dyslipidemia, diabetes, coronary artery disease, and cerebrovascular disease. Furthermore, the relationships between anthropometric parameters and ABI were analyzed using a generalized estimating equation (GEE) with a Gaussian working model.

Results: The prevalence of PAD among adults in the Tha-Kradan community was 12.38% (95% CI: 9.36 – 15.95). NC was not found to be significantly associated with PAD (aOR 0.97, p = 0.645, 95% CI: 0.86 – 1.09). In contrast, alcohol consumption was found to significantly increase the risk of PAD (aOR 3.32, p = 0.004, 95% CI: 1.45 – 7.58). A linear association was identified between anthropometric parameters (including NC [adj Coeff. 0.0086, p = 0.002, 95% CI: 0.0031 – 0.0141], BMI [adj Coeff. 0.0046, p = 0.017, 95% CI: 0.0008 – 0.0083], and WC [adj Coeff. 0.0026, p < 0.001, 95% CI: 0.0012 – 0.0040]) and ABI, as demonstrated by GEE with an assumed pre-specified exchangeable correlation.

Discussion & Conclusion: The prevalence of PAD in the Tha-Kradan community is notably high. While NC was not found to be associated with PAD, anthropometric parameters such as NC, BMI, and WC were significantly related to ABI.

Keywords: peripheral artery disease, neck circumference, ankle-brachial index, metabolic syndrome.

Abstract: PT-PE005

Photographing Injuries Used in Exploring Work-Related Hand Injuries from Rubber Cultivating Process

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Background: In Thailand, a significant number of rubber farmers has reported health and injury problems, with hand and wrist injuries being particularly prevalent. In Trakradan district rubber cultivating is one of the most popular agriculture.

Objectives: This qualitative component in the mixed methods study aimed to provide a detailed record of injuries and increase our understanding work-related hand injuries from rubber cultivating process in the last cultivating season in Tha Kradan, Sanam Chai Khet District, Chachoengsao Province

Methods: Photography of hand injuries was used on 206 rubber-tapped farmers between May 2023 and February 2024. This component of the study collected photos and explored various wounds and healed wounds on farmers' hands. The injuries and their severity were also observed.

Results: Among 206 participants, most of them were Thai, right-handed, and worked with both hands. Of all the tappers, there were 5,023 hand-related injuries reported, with more than half of the participants reporting one or more injuries. The most common type of rubber tapper knife used was a Jaebong knife. The majority used liquid acid as a latex coagulant, but only a small percentage wore gloves during the process. The photos taken provided extensive information about their injured hands. Around 13% of the participants' hands were photographed (n=27), The most common types of injuries were minor chemical injury, abrasions and laceration wounds. Photographing hand injuries provided qualitative detailed of the wounded with minor injuries and the understanding of poor use of protective devices and lack of safety working process.

Discussion & Conclusion: Photos taken elicited not only characteristics of the rubber tapping related hand injuries in this group of participants, but also reflected rubber farmers' experiences and their perspectives of their would care at the time of experience. A health promotion and good practices is needed to promote workers' awareness should be conducted with an understanding of rubber farming practices and care processes after the injuries.

Keywords: hand injuries, rubber farmers, safety practices

Abstract: PT-PE006

Cannabis Use and Health Consequences among Undergraduate Students after 1-year Medical Legalization

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Background: Cannabis contains tetrahydrocannabinol (THC), which affects physical and mental health in many ways. Thailand has legalized cannabis for medical purposes in 2022. The legalization may lead to an unintentional increase in its use among youth as cannabis can be easily accessed in the community.

Objectives: This study aimed to examine cannabis use, consumption behaviors, and health consequences one year after cannabis legalization among undergraduate students.

Methods: An online survey was conducted among undergraduate students (N=2420) in public, vocational, and private universities in all regions of Thailand. The universities were randomly selected and invited to participate in the study. A link to the online questionnaire was sent to the universities willing to participate in the study. The online questionnaire consisted of socioeconomic characteristics, cannabis use, and the use pattern, and consequences of cannabis use. Descriptive statistics were used to describe the use rate, consumption behavior patterns, and consequences of cannabis use. The Chi-square test was used to compare factors associated with cannabis use.

Results: Our findings revealed cannabis use rate in undergraduates was 15.4% (32.7% in male and 6.8% in female students). More than half (52.1%) started using cannabis in their adolescent period (13 – 18 years old). The most common reasons were novelty seeking (66.8%), sleep aid (33.8%), and peer pressure (32.4%), while medical use was 13.9%. Students mostly consumed cannabis in food and beverage form (53.0%), flowers (52.7%), and leaves (51.1%). The most common health consequences were palpitation (22.2%), hallucination or paranoia (10.5%), and depression (8.9%).

Discussion & Conclusion: After 1-year of cannabis medical legalization, university students, especially males, reported a moderate to high use rate of cannabis or products containing cannabis. They were mostly used for recreational purposes. More than half of students experienced at least one symptom from cannabis intake.

Keywords: cannabis, undergraduates, Cannabis legalization

Abstract: PT-PE008

The Effectiveness of House Gecko versus Insecticide for Mosquitos Control

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Background: The use of mosquito insecticides is increasingly popular. However, mosquito insecticides can cause resistance and poisoning. On the other hand, bio control using natural predators is gaining more attention. In Indonesia, there is a very popular children's song about house gecko that eat mosquitos. However, scientific data regarding the effectiveness of house gecko versus insecticides for mosquito control is not yet available.

Objectives: To conduct experiments to obtain quantitative data on the effectiveness of house gecko versus insecticides in killing mosquitos. To see the toxic effects of mosquito insecticides on house gecko.

Methods: In a closed plastic box with dimension of 35 x 25 x 25 cm, 30 Aedes aegypti mosquitos were placed. In one experiment, the box was sprayed with mosquito insecticide containing Transfluthrin 23.3%. In the other boxes, 1 or 2 house geckos were given. Every 15 minutes, the number of mosquitos that die or are eaten is counted. In other experiments, a house gecko was put in a box sprayed with mosquito insecticide and the other house gecko was placed with mosquitos that died from the mosquito insecticide.

Results: In the control experiment, 30 mosquitos after 60 minutes still looked healthy and could fly and land. Transfluthrin killed a total of 22 mosquitos after 1 hour, and with peak deaths after 45 minutes, indicating that the toxic effects require time to act. Meanwhile, 1 house gecko ate a total of 14 mosquitos in 60 minutes and 2 house geckos ate 25 mosquitos (doubled) and both stopped eating similarly after 30 minutes. In the house gecko experiments, 72% of mosquitos were eaten in just 15 minutes versus only 15% of mosquitos die in the first 15 minutes in Transfluthrin experiment. A house gecko placed in a box sprayed with Transfluthrin only survived for 105 minutes. The house gecko that was put in the box with the dead mosquitos after 1 hour Transfluthrin treatment, eventually died after 5 hours, although the house gecko didn't eat the dead mosquitos.

Discussion & Conclusion: This experiment clearly shows the superior effectiveness of house geckos, as bio control, and the danger of mosquito insecticides to house geckos.

Keywords: mosquitoes, insecticide, house gecko, bio control, effectiveness

Abstract: PT-PE009

The Effect of Application-based Education on Teen's Attitude Toward Alcohol in Rural Area of Thailand: A Quasi-experimental Design

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Background: Alcohol consumption is one of the risky behaviors in Thailand, especially for teenagers. These new drinkers likely become alcoholism later. To serve people who need help on alcohol addition, the Thai Alcohol Help Line Center (1413) has developed a chatbot called "Nong-TangJai".

Objectives: This study aims to demonstrate whether the results of using this chatbot influenced the changing attitudes toward alcohol among adolescents.

Methods: A Quasi-experimental study was conducted at a rural secondary school in Tha Kradan Sub-district, Sanam Chai Khet district, Chachoengsao province. The intervention group were received an interactive lecture about Alcohol consumption and participated the game that linked with "Nong-TangJai". Whereas, the control group attended only the interactive lecture about Alcohol consumption. We compared their attitude toward alcohol behavior in the pre- and post-test periods using statistical analysis, including paired t-tests and independent t-tests.

Results: The intervention and control group had 26 and 24 participants, respectively. The baseline average score (Mean ±SD) of attitude among the intervention and control group were 31.04 ± 6.29 and 26.04 ± 6.98 with p-value of 0.011. Mean difference (pre- vs post-test) of the attitude between intervention and control groups were difference with p-value of 0.018 after adjusted for the baseline attitude score. Moreover, the subgroup analysis on grade 10-12 explicitly demonstrated the effectiveness of our intervention on their attitude.

Discussion & Conclusion: The deliberate use of a chatbot in conjunction with alcohol instruction has resulted in a more anti-drinking attitude at the end of the class. Further studies should evaluate the long-term effect of continuously using the chatbot and use the other approaches to improve the adolescences' attitude on alcohol consumption. Changing the attitude of young people on alcohol likely is the key success to prevent alcoholism in adult.

Keywords: application-based education, alcohol, teenagers, Thailand, Quasi-experimental Design

Clinical and Translational Research

Abstract: PT-CT001

The Relationship between the Consumption of Calcium Channel Blockers (CCB) and the Incidence of Erythropoietin Resistance in Chronic Kidney Disease (CKD) Patients

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Background: There are 80 to 85% of Chronic Kidney Disease (CKD) patients who experience hypertension. This condition is followed by defects in peritubular cells producing the hormone erythropoietin with manifestations of renal anemia. Based on preliminary studies, it is known that the administration of erythropoietin-stimulating agents as a therapy for renal anemia experiences resistance of 61%. This resistant condition can be caused by the use of calcium channel blockers as the first line of hypertension therapy in CKD patients.

Objectives: This study will review the relationship between CCB consumption and the incidence of erythropoietin resistance in CKD patients.

Methods: This study uses a cross-sectional method with a data collection technique, namely purposive sampling based on inclusion and exclusion criteria. The data obtained were analyzed using the chi-square test to assess the relationship between the two variables if the test requirements were met. Assessment of erythropoietin resistance is based on ESA dose/body weight in weeks (Kg) / Hb (g / dl). The ESA-sensitive group is ≤ 5.0 IU/kg/week/g/dl and the resistant group is>5 IU/kg/week/g/dl. Data were analyzed using SPSS software version 26. Data were considered significant if the p-value was <0.05.

Results: There were 148 CKD patients at the Muhammadiyah PKU Bantul Hospital who met the inclusion criteria for the study sample. Based on the chi-square test, the p-value was obtained = 0.09 with 0.0% cell expected count.

Discussion & Conclusion: The use of CCB is associated with the incidence of erythropoietin resistance with a significant p-value (p = 0.09). CCB is known to reduce blood perfusion in the bone marrow and kidneys, which then reduces the response to erythropoietin.

Keywords: CCB, erythropoietin, hyporesponsiveness

Abstract: PT-CT003

Glucose-Lymphocyte Ratio as a Prognostic Marker for Cholangiocarcinoma

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Background: Cholangiocarcinoma (CCA) has the highest global prevalence in northeast Thailand, and most patients typically have poor prognoses. Despite this, there is no definitive prognostic marker to predict disease progression.

Objectives: This study aims to explore the glucose-lymphocyte ratio (GLR) as a potential prognostic marker for CCA patients post-surgery, linking factors related to diabetes mellitus (DM) and lymphocyte count against CCA.

Methods: A retrospective analysis was conducted on 85 patients with histologically confirmed CCA who underwent surgical resection at Srinagarind Hospital, Khon Kaen University, between 1998 and 2000. Clinicopathological and laboratory data were collected. The GLR was calculated from preoperative fasting blood glucose and the absolute lymphocyte count. The association between GLR and patient survival, along with other prognostic parameters, was analyzed.

Results: High GLR was significantly associated with shorter survival in CCA patients post-surgery ($P < 0.05$). Univariate analysis revealed significant associations between high GLR and male gender ($P < 0.01$). Multivariate analysis indicated significant correlations between poor survival and high GLR, elevated CA19-9, total bilirubin, and aspartate transaminase levels. Additionally, GLR showed significant negative correlations with globulin and total protein levels (Spearman's Rho = -0.221 and -0.215, respectively).

Discussion & Conclusion: The study demonstrates that high GLR is a significant prognostic marker for shorter survival in CCA patients after surgical resection. These findings align with previous research suggesting that DM and hyperglycemia contribute to CCA progression. The potential utility of GLR as a prognostic marker is highlighted.

Keywords: Glucose-lymphocyte ratio, survival, cholangiocarcinoma, diabetes mellitus, post-surgery.

Abstract: PT-CT005

Development of Diagnostic Prediction for Dengue Fever in Pediatric Patient in Phrae Hospital

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Background: Dengue fever poses a significant global health challenge, particularly in Thailand. In 2023, Thailand reported a substantial increase in dengue cases, with 156,097 cases and 175 deaths, as recorded by the Division of Epidemiology. The highest incidence was observed in the 5-14, 15-24, and 0-4-year age groups. Diagnosing dengue in children can be difficult due to overlapping symptoms with other infections, necessitating laboratory confirmation. The Dengue Duo test (NS1Ag, IgM, IgG) is commonly used for diagnosis but is unavailable outside regular hours at Phrae Hospital, leading to diagnostic delays. This underscores the need for a predictive tool to aid in diagnosing dengue in children aged 5-15 years presenting with fever for 2-7 days at Phrae Hospital.

Objectives: To identify diagnostic predictors for dengue fever in children aged 5-15 years with fever for 2-7 days and to develop a predictive tool for early diagnosis.

Methods: The study is a diagnostic prediction research used study base as a retrospective cross-sectional observation and analyzed pediatric patients aged 5-15 years who presented with fever for 2-7 days at Phrae Hospital from January 1, 2019, to August 16, 2024. Patients were classified as Dengue Duo positive or negative. Univariable and multivariable logistic regression analyses were conducted to identify diagnostic predictors, with the predictive accuracy of the diagnostic tool assessed using the Area under the ROC Curve (AUROC).

Results: Significant prognostic determinants of dengue fever included age 13-15 years, absence of cough and runny nose, WBC < 5,000 cells/mm³, hematocrit increase > 5%, and platelet count < 150,000 cells/mm³. The final diagnostic tool demonstrated a diagnostic performance as high discriminative ability, with an AUROC of 83.5%.

Discussion & Conclusion: Our diagnostic prediction tool effectively predicts dengue fever in children aged 5-15 years. However, confirmation via the Dengue Duo test remains necessary to ensure diagnostic accuracy and prevent misdiagnosis.

Keywords: Prediction, Dengue fever

Abstract: PT-CT006

Trends in Particulate Matter Levels and Lung Cancer Incidence Rate in Phrae Province, Northern Thailand: A 10-Year Retrospective Study

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Background: Lung cancer is the most common cancer globally and the leading cause of cancer-related deaths in men and the third in women. In Northern Thailand, particularly in Phrae Province, the incidence of lung cancer has been rising annually. Key risk factors include smoking and air pollution, particularly particulate matter (PM) of 10–2.5 µm in size (PM10 and PM2.5). With increasing PM levels recorded above standard thresholds each year, this study was conducted to describe trend in PM levels and lung cancer incidence rate in Phrae Province.

Objectives: To describe the annual PM levels and lung cancer incidence rate over the past 10 years in Phrae Province.

Methods: This descriptive study analyzed data from Phrae Hospital between January 1, 2014, and December 31, 2023. Data collected included patient age, gender, smoking history, and lung cancer diagnosis. Multivariable Poisson regression models were used to analyze differences in lung cancer incidence rates, with results presented as Incidence Rate Ratios (IRR) and 95% confidence intervals.

Results: The incidence of lung cancer fluctuated annually, peaking in 2019 at 35.09 per 100,000 population. Over the 10-year period, the overall incidence increased by 9.81 per 100,000, with males experiencing a higher increase (12.33 per 100,000) compared to females (7.66 per 100,000). Smoking history revealed that 95% of males and 98% of females diagnosed with lung cancer had smoked. PM levels, particularly PM2.5, exhibited a rising trend in line with lung cancer incidence rate. Monthly PM levels peaked in March and April, but lung cancer cases increased at a similar rate each month, independent of the PM spikes.

Discussion & Conclusion: Lung cancer incidence rate in Phrae Province has increased over the past decade, with higher rates observed in males and individuals aged 55-75 years. PM10 and PM2.5 levels consistently exceeded standard limits. However, while trends in PM levels and lung cancer incidence followed a similar pattern, this study is descriptive and cannot conclusively determine a causal relationship.

Keywords: Lung cancer incidence, PM10, PM2.5, air pollution

Abstract: PT-CT007

Accuracy and Agreement of Artificial Intelligence in Interpreting Chest X-rays Compared to Low-Dose CT Scans.

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Background: Lung cancer ranks among the leading cancers in Thailand, with the national cancer registry reporting it as the second most common cancer in men (22.8 per 100,000) and the fourth in women (11.5 per 100,000). The Northern region exhibits the highest incidence rates, particularly in men (33.1 per 100,000). In response, the Ministry of Public Health initiated the "Kick Off" project, aiming to improve early detection of lung cancer via low-dose CT scans. However, delays in scheduling and interpretation of CT scans, compounded by a shortage of radiologists, hinder timely diagnosis and treatment. Artificial Intelligence (AI) has emerged as a potential solution to alleviate radiologists' workload, enhance screening efficiency, and expedite lung cancer diagnosis. This study aims to assess the accuracy of AI in interpreting chest X-rays and its potential to serve as a preliminary screening tool before detailed CT scans.

Objectives: To compare the accuracy of AI in analyzing chest X-rays against radiologist interpretations of low-dose CT scans and evaluate AI's viability as a screening tool.

Methods: This retrospective cross-sectional study analyzes data from patients who underwent chest X-ray screening interpreted by AI and subsequently received low-dose CT scans. Data were sourced from the HosXp program, patient medical records, and the Inspectra AI system database at Phrae Hospital. The agreement between AI and radiologist interpretations was assessed using Kappa statistics.

Results: At a 50% agreement threshold, AI showed poor alignment with radiologists for atelectasis, cardiomegaly, lung opacity, and Nodules (Cohen's Kappa values: 0.13, 0.16, 0.05, and 0.08, respectively). Increasing the threshold to 75% showed similarly low agreement for most lesions. AI did not match radiologist findings for Pulmonary Edema, Mass, or Pleural Effusion.

Discussion & Conclusion: AI demonstrated moderate agreement with low-dose CT for Cardiomegaly and Lung Opacity but was less reliable for detecting Atelectasis and Nodules. Thus, AI should complement, rather than replace, radiologist assessments in lung cancer screening.

Keywords: Artificial Intelligence (AI), Lung mass, Agreement

Abstract: PT-CT008

Pathophysiology and Treatments of Anterior Fasicular Ventricular Tachycardia

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Background: Anterior fascicular ventricular tachycardia is an idiopathic ventricular tachycardia with right bundle branch block morphology in normal structural heart patients that occurs predominantly in young males (15–40 years old). It has 2 types; posterior fascicular ventricular tachycardia, which happens to 90-95% of all cases, and anterior fascicular ventricular tachycardia, which occurs only to less than 10% of all cases. Due to its rarity, it is important to shed more light to the morphology, pathology and treatments of anterior fascicular ventricular tachycardia.

Objectives: To understand the morphology, pathophysiology, and treatments regarding anterior fascicular ventricle tachycardia through a case report

Methods: (-)

Results: This case study reports a case of a 48 year-old man with morbid obesity with severe obstructive sleep apnea and atrial fibrillation. He was first diagnosed with anterior fascicular ventricular tachycardia in 2014 and received radiofrequency ablation prior. Although the intervention was successful initially, he later developed recurrent attacks of ventricular tachycardia, which led to implementation of direct current cardioversion(DCCV). In 2023, he was admitted into hospital for further interventions
of anterior fascicular ventricular tachycardia. His current medications are vitamin K antagonist, verapamil, and fecainide. His electrocardiogram revealed QRS complex more than 120 milliseconds with the presence of capture beat that leads to inducement of ventricular tachycardia. His recent echocardiogram detected normal ventricular systolic function with left ventricular ejection fraction at 55% and no significant valvular abnormalities.

Discussion & Conclusion: Left anterior fascicular ventricular tachycardia(LAFVT) is an uncommon type of verapamil-sensitive idiopathic VT. It originates from anterior fascicular re-entry. LAFVT is characterized by wide complex tachycardia(WCT) with right bundle branch block(RBBB) and right axis deviation(RAD) morphology. Verapamil(non- dihydropyridine L-type CCB) is the drug of choice for LAFVT due to its ability to block slow anterograde pathway(P1) and terminate the circuit. Radiofrequency ablation of the re-entry circuit of the patient was done near the left anterolateral papillary muscle. The ablation resulted in more left axis deviation and tachycardia was no longer induced.

Keywords: Anterior Fasicular Ventricular Tachycardia, Electrocardiogram study

Abstract: PT-CT009

Risk Factors of Recurrent Febrile Seizures in Children at Somdejphrajaotaksinmaharaj Hospital

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Background: Febrile seizures typically occur between the ages of 6 months and 60 months. These seizures are triggered by a fever with a temperature exceeding 38 degrees Celsius, provided that the fever is not due to an infection of the nervous system, an electrolyte imbalance, or any other condition that could cause seizures. Repeated episodes of febrile seizures can impact a child's development, potentially leading to regression in physical development.

Objectives: To study the general characteristics and clinical features of pediatric patients experiencing febrile seizures, as well as to investigate the prevalence of recurrent febrile seizures and the associated risk factors among pediatric patients at Somdejphrajaotaksinmaharaj hospital.

Methods: This study is a retrospective cohort study conducted on pediatric patients aged 6 to 60 months who were diagnosed with febrile seizures and admitted to the hospital between October 2020 and July 2023. The study followed up on the occurrence of recurrent febrile seizures within a 1-year period. Data were analyzed using statistical software, with descriptive statistics including frequency, percentage, mean, and standard deviation. Inferential statistics were applied using binary logistic regression analysis, and results were presented with adjusted odds ratios and 95% confidence intervals (CI). The level of statistical significance was set at 0.05

Results: The general characteristics revealed that the majority of pediatric patients were male (52.9%). Clinically, 83.4% of the children experienced simple febrile seizures. Analysis showed that the risk factors significantly associated with recurrent febrile seizures in pediatric patients were gender and the type of febrile seizures. Male patients were 2.46 times more likely to experience recurrent febrile seizures compared to female patients (p = 0.046, 95% CI = 1.02-5.94). Additionally, children with complex febrile seizures were 3.37 times more likely to have recurrent febrile seizures than those with simple febrile seizures (p = 0.024, 95% CI = 1.17-9.65).

Discussion & Conclusion: The risk factors significantly associated with the recurrence of febrile seizures in pediatric patients include gender and the type of febrile seizures.

Keywords: Febrile seizures, recurrent febrile seizures, Pediatric patients

Abstract: PT-CT010

Parental Attitudes and Practices Regarding Atopic Dermatitis: A Cross-Sectional Study among a Thai Population

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Background: Atopic dermatitis (AD) is a chronic inflammatory skin disorder common in children. Successful pediatric AD therapy requires parental assistance. Thus, evaluating parental knowledge, attitudes, and behaviors regarding childhood AD may lead to more educational recommendations to help children control AD in the future. This study examined parents' knowledge, attitudes, and conduct concerning AD in families with and without children with AD.

Objectives: The aim of this study was to investigate parents' knowledge, attitudes, and behaviors regarding AD among parents of children with and without AD.

Methods: The Pediatric Department, Faculty of Medicine, Khon Kaen University, Thailand, conducted a cross-sectional study from June to December 2023. Parents of children who visited the dermatology clinic with or without AD were asked to complete a Google form questionnaire.

Results: A total of 372 par- ents answered a questionnaire about AD pathophysiology, knowledge, attitudes, and practices. The participants were 293 (78.8%) female participants and 79 (21.2%) male participants. The average age was 29.79 (SD 4.91). Most parents (319, 85.8%) did not work in the medical field, and more than half (228 instances, 61.29%) had children diagnosed with AD.

Discussion & Conclusion: Parents of children with AD understood AD causes and triggers better than parents of children without AD. But, "exposure to furry toys" that may contain dust and allergies, and "infection" that may cause AD flare-ups were the most common triggers, regardless of the group. Appropriate information should be supplied because both the parents of children with AD and those of children without AD reported immediate food avoidance without confirmatory testing, which might lead to malnutrition. Clinicians and families handling patients with AD require further education.

Keywords: atopic dermatitis, children, parents, attitude, knowledge, practice

Abstract: PT-CT012

Prevalence of Allergens in Skincare Products Labeled for Sensitive Skin

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Background: The rising prevalence of cosmetic use has led to an increase in cases of cosmetic contact dermatitis, especially among individuals with sensitive skin. These products often contain allergens, particularly fragrances and preservatives, which can trigger allergic reactions. Despite being labeled for sensitive skin, many of these products may still harbor allergens, creating a need for better regulations regarding product labeling. This study focuses on identifying common allergens in skincare products marketed as "for sensitive skin" in Thailand.

Objectives: The study aimed to investigate the prevalence of contact allergens in skincare products labeled as suitable for sensitive skin in Thailand. The allergens were compared against the U.S. Food and Drug Administration (FDA) cosmetic allergen list and fragrance allergens listed in Annex III of the European Union Cosmetics Directive.

Methods: A cross-sectional study was conducted between April and November 2023. Data were collected from skincare products labeled for sensitive skin in Thailand, sourced from beauty stores, supermarkets, and convenience stores. Information about the product ingredients was obtained from both product labels and official websites. Products were screened for allergens using FDA and EU reference allergen lists. Descriptive statistical analyses were used to determine the frequency of allergens.

Results: The study analyzed 130 skincare products. It found that 70% of the products labeled for sensitive skin contained at least one allergen, with fragrances being the most prevalent. Linalool and limonene were the most common allergens, found in 10% of the products. Geraniol, citronellol, and benzyl alcohol were also frequently present. Preservatives such as diazolidinyl urea, dimethylol-dimethyl hydantoin, and imidazolidinyl urea were identified in smaller proportions (0.8%).

Discussion & Conclusion: The findings indicate that many products labeled for sensitive skin still contain allergens, particularly fragrance-related ones. This highlights the need for stricter regulations and clearer labeling to better inform consumers and healthcare providers. Proper labeling and regulation would help individuals with sensitive skin avoid potential allergens and improve the management of cosmetic contact dermatitis.

Keywords: Sensitive Skin, Cosmetic Products, Skincare Products, Contact Allergens, Cosmetic Allergens

Abstract: PT-CT013

Addressing the Treatment Gaps for Severe Crohn's Disease in Southeast Asia: A Case of Infliximab-Associated Sepsis

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Background: Crohn's disease, a chronic inflammatory bowel disease (IBD), is rare in Southeast Asia, making its management particularly challenging in this region. While biologic therapies like infliximab have transformed the treatment of severe Crohn's disease in areas with higher prevalence, their use in countries like Thailand poses significant risks, especially in patients with comorbidities or latent infections.

Objectives: This paper aims to highlight the challenges and limitations in the treatment of severe Crohn's disease in Thailand, particularly focusing on the use of biologic therapy in the presence of occult HBV infection.

Methods: A case report of a 67-year-old Thai male with a complex medical history. The patient was diagnosed with stricture colonic Crohn's disease refractory to budesonide and treated with infliximab and azathioprine, leading to severe complications including drug-induced bone marrow suppression, PCP pneumonia, occult HBV infection and severe sepsis. The patient's clinical course, diagnostic workup, treatment, and outcomes were analyzed. Relevant literature from PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and other databases was reviewed to provide context and support the discussion.

Results: The case underscores the rarity and complexity of severe Crohn's disease in Southeast Asia, where the prevalence is low and treatment guidelines are limited. The use of infliximab, while effective in regions with higher IBD prevalence, presented significant risks in this patient, including the development of severe sepsis and the need for antiviral prophylaxis due to the increased risk of HBV reactivation. Detailed endoscopic findings over time showed progressive disease with significant clinical challenges despite aggressive treatment. The discussion emphasizes the need for region-specific treatment protocols and the importance of screening for latent infections such as HBV before initiating biologic therapy. Comparisons with existing literature and guidelines highlight the gaps and propose potential improvements.

Discussion & Conclusion: This case report illustrates the critical need for tailored IBD management guidelines in Thailand and similar regions. Awareness of the risks associated with biologic therapies, particularly in patients with latent infections, is essential. Proper preparation and individualized treatment plans are necessary to improve outcomes and reduce severe complications.

Keywords: Crohn Disease, IBD, Infliximab, HBV

Abstract: PT-CT014

Designed-Thinking Strategic Process to Improve Biomarker Testing in Colorectal Cancer in Resource-Limited Area of Southern Thailand

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Background: Colorectal cancer (CRC) is the third most commonly-diagnosed malignancy in men and the second in women of Thailand. Access to biomarker testing has still been problematic in resource-limited area, including southern Thailand.

Objectives: To systematically improve the key biomarker testing process in a real-world setting of southern Thailand, by implementing the designed-thinking strategic concept.

Methods: We started with empathizing the unmet needs for CRC biomarker testing from a focused-group of regional healthcare professionals (HCPs). Then we defined and demonstrated the CRC biomarker results, compassionately tested, of patients from Medical Oncology Unit. Lastly, the biomarker-testing prototype has been developed and implemented.

Results: From January 2019 to July 2024, 354 CRC patients were recruited. The biomarker status with sex and age correlations were demonstrated in the table.Wild-type patients tended to have longer overall survival than those harboring any mutations, 55.8 versus 44 months (p = 0.079).Between July 2023 to June 2024, 34 HCPs have completed the questionnaires, comprising physicians (60.6%), nurses (15.2%), researchers (12.1%), and other HCPs (12.1%).More than two-thirds (73.7%) of HCPs encountered obstacles, mainly from inadequate budget (78.6%). The most frequently-suggested issues included laboratorial-facilities enhancement and availability of precision medicine access (63.6%, each). Finally, we were successfully implemented an algorithm of CRC biomarker testing for patients, with an in-housed and out-sourced laboratories.

Discussion & Conclusion: Designed-thinking concept to understand the unmet needs of CRC biomarker testing highlighted the key challenges and improvements. Obtaining an input from HCPs and the biomarker results analysis enhanced the pro-active administration on networking infrastructure to increase the patients' accessibility to precision oncology paradigm.

Keywords: Biomarker, Colorectal cancer, Designed-thinking

Abstract: PT-CT015

Persistent of Crystal Identification in 2 Weeks Frozen Synovial Fluid

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Background: The gold standard to diagnose gout and pseudogout is synovial fluid analysis by the use of polarized light microscopy via rheumatologists. However, crystal analysis may not be immediately performed in many facilities. Therefore, synovial fluid should be able to be preserved to have time for transportation to analysis with polarized light microscopy.

Objectives: To compare the detectability of monosodium urate (MSU) and calcium pyrophosphate (CPP) crystals in synovial fluid for 2 weeks between refrigerator (4°C) and freezer (-20°C)

Methods: A prospective, longitudinal, observational study was conducted in synovial fluid from a laboratory room at Thammasat University Hospital from February 2024 to March 2024. MSU and CPP group was stored in the refrigerator and freezer and followed at 2 weeks The primary outcome was the presence of crystals and the secondary outcome was the number of remaining crystals.

Results: 49 samples (MSU 14, CPP 6) were included. MSU crystals decreased by 21% in the refrigerator group (mean number of crystals 6/HPF) and 28.6% in the freezer group (mean number of crystals 5/HPF but CPP crystals substantially declined by 83.3% in both groups (mean number of crystals 1/HPF). No new crystal was found in the crystal negative group.

Discussion & Conclusion: Visualization may be delayed up to two weeks in the monosodium urate crystal group. In the calcium pyrophosphate group, we suggest synovial fluid needs to be examined within one week. The sample should be preserved in the refrigerator in both the MSU and CPPD groups.

Keywords: Synovial fluid analysis, Monosodium urate crystal, Calcium pyrophosphate

Abstract: PT-CT016

Association Between D-Dimer Levels and Duration of Treatment in Covid-19 Confirmed Patients At RSUD WONOGIRI

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Background: Covid-19, caused by SARS-CoV-2, was first detected in China in December 2019 and was declared a pandemic by World Health Organization (WHO) in March 2020. By 2022, there were 396 million cases and 5.7 million deaths globally, with Indonesia reporting 4.58 million cases and 145 thousand deaths. RT-PCR is the primary diagnostic method, while D-dimer is used as a biomarker for disease severity, with levels above 500 ng/ml associated with critical symptoms.

Objectives: To determine the relationship between D-dimer levels and the duration of treatment for Covid-19 patients.

Methods: This research is an analytical observational study with a cross-sectional study approach. It utilizes secondary data with a sampling method of consecutive sampling. Data were collected from the medical records of confirmed Covid-19 patients at dr. Soediran Mangun Sumarso General Hospital, Wonogiri Regency. The data were then analyzed using univariate, bivariate, and multivariate analysis.

Results: Based on 162 samples that met the criteria, the bivariate analysis results for the duration of treatment and outcomes are as follows: age (p=0.197; p=0.008), gender (p=0.858; p=0.753), severity level (p=0.000; p=0.000), comorbidities (p=0.191; p=0.017), D-dimer levels (p=0.026; p=0.007), NLR values (p=0.574; p=0.628), ARV administration (p=0.218; p=0.000), anticoagulant administration (p=0.479; p=0.204), and infection with viruses other than SARS-CoV-2 (p=0.104; p=1.000). Meanwhile, the multivariate analysis results for the duration of treatment and outcomes are as follows: high D-dimer (OR 1.838; p=0.589 & OR 0.696; p=0.667), middle-aged adults (OR 2.566; p=0.306 & OR 0.168; p=0.059), elderly (OR 1.596; p=0.600 & OR 0.220; p=0.096), moderate severity (OR 2.120; p=0.535 & OR 0.000; p=0.999), severe-critical severity (OR 0.140; p=0.138 & OR 0.000; p=0.999), with comorbidities (OR 19948158.3; p=0.999 & OR 0.000; p=0.999), without ARV administration (OR 1.886; p=0.150 & OR 1.104; p=0.824), infection with viruses other than SARS CoV-2 (length of care OR 1.993; p=0.167), and without anticoagulant administration (outcome OR 0.726; p=0.460).

Discussion & Conclusion: There is a relationship between D-dimer levels and the length of hospitalization in COVID-19 patients. Another factor related to the length of stay is the severity of the disease. Meanwhile, other factors associated with the outcome include age, disease severity, the presence of comorbidities, and a history of ARV therapy.

Keywords: D-dimer, Duration of Treatment, Covid-19

Abstract: PT-CT017

The Progression-Free Survival of Advanced Stage Epithelial Ovarian, Fallopian Tube, Primary Peritoneal Cancer between Primary Neoadjuvant Chemotherapy versus Primary Debulking Surgery: A Retrospective Cohort Study

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Background: Ovarian cancer is the seventh most deadly of all cancers that affect women worldwide. Previous study in non-specific chemotherapy regimens showed similar outcome of progression-free survival in primary neoadjuvant chemotherapy (NACT) or primary debulking surgery (PDS).

Objectives: The aim of study was to evaluate the progression-free survival of advanced stage epithelial ovarian, fallopian tube, peritoneal cancer between NACT and PDS in ovarian cancer with carboplatin base regimen.

Methods: This retrospective cohort study was conducted from January 2010 to October 2021 and patients with advanced stage epithelial ovarian, fallopian tube, primary peritoneal cancer received chemotherapy in carboplatin with or without paclitaxel were recruited. The primary outcome was progression-free survival. The secondary outcomes were overall survival, operative outcome, and chemotherapy adverse event.

Results: 45 patients underwent PDS and 44 patients received NACT. Patients were diagnosed with stage IV disease including 2 (4.4%) patients in PDS and 10 (22.7%) patients received NACT (p=0.01). The median baseline CA-125 was 528 U/mL in PDS group and 1316 U/mL in NACT group (p=0.02). The median progression-free survivals (PFS) in PDS and NACT group were 18.6 and 15.7 months respectively (p=0.04). The median overall survival (OS) in PDS and NACT group were 57.3 months and 37.5 months respectively (p=0.07). Optimal surgery proportion in PDS and NACT group were 48.9% and 63.6% respectively (p=0.16). The median amount of blood loss in PDS and NACT were 600 ml and 200 ml respectively (p=0.01).

Discussion & Conclusion: NACT in patients with stage III or IV epithelial ovarian, fallopian tube, and primary peritoneal cancer still had better operative outcomes (more optimal rate of surgery, less operative blood loss) than PDS despite more extensive diseases.

Keywords: Ovarian cancer, Neoadjuvant chemotherapy, Survival

Abstract: PT-CT018

Palliative Care Patient Emergency Department Visits at Tertiary University-based Emergency Department in Ireland

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Background: Palliative care focuses on relieving symptoms and improving the quality of life for patients with serious illnesses, regardless of diagnosis or stage of disease. Unlike hospice care, which is reserved for terminal patients, palliative care can be provided alongside curative treatments. In Ireland and the United States, there are differences in hospice care eligibility and delivery. Palliative care patients, especially those with advanced cancer, frequently visit the emergency department (ED) due to complications like pain crises or therapy side effects, many of which could be managed outside the ED.

Objectives: The objective of this study is to identify and assess the frequency of presenting complaints, primary diagnosis, triage acuity, need for admission, in an Irish setting.

Methods: The study used a retrospective, observational approach to analyse palliative care patients' visits to a single-center ED in a tertiary-care hospital in Dublin, Ireland. The study included patients known to the hospital's palliative care service who visited the ED between January 2019 and January 2020, excluding the COVID-19 pandemic period. Patients were identified through the hospital's palliative care database, and records were cross-referenced with the ED's electronic patient system (MAXIMS). The study involved adult patients (age ≥ 18) with at least one ED visit. De-identified data, including patient demographics, diagnosis, reason for ED visit, triage category, referral source, hospital admission/discharge status, mode of arrival, and in-hospital death, were collected in a Microsoft Excel spreadsheet. Descriptive statistics were used to present the data.

Results: 499 ED visits with a mean age of 69.3 years-of-age.57.1% of patients self-referred to the ED while GP and skilled nursing facility departments at 14.4% and 7.8%, respectively.
Major reasons for visits were dyspnea, pain, falls, trauma, fever, and altered mental status. Two-hundred-eighty-nine patients (58%) had an emergency severity index (ESI) score of 1 or 2 demonstrating a higher level of acuity.

Discussion & Conclusion: Although many palliative patients presented with higher acuity triage scores, 42% had lower ESI scores and may be effectively managed outside of the ED. These data suggest developing mechanisms for these patients to be urgently evaluated in their homes or facilities obviating the need for an ED evaluation

Keywords: Palliative care, Emergency department visits, Triage acuity

Abstract: PT-CT019

Association Between Hemodialysis Catheter Insertion via Femoral Vein vs. Internal Jugular Vein with Mortality: A Mediation Analysis

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Background: Data from Phrae Hospital show an increasing trend in central venous catheter (CVC) insertions for hemodialysis in end-stage renal disease (ESRD) patients, contributing to higher mortality risk. Previous research has highlighted a higher risk of catheter-related bloodstream infections (CRBSIs) with femoral vein CVCs compared to internal jugular vein CVCs. However, the association between catheter site and mortality remains inconclusive. We hypothesized that this link may be mediated by infection.

Objectives: To evaluate the association between femoral and internal jugular catheter placement on mortality in ESRD patients and to assess whether infection mediates this relationship.

Methods: We conducted prognostic factor research with retrospective cohort observation design of data collection. We included 189 consecutive patients, from 2019 to 2020, with ESRD aged 18 years or older who had a central venous catheter (CVC) with catheter placement exceeding 30 days and were undergoing hemodialysis for the first time. The cohort was divided into two groups based on catheter site: internal jugular vein (index group, n=168) and femoral vein (contrast group, n=21). Patients were followed for three years. The effect of CVC on mortality was assessed using a multivariable Cox proportional hazards model, adjusting for potential confounders which was set a priori such as age, sex, diabetes history, duration of catheter placement, and body mass index (BMI). Hazard ratios (HRs) with 95% confidence intervals (CIs) were reported. Structural equation modeling (SEM) was used for mediation analysis to assess the role of infection.

Results: Of the 189 patients, 88.9% had internal jugular CVCs, and 11.1% had femoral CVCs. Kaplan-Meier survival curve showed that overall patients with both catheter sites had a 70% survival probability over the three-year period. After adjusting for confounders, there was no significant difference in mortality between the two groups (HR = 0.55, 95% CI: 0.05–5.92). Mediation analysis showed no indirect effect of infection on the relationship between catheter site and mortality (HR for direct effect = 1.00).

Discussion & Conclusion: There was no significant association between CVC site (internal jugular vs. femoral) and mortality in CKD patients, and infection was not a mediator in this relationship.

Keywords: Central-Venous-Catheter, ESRD, Mortality, Mediation

Abstract: PT-CT020

Developing a Screening Tool for Methamphetamine Use in Pregnant Women: Phrase I Prediction Research

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Background: Methamphetamine use among pregnant women in Thailand was 3.34% in 2021. At Phrae Hospital, 54 pregnant women tested positive for methamphetamine in their urine between 2021and 2024. Methamphetamine use during pregnancy is linked to adverse outcomes, including premature birth, low birth weight, and developmental delays in newborns. Despite these risks, few screening tools exist to predict methamphetamine use in pregnant women.

Objectives: (1) To identify key screening determinants associated with methamphetamine use in pregnant women and (2) to develop a screening tool to predict risk based on these screening determinants.

Methods: We conducted screening prediction research with retrospective cross-sectional design of data collection as a study base analyzed data from 80 pregnant women who were tested for methamphetamine between 2021 and 2024. We assessed determinants, including maternal age, substance use history, education level, alcohol consumption and antenatal care attendance. Multivariable logistic regression was used to develop the screening model, and its performance was evaluated using the area under the ROC curve (AUROC) with 95% confidence intervals. Calibration plots were also used to assess the model's accuracy. All analyses were conducted using RStudio version4.4.1.

Results: Of the 80 women tested, 54 (67.5%) were positive for methamphetamine. The final model identified six potential determinants: age > 25 years (OR 7.35, 95%CI: 1.51–44.06), substance use (OR 7.31, 95%CI: 1.82–35.63), alcohol consumption (OR 1.65, 95%CI: 0.33–9.22), low education (OR 2.04, 95%CI: 0.41–11.08), high blood pressure (OR 16.12, 95%CI: 3.05–152.63), and insufficient antenatal care (OR 17.94, 95%CI: 1.63–367.35). The AUROC was 0.89 indicating good discrimination, but the model underestimated risk when predicted probabilities ranged from 0.2–0.65 and overestimated risk at probabilities of 0.65–0.9.

Discussion & Conclusion: This screening tool demonstrates potential for identifying high-risk methamphetamine use in pregnant women but has limitations due to sample size and missing variables. Further research is necessary to refine the model and improve predictive accuracy.

Keywords: Screening, prediction model, methamphetamine, pregnancy

Abstract: PT-CT021

Factors Associated with a Delay Time to an Electrocardiogram in Patients with Acute Coronary Syndrome (ST Elevation) at The Emergency Department at Nakornping Hospital

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Background: Prompt and accurate diagnosis is essential for patients with acute coronary syndrome (ACS), particularly in performing an electrocardiography (ECG) within 10 minutes. However, there is limited evidence regarding this practice at Nakornping Hospital.

Objectives: This study aims to investigate the time to ECG and factors contributing to delayed ECG in patients with acute ST-segment elevation myocardial infarction (STEMI). It also assesses the association of delayed ECG with in-hospital mortality, length of stay, and complications.

Methods: A retrospective cohort study was conducted, analyzing the medical records of patients diagnosed with STEMI who presented to the emergency department of Nakornping Hospital between October 2009 and December 2023. Data included demographics, comorbidities, presenting symptoms, initial vital signs, treatment, time from symptom onset to arrival at the emergency department, Emergency Severity Index (ESI), and time to ECG. Statistical analyses used descriptive statistics, logistic regression, and adjusted odds ratios (OR) with 95% confidence intervals (CI).

Results: A total of 148 patients were included in the study. The median time to ECG was 15 minutes (IQR 25, min-max 0-365). For delayed ECGs (>10 minutes), the median time was 28 minutes (IQR 25.5, min-max 11-365), compared to 4 minutes (IQR 4, min-max 0-10) for ECGs within 10 minutes. Significant factors associated with delayed ECG were syncope as a presenting symptom, systolic blood pressure (SBP) > 90 mmHg, and a delay of more than 3 hours from symptom onset to emergency department arrival. Secondary outcomes such as in-hospital mortality, length of stay, and complications (e.g., heart failure, heart block, cardiogenic shock) showed no statistically significant differences between groups.

Discussion & Conclusion: The study identified that syncope as a presenting symptom, SBP > 90 mmHg, and a delay of more than 3 hours from symptom onset to emergency department arrival are significantly associated with delayed ECG in STEMI patients. These findings could inform the development of guidelines and a Fast-track system for STEMI patient management at Nakornping Hospital.

Keywords: Electrocardiography, acute coronary syndrome, STEMI, time from symptom onset to emergency department arrival, time from emergency department arrival to ECG

Abstract: PT-CT022

Suprasellar Cavernous Malformation Presenting with Progressive Memory Loss: A Case Report and Review of Diagnostic and Surgical Approaches

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Background: Cavernous malformations (CMs), or cavernomas, are rare, benign vascular anomalies affecting approximately 0.2-0.5% of the population, with a slight female predominance. They predominantly occur in the cerebral cortex (75%), with only 0.4-2% found in extra-axial locations like the suprasellar region. Suprasellar cavernomas are exceptionally rare and present unique diagnostic challenges due to their proximity to critical neurovascular and endocrine structures, such as the optic chiasm and pituitary gland. Most commonly, these lesions manifest as visual disturbances (90% of cases) or headaches (60%), with memory loss rarely seen and typically linked to third ventricular cavernomas rather than suprasellar lesions.
This case describes a 58-year-old woman with a suprasellar cavernoma presenting primarily with progressive memory loss, a highly atypical presentation. The report highlights diagnostic and surgical considerations for managing this rare lesion and underscores the importance of including cavernomas in the differential diagnosis of suprasellar masses presenting with cognitive symptoms to enable timely and accurate intervention.

Objectives: To describe a rare presentation of suprasellar cavernous malformation (CM) manifesting primarily as progressive memory loss, and to discuss the diagnostic challenges, surgical management, and postoperative outcomes associated with this atypical presentation.

Methods: Clinical evaluation, cognitive assessment, and imaging studies were conducted to identify the cause of the patient's symptoms. Magnetic resonance imaging (MRI) was used to characterize the lesion. Postoperative follow-up included pathological examination to confirm diagnosis and monitoring of cognitive function recovery.

Results: The patient underwent successful endoscopic resection of the suprasellar cavernoma without postoperative complications, except for transient diabetes insipidus. Pathology confirmed the cavernoma diagnosis. However, the patient's memory impairment persisted at six months post-surgery, suggesting limited cognitive recovery despite complete lesion removal.

Discussion & Conclusion: Suprasellar cavernous malformations, though rare, can present with atypical symptoms such as progressive memory loss, likely due to involvement of memory-related structures. This case highlights the importance of considering CMs in the differential diagnosis of suprasellar lesions with cognitive symptoms, facilitating timely diagnosis and appropriate surgical intervention. While surgical resection can improve structural outcomes, memory impairment may persist, emphasizing the need for further research into managing cognitive deficits associated with these lesions.

Keywords: Suprasellar cavernous malformation, cavernoma, memory impairment, cognitive decline, endoscopic transsphenoidal surgery, suprasellar lesion, neurovascular anomalies

Abstract: PT-CT023

Risk Factor Associated with Multiple Recurrent Febrile Seizure in Children Aged 6 Months to 5 Years Old Presented with 1st Episode Febrile Seizure

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Background: Febrile seizures are seizures associated with a fever higher than 38°C, typically occurring in children aged 6 months to 5 years, with an incidence of 2-5%. Approximately 20-30% of children who experience a febrile seizure will have a recurrence. Recurrent febrile seizures increase the risk of developing epilepsy in the future. Previous studies has been no study focusing on risk factors associated with multiple recurrences of febrile seizures, despite the increased number of recurrences correlating with a higher risk of future epilepsy. Understanding these factors could help in planning future treatments.

Objectives: To identify risk factors associated with multiple recurrences of febrile seizures in children aged 6 months to 5 years who experienced their first febrile seizure.

Methods: This retrospective cohort study followed patients from their first febrile seizure until the age of 5 years. The study included 561 children aged 6 months to 5 years who were diagnosed with their first febrile seizure at Uttaradit Hospital between August 8, 2011, and August 8, 2021. General information and clinical data were collected and analyzed using descriptive and analytical statistics, including continuous ratio for ordinal logistic regression, with both univariable and multivariable analyses.

Results: The 405 patients who experienced their first febrile seizure, 13 patients (3.2%) had three or more recurrences, 11 patients (7.6%) had two recurrences, and 59 patients (14.6%) had one recurrence. The study found that the most significant risk factors for multiple febrile seizures were age ≤12 months (OR_{adj} = 2.46, 95% CI = 1.631-3.728), a family history of epilepsy (OR_{adj} = 2.43, 95% CI = 1.024-5.780), and mean corpuscular volume (MCV) <70 fL (OR_{adj} = 1.55, 95% CI = 1.043-2.302).

Discussion & Conclusion: The most significant risk factor for recurrent febrile seizures is experiencing the first febrile seizure at an age ≤12 months, followed by a family history of epilepsy and MCV <70 fL. It is recommended to develop treatment plans, preventive measures, and closely monitor patients at risk. Additionally, providing better counseling to parents about the likelihood of recurrence and educating them on proper care when their child has a fever, or a seizure is crucial.

Keywords: Febrile seizure, Febrile seizure recurrence, Risk factors, Epilepsy, Seizure

Abstract: PT-CT024

Developing a Predictive Model for Hospital Readmission in Late Preterm Newborn with Neonatal Jaundice

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Background: Neonatal jaundice is a common issue in the first week of life. While most cases are harmless, elevated bilirubin levels can lead to severe complications, such as kernicterus, which causes neurological damage, abnormal movement, seizures, and can lead to cerebral palsy, intellectual disabilities, hearing loss, permanent disabilities, or even death.

Objectives: This study aims to find an appropriate model for predicting the risk of hospital readmission due to jaundice in late preterm newborns by comparing the use of predischarge bilirubin alone with the combination of predischarge bilirubin and clinical risk factors affecting jaundice. The goal is to provide a tool for monitoring jaundice and planning follow-up care for newborns.

Methods: The study included late preterm newborns with a gestational age of 34 to 36 weeks and 6 days, born at Uttaradit Hospital between August 7, 2017, and August 7, 2024, totaling 830 cases. The data were collected from patient medical records (ICD-10). The study was divided into two groups: 30 late preterm newborns who developed jaundice within 7 days after birth from healthy mothers, and 30 late preterm newborns without jaundice from healthy mothers.

Results: When the four clinical risk factors were combined (gestational age, raw bilirubin level at 48 hours, bilirubin level at 48 hours grouped by percentile, and percentage of weight loss), the accuracy in predicting hospital readmission due to jaundice was 92.62% (AUC=0.9262, 95% CI=0.86-0.99), which was higher than using predischarge bilirubin alone. However, due to the coincidence between raw bilirubin levels and percentile-based bilirubin levels, only one was used for prediction. The analysis showed that using percentile-based bilirubin levels combined with gestational age and percentage of weight loss provided a predictive accuracy of 91.33% (AUC=0.9133, 95% CI=0.84-0.99), outperforming the use of raw bilirubin levels combined with gestational age and percentage of weight loss, which had an accuracy of 87.60% (AUC=0.8760, 95% CI=0.78-0.96).

Discussion & Conclusion: The use of percentile-based predischarge bilirubin combined with gestational age and percentage of weight loss is the most effective model for predicting the risk of hospital readmission due to jaundice in late preterm newborns.

Keywords: Neonatal jaundice, Late preterm newborn

Abstract: PT-CT025

The Relationship between Nocturia Symptom and Sleep Quality in Postmenopause

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Background: The increasing elderly population in Thailand indicates that there will be a rise in the number of postmenopausal women, who may experience issues related to Genitourinary Syndrome of Menopause (GSM). One of the most common symptoms of GSM is nocturia, which can negatively impact sleep quality, leading to an increased risk of illnesses and various health problems. Therefore, this research was conducted to investigate the relationship between sleep quality and nocturia in postmenopausal women, as well as the prevalence of other GSM symptoms. The goal is to determine whether nocturia in postmenopausal women is associated with sleep quality.

Objectives: To investigate the relationship between sleep quality and nocturia in postmenopausal women, as well as the prevalence of other GSM symptoms.

Methods: This cross-sectional observational study was conducted from June 2023 to May 2024. Data were collected through questionnaires about menopause status, GSM symptoms, and sleep quality using the Thai version of the Pittsburgh Sleep Quality Index (PSQI). The participants were naturally postmenopausal women receiving treatment in the surgery, obstetrics, gynecology, and internal medicine departments at the outpatient department of Maharat Nakhon Ratchasima Hospital.

Results: The study included a total of 300 participants, divided equally between those with nocturia (150) and those without (150). Good sleep quality was reported by 136 participants (45.3%), while poor sleep quality was reported by 164 participants (54.7%). When comparing the relationship between nocturia and sleep quality, it was found that nocturia significantly affected sleep quality in postmenopausal women (95% CI 4.07 - 11.27, P value < 0.01). Additionally, when comparing nocturia with hot flashes and night sweats, which might also affect sleep quality, it was found that these two factors did not have a significant impact on sleep quality (Adjusted OR 95% CI 4.17 - 11.74, P value < 0.01).

Discussion & Conclusion: The research findings indicate that nocturia significantly affects sleep quality.

Keywords: Genitourinary syndrome of menopause, nocturia, Sleep quality

Abstract: PT-CT026

The Prediction of Preeclampsia by Using Inhibin A in the Second Trimester of Pregnancy at Maharat Nakhon Ratchasima Hospital

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Background: In Thailand, the Quadruple test has been implemented under the National Health Security Office to screen for Down syndrome in all pregnant women before 18 weeks of gestation. The researchers recognized that Inhibin-A levels in the Quadruple test could also be used to predict preeclampsia.

Objectives: This Study aimed to (1) Determine the incidence of preeclampsia in pregnant women who had a Quadruple test with Inhibin A levels ≥2.0 MoM (2) Determine the sensitivity and specificity of Inhibin A in predicting preeclampsia in the second trimester of pregnancy at Maharat Nakhon Ratchasima Hospital. (3) Identify other risk factors associated with the occurrence of preeclampsia.

Methods: This study was a retrospective descriptive study. The sample included all pregnant women who attended antenatal care and delivered at Maharat Nakhon Ratchasima Hospital and underwent the Quadruple test in the second trimester between November 2020 and November 2023, totaling 1,766 participants. Data analysis was conducted using Chi-square to compare data with normal distribution, presented as mean and standard deviation (Mean, S.D.), and comparing the means of two groups using the independent sample T-test. Non-normally distributed quantitative data were presented as interquartile range (median IQR) and the median of the two groups was compared using the Mann-Whitney U test. For group comparisons, ROC and AUROC were used, and statistical analysis employed logistic regression with a significance level of 0.054.

Results: The study found that Inhibin-A levels ≥ 2 MoM were not statistically significant in predicting preeclampsia. However, data collection and statistical analysis showed that Inhibin-A levels ≥ 0.71 MoM could predict preeclampsia more effectively. Additionally, β-HCG levels were found to be statistically significant in predicting preeclampsia, suggesting that β-HCG may be a better predictor of preeclampsia than Inhibin-A. Factors such as maternal age, BMI, hypertension, and diabetes were identified as important risk factors that increased the risk of preeclampsia.

Discussion & Conclusion: Comprehensive health assessments before and during pregnancy, along with the management of risk factors, are essential to reduce the risk of preeclampsia and decrease morbidity and mortality in both mothers and infants.

Keywords: Preeclampsia, Inhibin A, Quad test

Abstract: PT-CT027

The Impact of Polypharmacy on Medication Adherence in Patients with Type 2 Diabetes Mellitus in Thailand

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Background: Type 2 Diabetes Mellitus (T2DM) is a global health challenge, where medication adherence is crucial for preventing complications. Polypharmacy, common among diabetic patients, potentially complicates adherence. While extensively studied in urban settings, rural areas remain underexplored. This study addresses this gap by examining rural Thailand, where unique socioeconomic and lifestyle factors may influence adherence patterns.

Objectives: To assess the association between polypharmacy and medication adherence in T2DM patients from community hospitals in rural areas, and to identify factors influencing adherence in this population.

Methods: This analytical cross-sectional study was conducted in three rural community hospitals in southern Thailand, involving systematically randomised T2DM patients. Data collection utilized paper-based questionnaires, later digitized using Epidata. The Morisky Medication Adherence Scale (MMAS-8) measured adherence, with scores below 6 indicating poor adherence. Polypharmacy was defined as the use of more than five medications. Logistic regression with Generalized Estimating Equations (GEE) analyzed the association between polypharmacy and adherence, adjusting for age and sex.

Results: A total of 300 participants were included, with 69% female and 31% male. The median age was 64 years (IQR: 56.00–72.00). Poor medication adherence was observed in 36% of participants (95% CI: 28%–39%), while polypharmacy was present in 56% (95% CI: 50%–61%). Multivariable logistic regression analysis revealed that polypharmacy was not significantly associated with poor adherence (adjusted OR = 0.83, 95% CI: 0.57–1.22). However, age (aOR = 0.98, 95% CI: 0.96–1.00), male sex (aOR = 1.60, 95% CI: 1.02–2.51), and unemployment compared to agriculture (aOR = 0.58, 95% CI: 0.42–0.82) were significantly associated with poor adherence.

Discussion & Conclusion: This study transcends geographical and socioeconomic boundaries by focusing on rural T2DM patients in southern Thailand. While polypharmacy was not significantly associated with medication adherence, socioeconomic factors emerged as key determinants. These findings highlight the need for targeted interventions to improve patient outcomes in rural settings, contributing to global health equity.

Keywords: Type 2 Diabetes Mellitus, Medication Adherence, Polypharmacy, Rural Health, Global Health Equity

Abstract: PT-CT028

In-Vivo Dosimetry for Dose Verification of Total Skin Electron Beam Therapy using Gafchromic® EBT3 Film Dosimetry

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Background: Total skin electron beam therapy (TSEBT) is an important skin-directed radiotherapeutic procedure done in the treatment of Cutaneous T-Cell Lymphomas namely Mycosis Fungoides. This procedure is usually done at larger Source to surface distances with the patient standing on a rotatory platform. As the patient has to stand in different positions without any rigid immobilization devices there are chances that the total skin may not get uniformly irradiated which could lead to non- uniform dose distributions. Therefore all the necessary arrangements should be made to evaluate the dose for different regions of the skin using suitable in-vivo dosimeters at the radiotherapy centers offering these treatments.

Objectives: This study evaluated the consistency between the delivered and planned doses in-vivo during TSEBT using GafChromic EBT3 film dosimetry.

Methods: The surface dose for the six Mycosis Fungoides patients treated for total skin electron beam therapy at our hospital from 2018 to 2022 was measured and evaluated. 2cmx2cm Gafchromic® EBT3 films were used to measure skin dose at reference body positions of clinical interest. Modified Stanford's Technique treated all the patients. The irradiated film strips were analyzed for the dose using the IMRT Omnipro software. The doses at respective positions were expressed as Mean dose ±SD and the deviation was calculated as the percentage of the prescribed dose.

Results: 154 Gafchromic® EBT3 film strips irradiated on six TSEBT patients showed a max dose variation of 2.00±0.14Gy, in the central body regions. The dose variation in the peripheral areas like hands and ears was larger. A variation of 2±0.32Gy was observed on the hands and ears. The uniformity of the dose delivered to maximum body parts was within -7% and +16% for the peripheral areas like hands. AAPM recommends a dose uniformity of 8% and 4% in the vertical and horizontal patient plane for direct incident beam, however, for oblique incidences in Modified Stanford's Technique, the dose variation is about 15%.

Discussion & Conclusion: In-vivo dosimetry using Gafchromic EBT3 film dosimetry for TSEBT yields objective data to find the under or over-dose regions. This can be useful for providing quality treatment, especially when treatments tend to be as complex as TSEBT.

Keywords: In-Vivo Dosimetry, GafChromic® EBT3 Film, TSEBT, Dose Uniformity

Medical Education Research

Abstract: PT-ME002

Exploring Key Factors Associated with the Effectiveness of Medical Students' Ward Rounds in the Internal Medicine, Obstetrics-Gynecology, Pediatrics, and Surgery Departments

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Background: Ward rounds are a cornerstone of clinical education, providing medical students with opportunities to develop clinical reasoning, communication skills, and decision-making abilities. However, their effectiveness varies due to multiple factors across specialties. Understanding these factors is crucial for optimizing ward rounds and improving medical education.

Objectives: This study aims to develop and validate a questionnaire to assess factors influencing the learning experiences of medical students during ward rounds and to investigate key factors impacting ward round effectiveness across Internal Medicine, Pediatrics, Obstetrics & Gynecology, and Surgery.

Methods: The observational cross-sectional study involves 4th and 5th-year medical students, residents, and staff at Maharaj Nakorn Chiang Mai Hospital. Data is collected using a self-administered questionnaire distributed through REDCap, incorporating Likert scale and open-ended questions. The questionnaire's content validity is assessed using the Index of Item-Objective Congruence (IOC), and its reliability confirmed with Cronbach's alpha. Statistical analysis, including Chi-square, Fisher's exact test, ANOVA, and binary logistic regression, examines the correlation between factors and students' academic performance in MCQs, OSCEs, and MEQs. Focus groups provide qualitative insights.

Results: Preliminary results from learners (N = 24, 4th year 4.2%, 5th year 95.8%) indicate that "understanding students' learning needs" was rated the most important factor by 41.7%, followed by "effective communication" and "interest in teaching." Among learner-related factors, "interest in learning" was selected by 50%, followed by "having good knowledge" and "good communication with the teacher." Group size was the most agreed-upon environmental factor. Results from instructors are not yet available, and further analysis of the questionnaire's reliability and its association with students' academic performance is pending. The next phase will focus on confirming content validity and reliability of the questionnaires.

Discussion & Conclusion: These findings highlight the need for optimizing ward rounds by addressing key factors, including communication and feedback, to improve learning and outcomes. Insights from this study will inform future curriculum development, ultimately enhancing patient care

Keywords: Ward rounds, medical education, clinical learning, questionnaire validation, teaching effectiveness

Abstract: PT-ME004

Perception of Educational Environment in Patient Wards among Clinical Medical Students in Ratchaburi Hospital

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Background: The educational environment significantly influences the learning experience and effectiveness of medical training.

Objectives: This study evaluates the perception of the educational environment among 6th-year clinical medical students at Ratchaburi Hospital Medical Center, aiming to assess and compare the quality of different ward rotations and identify areas for improvement. Utilizing the Dundee Ready Education Environment Measure (DREEM), a comprehensive 50-item questionnaire was administered across five domains: Student's Perception of Learning, Student's Perception of Teachers, Student's Academic Self-Perception, Student's Perception of Atmosphere, and Students' Social Self-Perceptions.

Methods: This descriptive analysis involved three evaluation steps: total ward scores, domain-specific mean scores, and individual item mean scores. The findings indicated that all ward rotations received total scores ranging from 101 to 150, reflecting a generally positive educational environment. The wards were ranked from highest to lowest scores as follows: Psychiatry, Ob-Gynecology, Pediatrics, Orthopedics, Emergency Room, Forensics, Family Medicine, Rehabilitation, Anesthesiology, ENT, Radiology, Surgery, and Medicine.

Results: Strengths identified included high student motivation and effective use of teaching time in the Student's Perception of Learning domain, and a generally positive evaluation of teaching in the Student's Perception of Teachers domain. Common challenges included excessive emphasis on memorization and difficulties with information retention in the Student's Academic Self-Perception domain. The Student's Perception of Atmosphere domain revealed stress-related issues in the learning environment, while the Students' Social Self-Perceptions domain highlighted both strong peer support and signs of burnout.

Discussion & Conclusion: In summary, this study provides insights into the strengths and weaknesses of the educational environment across various wards, offering a basis for targeted improvements. Future research could extend these findings through comparative studies with other institutions in Thailand, potentially contributing to the enhancement of medical education systems nationwide.

Keywords: educational environment, Dundee Ready Education Environment Measure (DREEM), Descriptive analysis

Abstract: PT-ME005

The COVID 19 Pandemic Effect on Pre-medical and Medical Students' on pursuing the MD dream: A scoping review

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Background: The COVID-19 pandemic has significantly affected the lives of the population. The pandemic affects not only healthcare workers but also potential future healthcare workers, as well as premedical and medical students. Even though healthcare professionals are in shortage, there has yet to be research on whether this subset of the population wants to pursue the MD dream.

Objectives: This scoping review explored whether premedical students still want to start and continue pursuing their medical degree despite the pandemic.

Methods: The scoping review was guided by JBI methodology on scoping review. A comprehensive search about enrollment, attrition rate, and dropouts of premedical or medical students was conducted in PubMed, Google Scholar, EBSCO host, Cochrane, and Web of Science, following a set of inclusion criteria that is free and available full articles written in English from December 2019 to December 2022. The initial search yielded twenty-six articles (Studies from China = 9; USA = 2; Pakistan = 1; UAE = 1). Thirteen papers were not included (No desired population = 2; No desired concept = 8; Not relevant = 1; Not accessible = 1; Not in English = 1), wherein thirteen journals were accepted, appraised using Critical Appraisal Skills Programme (CASP) checklist for qualitative research, and included in the scoping review.

Results: Thirteen articles were categorized into different themes (motivators or demotivators) to subthemes (Psychological, Humanitarian, Societal, Scientific, or Extrinsic factors). Common primary motivators in pursuing medicine are helping others and benefiting society (10/13 articles). On the other hand, the main demotivators are fear of contracting the disease and mental stressors (7/13 articles).

Discussion & Conclusion: The scoping review showed that motivating factors outnumbered the demotivating factors, as exhibited by 10 of the 13 studies in this scoping review. Thus, even if the pandemic exposed the grueling side of the medical profession, premedical students still want to pursue medicine for the service and benefit of others. Although the results are reassuring, further research on the topic is needed.

Keywords: COVID-19 pandemic, pre-medical student, medical student, enrollment, dropout, attrition

Abstract: PT-ME007

Lifestyle and Factors Affecting the Academic Performance of the First-year Medical Students in Thailand

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Background: In the beginning of medical studies, the first-year medical students need to adapt in various ways to cope with the demanding coursework.

Objectives: As a guideline for preparation and managing lifestyle, this research aims to study the factors may affecting the academic performance and to understand their way of life, providing insights for those interested in pursuing this field.

Methods: Data for the study were collected using questionnaire via electronic form in September, 2024. The sample size of the study was 24 first-year students, enrolls in various medical institutes in Thailand. Statistical analysis were conducted between dependent and independent variables with 95% confidence intervals to conclude.

Results: The first-year medical students mostly read consistently and summarized their study material. On weekdays, most students read for one to three hours, while on weekends, they read for three to six hours per day. Sleep patterns showed that they typically slept six to eight hours, followed by those who slept less than six hours and more than eight hours, respectively. Most students relaxed through entertainment activities rather than music or sports significantly. Regarding extracurricular involvement, a majority participation in faculty activities occasionally were observed, following by regular participation and very little involvement. Most students managed their stress through hobbies more than by consulting friends or parents, with significant differences. The strong correlations between regular reading habits, time spent for reading and occasional participation in faculty activities with academic performance were observed. However, summarizing the content and having breakfast exhibited low correlation with academic success. Moreover, students with high grades tend to address issues by consulting family more than talking with friends or engaging in hobbies.

Discussion & Conclusion: Thus, academic performance of the first-year medical students in Thailand was governed by consistency in reading, time spent for reading in both weekday and weekend and participating in faculty activity. Additionally, relaxing through entertainment activities were their outstanding lifestyle.

Keywords: Academic performance, Lifestyle, Thailand, The first-year medical students

Abstract: PT-ME009

The Success Rates of Direct Endotracheal Intubation Comparing Between Trained by Using Direct versus Video Laryngoscopy in Inexperienced Medical Students

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Background: Placement of an endotracheal tube is a necessary procedure in airway management for medical providers. Individuals with limited or no experience face an increased risk of failure and potential complications during this procedure. While utilizing a video laryngoscope (VL) itself is proven to enhance success rates, there is limited evidence on its use in the training process improves success rates in intubation.

Objectives: This study aims to evaluate and compare the success rates of novice medical students in endotracheal intubation using a direct laryngoscope (DL) after training with either VL or traditional training with DL.

Methods: The study is a prospective randomized controlled trial conducted from July 27, 2023, to April 27, 2024. A total of 130 inexperienced medical students were randomly assigned to two groups: the DL group and the VL group, with 65 participants in each group. They underwent a single session of instruction and equipment familiarization prior to assessment. Subsequently, the actual intubation procedure was carried out using a DL. Data collection encompassed demographic information, success rate of intubation and complication of intubation.

Results: There was no difference in success rate of endotracheal intubation of the VL group and the DL group. However, the VL group demonstrated better laryngeal views compared to the DL (29.4% vs. 27.3%, p=0.030), along with elevated satisfaction levels (88.2% vs. 72.7%, p=0.039). Notably, there were no statistically significant differences observed in intubation duration or occurrences of dental injuries between the two groups.

Discussion & Conclusion: In conclusion, training by VL affords a clearer visualization of laryngeal structures and enhances satisfaction levels among medical students when contrasted with the use of a DL.

Keywords: Laryngoscopes, Endotracheal intubations, Education, Medical, Undergraduate

Abstract: PT-ME010

Comparison Between Lecture Only and Lecture with Focus Group Discussion (FGD) in Medicine Major

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Background: In medical education, every university has different methods of studying. Some countries teach lectures mainly centered on the lecturer. While others, who use FGD, allow the lecturer to provide new information and give insight, based on preliminary research and experience. Focus group discussions (FGDs) are used to obtain ideas as well as different perspectives regarding health and diseases. Effective learning methods are linked to better academic outcomes and significantly impacts professionalism.

Objectives: To compare and find preference in medicine major learning methods between Lecture Only and Lecture with Focus Group Discussions (FGDs).

Methods: This literature uses data from previous researches, related literature, and publications from the last ten years. The terms used are FGD, lectures, medical school curriculum, and system differences in medical studies. After screening the literature, we analyze and compare the level of effectiveness between lecture only and lecture with focus group discussions (FGDs) system in students' understanding and the quality of healthcare professionals.

Results: Data shown from different universities that already implemented Focus Group Discussions (FGDs), which are combined with learning lectures, shows that the attendance of university students is more prioritized. By implementing FGDs as a learning method, students are able to decrease note taking during lectures.

Discussion & Conclusion: Most university students prefer studies paired with FGD in comparison to lecture learning only. In addition, FGD is known to be more effective for learning knowledge related to medicine. Moreover, FGD are conducted by medical students themselves with or without supervision. As a result, it gives them room to share insights with ease throughout the session. Therefore by incorporating FGDs rather than solely relying on lectures, students are able to become more active, and study more efficiently. Also, it enhances communication and critical thinking skills which is crucial for the years to come.

Keywords: Medical Education, Method, Learning Lecture, FGDs

Abstract: PT-ME011

Exploring the Impact of Cross-Tapered Near-Peer Teaching on Medical Students Transitioning into Clinical Medicine

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Background: The shift from pre-clinical, theory-based education to clinical, practice-oriented medicine is a critical and often challenging phase for medical students. This transition is marked by a steep learning curve, as students must rapidly develop clinically oriented critical thinking. Near-peer teaching, where senior students educate their junior peers, has emerged as an innovative and effective pedagogical approach in medical education.

Objectives: The aim of this study is to explore the effects of a novel cross-tapered, metacognition-focused near-peer teaching medical education model on the confidence and performance of medical students entering their first year of clinical rotations.

Methods: This prospective cohort study will involve Stage 3 MBBS students at Newcastle University Medicine Malaysia (NUMed). Participants will be divided into two groups: those attending the near-peer teaching program and a control group that will not participate in the program. The study will employ quantitative assessments, using validated confidence questionnaires based on Likert scales and exam scores. Statistical analysis will be performed to evaluate differences between groups (t-tests and non-parametric tests).

Results: Existing literature highlights the positive impact of near-peer teaching. This study aims to extend these findings by exploring the potential of a metacognition-centered approach to near-peer teaching in improving both confidence and performance in clinical settings.

Discussion & Conclusion: This first-of-its-kind study could provide robust support for integrating near-peer teaching into the formal medical school curriculum. Furthermore, the findings may prompt further research into metacognition-centered medical education models and the importance of tapering senior student involvement to facilitate a smoother transition for junior students into clinical practice.

Keywords: Medical education, Near-peer teaching, Student perception, Student performance

Abstract: PT-ME012

The Role of Relationships and Support Systems in Medical Student Well-Being and Resilience: A Qualitative Study

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Background: Medical education is widely recognized as an intensely challenging journey, both intellectually and emotionally. While the impact of relationships and support systems on medical student well-being and resilience is acknowledged, the nuanced dynamics of these influences remain incompletely characterized.

Objectives: This study aimed to elucidate the role of relationships and support systems in fostering well-being and resilience among medical students by comparing perspectives and experiences between two cohorts: students recognized for exceptional peer support and engagement, and a randomly selected sample of medical students.

Methods: A qualitative study was conducted using semi-structured, in-depth interviews with 18 final-year medical students (5 peer-recognized, 13 randomly selected) at a private Thai medical school. The study employed an Appreciative Inquiry approach, a strength-based methodology that focuses on identifying and building upon positive experiences and successes rather than problem-solving. This approach was chosen to uncover and amplify the factors that enable students to thrive in the challenging environment of medical education. Thematic analysis was used to analyze the data.

Results: The study yielded significant insights into effective support mechanisms and the impact of specific interpersonal interactions on student well-being and resilience. Four primary themes emerged: (1) Peer Relationships as Pillars of Resilience, (2) Family Support as a Safe Haven, (3) Mentorship and Faculty Support in Professional Development, and (4) Institutional Culture and Learning Environment. Analysis revealed distinct patterns between the two cohorts. The peer-recognized group demonstrated more proactive support behaviors and placed higher value on professional guidance, whereas the randomly selected students emphasized emotional support and faculty approachability. Both groups underscored the importance of a supportive institutional culture. Participants provided concrete examples illustrating the significant influence of supportive relationships on their capacity to navigate challenges.

Discussion & Conclusion: The findings underscore the critical role of diverse support systems in enhancing medical student well-being and resilience. This study contributes to the understanding of how fostering culturally appropriate supportive relationships may enhance resilience and well-being, offering potential strategies that could be explored in real-world educational settings. Further research is warranted to explore the generalizability of these findings across different cultural and institutional contexts.

Keywords: medical education, well-being, resilience, support systems, relationships, qualitative research

Abstract: PT-ME013

Comparative Effectiveness of Different Learning Methods on Respiratory Physiology: A Quasi-Experimental Study

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Background: Medical students are crucial to the future of healthcare, playing a key role in advancing sophisticated and beneficial health systems. However, medical students currently face significant challenges, including insufficient study time, difficulties in maintaining focus, and limited rest. This is proven by the decline in GPA (Grade Point Average) observed in the second semester by the class of 2023 compared to their GPA from the first semester. To overcome these challenges, we identify effective teaching methods that can enhance learning outcomes. This study aims to compare various teaching methods for respiratory physiology with their characteristics, which are (1) large and small group classes, (2) active learning, (3) flipped classroom, (4) morning-evening classes, and (5) flashcard method.

Objectives: This study aims to compare the effectiveness of these five teaching methods in enhancing learning outcomes among medical students and to identify the most effective respiratory physiology teaching method.

Methods: This quasi-experimental study involved 74 medical students from the 2nd semester at Republic Indonesia Defense University. They were divided into two groups (n=37 each) based on their GPA to ensure balanced groups. A pre-test was administered to both groups to establish baseline knowledge, then teaching different interventions for each group. Group A received one set of methods, while Group B received the comparison set. After that, a post-test was conducted to assess learning outcomes. Statistical analyses, including tests for normality and homogeneity, were performed, followed by inferential tests (t-tests) to compare pre-test and post-test results.

Results: The study revealed significant improvement in post-test scores for group A, which received innovative learning methods, compared to group B, which used conventional methods. Some specific methods show the greatest improvement in understanding respiratory physiology.

Discussion & Conclusion: To overcome the current difficulties in maintaining medical students' knowledge and comprehension as reflected in their GPA, we demonstrated five innovative learning methods. It was found that innovative teaching yields superior results compared to conventional approaches. The analysis also identified some teaching methods producing the most optimal learning outcomes in enhancing medical students' knowledge and comprehension.

Keywords: Medical students, Study methods, Large and small class, Active learning, Flipped classroom, Morning-evening class, Flashcard method, Respiratory physiology

Abstract: PT-ME014

Comparison of the Effectiveness of Using Multi-head Microscope versus Single-head Microscope as Teaching Tools in Medical Education

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Background: For medical students to gain a better understanding of the composition and capabilities of human body tissues, histology education is essential. Utilizing microscopes is a crucial teaching strategy in this subject. While a single-head microscope linked to a projector allows the preparations to be displayed for the entire class to see, a multi-head microscope allows many persons to view the preparations at once. Each has a different capacity to increase the efficacy of learning.

Objectives: The purpose of this study is to assess how well medical students understand histology preparations when they use a multi-head microscope vs a single-head microscope that is attached to a projector.

Methods: 40 medical students participated in this study's experimental design, which involved splitting them into two groups at random. While the second group utilized a single-head microscope attached to a projector, the first group employed a multi-head microscope. Equal time was allotted to each group to review the preparations. Following the lesson, each participant completed a comprehension test covering the preparations they had covered. To compare the outcomes for the two groups, the data was examined.

Results: The results showed that the use of multi-head microscopes provided a better level of accuracy and detail of observation compared to a single-head microscope. Multi-head microscope users reported a deeper understanding and clearer visualization of the preparations as seen from the average post test results of the multi-head microscope user group of 82, while the average post test results of single-head microscope users were 66.5 which means an increase of 15.5%, a single-head microscope tend to experience limitations in terms of observation details.

Discussion & Conclusion: Compared to a single-head microscope with a projector, the usage of a multi-head microscope improved the quality of observation of histology preparations more effectively. Thus, it is possible to suggest that the multi-head microscope is a better tool for educational purposes.

Keywords: Multi-head microscope, Single-head microscope, Histology education, Observation accuracy

Abstract: PT-ME015

Leveraging Social Media for Collaborative Learning in Medical Education: Balancing Benefits, Challenges, and Patterns of Use

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Background: Social media is increasingly being used in medical education, offering students innovative ways to engage in collaborative learning, share academic resources, and support one another. However, its use also brings challenges, including misinformation, privacy concerns, and distractions. This study examines how medical students leverage social media for learning, exploring both its benefits and drawbacks to provide insights into its role in medical education.

Objectives: This research investigates the role of social media in medical education, focusing on how students use it for collaborative learning and resource sharing. It highlights benefits such as improved access to materials and peer support, while addressing challenges like misinformation and distractions. The study aims to provide guidelines for responsible use and promote digital literacy among students.

Methods: A mixed-methods study was conducted with 179 medical students. Participants completed a quantitative survey assessing social media usage patterns, perceived benefits, challenges, and academic outcomes. Key factors measured included the frequency and duration of social media use, types of interactions (e.g., resource sharing, study groups), and its impact on academic performance. In-depth interviews with a subset of participants were conducted to gain deeper insights into students' experiences, focusing on the balance between benefits and challenges.

Results: The study found that more than 70% of students used YouTube as their primary learning tool, with 80% agreeing that social media improved access to diverse educational resources. Social media facilitated collaborative learning by enabling real-time communication, sharing of materials, and peer support during exams, which enhanced understanding of complex topics. However, 40% of students reported frequently encountering inaccurate information, and privacy concerns were raised by a significant number of participants. Students also reported challenges in managing boundaries between academic and personal use, often leading to distractions.

Discussion & Conclusion: Social media has become a valuable tool for collaborative learning in medical education, enhancing student engagement and academic success. However, the challenges of misinformation, privacy concerns, and distractions must be addressed. Medical educators are encouraged to develop guidelines for responsible social media use, emphasize digital literacy, and explore the creation of secure, dedicated platforms for academic purposes to maximize the benefits while mitigating risks.

Keywords: medical education, social media, collaborative learning, leveraging social media, medical education associated with social media

Abstract: PT-ME016

Integrating Humanities and Early Community Exposure in Medical Education: Fostering Empathy and Ethical Reasoning Through Service Learning in Resource-Limited Settings

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Background: Integrating humanities and early community exposure in medical education is crucial for cultivating empathy, ethical reasoning, and social responsibility in future healthcare professionals. This study investigates the impact of a unique program at Phramongkutklao College of Medicine (PCM) that involves first-year medical students working independently in resource-limited communities. The program provides students with direct, hands-on experience in these settings, where they engage with local populations, address healthcare needs, and reflect on their experiences through humanities-based activities. This early exposure aims to develop a deeper understanding of healthcare inequities and foster patient-centered care.

Objectives: This study aims to assess the impact of integrating early community exposure and humanities-based reflection in medical education on the development of empathy, ethical reasoning, and professional identity among first-year medical students at Phramongkutklao College of Medicine (PCM). The program allows students to work independently in resource-limited communities, providing direct hands-on experience and opportunities for reflection on healthcare disparities.

Methods: A mixed-methods approach was used, combining a post-program survey and qualitative data collection. The survey measured changes in empathy, ethical reasoning, and professional identity using a 5-point Likert scale. Qualitative insights were gathered through reflective journals and interviews, and thematic analysis identified key themes related to empathy, ethical reflection, and social responsibility.

Results: The results demonstrated significant improvements in students' empathy (mean: 4.02), ability to engage with diverse communities (mean: 4.17), integration of empathy and ethics into practice (mean: 4.18), and professional identity (mean: 4.11). Qualitative data supported these findings, showing that the independence provided during the program played a crucial role in shaping students' empathy, ethical reasoning, and commitment to addressing healthcare disparities.

Discussion & Conclusion: This study demonstrates the profound impact of early community exposure, particularly through independent student engagement in resource-limited settings, on the development of empathy, ethical reasoning, and professional identity. The novel approach of allowing first-year students to work directly within communities provides a model that can be adapted by other institutions seeking to cultivate compassionate, socially responsible healthcare professionals. The results support the integration of similar programs into medical curricula to prepare students for the complexities of diverse and underserved healthcare environments.

Keywords: Early Community Exposure, Integrating Humanities, Medical Education

Abstract: PT-ME017

Mindfulness as a Tool for Enhancing Student Wellbeing: Evaluating the Impact of a Meditation Retreat on Medical Students in Stressful Academic Environments

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Background: Medical students often experience significant academic stress, leading to burnout and negatively impacting their mental health and performance. Mindfulness-based interventions, like structured meditation retreats, are increasingly recognized for reducing stress and enhancing well-being. This study examines the impact of a 7-day mindfulness retreat on the stress levels, resilience, and well-being of medical students in demanding academic environments. The aim is to assess how mindfulness practices help students manage stress during critical periods, such as exam preparation and intense study.

Objectives: To evaluate the impact of a meditation retreat on the stress levels, wellbeing, and resilience of medical students facing stressful academic environments.

Methods: A mixed-methods study was conducted with 159 medical students who participated in a meditation retreat during high-stress academic periods. A post-retreat assessment was collected using validated tools, including the Perceived Stress Scale (PSS) and WHO-5 Well-Being Index, to measure changes in stress levels and wellbeing. Additionally, qualitative data were gathered through open-ended questions to explore students' reflections on how mindfulness practices influenced their academic and personal lives. Thematic analysis was applied to identify key themes in personal growth, emotional regulation, and improvements in academic performance.

Results: Quantitative analysis showed a significant reduction in perceived stress levels, with the average PSS score decreasing from 27.9 (high stress) before the retreat to 16.3 (moderate stress) afterward. WHO-5 scores also improved, with the average score rising from 46.5% (moderate wellbeing) pre-retreat to 71.4% (good wellbeing) post-retreat. Participants reported improvements in mental clarity, emotional regulation, and resilience, with many expressing better focus and an enhanced ability to handle academic pressure. Qualitative feedback supported these findings, indicating that students applied mindfulness techniques not only to reduce stress but also to improve their academic performance and overall sense of balance.

Discussion & Conclusion: The meditation retreat significantly reduced stress and improved wellbeing among medical students, suggesting mindfulness practices support mental health in demanding academic environments. These results indicate such programs could be effectively integrated into medical curricula to foster resilience, focus, and wellbeing. The study also supports the broader application of mindfulness retreats in other high-stress academic and professional settings, offering a model for promoting wellbeing in challenging contexts.

Keywords: Meditation retreat, Mindfulness-based interventions, Academic stress, Mental health, WHO-5 Well-Being Index, Perceived Stress Scale (PSS)

Abstract: PT-ME018

Exploring the Impact of ChatGPT on Medical Education: A Cross-Sectional Study among Pre-Clinical Medical Students in Thailand

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Background: ChatGPT, a model of generative artificial intelligence (GAI), has revolutionized medical education by enhancing access to evidence-based medicine such as diagnostic support, clinical data interpretation, case-based discussions and exam preparation. While there is growing research on GAI in healthcare, few studies have explored its impact among pre-clinical medical students.

Objectives: This study aims to examine the role of ChatGPT as an educational tool among pre-clinical medical students in Thailand, focusing on frequency of usage and perceptions of the reliability and ethical implications of using ChatGPT as a learning resource.

Methods: This prospective cross-sectional study surveyed preclinical medical students at Chulalongkorn University through an online questionnaire. Eligibility criteria were first, second, and third year medical students during the 2023 academic year. Chi-square tests were employed to analyze for correlation between responses with a significance level set at $p < 0.05$.

Results: A total of 100 participants participated in this study. Of these, 81% of participants reported using ChatGPT, and 43% had accessed it more than 10 times in the past month to supplement their medical studies. The majority (51.1%) used ChatGPT as a supplement to search for information. When preparing for case discussions, 88% viewed ChatGPT to be at least moderately useful with 40.0% stating it was most beneficial for generating differential diagnoses. Additionally, 55.0% used it for exam preparation and 43.0% deemed it very helpful in that context. The tool was particularly favored for information searches (31.0%). Participants expressed significant concerns regarding the accuracy of information, with 76% worried about inaccurate data and 63% concerned about outdated medical information. Increased ChatGPT usage was significantly associated with positive perceptions of its utility for exam preparation ($p<0.01$) and case discussions ($p<0.05$).

Discussion & Conclusion: Many medical students frequently use ChatGPT to enhance their learning, finding it useful for exam preparation and case discussions. However, concerns about information accuracy are prevalent among users. Frequent users reported greater perceived benefits, highlighting the need for cautious integration of AI tools in medical education.

Keywords: medical education, Generative AI, ChatGPT

Systematic Review and Meta-Analysis Research

Abstract: PT-SM001

Effects Of Transcranial Direct Current Stimulation on Symptoms Of Nicotine Dependence: A Systematic Review And Meta-analysis

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Background: Smokers face heightened risks of heart disease, stroke, and lung cancer. Nicotine addiction alters brain function, making quitting challenging and leading to high relapse rates. Transcranial direct current stimulation (tDCS) has emerged as a potential tool for reducing smoking dependence by targeting the dorsolateral prefrontal cortex (DLPFC), which plays a role in regulating cravings and improving withdrawal symptoms.

Objectives: While tobacco control measures have been extensively researched and implemented, smoking remains prevalent globally. This systematic review and meta-analysis aim to evaluate the effects of tDCS, compared to sham-controlled stimulation, on smoking behavior, including craving and smoking intake, as well as brain imaging findings in smokers without neurological disorders.

Methods: A comprehensive search was performed in PubMed, CENTRAL, CINAHL, and EMBASE databases up to June 4, 2024, using terms related to tDCS and smoking reduction behavior. From an initial pool of 248 articles, 22 studies meeting the inclusion criteria of randomized controlled trials (RCTs) and crossover designs were selected for meta-analysis. Two independent reviewers extracted data using Covidence, resolving conflicts through a third reviewer. The studies were assessed for bias using the Cochrane risk-of-bias tool (RoB 2). Meta-analysis was conducted to evaluate quantitative estimates of smoking behavior.

Results: Meta-analysis conducted with SPSS version 29.0 revealed a significant reduction in cue-provoked craving with a pooled effect size of -1.57 (95% CI: -3.09 to -0.04, $p < 0.05$) across nine studies. However, the heterogeneity was high ($I^2 = 96\%$), indicating variability among studies. The funnel plot suggested potential publication bias, which warrants further investigation. The effect on smoking intake was non-significant (effect size: -0.67, 95% CI: -1.50 to 0.16, $p = 0.12$). Study quality was mixed based on the RoB 2 tool.

Discussion & Conclusion: While tDCS shows promise in reducing nicotine dependence, particularly in craving reduction, the high heterogeneity and possible publication bias highlight the need for standardized protocols and more diverse study samples in future research.

Keywords: Transcranial Direct Current Stimulation (tDCS), Nicotine Craving, Smoking Cessation

Abstract: PT-SM002

The Potential of a Wireless Smart Bra using Circulatory Polarized Microwave Sensor for Effective and Economical Breast Cancer Screening: A Systematic Review

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Background: Breast cancer (*Carcinoma mammae*) is a malignant neoplasm resulting from the abnormal growth of breast cells. Currently, in Indonesia, breast cancer ranks as the second most common type of cancer after cervical cancer. The high prevalence of this disease has driven the innovative spirit of medical students, who act as researchers, to develop advanced breast cancer screening technologies. This prevalence also underscores the low level of welfare among the Indonesian population, particularly given the fact that many Indonesians lower - middle income population still struggle to meet their basic food needs. WHO data indicates that approximately 60% of the lower - middle income population in Southeast Asia, including Indonesia, faces difficulties in accessing essential healthcare services.

Objectives: The aim of this study is to assess the potential of a wireless smart bra as a more effective, practical, and economical tool for breast cancer screening, based on circulatory polarized microwave sensor technology.

Methods: The research design for this systematic review focused on the potential of a wireless smart bra using a circulatory polarized microwave sensor for effective and economical breast cancer screening. The study involved a systematic review of 88 articles and 12 additional research, analyzing their relevance and relevance to the topic. The search strategy included terms like "breast cancer," "circulatory polarized microwave sensor," “ESP 32”, "middle-low income," and "smart bra." The analysis involved data collection, logical reasoning, and conclusions, with 28 articles meeting inclusion criteria and 72 excluded due to outdated publication years or incompatibility with the topic.

Results: The study results indicate that the development of the smart bra involves simplifying its design to be wireless by utilizing the ESP 32 microcontroller, which connects via bluetooth low energy (BLE) and Wi-Fi. The ESP 32 also facilitates the computation of medical record data. Additionally, to evaluate public acceptance of this research, we used the technology acceptance model to ensure that the device can be broadly adopted.

Discussion & Conclusion: Therefore, the presence of a wireless smart bra based on circulatory polarized microwave sensor technology has significant potential to support more effective, practical, and economical breast cancer prognosis and diagnosis.

Keywords: Breast Cancer, Middle - low income, Smart Bra, Circulatory Polarize Microwave Sensor, ESP 32

Abstract: PT-SM003

Seven Chinese Regional Cuisines and Type 2 Diabetes Prevalence Rate: A Systematic Review and Meta-Analysis of Existing Literature

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Background: Dietary habits are a critical Type 2 diabetes (T2D) risk determinant. This study focuses on 7 geographical regions in China to investigate the correlation between local dietary habits and T2D prevalence. Understanding regional dietary trends will inform targeted public health interventions, offering significant implications for national and global health strategies.

Objectives: To review how Chinese regional dietary habits influence T2D prevalence.

Methods: A systematic search in PubMed, Google Scholar, Medline, Embase, and CNKI, the existing literature selection following the characteristics: publication years, regional cuisines, and relationship to T2D prevalence rate (%). Certain provinces (Hongkong, Macau, Tibet, Xinjiang) are excluded because of habit similarity. Data extraction is categorized according to the seven Chinese regions. A map will be made with the latest provincial T2D prevalence rate, and relevant beneficial and harmful dietary habits.

Results: Through systematic and meta-analysis, Yunnan and Guizhou contributed to lowering T2D prevalence compared to the global scale by 11.2%, and the current estimated rate was 8.8% and 9.2%, respectively. Their dietary habits emphasize rich vegetables, specifically bitter gourd, with their potential antidiabetic properties in mimicking insulin and enhancing insulin-sensitivity. Their carbohydrate sources include whole grains, specifically millet, brown rice, and corn, which have low GI and high fiber to manage fullness and body weight compared to other provinces (e.g. Shandong, Inner Mongolia, Guangdong) consuming white rice, mantou, and processed noodles. Their protein sources are legumes, specifically beans, and lentils, being low in fat to manage blood glucose levels. The meat consumption, specifically free-range chicken and wild-game meats, is lower in saturated fat compared to other provinces consuming processed meat. These systematically controls T2D's metabolic instability by 25-30%. Their cuisine is not dependent on sweet, salty, sour, and spicy taste additives, but retains flavor and nutrients using traditional cooking methods with herbal and spice, simultaneously enhancing taste and nutritional profile.

Discussion & Conclusion: The systematic review includes a comprehensive side-dishes selection upon Chinese consumption. To alleviate the T2D burden in China and extended globally. With habits identification being subjective, diverse regional diets, and population migration among provinces making regional characteristics increasingly blurred, more collaborative quantitative data is required for these findings to be applicable.

Keywords: Dietary habits, Type 2 diabetes, Foods, Glycemic index

Abstract: PT-SM004

The Impact of Aromatherapy Usage on Chronic Rhinitis: A Scoping Review

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Background: Rhinitis is inflammation of the nasal passages, which can be caused by infection or non-infectious factors. There are various subtypes of rhinitis, including acute, subacute, chronic, recurrent, and chronic acute exacerbation. The global prevalence of rhinitis is significant. Recent research data shows that the average global incidence of rhinitis is approximately 29%. Chronic rhinitis occurs when symptoms persist for more than 12 weeks with a bacterial cause. Bacterial infections of the upper respiratory tract are the main cause of chronic rhinitis. Treatment of rhinitis involves conventional, integrative, and alternative approaches. One form of integrative treatment aimed at supporting conventional medical care is the use of aromatherapy. Aromatherapy uses essential oils which have antibacterial, antiviral, and anti-inflammatory effects. This review aims to examine and evaluate the effect of using aromatherapy on the symptoms of chronic rhinitis.

Objectives: This study will review the impact of aromatherapy usage on chronic rhinitis.

Methods: This study utilizes a scoping review method, combining various research findings under the PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping reviews) search process obtained from the PubMed, Science Direct, EBSCOHost, Proquest, and Google Scholar databases. The articles that were used in this review study were selected based on the criteria of being in English or Indonesian and containing discussions on the use of aromatherapy for various types of rhinitis in Indonesia or other countries. The subject criteria for this study include patients with any type of rhinitis and COVID-19 patients with rhinitis-like symptoms. The types of reference articles used by the author as sources include clinical studies, both randomized and non-randomized, with a maximum publication timeframe of the last 10 years (2014-2023).

Results: The journal search yielded 5707 literature sources, which were subsequently filtered down to 12 open-access literature sources discussing the administration of aromatherapy to rhinitis and COVID-19 patients with rhinitis-like symptoms. 82 types of single aromatherapy reduced rhinitis symptoms such as rhinorrhea, facial pain, anosmia, nasal congestion, and sore throat. Additionally, aromatherapy also has antiviral effects.

Discussion & Conclusion: Providing aromatherapy to chronic rhinitis patients has been shown to alleviate symptoms and has the potential to act as an antiviral.

Keywords: Aromatherapy, Rhinitis, Chronic Rhinitis

Abstract: PT-SM005

Effectiveness of Oral Iron Supplements vs. IV Iron in Chronic Anemia: A Meta-Analysis of Clinical Outcomes

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Background: Chronic anemia, characterized by diminished hemoglobin levels, significantly impacts patients' quality of life, necessitating effective iron supplementation strategies. Oral iron supplements (OIS) and intravenous iron (IVI) are common treatments, but their relative effectiveness in terms of clinical outcomes, such as hemoglobin improvement, iron stores replenishment, and patient tolerance, remains debated. This meta-analysis aims to compare the effectiveness of OIS and IVI in managing chronic anemia.

Objectives: The primary objective is to assess the clinical effectiveness of oral iron supplements versus intravenous iron in the treatment of chronic anemia. Secondary objectives include evaluating the safety profile, adverse events, patient compliance, and overall quality of life outcomes associated with each treatment modality.

Methods: A comprehensive literature search was conducted across databases such as PubMed, Cochrane Library, and Scopus from January 2010 to November 2023. Randomized controlled trials (RCTs) comparing oral and IV iron supplementation in patients with chronic anemia were included. Studies were selected based on predefined inclusion criteria focusing on hemoglobin improvement, iron store repletion, and adverse event rates. Data were extracted and analyzed using a random-effects model to compute pooled mean differences and odds ratios with 95% confidence intervals.

Results: A total of 15 RCTs, encompassing 2,800 patients, were included in the analysis. IV iron showed a statistically significant improvement in hemoglobin levels (mean difference: 1.25 g/dL, $p < 0.01$) and quicker repletion of iron stores compared to oral iron. However, oral iron had a more favorable safety profile with fewer severe adverse events, particularly concerning hypersensitivity reactions. Patient compliance was higher in the IV iron group, likely due to fewer gastrointestinal side effects.

Discussion & Conclusion: IV iron is more effective in rapidly improving hemoglobin levels and restoring iron stores in patients with chronic anemia. However, oral iron remains a safer option with fewer severe adverse events. The choice between these two treatment modalities should be based on the clinical condition of the patient, the urgency of treatment, and potential side effects.

Keywords: IV iron, chronic anaemia, oral iron

Abstract: PT-SM006

Characteristics of Monkeypox Vaccines Across Multiple Studies: A Systematic Review for Guiding Future Research

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Background: Monkeypox has been declared a Public Health Emergency of International Concern (PHEIC) yet again, marked by another instance of widespread infection of the virus in non endemic countries. The usage of vaccines in the management of monkeypox has been explored since the 1960s resulting in the discovery of monkeypox virus's vulnerability to smallpox virus vaccines. These vaccines provided an ample response against outbreaks of monkeypox. However, unlike smallpox which was deemed eradicated in 1980, monkeypox continues to be a persisting issue unaided by the discontinuation of immunization programs. Developments in monkeypox prophylaxis have continued, utilizing the vaccinia virus or VACV resulting in 2nd and 3rd generation vaccines ACCAM2000 and JYNNEOS. Nevertheless, monkeypox has continued to resurface in both endemic and non-endemic regions bringing much concern to health authorities worldwide.

Objectives: This review aims to explore and compile information regarding the varied characteristics of different vaccines across multiple studies as reference for future monkeypox vaccine research and development.

Methods: The systematic review was conducted using the Google Scholar, PubMed and Web of Science databases following PRISMA guidelines to evaluate the monkeypox vaccines. Data extraction was performed independently and in a double-blinded manner by four reviewers. Study quality was evaluated using ROB-2.

Results: From an initial 116 articles, 13 were eligible for inclusion. The data evaluated various monkeypox vaccines across generations. Dryvax, a first-generation vaccine, was discontinued due to safety concerns. Its clone produced the second-generation vaccine ACAM2000, which has greater immunogenicity but is unsuitable for immunodeficient individuals. The third-generation vaccine LC16m8 shows high effectiveness, safety, and minimal side effects, except for immunocompromised individuals. MVA-BN had the best results, with high effectiveness, fewer adverse effects, and longer seropositivity. Emerging mRNA vaccines also show promise in animal trials and simulations for effectiveness and safety.

Discussion & Conclusion: Current developments in live vaccines show good effectiveness in preventing monkeypox, but vaccines like ACAM2000 and LC16m8 have limitations for immunodeficient individuals. This highlights the need for further research to improve vaccine technologies. Next-generation monkeypox vaccines, especially mRNA candidates, show promise in enhancing immunogenicity and safety. Ongoing research and trials are essential to validate these advancements and ensure effective vaccination strategies.

Keywords: Monkeypox, Mpox, Vaccines, Vaccine safety, Vaccine effectivity, Vaccine development

Abstract: PT-SM007

The New Frontier in Cognitive Screening: Digital Cognitive Assessments in Mild Cognitive Impairment and Dementia

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Background: In 2020, over 55 million people worldwide were living with dementia, with 60% from lower-to-middle income countries. The number has been doubled every 20 years due to the longer life expectancy and aging population. However, it has been found that more than 75% of the people do not receive a formal diagnosis, resulting in reduced access to healthcare and treatment, leading to poorer care. Montreal Cognitive Assessment (MoCA) is a validated tool for screening mild cognitive impairment along with clinical judgment to diagnose patients with dementia. However, the accessibility of traditional paper-based MoCA is limited, especially in the setting of restricted healthcare resources. The immersion telemedicine platform of digital cognitive assessments provide alternative ways to access and help in early detection. The aim of this study is to compare of the effectiveness of the conventional MoCA and digital cognitive assessment tools in the setting of screening dementia

Objectives: To compare diagnostic accuracy between digital cognitive assessment to conventional method such as Montreal Cognitive Assessment (MoCA).

Methods: Several online databases including PUBMED, SCOPUS were systematically searched and with inclusion/exclusion criteria: published from the year 2014-2024, available in English, not meta-analysis or systematic review. Then the data were extracted and analyzed.

Results: Total of 5,067 publications were found. After the inclusion/exclusion criteria were used, only 14 publications were used. The result showed that electronic MoCA is non-inferior to the gold-standard of diagnosing Dementia.

Discussion & Conclusion: Digital diagnostic tests could be used for screening for dementia apart from conventional MoCA by providing timely, cost reduction, and increased accessibility for both physicians and patients. However, the digital diagnostic tests should be used along with clinical assessment and other neuropsychological testing.

Keywords: Montreal Cognitive Assessment, Digital cognitive assessment tools, Dementia, Mild cognitive impairment

Abstract: PT-SM008

Evaluation of Neuroprotective Potentials of Metformin in Neurodegenerative Disorders

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Background: Many epidemiological studies have indicated that type 2 diabetes mellitus (T2DM) is associated with increased risk of neurodegenerative diseases, especially Alzheimer's (AD) and Parkinson's (PD) diseases. The potential underlying mechanism may be due to insulin resistance effects in the CNS, since it is believed that insulin may have a neuroprotective role. Some studies revealed that metformin, a commonly prescribed diabetic drug which improves insulin sensitivity, showed promise in slowing neurodegenerative diseases, but many challenges remain in understanding its full potential.

Objectives: To review the effects of metformin on neurodegenerative diseases.

Methods: Several databases including PUBMED, ScienceDirect, SCOPUS were systematically searched and with the criteria: published between the year 2005 - 2024, available in English, not meta-analysis or systematic review. Then, the data were extracted and analyzed.

Results: From an initial 5,090 publications, 14 were selected after using inclusion and exclusion criteria. Metformin's influence on mitochondrial function and VDAC1 may reduce cell apoptosis. Its activation of the AMPK pathway indicates potential for preventing mitochondrial dysfunction, reducing neuroinflammation, and promoting autophagy, contributing to neuroprotection. However, further RCTs are needed to confirm these effects. Several trials have investigated metformin's influence on GLP-1 receptors for treating neurodegenerative diseases. While there are positive outcomes, emerging evidence signifies a link between metformin use and increased Parkinson's disease risk, necessitating further investigation. Metformin has demonstrated short-term cognitive benefits, but long-term use has been associated with declines in memory and learning, particularly in non-diabetics. Some studies also suggest that discontinuing metformin may raise the risk of dementia, though evidence remains inconclusive.

Discussion & Conclusion: Metformin, long term used in the management of T2DM, is now being explored for its potential role in treating neurodegenerative diseases, particularly AD. Its ability to promote functional recovery and mitigate injury mechanisms offers significant promise. However, gaps in current research call for further studies to clarify its long-term effects, especially among non-diabetic individuals, and to find promising treatment protocols for neurodegenerative conditions.

Keywords: Metformin, Type 2 diabetes, Neurodegenerative diseases

Abstract: PT-SM009

Do Digital Health Interventions Effectively Improve the Management Outcomes for Asthma Patients? A Systematic Review And Meta-Analysis

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Background: About 300,000,000 people globally suffer from asthma, and an additional 100 million are potentially at risk. Asthma is commonly described as a long-term inflammatory illness that affects the airways. This inflammation exacerbates airway hyperresponsiveness, which causes dyspnea, chest tightness, coughing, and recurrent wheezing. Managing both medical therapy and environmental exposure can also exacerbate or cause symptoms of the disease. The fundamental goal of asthma management is to cultivate and sustain effective asthma control, which includes reducing the severity of symptoms, preventing exacerbations, and decreasing the risk of asthma-related mortality. Clinical outcomes may be improved by incorporating technological and digital interventions into clinical care pathways, which could give patients prompt, individualized support.

Objectives: To assess the efficacy of digital health interventions in improving management outcomes for asthma patients.

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) criteria are followed in this systematic review and meta-analysis. The studies listed were sourced from PubMed, EBSCOhost, and Scopus. Review Manager 5.4.1 was utilized for the analysis of the extracted data.

Results: From a total of fifteen randomized controlled trials involving 2,086 patients, the meta-analysis results show that children in the intervention group had significantly better FEV1 (SMD = 0.39; p-value = 0.0005). Notably, in young populations, particularly those aged 4 to 11, the intervention group showed significantly higher C-ACT scores (SMD = 0.27; p-value = 0.008). Across both adult and pediatric populations, the therapies implemented had a significant overall impact on improving both FEV1 and Asthma Control Test (ACT) scores. Specifically, the improvement in FEV1 was statistically significant (SMD = 0.23; p-value = 0.004), and the ACT scores, which assess overall asthma control, also showed significant improvements (SMD = 0.18; p-value = 0.004).

Discussion & Conclusion: This study concluded that digital health interventions have a considerable positive impact on asthma management outcomes. Given the rapid improvements in digital health technology and the rising prevalence of asthma, further research studies using the most recent connected issue data should be undertaken to provide the most up-to-date evidence in asthma care.

Keywords: Asthma, Digital Health, Telemedicine, Management

Abstract: PT-SM010

Efficacy of Real-Time Functional MRI in Neurofeedback Training for Self-Regulation among Major Depressive Disorder Patients: Systematic Review and Meta-Analysis

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Background: An estimated 21 million adults in the United States suffer from Major Depressive Disorder (MDD) in 2021 alone. Many patients do not respond optimally to standard treatments such as antidepressant medications and psychological therapy. Recent studies found that interventions on the amygdala activity might yield positive results for MDD patients. Real-time functional Magnetic Resonance Imaging (RT-fMRI) has become an interesting option to train increased amygdala hemodynamic responses during positive memory recall resulting in symptom improvement. However, there is a lack of comprehensive analysis in evaluating its efficacy and influences on emotional processing, highlighting the importance of systematic assessment.

Objectives: To assess the effectiveness of RT-fMRI in stimulating amygdala in processing negative and positive stimuli and how this accelerates the result of neurofeedback training.

Methods: Meta-analysis was conducted from PubMed, Scopus, Cochrane, and ProQuest. Studies were selected with inclusion and exclusion criterias. Systematic review process considered the PICO framework and PRISMA guidelines with 95% CI. Risk of bias was analysed by The Cochrane tool RoB 2.0. Random effects model was measured by the {netmeta} package in the R programming language.

Results: Ten studies with a total of 484 participants were included in the systematic review and meta-analysis with a low risk of bias. Six of the included studies are scrutinize quantitatively by meta-analysis which shows reduction in anxiety and depression level in MDD patients, represented by decrease in Montgomery-Asberg Depression Rating Scale (MADRS) scores (MD=-1.06; Z=3.05; p=0.002; 95% CI: -1.74;-0.38), Beck Depression Inventory (BDI-II) scores (MD=-1.19; Z=6.08; p=0.0001; 95% CI: -1.58;-0.81), and Hamilton Depression Rating Scale-21 (HDRS-21) (MD=-1.43 ; Z=4.86; p=0.0001; 95% CI: -2,00 ;-0.85).

Discussion & Conclusion: This study shows significant efficacy of real-time functional magnetic resonance imaging (RT-fMRI) in modulating amygdala responses and reducing anxiety and depression level in MDD patients. Exploration about other target rather than amygdala in diminishing anxiety and depression level are still need further observation.

Keywords: rt-fMRI, neurofeedback, major depressive disorder

Abstract: PT-SM012

Exploring the Connection Between Dietary Lifestyles and Depression: A Meta-Analysis

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Background: Diet plays a crucial role in overall health, extending beyond the digestive system to significantly influence mental well-being. Growing evidence suggests a strong link between dietary choices and depression, a mental health disorder affecting an estimated 5% of adults globally according to the World Health Organization. Depression has long-term, debilitating effects on individuals, impairing both personal and professional functioning. While factors such as genetics, environment, and stress contribute to its onset, recent research highlights how poor dietary habits—especially those high in added sugars and processed foods—may exacerbate the risk of depression by triggering systemic inflammation. Given the rising prevalence of depression in modern societies, it is critical to address dietary factors as part of a comprehensive approach to mental health care and prevention.

Objectives: Primary objective: To investigate the relationship between dietary choices and the risk of developing depression Secondary objectives : To examine the impact of diet on depression across different demographic groups, To assess whether dietary interventions can alleviate depressive symptoms or reduce the risk of depression, To identify potential mediating factors in the diet-depression link

Methods: This study will employ a systematic review to evaluate the relationship between dietary choices and depression. The review will follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure rigour and transparency.

Results: The findings suggest a potential correlation between dietary habits and mental health. High intake of added sugars and processed foods appears to contribute to depressive symptoms through mechanisms such as systemic inflammation, gut microbiota disruption, and neurobiological dysregulation. Certain dietary lifestyles may influence the severity of mental health conditions, especially depression.

Discussion & Conclusion: The review highlights a growing body of evidence suggesting a significant correlation between dietary choices and mental health, particularly in the context of depression. These findings underscore the importance of considering dietary interventions as part of a holistic approach to managing and preventing depression, with particular attention to high-risk populations. Further research is warranted to explore the therapeutic potential of dietary modifications in improving mental health outcomes.

Keywords: Depression, Dietary Lifestyles, Mental Health

Abstract: PT-SM013

A Bibliometric Review of Cost-Effectiveness of Lung Cancer Treatment in Hospitals

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Background: Lung cancer is a significant global health concern with high incidence rates and substantial economic burden worldwide. In response to the growing demand for effective health interventions, there is an increasing focus on assessing the cost-effectiveness of lung cancer treatments. This bibliometric review explores the cost-effectiveness of lung cancer treatment in hospitals, providing an in-depth analysis of the trends, influential research and major schools of thought.

Objectives: This study aims to identify key trends, leading research and emerging findings on the cost-effectiveness of lung cancer treatment. By reviewing existing literature, it seeks to offer insights into how resource allocation in lung cancer care has developed throughout the years and how it may inform future healthcare decisions.

Methods: This study has analyzed 360 related documents since 1985 from the scopus database. Analytical tools such as Excel and the bibliometric software VOSviewer were utilized to conduct these comprehensive analyses as well.

Results: The results illustrated descriptive statistics in the titles of conducting year, geographic distribution, author, and subject area of this study topic. The number of documents peaked in 2023 due to the COVID-19 pandemic consequences. It highlights the citation impacts over the past four decades ranked in the topic of journal, author, and article as well. There are 4 major schools of thought prominent in this bibliometric review: 1) cost analysis of lung cancer treatment in Chinese context, 2) cost-effectiveness analysis of metastatic non-small cell lung cancer (NSCLC) treatment, 3) cost-effectiveness analysis of chemotherapy for lung cancer, and 4) cost of treatment for stage III non-small cell lung cancer.

Discussion & Conclusion: In conclusion, this review provides valuable insights into the trends, influential publications, and key contributors in the field of cost-effectiveness of lung cancer treatment in hospitals. Understanding these patterns is essential for optimizing healthcare outcomes and ensuring efficient use of resources in lung cancer care.

Keywords: cost-effectiveness, lung-cancer, bibliometric analysis

Abstract: PT-SM014

Trends in Research on The Association of Mental Health and Stress Level-Induced Hypertension: A Bibliometric Analysis

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Universitas Islam Indonesia

Background: Mental health and stress levels are issues that are still increasing in every country. They affect cognitive, behavioral, as well as emotional well-being. This also has an impact on the overall body health. There has been growing evidence of the link between mental health and stress level-induced hypertension.

Objectives: This study aims to summarize the publications of correlation between mental health and stress level-induced hypertension, using a bibliometric method.

Methods: The publications used were 321 related articles indexed in Pubmed from 2004 to 2024. The database was queried using a set text of search strategies on 14th September 2024. Limited to meta-analysis, randomized controlled trial, reviews, and systematic review with observational studies in human subjects. VOSviewer software was utilized in this study to help visualize the data.

Results: The number of articles published has significantly increased over the last two decades and has declined in the last two years, with the peak occurring in 2020. There are 58 organizations included in this study. Every organization has at least 1 article concerning the relation between mental health and stress level-induced hypertension. One of the top contributors is from Alzheimer's Therapeutic Research Institute, University of Southern California, San Diego, California . The 5 most used keywords identified in this study were "cardiovascular disease", "nutrition", "brain", "child abuse", and "coronary artery disease".

Discussion & Conclusion: This bibliometric analysis provides valuable information of the increasing interest in the subject. Furthermore, it may guide future research regarding the association between mental health and hypertension induced by stress levels.

Keywords: mental health and stress levels-induced hypertension, VOSviewer software, bibliometric analysis

Abstract: PT-SM015

Global Disparities of LGBTQ+ Healthcare Education in Western versus Eastern Medical Schools: A Systematic Review and Meta-Analysis of Cross-sectional Studies

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Faculty of Medicine Ramathibodi Hospital, Mahidol University

Background: The LGBTQ+ community faces stigmatization and barriers to medical treatment, leading to healthcare disparities and negative health outcomes. Previous studies indicated a lack of training in medical schools, exacerbated by heteronormative societal norms.

Objectives: This meta-analysis reveals a comprehensive evaluation of LGBTQ+ healthcare education on a global scale.

Methods: The meta-analysis involved searching three databases: Google Scholar, Scopus, and PubMed. Five studies were selected from seven counties to study LGBTQ+ content inclusion in undergraduate education. With the same dataset, other examined factors were content coverage, assessment inclusion, and clinical training.

Results: Students' perceptions regarding content inclusion were also extracted from eight studies, considering the latest publication date. Subgroup analysis was used to emphasize the influence of different normative endemics. Western countries showed a homogeneous representation of 96% inclusion, whereas Eastern countries exhibited only 67%. The main factor in this disparity was believed to be heteronormativity. The percentage of conducting student assessment ranged from 51% in Japan to 100% in Australia and New Zealand, suggesting that the governance system of individual medical schools might have a greater impact than regional factors. Eastern countries effectively managed the inclusion of differences in sex development, sex reassignment surgery, and transitioning but fell short in addressing education related to sexually transmitted diseases and understanding LGBTQ+ community nuances. "Safer Sex" was shown as the most neglected topic, with a disparity of 54%. Clinical training inclusion rates were 58% in Western countries and 9% in Eastern countries, pointing out the lack of clinical competence in LGBTQ+ patient care as a significant barrier to healthcare. A consensus was found on the interest and need for inclusion, with 90% of responses from Western and 96% from Eastern subgroup participants affirming this need.

Discussion & Conclusion: Medical students have a positive attitude towards LGBTQ+ healthcare education; however, inclusion needs to be improved, particularly in Eastern countries. Additionally, there is a need to increase research in the field to address the gap and create more inclusive healthcare for LGBTQ+ individuals. There are significant disparities in LGBTQ+ healthcare education between Western and Eastern countries, with medical students feeling under-trained on these topics, highlighting the need for improved education.

Keywords: LGBTQ+, Healthcare Education, Meta-Analysis

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