

Infectious Diseases

The Infectious Diseases team at CUHK has contributed to advancing the research on infectious diseases, including emerging infectious diseases such as SARS, seasonal and pandemic influenza, HIV / AIDS, community-acquired pneumonia, and tuberculosis. Our research interests include the following:

Co-morbidities in people living with HIV: HIV-infected individuals are enjoying near-normal life expectancy with the availability of effective combination antiretroviral therapy. At the same time, they are also at greater risk of suffering from a wide range of non-communicable diseases. Our research team strives to delineate the pathogenesis, outcomes and advances in treatment for various co-morbidities in HIV-infected individuals in Asia, including atherosclerosis, fatty liver disease, obesity, diabetes, renal disease and osteoporosis.

Antimicrobial stewardship and resistance: The rising trend of multidrug resistance to a wide range of organisms is both a global and local concern. Our research team focuses on evaluating different strategies to optimise antimicrobial prescriptions for healthcare workers, including the use of biomarkers and electronic clinical decision tools.

Tuberculosis and other respiratory tract infections: Respiratory tract infections and tuberculosis constitute one of the most important causes of mortality from infectious diseases worldwide. We collaborate with our Respiratory division and microbiologists to perform translational and clinical research in this area to enhance rapid diagnostics, better understand aetiologies, and improve treatment for better outcomes.

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Nephrology

Nephrology is a rapidly evolving field of medicine, particularly with the expected emergence of new therapeutic advances for the treatment of kidney diseases and new dialysis technology. Our mission is to serve patients with renal disease with the highest quality of caring service, to educate medical students, medical doctors and healthcare personnel with the aim of upgrading the standard of care of nephrology in Hong Kong, and to conduct research for the advancement of health science and clinical care. Our research interests include the following:

- I. Peritoneal dialysis
 - Peritonitis treatment and prevention
 - Circulating bacterial fragment, cardiovascular disease and fluid overload in dialysis
- II. Chronic kidney disease
 - Treatment of IgA nephropathy
 - Novel urinary biomarkers for diagnosis, monitoring and risk stratification

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Neurology

We have pioneered research in the following areas of brain disease that are becoming increasingly prevalent in Asia:

Vascular Cognitive Disorders (VCD): As pioneers of VCD research in Asia, we were the first to use amyloid PET in a VCD study. Known for setting the standard in VCD research (neuroimaging, cognitive assessment), our work has been published in *The Lancet Neurology* and *Nature Reviews Neurology*, and received the Excellent Research Award from the Hong Kong Food and Health Bureau.

Stroke: We were the first to reveal intracranial atherosclerosis (IA) as the most common stroke aetiology in Asians and have evaluated various anti-thrombotics regimes and endovascular revascularisation in IA. Our work has been published in the *New England Journal of Medicine* and *The Lancet Neurology*, and has also received a number of State Science and Technology awards.

Parkinson's Disease (PD): In collaboration with neurosurgeons, we performed the first deep brain stimulation for PD in Asia. Together with psychiatrists, we study pre-clinical PD using PET imaging.

Epilepsy: We pioneered the use of intracranial electroencephalogram (EEG) and high-frequency oscillations in the evaluation of epilepsy and are exploring the use of herbal medicine in its treatment.

Multiple Sclerosis (MS): We are developing a computational MRI platform and pioneering the use of integrative medicine for the management of MS.

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Rheumatology

The driving research interest of the Division is the role of inflammation and autoimmunity in the development of co-morbidities in patients with rheumatic diseases, particularly premature atherosclerosis and bone loss.

Cardiovascular disease is one of the major causes of morbidity and mortality in patients with rheumatic diseases. In the field of premature atherosclerosis in rheumatic diseases, CUHK is the leading centre in Asia. We have published in high-impact journals on how inflammation accelerates subclinical atherosclerosis and arterial stiffness, and have proved that effective suppression of inflammation can prevent the progression of premature atherosclerosis. Thanks to the availability of state-of-the-art, high resolution peripheral quantitative CT (HR-pQCT) scans, we have identified how inflammation and glucocorticoid lead to bone loss in patients with inflammatory arthritis and provided new treatment options to prevent bone loss and even heal bone erosions.

In recognition of the value of our research projects, we have received local, national and international awards and support from various government funding agencies and pharmaceutical companies. We have not only become a major training centre for local and international PhD students but have also established an extensive collaboration network with leading overseas universities, including the Study group for Extreme CT (SPECTRA).

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Medicine and Therapeutics

The Department of Medicine and Therapeutics, one of the larger clinical departments in the Faculty of Medicine, is composed of academic clinicians and basic scientists. Many of our academic staff are affiliated with the School of Biomedical Sciences, Li Ka Shing Institute of Health Sciences, and Jockey Club School of Public Health and Primary Care, with close collaboration with the Nethersole School of Nursing and the School of Pharmacy. We also work in close partnership with staff of the Hospital Authority in providing excellent clinical service, teaching and research.

DEPARTMENT OF MEDICINE AND THERAPEUTICS

“ The Department of Medicine and Therapeutics is a leading centre for research and medical education. Located at our major teaching hospital, Prince of Wales Hospital, and supported by good research facilities and technological platforms, the Department facilitates exchanges between clinical medicine and basic science research. Activities of the Department include undergraduate and postgraduate education in clinical medicine and biomedical sciences, in addition to its major research programmes. ”

David SC HUI
Chairman



Cardiology

Our Division aspires to be a world leader in cardiovascular medicine through its resolute commitment to excellence in patient care, medical education and scientific research. We are engaged in a broad spectrum of research programmes, ranging from basic bench science and translational investigation to clinical trials, biomedical engineering, epidemiological studies and health economics. Our mission is to understand the underlying causes of cardiovascular diseases, develop new treatments and improve outcomes. As a result of our efforts, we have earned an excellent international reputation in a number of areas of cardiovascular medicine, particularly in heart failure, echocardiography and cardiac resynchronisation therapy.

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Dermatology

The Division provides high quality, subspecialised services in hospital and medical dermatology through a team of dermatologists with strong medical backgrounds working closely with pathologists and other relevant specialties. We provide a one-stop, comprehensive dermatology service, from admission to follow-up, as well as hair root analysis, biologics treatment and cutaneous oncology service. To broaden our knowledge of the skin, we undertake multidisciplinary collaborations and clinical research. Areas of interest include research into severe cutaneous adverse drug reactions, hair and scalp disorders, severe psoriasis and eczema, as well as autoimmune blistering diseases.

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Endocrinology and Diabetes

Diabetes is one of the most widespread chronic non-communicable diseases, affecting more than 10% of the population globally and locally. The Division carries out research to advance our understanding of diabetes and endocrine diseases, with a focus on the epidemiology and genetics of diabetes and related complications, and to discover novel treatments for diabetes. The Division has established several important resources, including the world-renowned Hong Kong Diabetes Registry, which has played a major role in defining the epidemiology of diabetes in Asians. Additionally, we developed the structured care assessment model and a comprehensive complication screening method that has been adopted by other public hospitals in Hong Kong and beyond. To identify novel biomarkers for diabetes and conduct translational research, our group utilises genomics as well as other state-of-the-art “omics” technologies as part of our multidisciplinary approach.

The Division also has extensive experience conducting investigator-initiated or sponsored clinical trials of care delivery models or novel treatments of diabetes and its complications, in particular targeting cardiovascular and kidney complications in diabetes. We are also interested in investigating other endocrine disorders, such as polycystic ovary syndrome, gestational diabetes, childhood obesity, metabolic surgery and neuroendocrine tumours.

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Clinical Pharmacology

Clinical pharmacology is a multidisciplinary sub-specialty of internal medicine, involving the development and evaluation of medicinal products to ensure their efficacy, safety, and rational, cost-effective use in health protection and disease management. Our research interests and achievements include the following:

Drug development and evaluation: The Bioavailability and Bioequivalence (BABE) Clinical Research Unit is the first to be accredited by the China Food and Drug Administration (CFDA) for evaluation of novel / generic drugs in their early phase of development. Working in partnership with the Phase 1 Clinical Trial Centre, the School of Pharmacy and other clinical research units, the BABE team generates the scientific data required for the inclusion of these medicinal products into the Hospital Authority Drug Formulary and for worldwide registration, including mainland China.

Pharmacogenomics and personalised medicine: We use real-world databases to examine inter-ethnic differences in drug responses, the inter-relationships among genotypes and phenotypes, treatment and outcomes. We also combine team-based care and information technology to ensure treatment adherence brings out the best in modern medicinal products.

Training, services and consultancy: We provide expert advice to the Government and healthcare professionals on regulatory and public health issues related to drug usage, food safety and environmental toxicology. Through the Prince of Wales Hospital Poison Treatment Centre (PWHPTC) and the Centre for Food and Drug Safety of CUHK, we provide services and specialist training in clinical pharmacology, therapeutics and toxicology.

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Geriatrics

Our Division aims to improve the quality of life of older patients through the provision of holistic medical care and multidisciplinary interventions. We focus our research on common geriatric conditions such as dementia, frailty, sarcopenia and osteoporosis, and healthy ageing. In addition, we have translated our research findings with direct care services and public education provided through the CUHK Jockey Club Institute of Ageing and our research and service centres, thus maximising their societal impact.

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Haematology

The main research interests of the Division include autoimmune diseases, bleeding and thrombosis. We have published in high-impact journals on immune thrombocytopenia (ITP), including our pioneering use of high dose dexamethasone in the initial treatment of ITP. Moreover, our Division has been involved in numerous international collaborative clinical trials on various benign and malignant haematological diseases. In collaboration with many regional and international experts, we have developed a regional consensus and published guidelines on the management of several haematological conditions.

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Gastroenterology and Hepatology

Digestive diseases have always been a major threat to global health, with cancers of stomach, colon and liver persistently ranking among the top cancer killers. Our Division has a strong culture of interdisciplinary collaboration with surgeons, molecular biologists, pharmacologists, pathologists, microbiologists, psychiatrists, public health specialists and radiologists. Through our work, we have contributed to major breakthroughs that have improved the clinical management of digestive diseases. These include the advent of endoscopic therapies, research on molecular diagnostic tools for cancers, and the development of novel treatments for acid-peptic disease and viral hepatitis. Our achievements have been recognised at both the national and international level.

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Respiratory Medicine

Respiratory diseases are important causes of morbidity and mortality. With the ageing of our population, more and more elderly subjects are developing common airway diseases such as chronic obstructive pulmonary disease (COPD). Another common problem in the Chinese population is obstructive sleep apnoea due to craniofacial factors and increase in obesity. In addition, the emergence of severe acute respiratory infections such as SARS, avian influenza and MERS has highlighted the importance of developing better strategies in infection control and clinical management. Along with a strong commitment to providing excellent clinical service and education in respiratory diseases, we conduct research in the following areas:

- Sleep-related breathing disorders, including their epidemiology, craniofacial features, treatment, cardiovascular outcome, and health status
- Infection control and safety of respiratory therapy in the post SARS era
- Clinical management of emerging respiratory viral infections
- The epidemiology, aetiology and mechanisms of asthma and COPD

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