

# Implementing evidence-based research in the era of COVID-19 and other global health challenges

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The Health Research Symposium 2021 ([https://rfs.fhb.gov.hk/english/events/health\\_research\\_symposium\\_2021.html](https://rfs.fhb.gov.hk/english/events/health_research_symposium_2021.html)), organised by the Research Office of the Food and Health Bureau (FHB), was held on 23 November 2021 at the Hong Kong Academy of Medicine Jockey Club Building. The event, which marked the 10th anniversary of the establishment of the Health and Medical Research Fund (HMRF), provided a valuable platform to facilitate academic exchange, bringing together researchers, health service providers, and policy makers to share with a view to advancing science in health. This year's Symposium, for the first time, was held in hybrid mode with presentations being made both virtually and in person. The Symposium was attended by some 690 delegates (online and on-site). A total of 207 abstracts were published and 185 electronic posters were exhibited on the online platform, including 30 physical posters of COVID-19 studies, which were also exhibited on-site.

The Symposium opened with a short video clip describing the role and impact of the HMRF since its establishment in 2009 ([https://www.youtube.com/watch?v=aY7ar21i\\_TA](https://www.youtube.com/watch?v=aY7ar21i_TA)). In the video, many renowned local researchers highlighted the impact of HMRF in translating research findings into evidence-based policies and practices as well as in building up capacity in the research community.

Prof Sophia Chan Siu-chee, JP, the Secretary for Food and Health, officiated at the Opening Ceremony and warmly welcomed the keynote speakers, distinguished guests, and other participants to the Symposium. She noted the continuous growth and development of health and medical research in Hong Kong from 1994 to the present day and the unique position of the HMRF as the only local funding platform bridging the gap between benchtop research and clinical translation of research findings. Reflecting on the Symposium's theme of "Implementing evidence-based research in the era of COVID-19 and other global health challenges", Prof Chan stated that it aimed to understand how the challenges to the healthcare system resulting from the global COVID-19 pandemic could be mitigated through application of evidence-based research findings, which well reflected the HMRF's objectives.

FHB and HMRF have awarded a total of \$513 million to support 67 COVID-19 research studies

in the period April 2020 to August 2021. Many of these studies applied cutting-edge technologies to fill the knowledge gaps from bench to bedside to the community and to better prepare Hong Kong for the recovery stage of the COVID-19 epidemic. Prof Chan expressed her sincere thanks to each and every project team joining the fight against COVID-19.

FHB has committed extensive resources via the HMRF to support research on primary healthcare and non-communicable diseases, and many of these studies were being showcased at the Symposium. Several studies, for example, those on tobacco control and cancer screening, have had a positive impact on the quality of life and overall population health through informing health policy and decision-making as well as enhancing clinical practice and health services. The significant reduction in smoking and tobacco use in Hong Kong in recent years and the implementation of the Breast Cancer Screening Pilot Programme were just two examples of the application of findings from HMRF-funded research projects.

In closing, Prof Chan thanked the four keynote speakers, 24 local speakers, as well as Members of the Organising Committee and Review Panel of the Symposium, the Moderators of the Keynote and Parallel Sessions, and the notable experts who had participated in the HMRF video clip.

The following is a summary of the four keynote lectures:

## **Keynote lecture 1:**

### **Innovation in design and implementation of primary care clinical trials to generate evidence for community therapeutics for COVID-19: The UK National Urgent Public Health PRINCIPLE Trial example**

Prof Chris BUTLER

Professor of Primary Care, Nuffield Department of Primary Care Health Sciences, University of Oxford, United Kingdom

Moderator: Prof Gabriel LEUNG, LKS Faculty of Medicine, The University of Hong Kong

Prof Butler presented a lecture that focused on an example of the rapid initiation and implementation of a novel clinical trial in the community, with

findings generated rapidly enough to be implemented during the COVID-19 pandemic. The platform randomised trial of treatments in the community for epidemic and pandemic illnesses (PRINCIPLE) was a multicentre, open-label, multi-arm, response-adaptive platform randomised controlled trial of community treatments for COVID-19. Prof Butler explained that PRINCIPLE operated under a master protocol that allowed the addition of further interventions into the trial while the trial was already in progress, so a new trial did not need to be started afresh each time an additional suitable intervention became available. This meant that existing controls could be used efficiently to give rapid answers about the effectiveness of new interventions. Response adaptive randomisation allowed the proportion of participants allocated to each intervention to be adjusted, based on emerging data from the trial to increase efficiency and shorten time to results. Apart from innovations in trial design, PRINCIPLE also resulted in innovation in trial implementation such as recruiting subjects through online methods as well as stimulating innovation in the evidence base where clinical alerts could be rapidly disseminated to clinicians to facilitate uptake of the latest findings.

**Keynote lecture 2:  
Infectious disease dynamics as a tool for decision makers during pandemics**

Prof Steven RILEY  
Professor of Infectious Disease Dynamics, School of Public Health, Faculty of Medicine, Imperial College London, United Kingdom

Moderator: Prof Gabriel LEUNG, LKS Faculty of Medicine, The University of Hong Kong

Many infectious diseases spread quickly from person to person. This makes them fundamentally different to other health threats because the amplitude of the threat they pose can accelerate exponentially, forcing leaders to make very difficult decisions in a short space of time with imperfect information. The emergence of SARS-CoV-2 illustrated clearly how leaders can reach very different conclusions. In his keynote presentation, Prof Riley gave examples of how the science of infectious disease dynamics could help reduce uncertainty when used to inform planning, responding, and learning from pandemics. As the world transitions from low to high immunity against SARS-CoV-2 with as little health impact as possible, Prof Riley noted that we have the opportunity to revise our plans to reduce greatly the impact of the next similar emergent virus.

**Keynote lecture 3:  
Introducing Implementation Science – Linking Research and Practice**

Prof Per NILSEN

Professor of Health Medicine and Caring Science, Linköping University, Sweden

Moderator: Prof YEOH Eng-kiong, The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong

Prof Nilsen provided an overview of the implementation science field and summarised knowledge about barriers to implementation and facilitators and strategies to overcome challenges to achieve a more evidence-based healthcare practice. Prof Nilsen explained that the word ‘implement’ was derived from the Latin ‘implere’, meaning ‘to fulfil’ or ‘carry into effect’. This provided a basis for a broad definition of implementation science as the scientific inquiry into questions concerning how to carry intentions into effect. The intentions might be formulated in policies, clinical guidelines or other recommendations; they could be manifested in specific interventions; and they could relate to the use of research in decisions by individuals and organisations. The birth of implementation science was usually linked to the emergence of the evidence-based movement in the 1990s, which popularised the notion that research findings and empirically supported (‘evidence-based’) interventions should be more widely implemented in healthcare and other settings for improved health and welfare of populations. The field of implementation science has identified many challenges that exist when translating research into practice and investigated strategies to address these obstacles.

**Keynote lecture 4:  
Better Research and Better Uptake: Lessons from the Pandemic**

Prof Paul GLASZIOU  
Director, Institute for Evidence-Based Healthcare, Faculty of Health Sciences & Medicine, Bond University, Australia

Moderator: Prof YEOH Eng-kiong, The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong

In his presentation, Prof Glasziou pointed out that in previous pandemics, large-scale randomised trials were generally not set up in time. For the >2000 planned drug studies examining COVID-19 treatments, most had delivered little or no directly useful information. However, there were some important exceptions, with trials such as RECOVERY, REMAP-CAPS, and SOLIDARITY setting new standards and showing that a combination of old-fashioned randomisation, established clinical-trials networks and imaginative use of modern information technology could provide many rapid and reliable therapeutic answers. The speed of the RECOVERY trial was record-breaking: the period from protocol

to first patient recruitment was 9 days, with the 176 UK hospitals recruiting >12000 hospitalised patients (15% of the UK COVID-19 cases at the time), and it provided clear answers within a few months on the effectiveness of dexamethasone and the ineffectiveness of hydroxychloroquine and lopinavir-ritonavir. Although the pandemic had seen remarkable trials for vaccines and drug treatments, much less had been done to evaluate the effects of public health and social measures (also known as non-pharmaceutical interventions). Only a handful of trials had been registered and few completed in time to influence practice and policy. Important lessons could be learned from examining both the successes and failures of research during this pandemic, both in research and in its implementation.

### Sharing session on Research Fellowship Scheme

Four researchers supported by the Research Fellowship Scheme of the HMRF shared what they had learnt from their training programmes and how they had applied the skills acquired in their research

projects. Dr KWOK Man-ki (School of Public Health, The University of Hong Kong) presented her work on “Income inequality and cardiovascular health in China”. Dr Wendy HUANG Yajun (Department of Sport, Hong Kong Baptist University) presented her work on “Evaluation of uptake and impact of Physical Activity Guidelines for preschool children in Hong Kong”. Dr Jessie LIANG Qiaoyi (Department of Medicine and Therapeutics, The Chinese University of Hong Kong) presented her work on “Establishing a best panel of stool-based detection for non-invasive colorectal neoplasm screening”. Dr Jeremy TEOH Yuen-chun (The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong) presented his work on “The cost-effectiveness of Prostate Health Index for prostate cancer detection in Chinese men”.

### Award ceremony

The Symposium ended with an award ceremony to acknowledge outstanding research whose outcome has influenced health policy and practice in Hong Kong. The award recipients were as follows:

#### Outstanding project team on COVID-19 Research Awards

Principal applicant	Project title
Prof Benjamin John COWLING The University of Hong Kong	Nowcasting COVID-19 transmission dynamics, severity, and the effectiveness of control measures
Prof NG Siew-chien The Chinese University of Hong Kong	Role of gastrointestinal tract and gut microbiota in pathogenesis of coronavirus disease 2019 (COVID-19): a missing site for viral replication and transmission
Prof Leo POON Lit-man The University of Hong Kong	Molecular epidemiological study of COVID-19 cases in Hong Kong
Dr Gilman SIU Kit-hang The Hong Kong Polytechnic University	Whole-genome sequencing of COVID-19 cases in Hong Kong: development of a geo-phylogenetic database and characterisation of SARS-CoV-2 variants circulating in the community
Prof ZHANG Tong The University of Hong Kong	Grid monitoring of SARS-CoV-2 in sewage for an early-warning sign of community outbreak

#### The 10th HMRF Anniversary Awards

##### Breakthrough research

Principal applicant	Project title
Prof Alfred CHENG Sze-lok The Chinese University of Hong Kong	Elucidating gene regulatory networks of HBx isolated from novel HBV subgenotype/ mutants associated with increased risk of hepatocellular carcinoma
Prof Richard CHOY Kwong-wai The Chinese University of Hong Kong	Clinical application of an established target-enrichment massively parallel sequencing method for genetic screening and diagnosis of hereditary hearing loss patients with normal arrayCGH result
Prof JIN Dong-yan The University of Hong Kong	Roles of Epstein-Barr virus-encoded miR-BART microRNAs in viral persistence and transformation of epithelial cells

### Public health, clinical and health services research

Principal applicant	Project title
Prof Cindy LAM Lo-kuen The University of Hong Kong	A study on health-related quality of life of patients with colorectal neoplasm and cost-effectiveness analysis of colorectal cancer screening in Hong Kong
Dr Wendy LAM Wing-tak The University of Hong Kong	A longitudinal study of psychosocial needs, physical symptom distress, and psychological distress of Chinese patients with colorectal cancer
Prof Vincent MOK Chung-tong The Chinese University of Hong Kong	Amyloid burden in poststroke dementia

### Health promotion

Principal applicant	Project title
Prof LAM Tai-hing The University of Hong Kong	Youth Quitline: an accessible telephone-based smoking cessation hotline for youth
Prof Albert LEE The Chinese University of Hong Kong	Community development approach to create better health of our young generation within the settings of their daily life
Prof Vivian LEE Wing-yan The Chinese University of Hong Kong	Joint nursing-pharmacy health promotion programme for hidden elders in the community
Prof Agnes TIWARI Fung-yea The University of Hong Kong	Becoming parents: a hospital-community partnership to enhance transition to parenthood

### Excellent Research Awards

Principal applicant	Project title
Prof Richard CHOY Kwong-wai The Chinese University of Hong Kong	Whole genome sequencing analysis of genetically undiagnosed euploid fetuses with increased nuchal translucency
Prof Ava KWONG The University of Hong Kong	Screening of founder and recurrent BRCA mutations in Hong Kong and US Chinese populations
Prof LAU Chak-sing The University of Hong Kong	Validation of a new definition of lupus low disease activity state (LLDAS): clinical and management implications
Prof LI Miao-xin Administering institution: The University of Hong Kong	Development of multivariate gene-based association analysis approaches for endophenotypes of complex diseases and their application to genetic mapping in a Chinese schizophrenia sample
Prof Winnie MAK Wing-sze The Chinese University of Hong Kong	Mobile self-compassionate programme for the promotion of public mental health: randomised controlled trial
Prof NG Ho-keung The Chinese University of Hong Kong	Molecular stratification of lower grade gliomas in routine practice in Hong Kong

### Excellent Health Promotion Project Awards

Principal applicant	Project title
Ms Vicky CHUNG Wai-yin Life Education Activity Programme	"A Healthy Me Is Alcohol Free"- Helping students to avoid alcohol and develop a healthy life (健康不要「酒」)
Prof Angela LEUNG Yee-man The Hong Kong Polytechnic University	Changing the way we prevent diabetes: the use of mobile application

### The Most Promising Young Researcher Awards

Principal applicant	Project title
Dr CHEUNG Ching-lung The University of Hong Kong	The role of vitamin D and bone metabolism in cardiovascular events risk, an interaction or mediation? An 11-year follow-up study
Prof LI Miao-xin Administering institution: The University of Hong Kong	Development of multivariate gene-based association analysis approaches for endophenotypes of complex diseases and their application to genetic mapping in a Chinese schizophrenia sample

### Best Poster Awards

Principal applicant	Project title
Prof David HUI Shu-cheong The Chinese University of Hong Kong	Comparisons of exhaled air dispersion during high flow nasal cannula oxygen therapy and CPAP
Prof JIN Dong-yan The University of Hong Kong	Development and test of candidate attenuated vaccines for SARS-CoV-2
Prof Maria LUNG The University of Hong Kong	Clinical application of enumeration and genomic characterization for non-invasive detection and real-time monitoring of circulating tumor cells for esophageal carcinoma
Prof Joyce YOU Hoi-sze The Chinese University of Hong Kong	EGFR mutation-guided first-line target therapies of advanced non-small-cell lung cancer: a health economic analysis
Dr Derek CHEUNG Yee-tak The University of Hong Kong	Use of nicotine replacement therapy sample and brief smoking cessation advice for recruiting smokers to smoking cessation services and motivating quit attempts

To celebrate the 10th anniversary of the establishment of the HMRF and the 25th anniversary of the establishment of the Hong Kong Special Administrative Region, the recipients of the 10th HMRF Anniversary Award were invited to give a presentation at a series of Journal Clubs (<https://rfs2.fhb.gov.hk/english/events/events.html>) organised by the Research Office of FHB from January to May 2022. The talks focused on the new findings and their implementation into practices in clinical and community settings.

Dr Chui Tak-yi, JP, Under Secretary for Food and Health, thanked the keynote speakers, moderators, judges, speakers in the parallel sessions, and all those who had prepared posters about their work. He also congratulated all the awardees who had conducted world-class studies and proved themselves as leading experts in their own research area. Finally, Dr Chui thanked the Organising Committee and all the delegates for attending and looked forward to meeting them again at the next Health Research Symposium.