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Dr. Tan, Toh Leong is a Associate Professor and Consultant Emergency Physician currently working at the Department of Emergency Medicine, Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia Medical Center. He is the current President and Founder of the Malaysian Sepsis Alliance and Steering Committee for Asia Pacific Sepsis Alliance Internationally. He is an clinical researcher with various publications and popular writings, 5 books, numerous scholarships and awards, and funding totaling over Million Ringgit Malaysia. He is also a peer reviewer for various high impact journals. He is deeply involved in research and his interest is in sepsis, infection, emergency critical care, translational research, point-of-care test, molecular biology, and antibiotic stewardship. He is now working closely with WHO and Global Sepsis Alliance, aim to create a world free of sepsis.

Keywords: sepsis, infectious diseases, emergency medicine, critical care, point of care test, sepsis biomarkers

Professional and Academic Background

2020 – NOW : Editor Journal of Surgical Academia (eISSN-2231-7481)
2018 – NOW : Steering Committee, Asia Pacific Sepsis Alliance, Asia Pacific Region
2018 – NOW : President Malaysian Sepsis Alliance (Persatuan Sepsis Malaysia, MySepsis)
2017 – NOW : Certified in Antimicrobial Stewardship – University of Dundee, United Kingdom
2014 – NOW : Committee for Antimicrobial Stewardship, Hospital Canselor Tunku Muhriz, Universiti Kebangsaan Malaysia
2014 – NOW : Professional Associate, American Heart Association & American Stroke Association
2013 – NOW : Member of Academy of Medicine of Malaysia, Member of College of Emergency Physician
2013 – NOW : Certified Instructor for International Advance Cardiac Life Support
2012 – NOW : Doctor in Emergency Medicine, Universiti Kebangsaan Malaysia,
2010 – NOW : Certified Instructor for International Advance Trauma Life Support, 2010



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2003 : Medical Doctor Degree, M.D – Universiti Sains Malaysia.

Research Interests

My research interests are in sepsis, infection, Infection resistant, diagnostic and antibiotic stewardship, Pandemic, Infectious Outbreak, Emergency Medicine, critical care medicine.

Research Projects and Grants (2013-2019)

Total Value Grants related to sepsis under management (Project Lead) = **RM 563, 250.00**
Total Value Grants under management (Co-Researcher) = **RM 648, 164.93**
Total Value = **RM 1,211,414.93**

Awards

2021 – Translational Research Special Award, Universiti Kebangsaan Malaysia

2020 – Excellence Service of the Year 2020 Award

2019 – Silver Award, International Conference and Exposition on Inventions by Institutions of Higher Learning (PECIPTA)

2018 – Champion, Curriculum Module and Innovative Teaching 2018 (Immersive Teaching via Experiences category)”

2017 –National Intellectual Property Award. Finalist for “A Device and Method for Detecting Sepsis Dan Bacterial Infection” (PI2016001396 (MY), UKM IKB/108/2/1121, 26 July 2016

Administrative positions (Selected)

- 2019 till now – Head of Research and Publication Unit, Department of Emergency Medicine, HCTM.
- July 2018 till now - Coordinator for UKM Medical Faculty Alumni
- October 2016 till now - Committee Member for Antimicrobial Stewardship PPUKM
- 19th to 20th April 2017 - Curriculum reviewer for Masters in Emergency Medicine with Honors
- 1 March 2015 – 28 February 2018 - Advisory Committee for Department of Research in Emergency Medicine, Universiti Kebangsaan Malaysia Medical Centre

Publications (Recent 15 most relevant)

Journals

1. **TL Tan**, CW Kang, KS Ooi, ST Tan, NS Ahmad, DN Nasuruddin, et al. Comparison of sPLA2IIA performance with high-sensitive CRP neutrophil percentage PCT and lactate to identify bacterial infection, Scientific Reports 2021; 11 (1), 1-9.
2. NAH Jamaluddin, P Periyasamy, CL Lau, S Ponnampalavanar, PSM Lai, PSMei Lai, R Ramli, **TL Tan**, N Kori, MK Yin, NJ Azman, R James, K Thursky, IN Mohamed. Point Prevalence Survey of Antimicrobial Use in a Malaysian Tertiary Care University Hospital, Antibiotics 2021, 10 (5), 531



3. MAH Ismail, N Kamarudin, MN Abdul Samat, RMF Raja Abdul Rahman, Saberi Saimun, **TL Tan**, HM Neoh. Methicillin-Resistant Staphylococcus aureus (MRSA) Clonal Replacement in a Malaysian Teaching Hospital: Findings from an Eight-Year Interval Molecular Surveillance, *Antibiotics* 2021;10 (3), 320
4. NS Ahmad, **TL Tan**, KT Arifin, WZW Ngah, YAM Yusof. High sPLA2-IIA level is associated with eicosanoid metabolism in patients with bacterial sepsis syndrome. *PLoS one* 2020. 15 (3), e0230285
5. NS Muhamad Rizal, Neoh HM, Ramli R, Hanafiah A, Abdul Samat MN, **TL Tan**, Wong KK et. al. Advantages and Limitations of 16S rRNA Next-Generation Sequencing for Pathogen Identification in the Diagnostic Microbiology Laboratory: Perspectives from a Middle-Income Country. *Diagnostics*. 2020, Oct;10(10):816.
6. HF Sapri, MAH Ismail, NA Mohamad Sani, A Noordin, **TL Tan**, S Hussin et al. Molecular surveillance of methicillin-susceptible Staphylococcus aureus (MSSA) isolated over a one-year period from a Malaysian Teaching Hospital. *GERMS* 2020, 10(2),1191
7. HM Neoh, XE Tan, HF Sapri, **TL Tan** Pulsed-field gel electrophoresis (PFGE): A review of the “gold standard” for bacteria typing and current alternatives. *Infection, Genetics and Evolution* 2019, 103935.
8. LF Tee, **TL Tan**, H Neoh, R Jamal. Rapid Detection of Sepsis using CESDA: the Caenorhabditis elegans Sepsis Detection Assay. *Revista da Sociedade Brasileira de Medicina Tropical* 2019. 52, e20180300
9. A Noordin, HF Sapri, NAM Sani, SK Leong, XE Tan, **TL Tan**, NM Zin et al. Antimicrobial resistance profiling and molecular typing of methicillin-resistant Staphylococcus aureus isolated from a Malaysian teaching hospital. *Journal of medical microbiology* 2016. 65 (12), 1476-1481
10. XE Tan, HM Neoh, ML Looi, **TL Tan**, S Hussin, L Cui, K Hiramatsu et al. Comparative proteomics profiling reveals down-regulation of Staphylococcus aureus virulence in achieving intermediate vancomycin resistance. *Malaysian Journal of Microbiology* 2016. 12 (6), 498-505
11. **TL Tan**, et al. Comparison of Prognostic Accuracy of the quick Sepsis-Related Organ Failure Assessment between Short- & Long-term Mortality in Patients Presenting Outside of the Intensive Care Unit – A Systematic Review & Meta-analysis. *Scientific Reports* 2018, 8: 16698
12. NN Nik Mansor, **TL Tan**, NS Ahmad, DN Nasuruddin, A Ithnin, IZ Zaini, E Safitri, D Futra, YH Lee NI Hassan. An amperometric biosensor for the determination of bacterial sepsis biomarker, secretory phospholipase Group 2-IIA using a Tri-Enzyme System. *Sensors* 2018; 18:686
13. **TL Tan & YY Goh**. The role of group IIA secretory phospholipase A2 (sPLA2-IIA) as a biomarker for the diagnosis of sepsis and bacterial infection in adults—A systematic review. *PLoS ONE* July 3, 2017. <https://doi.org/10.1371/journal.pone.0180554>
14. **TL Tan**, et al. (2016) CD64 and Group II Secretory Phospholipase A2 (sPLA2-IIA) as biomarkers for Distinguishing Adult Sepsis and Bacterial Infections in the Emergency Department. *PLoS ONE* 11(3): e0152065. doi:10.1371/journal.pone.0152065
15. **TL Tan**, Noor Asmidar, Ong WJ, A Fuad, Fahmi MN, Chieng ZL, NAS Ismail. The 28-Day Mortality Prediction in Sepsis Patients Using Static Lactate Concentration and Early Lactate Clearance: An Observational Study. *Med & Health* 2014; 9(2):124-133



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Books

1. **Tan Toh Leong**, Lim Jun Yi. Title: Sepsis management: A quick guide – Suitable for low-middle income countries.
2. **Tan Toh Leong**, Nurul Huda Ahmad, Neoh Hui-Min. Title: Sepsis - The New Insight – English
3. **Tan Toh Leong**. Title: Dengue - The Biomarkers- English
4. Tan Xin-Ee, Neoh Hui-min, **Tan Toh Leong**. Title: MRSA dan Vankomisin – Malay
5. Nurul Saadah Binti Ahmad, **Tan Toh Leong**, Khaizurin Tajul Arifin. Title: Sepsis jangkitan bakteria. *Sepsis – Bacteria Infection* – Malay

JOURNAL/BOOK/PROCEEDINGS REFEREES

1. Reviewer 2021-08-24. Antimicrobial use and co-infections among hospitalized patients with COVID-19: a prospective observational cohort study. *Emerging Microbes & Infections*. (ISI Q1: IF 7.163)
2. Reviewer 2021-05-07. Convalescent plasma efficacy in life-threatening COVID-19 patients admitted to the ICU. *Journal of Clinical Medicine*. (ISI Q1: IF 4.241)
3. Reviewer 2021-03-04. Effect of N-acetylcysteine administration on 30-day mortality in critically ill patients with septic shock caused by carbapenem-resistant *Klebsiella pneumoniae* and *Acinetobacter baumannii*: a case-control study. *Antibiotics* (ISI Q1: IF 4.639)
4. Reviewer 2020-11-16. Prognostic Value Of Diagnostic Scales In Community-Acquired Sepsis Mortality At An Emergency Service. *Journal of Clinical Medicine*. (ISI Q1: IF 4.421)
5. Reviewer 2020-09-23. A prospective validation study of prognostic biomarkers to predict adverse outcomes in COVID-19 patients: a study protocol. *BMJ Open* (ISI Q2: IF 2.496)
6. Reviewer 2020-06-10. Predictive Value of Combined Detection of PCT, D-dimer and CD62p in Patients with Sepsis. *European Journal of Inflammation* (ISI Q4: IF 0.466)
7. Reviewer 2020-02-14. Development and Validation of a Quick Sepsis-Related Organ Failure Assessment-Based Machine-Learning Model for Mortality Prediction in Patients with Suspected Infection in the Emergency Department. *Journal of Clinical Medicine*. (ISI Q1: IF 4.421)
8. Reviewer 2020-01-20. The Prognostic Role of Procalcitonin in Critically Ill Patients Admitted in a Medical Stepdown Unit: A Retrospective Cohort Study. *Scientific Reports* (ISI Q1: IF 2.766)
9. Reviewer 2019-11-28. Epidemiology and Trends of Sepsis in Young Adults Aged 20-44 Years: A Nationwide Population-Based Study. *Journal of Clinical Medicine*
10. Reviewer 2019-10-21 Predictive Validity of the qSOFA Score for Sepsis in Adults with Community-Onset Staphylococcal Infection in Thailand. *Journal of Clinical Medicine*
11. Reviewer 29-3-2019 Comparative Prognostic Accuracy of Sepsis Scores for Hospital Mortality in Adults with Suspected Infection in Non-ICU and ICU Populations at an Academic Public Hospital – *PlosOne* (ISI Q1: IF 2.766)
12. Reviewer 2018-12-28, The quick Sepsis-related Organ Failure Assessment [qSOFA] is a good predictor of in-hospital mortality in very elderly patients with bloodstream



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- infections. A retrospective observational study -The QJM: An International Journal of Medicine. (ISI Q1: IF 3.204)
13. Reviewer 2018-12-28, Lactate Predicts both Short and Long Term Mortality in Patients With and Without Sepsis, Journal of Intensive Care Medicine (ISI Q3 - IF: 2.514)
 14. Reviewer 2018-8-02, Basal Ganglia Hyperdensity on CT Brain: A Rare Finding of Non-Ketotic Hyperglycemia, Medicine and Health UKM (ECSI)
 15. Reviewer 2018-06-13, The Effectiveness Of Integrated Medical Response Protocol On The Knowledge, Attitude And Practice Of Healthcare Providers Involved In Patient Management During Flood Disaster In Kelantan: A Randomized Controlled Trial, Malaysia Journal of Public Health (SCOPUS)
 16. Reviewer 2017-06-05, Exploring Patient Management Issue During A Flood disaster in Kelantan, Malaysia: A Qualitatives Study , Jurnal Teknologi (ISI, SCOPUS)
 17. Reviewer 2017-04-04, Celecoxib enhances the efficacy of low-dose antibiotic treatment against polymicrobial sepsis in mice and clinical isolates of ESKAPE pathogens, Frontiers in Microbiology (ISI Q1, IF 4.165)
 18. Reviewer 2016-09-07, Can APRIL and sTACI serve as biomarkers in prediction of Multiorgan Dysfunction Syndrome Virulence, (ISI Q1, IF: 5.418)
 19. Reviewer 2016-07-05, Combination of Quantitative Bacterial and WBC Count in Symptomatic UTI to Estimate the Successful of Urine Culture, Malaysian Journal of Microbiology (ISI)
 20. Reviewer 2016-05-31, Exploring Patient Management Issues during a Flood Disaster in Kelantan, Malaysia, Jurnal Teknologi (ISI, SCOPUS)
 21. Reviewer 2016-03-31, The Early PREDiction of Severe Sepsis (ExpRES-Sepsis) study: protocol for an observational derivation study to discover potential leukocyte cell surface biomarkers, BMJ Open (ISI Q1, IF: 2.562)