Issue 16 **Aug-Sep 2013**

A Newsletter For The Research Community In Singapore

National Healthcare Group

Adding years of healthy life

catalyst

ACCELERATING **RESEARCH**

AGEING RESEARCH

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Dear Readers,

Improvements in healthcare and living conditions coupled with declining fertility rates have contributed towards the shift to an aged population profile worldwide.

According to the Global Burden of Disease Study 2010 published in Lancet in December 2012, the report showed that both men and women worldwide have gained slightly more than 10 years of life expectancy, but they spend more years living with injury and illness. Singapore was reported to have one of the highest healthy life expectancy in the world for men and women. For instance, a boy born here in 1990 could expect to live 72.8 years and a girl, 77.9 years while in 2010, it had gone up to 78.8 years for boys and 83.3 years for girls. While part of the increase is in healthy years, unfortunately, the last decade or so will be lived in poor health with women being harder hit by various disabilities!

The push for research to militate against the ailments associated with ageing is now more urgent than ever before. In line with our vision of "Adding Years of Healthy Life", there are already many ongoing research in ageing. In this issue of Catalyst, we highlight some of them – in dementia, depression, aging skin, cognitive impairment and health status assessment in the elderly.

To push ageing research to greater heights, Nanyang Technology University (NTU) and NHG recently launched the Ageing Research Grant (ARG) to fund collaborative projects at S$400,000 each. The grant aims to facilitate inter-disciplinary approach to ageing research that may generate new knowledge and outcomes that could improve health, and quality of life of the elderly.

On the lighter side, as you turn the pages of this issue, I hope you like our new look and feel. Please continue to write in to us with your valuable feedback or if you have research stories and news to share with the research community. We love to hear from you.

Till next time!

Yours Sincerely,

Farah Haniff
Editor-in-Chief

National Healthcare Group
Adding years of healthy life

Your Newsletter, Your Comments

Please send us your comments and feedback to **researchtraining@nhg.com.sg** (Attn: NHG Research Editorial Workgroup)

Modes of contribution:

By Mail
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Designed by creativessence design & communications

Error in Issue 15 (May/June 2013)

In Issue 15 (May/June 2013), the article "Depressive Symptoms in Singaporean Primary Care Patients: Do They Differ Based on Age, Gender or Ethnicity?" on Page 8 was written by Ms Tan Yan Lin, Research Assistant, Department of Child and Adolescent Psychiatry, Institute of Mental Health. We apologise for this missing information.

Monitoring Treatment Outcome

(left to right)
Dr Victoria Manning (Senior Research Manager), Dr Kandasami Gomathinayagam (Consultant, Chief), Puay Kee Koh Research Officer), Rebecca Ong (Research Assistant) and Andrew Ng (Research Assistant) Dr Guo Song (Consultant/Research Head) (missing from photo).

Dr Victoria Manning
PhD, MSc, BSc (Hons), C.Psychol.
Senior Research Manager, National Addictions Management Service (NAMS), Institute of Mental Health, Singapore
Adjunct Assistant Professor, Duke-NUS, Program in Neuroscience & Behavioral Disorders and Health Services & Systems Research

Development of Treatment Outcome Monitoring system at the Institute of Mental Health for addiction patients boosts their confidence and commitment to their long-term recovery.

International research highlights the importance of optimising clinical care through implementation of standardised and systematic data collection in the form of treatment outcome monitoring (TOM) systems. This clinical data can be used to provide representative and on-going information to service providers to inform the planning and development of treatment delivery.

Our research team at the Institute of Mental Health led by Dr Victoria Manning developed a TOM system for patients at the National Addictions Management Service with drug, alcohol and gambling disorders.

One of the first projects undertaken by the research team which was formed in 2009 was to develop an efficient TOM system for patients with drug alcohol and gambling disorders. This enables us to determine the nature and extent of recovery following addiction treatment and gather direct patient feedback so that we can continually improve service delivery.

Treatment at NAMS involves an abstinence-orientated, predominantly Cognitive Behavioural Therapy (CBT) and motivational interviewing approach, comprising at least monthly one-to-one sessions with a doctor and/or counsellor, and optional group therapy sessions for up to one year.

> The Development

Recent efforts to redefine 'recovery' have shifted away from mere sobriety/abstinence, and towards a more holistic approach that includes behavioural indices such as reduced frequency/quantity as well as improved personal health, interpersonal relationships and citizenship. Therefore, it is imperative that our outcome measures assess these multidimensional aspects of recovery are reliable, brief and sensitive to detect change in response to treatment.

We use standardised measures of addiction severity which is the Addiction Severity Index - Lite for substance misusers, Gambling Symptom Assessment Scale, the Personal Wellbeing Index - to assess quality of life and the Treatment Perception Questionnaire to assess treatment satisfaction.

For the first two years (Phase 1), the TOM co-ordinators administered these measures to all addiction patients on treatment entry (baseline), and attempted follow-ups at three, six and 12 months, irrespective of treatment attendance status. The resource intensity and challenge of tracking elusive patients along with findings from Phase 1 prompted us to revise the programme at Phase 2, focussing on patients in treatment up to six months and using urine screens and breathalysers to verify self-reports of abstinence.

> The Work

To date, we have conducted TOM on over 3000 substance misusers and more than 1000 problem or pathological gamblers. The programme was also extended to adolescents and other behavioural addictions such as gaming, internet and sex addiction.

The resulting dataset is regularly analysed by the TOM co-ordinators to demonstrate clinical improvement as evidence supporting departmental KPIs. This patient database is also de-identified and registered as a 'standing database' which grants the research team permission to conduct analyses. And, this also enables us to advance knowledge base on treatment effectiveness by disseminating findings in peer-review manuscripts, at local and international conferences and via other media. Patient data is also shared with doctors and counsellors to ensure that treatment is tailored to meet individual needs

However, most importantly the TOM co-ordinators note that patient feedback on positive changes serves as a confidence boost, reinforcing the benefits of treatment and their commitment to long-term recovery.

> The Outcomes

To date, we have published three papers from the dataset. Among the key findings are:

- About 70 per cent of alcohol patients showed significant clinical improvement after three months of treatment.
- Significant reductions in gambling severity and improved quality of life achieved at three months are sustained up to one year.
- Treatment satisfaction is the strongest and most significant predictor of improved clinical outcomes for both addiction populations.

In addition, we have presented findings from this dataset at nine conferences, two of which earned awards for best presentation, one by Dr Kandasami Gomathinayagam, on the outcome of benzodiazepine abusers at the 13th Congress of ASEAN Federation of Psychiatry and Mental Health (2012) and the other by Dr Victoria Manning on suicide and self-harm in substance and behavioural addictions at the Asia Pacific Behavioural And Addiction Medicine (APBAM) Conference, held in Singapore this year.

Several other papers are currently in preparation and shed light on demographic and clinical predictors of clinical outcomes, demonstrating that recovery is a real and achievable goal, in which NAMS clinicians play a contributory role.

Study: Treatment Monitoring of patients with gambling, substance use and behavioural addiction disorders. Principal Investigator: Dr Victoria Manning

The Institute of Infectious Disease and Epidemiology

The history of the Institute of Infectious Disease and Epidemiology goes back to 1907 when it started off as an Infectious Disease Camp.

Way back in the early 1900s, the Singapore government established its first Infectious Disease Camp to manage infectious diseases which were rampant then.

In time, it became the Communicable Diseases Centre (CDC) which has been the national centre for the management of communicable and infectious diseases in Singapore.

This framework has evolved over the years and transformed into a brand new institution - the Institute of Infectious Disease and Epidemiology (IIDE), which was established in November 2012 by Tan Tock Seng Hospital (TTSH).

This new institute serves to provide a seamless integration of both clinical service and academic inquiry, constituted by the synergistic roles of Communicable Disease Centre (CDC), the Department of Infectious Disease (Dept of ID) and the Department of Clinical Epidemiology (DCE).

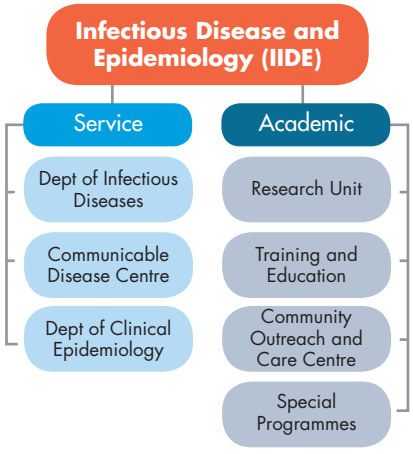
From this sharing, IIDE is able to better integrate and coordinate the various distinct but related functions of infectious diseases and epidemiology under one overarching structure to facilitate future growth in a concerted matter and improve the quality of patient care and academic advancement.

The organisational structure is supported by both the service and academic arms with 8 functional units. (See Organisational Chart).

The Department of Infectious Disease and Communicable Disease Centre provide compassionate medical care including inpatient, subspecialty service lines, and transition of care to outpatient for patients discharged for HIV, dengue, parenteral antimicrobials and other infectious diseases. The Department of ID also serves as a National Referral Centre for Outbreak of Communicable Diseases.

The Department of Clinical Epidemiology provides disease surveillance and research on hospital-associated infections and infectious disease of public health importance, outbreak investigations and management, infection prevention and control as well as the maintenance of epidemic and pandemic preparedness.

Infectious Disease and Epidemiology (IIDE)



INSTITUTE OF INFECTIOUS DISEASE AND EPIDEMIOLOGY

Training, education and research

Besides undergraduate trainings, the Training and Education unit provides a wide range of infectious diseases subspecialties trainings and learning experiences to the post-graduates. Workshops, Seminars, conferences are also conducted throughout the years involving local, regional and international participants including courses such as clinical fellowship in training for doctors from the region in the specific domains on Infection Control, Antimicrobial Stewardship, HIV Medicine and Outpatient Parenteral Antibiotic Therapy.

Programmes such as HIV medicine, transplant infectious disease, tropical and emerging infections, vaccinology, travel medicine, intensive care infectious, orthopeadic infections, viral hepatitis, infection control, antimicrobial stewardship and resistance and outpatient parenteral antimicrobial therapy are also available.

This synergistic outcome is creating and enabling our organisational capabilities to enhance transitional Infectious Disease (ID) research in applying research findings into routine practice, and to embark on researching on emerging infectious disease with potential to cause severe epidemics or pandemics where prevalent. The research journey will build and strengthen our connection and collaborations with both local and regional partners.

Over and above, our integrated system provides participants a tremendous platform for research and clinical experiences in both the inpatient and outpatient settings.

The Institute of Infectious Disease and Epidemiology will continually strive to be a leader in managing and preventing infectious disease, through clinical excellence, compassionate care, innovative research and inspiring education. It is headed by Associate Professor Leo Yee Sin, previously heads the Department of Infectious Diseases of Tan Tock Seng Hospital. She is also the concurrent Clinical Director of Communicable Disease Centre in Singapore.

Preventing Disease Through Social Media

Nanyang Technological University researched on the use of social media to address the challenges in infectious disease prevention.

Public health authorities face multiple challenges in disseminating timely health information to the public during infectious disease outbreaks.

Researchers at Nanyang Technological University's Centre of Social Media Innovations for Communities (COSMIC) have found that infectious disease surveillance is largely reactive – meaning, that authorities usually map hotspots after the outbreak has occurred.

Furthermore, while the public may show positive attitudes towards prevention, their adoption of preventive behaviours tend to be much lower. There have also been calls from various sectors for increased community engagement in health promotion, disease prevention and management processes.

> Mo-Buzz System

Associate Professor May O. Lwin leads an interdisciplinary research group at COSMIC where social media is used to address these challenges in infectious disease prevention.

The team has developed a social media system called Mo-Buzz that attempts to address some of the shortcomings in conventional public health reporting systems by integrating three digitally driven components: predictive surveillance, civic engagement and health communication.

For a start, Mo-Buzz, is targeted at fighting dengue, which affects more than 40 per cent of the world's population and is a growing threat in the tropics. For instance, Sri Lanka has recorded more than 70,000 cases since 2009 and closer to home, Singapore faced arguably its worst year of dengue with more than 14,000 cases this year.

Predictive Surveillance: A colour-coded early warning system displays dengue hotspots by generating predictive maps (see Figure 1). The predictive maps are based on various data parameters such as mosquito density, human density, dengue incidence and historic weather patterns, and leverage computer algorithms and simulations to predict where future hotspots are likely to emerge.

Civic Engagement: In order to boost surveillance efforts, the system engages members of the public to contribute by helping to report on breeding sites (see Figure 2), mosquito bites and dengue symptoms using their smartphones via image, text or video formats.

These inputs are automatically reflected in the crowd source maps (see Figure 3). In this way, health authorities can respond more swiftly to address citizens' concerns and initiate preventive actions in specific districts. The data collection becomes much faster because the public's inputs from their mobile phones are immediately tagged by geographical location and these details, as well as the date, time and contact number of the contributor are all captured by the Mo-Buzz system.

Health Communication: As soon as an area on the map is identified as a hotspot (Figure 4), health alerts and education messages can be quickly sent to residents in that area. Users can also receive customised health information that they can share with their family and friends using social networking tools, such as Facebook, Twitter and SMS. This encourages the community to adopt behaviours that will reduce their risk of contracting dengue.

The Mo-Buzz system was recently launched in Colombo, Sri Lanka and is currently being used by all public health inspectors in the city (see Figure 5). In doing so, the team has collaborated with the University of Colombo School of Computing (UCSC), Colombo Municipal Council (CMC) and Mobitel, the largest telecom provider in Sri Lanka. The system will be launched for the general public in December 2013.

In Singapore, the team is working with Tan Tock Seng Hospital (TTSH) to adapt the concept for influenza prevention. They are also collaborating with the Singapore Heart Foundation (SHF) and Nanyang Polytechnic to design a similar alert system for cardio respiratory illnesses.

Mo-Buzz Images:

Figure 1 : Predictive dengue hotspot maps to stimulate preventive actions in advance

Figure 2: Mobile interface allows citizens to report pictures of breeding sites using their smartphone cameras

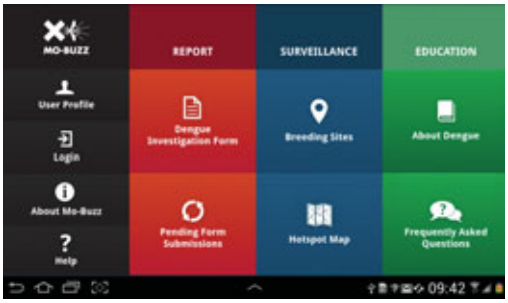


Figure 3: Crowdsource map of citizen reports on symptoms and breeding sites sent through pictures, simple forms and Twitter feeds (dummy data)

Figure 4: Geographically targeted health alerts can be sent to citizens on their mobile devices

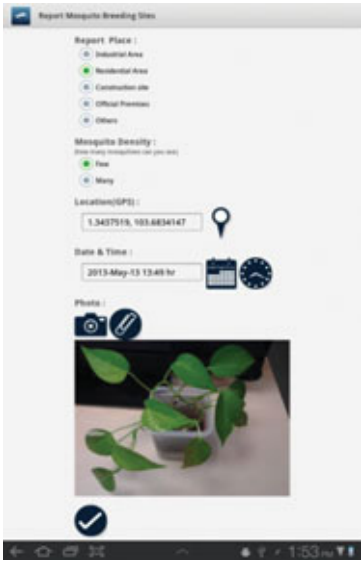


Figure 5 : Tablet-based dengue monitoring and surveillance system currently being used by public health inspectors in Colombo, Sri Lanka

Acknowledgement

This research is supported by the Singapore National Foundation under its International Research Centre @ Singapore Funding Initiative and administered by the IDM Programme Office. The research team includes Professor Schubert Foo, Associate Professor Theng Yin Leng, Dr Santosh Vijaykumar, Dr Owen Noel Newton Fernando, Dr Cheong Siew Ann, Jeffrey Hong, Vajira Sampath Rathnayake and Gentatsu Lim

> Introduction

Psychosis is a serious and potentially chronic mental disorder with a profound impact on patients and their families and on society. The growing body of evidence showed that early treatment could result in a significant reduction in morbidity (i.e. reduction in disabilities, hospitalization, disruption in family, suicides and costs), and a better quality of life for patients and their families (McGlashan 1996, Larsen et al. 1998). By reducing the duration of untreated psychosis (DUP) – defined as the time between the onset of the first psychotic symptoms and the first adequate treatment – the outcome of psychosis could potentially be changed. In Singapore, we found that the average DUP of patients with first episode psychosis is 33 months (Chong et al. 2005).

epip early psychosis intervention programme

> Development of a New System of Care - The Early Psychosis Intervention Programme

The alarmingly long DUP in Singapore, its possible consequences and the lack of appropriate and effective interventions for psychotic disorders, were the impetus for establishing the Early Psychosis Intervention Programme (EPIP). The programme was initiated in April 2001 under the auspices of the Health Services Development Programme of the Singapore Ministry of Health. EPIP adopts a multi-disciplinary team approach to provide a comprehensive and personalized patient care service. Our team consists of psychiatrists, case managers, occupational therapists, psychologists, family therapists, social workers and nurses to provide quality care.

The aims of EPIP are to:

- Raise awareness of the early signs and symptoms of psychosis.
- Reduce stigma associated with psychosis.
- Establish strong links with primary health care providers and collaborate in the detection, referral, and management of those with psychosis.
- Detect and manage psychosis early through screening and continuous monitoring of those with a 'high risk' of developing psychosis.
- Improve the outcome and quality of life of those with psychosis and reduce the burden of care for their families.

Right from the start of the programme, we decided to create a patient database which would help us track outcomes, evaluate our performance and incorporate research.

Using rating instruments to systemically evaluate our patients at baseline and subsequently at regular intervals, patients are evaluated on the severity of symptoms, social-occupational functioning, quality of life, and service satisfaction. In addition to such clinical ratings, other data such as number of admissions and length of stay are captured. To collate and analyse these data, we have put in place an IT system. This system has also enabled us to keep track of our patients' appointments thus alerting us to defaulters, and allowing for follow-up action. Regular review of these indicators serves as feedback to the team, showing us how we are performing and what the areas for improvement are.

All the data collected is entered into a database which has been registered as a standing database with the National Healthcare Group.

Some of the EPIP team who were involved in our research. Photo by IMH.

> Database research

This database has helped EPIP brainstorm ideas for research projects, allowed for data mining for various studies and presentations, and provided a platform to facilitate research collaborations. Through this, EPIP has had the opportunity to mentor students, residents and allied health professionals with research interests.

Our database led to projects that focused on health service, evaluation of effectiveness of interventions and qualitative data.

a. Health service

Using data collected for the database, EPIP has published studies such as those looking at remission and recovery rates (Verma et al., 2012), and metabolic risk factors (Verma et al., 2009) in our patients. Current studies include those which look at the profile and outcomes of our first-episode psychosis patients, such as their quality of life, incidence of trauma, medication adherence, pathways to care as well as predictors of suicide.

b. Effectiveness of interventions

In collaboration with other international early psychosis programmes, EPIP is involved in a multi-site study investigating the use of Omega-3 Fatty Acids and Cognitive Behavioural Management in patients at-risk of psychosis. We are also planning to evaluate the effectiveness of psychosocial interventions in weight management of our patients, which is a new initiative that we will be starting.

c. Qualitative studies

EPIP has embarked on qualitative studies looking at our peer support programme and the experience of our patients who participated in a photography workshop to explore their personal experience of living with and recovering from psychosis.

"Right from the start, we decided that research would form an integral part of EPIP and we went about setting up a patient database, which proved invaluable in helping us understand the disease process in psychosis, track clinical outcomes and explore effectiveness of various treatments. It may not be cutting-edge, ground-breaking research, but it has certainly helped us improve our patient care and at the end of the day that is what really matters."

A/Prof Swapna Verma
Senior Consultant Psychiatrist and Chief, Early Psychosis Intervention Programme, Institute of Mental Health

> Awards

In 2005, EPIP received the inaugural State of Kuwait Prize in Health Promotion awarded by the World Health Organization (WHO). This was in recognition for our outstanding contribution to research in health promotion. In 2008, EPIP was awarded the inaugural National Medical Excellence Team Award. This award recognizes individuals and teams who have contributed significantly in clinical work and research, leading to positive outcomes in healthcare delivery that have benefited patient care.

Conclusion

EPIP has been successful in integrating research into our clinical service. The purpose of our research is two-pronged: to inform the local and international communities of what we do, and to feedback to the EPIP team of our service provision. Such communication has opened doors in terms of inviting research collaborations, generating discussions amongst the team on service improvement, and initiating other research and improvement projects.

From left: Professor Paulo Ivo Garrido, President of the 59th World Health Assembly & Minister of Health of Mozambique; Associate Professor Chong Siow-Ann, EPIP's Director; and H.E. Sheikh Ahmad Al-Abdullah Al-Ahmad Al-Sabah, Minister of Health of Kuwait, representing the State of Kuwait Prize for Research in Health Promotion.

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CLR FY2011
Successful Graduands

The NHG Clinician Leadership in Research (CLR) Programme is a Career Scheme aimed at grooming and nurturing aspiring clinicians with little or no prior experience, but are keen on both research and clinical work, and wish to enhance their knowledge and skills in research.

We would like to congratulate the following FY2011 awardees who have successfully completed the 2-year programme.

Dr Darren Seah
National Healthcare Group Polyclinics
Toa Payoh Polyclinic

Dr Lee Eng Sing
National Healthcare Group Polyclinics
Clementi Polyclinic

Dr Saclolo Rafael Pulido
Tan Tock Seng Hospital
Emergency Department

Dr Chan Lai Gwen
Tan Tock Seng Hospital
Psychological Medicine

Dr Teo Ying Xin
Tan Tock Seng Hospital
Emergency Department
(Photo not Provided)

By NHG Research & Development Office (RDO)

WiSE up

Survey on the Well-being of the Singapore Elderly (WiSE) headed by the Institute of Mental Health.

In 2011, elderly residents aged 65 years and above constituted 9.3 per cent of the general population in Singapore. Given the significant proportion of the elderly, their mental health is a major concern for the various stakeholders.

The Institute of Mental Health is heading the Well-being of the Singapore Elderly (WiSE) survey to obtain the most comprehensive, generalisable and up-to-date information on the number of elderly with dementia and depression, understand the associated caregivers' burden and estimate the types and costs of service utilisation among the elderly in Singapore. It is funded by a combined research grant of more than $4 million from the Ministry of Health and the Singapore Millennium Foundation of the Temasek Trust.

The survey was initiated in Sep 2012 and is expected to be completed by Dec 2013. As of June 2013, 1802 participants and 1704 informants have been interviewed giving an interim response rate of about 58%. Among the participants, the majority belonged to the Chinese ethnic group (35.4%) followed by Malays (32.4%), Indians (30.5%) and Others (1.7%).

Scientifically robust sampling strategies are employed to ensure a nationally representative elderly survey population. Data is collected by interviewers in real-time using iPADs from the elderly participant and a family informant.

Carol Zhang and Eng Goi Kia

Information on socio-demographic profile, mental and physical health and informants' health and perceptions are collected. Physical and neurological examination is conducted at the end of the interview which will be valuable in the evaluation of the health status and risk factors for the elderly.

With an estimated five-fold increase in the number of people with dementia by the year 2050, smaller family size and low birth rate, the potential health, social and economic impact for the elderly and their families is substantial.

Associate Professor Chong Siow Ann
Principal Investigator for the study

Dialect challenge

According to the Singapore Census 2010, about 42 per cent of the Singapore population aged 60 and above speak one of the three dialects – Hokkien, Teochew or Cantonese.

Assistant Professor Mythily Subramaniam, who is a co-principal investigator for the study says: "One of the challenges faced by my team was the higher than expected proportion of elderly residents requesting for being surveyed in a Chinese dialect. In the first three months of the survey, about 5 per cent of the Chinese residents approached preferred a dialect interview. Consequently, we decided to translate and adapt the survey to be administered in the three most preferred dialects - Hokkien, Teochew and Cantonese".

Ms Eng Goi Khia, research psychologist and Ms Carol Zhang, research assistant at the Institute of Mental Health, who led the dialect interview preparations, share their experiences of the process.

Ms Eng says: "Catering to our dialect speaking respondents was a challenging yet learning feat for our team. I had to start with getting better acquainted with the dialects by attending formal trainings offered by reputed agencies. In leading the expert panels to discuss translations of the questionnaires into dialects, I gained more insight into the subtle to the more obvious differences among these."

She was responsible for scripting the questionnaires into Hokkien and Teochew. Quality was ensured by having a separate dialect-specific data-collection portal, followed by dialect training and on-site supervision sessions for select field interviewers.

By the use of dialects, the study was able to include as many Singaporeans as possible so that their needs can be addressed. Also, this ensures that future policy formulations are based on analyses of data from all segments of the society.

Ms Zhang who conducted some of the interviews in Cantonese says: "Striking a balance between 'formal' Cantonese and the one understood better by respondents in 'lay-man' terms was both challenging and amusing at times."

The Ageing Skin:

Research on Erythroderma and Primary Cutaneous Amyloidosis

Dr Tey Hong Liang
Consultant and Clinician Researcher
National Skin Centre

The skin is the largest organ in the body and as we age, skin barrier defects and immune dysfunction results in various skin diseases that we commonly see in the elderly. It has been estimated that consults for skin disorders constitute seven per cent of all physician visits in the elderly.

Erythroderma

Erythroderma or Generalised Exfoliative Dermatitis (GED) is a dermatological reaction characterised by extensive erythema and scaling of the skin, secondary to a variety of causes.

A study was conducted on the characteristics of the disease in 225 patients who visited the National Skin Centre between January 2005 and June 2012. Their mean age was 66 years (ranges from 1 month to 95 years), with a male-to-female ratio of 3:1.

The most common clinical presentations were generalised erythema (100 per cent), scaling (92.4 per cent) and pruritus (92 per cent). Unlike other studies, fever (4 per cent) was uncommon in the patients in our study. Renal impairment which was not noted in other studies, was present in 16.9 per cent of the patients and it is likely secondary to dehydration from fluid losses and poor oral intake during severe acute illness. And 3.1 per cent of them developed bacteremia and sepsis which although uncommon, physicians should be mindful of this serious complication.

The main etiologies of erythroderma were pre-existing dermatoses (68.9 per cent), idiopathic causes (14.2 per cent), drug reactions (10.7 per cent) and malignancies (4 per cent). Although malignancies were the cause of erythroderma in only 4 per cent of the patients, from a practical point of view, they constituted 19.6 per cent of the cases when drugs and underlying dermatoses were excluded. As such, an active search for an associated malignancy should be carried out in such cases.

Malignancies associated with erythroderma

The frequency of malignancies in our study was comparable to other studies (1.0 to 11.3 per cent). However, solid organ malignancies were responsible for more than half of our cases (5/9), which was significantly higher than other studies (0 to 25 per cent).

There is a higher incidence of hepatocellular carcinoma associated with erythroderma, largely due to the ubiquity of hepatitis B infection in this part of the world. In view of the higher frequency of solid organ malignancies associated with erythroderma, a more detailed screening of solid organ malignancies is recommended for patients.

It was found that tumor markers were not useful as a routine screening tool for malignancy in erythroderma. Imaging and endoscopies guided by clinical findings were more reliable.

In contrast to some earlier studies that have quoted high mortality rates (11 to 64 per cent), there was no mortality arising directly from erythroderma among our patients in this study.

With regards to drug-induced erythroderma, anti-tuberculosis medications and traditional Chinese medicine were the most common causative drugs. These higher incidences are related to their more frequent use in Singapore.

Findings of the study

- In cases of erythroderma not due to drugs and underlying dermatoses, an associated malignancy was present in a significant proportion of cases and this should be actively screened for.
- There were more cases of solid organ malignancies compared to primary cutaneous malignancies.
- Tumour markers were ineffective in identifying an underlying malignancy.
- Skin biopsy was effective in identifying primary cutaneous malignancies and drug-induced cases.

Primary Cutaneous Amyloidosis

Primary localised cutaneous amyloidosis (PLCA) is a chronic pruritic dermatological disorder of unknown etiology occurring more commonly in Southeast Asians in their 50s. Endogenous eczema, of which atopic eczema (AE) is a subtype, has a higher prevalence in the elderly compared to adults due to impaired skin barrier and immune system.

We prospectively studied if AE is more prevalent in patients with PLCA compared to patients with other conditions attending the same dermatology clinic. We also investigated if the prevalence of AE, severity of itch, morphology and locations of PLCA differ between familial and sporadic forms of the disease.

Consecutive patients with the clinical diagnosis of PLCA visiting a dermatology clinic were evaluated by a single investigator. Data on demographics, family history, morphological types and locations of PLCA, and itch score were collected and they were screened for concomitant AE based on history and physical examination. The control population consisted of consecutive patients with diagnoses other than PLCA seen in the same clinic.

A total of 44 patients with PLCA and 97 controls were evaluated. The mean age of the patients with PLCA was 54 years and the majority of them (82 per cent) were Chinese. The prevalence of AE in patients with PLCA was significantly higher than in controls, at 75 per cent and 39.2 per cent respectively (OR=4.66, 95% CI=2.10 to 10.3, $p<0.0005$).

The prevalence of AE in sporadic cases was significantly higher than familial cases, at 84.4 per cent and 50 per cent respectively (OR=5.4, 95% CI=1.23 to 23.7). Mean itch levels, morphological types and locations of PLCA did not differ between familial and sporadic cases.

Findings of the study

Atopic eczema (AE) was associated with Primary localised cutaneous amyloidosis (PLCA) and the association was stronger with the sporadic compared to the familial cases.

And we recommend that AE should be routinely checked for in patients with PLCA, especially since scratching in AE can worsen the skin lesions already present in PLCA.

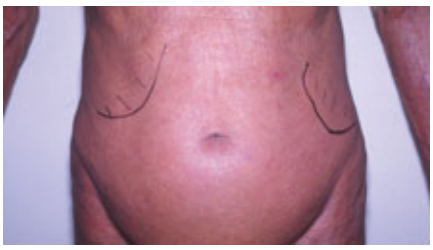


Figure 1: An elderly man with generalized erythema and hepatosplenomegaly from an underlying malignancy.

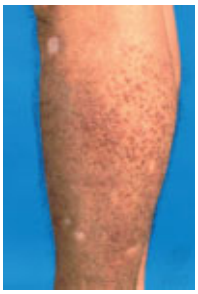


Figure 2: Multiple keratotic and hyperpigmented papules on the lower legs - lichen amyloidosis, the most common subtype of primary localized cutaneous amyloidosis.

Depression in the Elderly

Association of socioeconomic status and social support with depressive symptoms in the elderly

Depression in the elderly is a major public health issue. Depression can often be undiagnosed and untreated because it is frequently viewed as a normal part of ageing and a natural consequence to chronic illnesses, loss of independence and function, and bereavement.

Older adults who have depression have higher risks of impairments in physical, mental and social functioning, with some even being suicidal. In Singapore, depression is the second leading cause of disability, and population-based surveys have found that 6 per cent of community-dwelling elderly suffer from depression, while 13 per cent of them have depressive symptoms[1].

SES and Social Support

While depression is a function of many contributing factors, low socioeconomic status (SES) (a measure of economic, social and work status) and poor social support have consistently been found to be associated with depression in elderly populations (Figure 1). Social support may also moderate the impact of SES on health. However, local evidence regarding the association between social relations and health across SES groups is unclear.

Author

Charis is a Senior Research Analyst who has experience in survey design, implementation and analysis (patient satisfaction, needs assessment), and in the evaluation of new interventions (dementia integrated care programme, end-of-life care for nursing home residents). She has published widely in peer-reviewed international journals, and received a merit award for her work at the 1st Singapore International Public Health Conference in 2012.

Figure 1 - Findings on the association between low SES, and poor social support with depression in elderly

LOW SES
- Reduces capacity to manage stress & increases vulnerability to negative emotions and cognitions[2]
- Higher prevalence of depressive symptoms among lower social strata due to accumulated exposure to social stressors[3]

POOR SOCIAL SUPPORT
- Existence & quantity of contact with relatives lower risk for depressive symptoms[4]
- Weak external social network associated with higher depressive symptom scores[5]

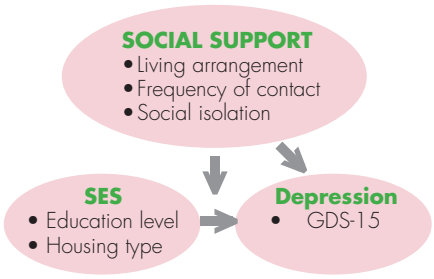
DEPRESSION IN ELDERLY

Marine Parade Elderly Needs Survey

In collaboration with several ministries, the Marine Parade Elderly Needs Survey was conducted in 2011 on 4,200 residents aged 60 years and above, to facilitate a better understanding of the needs of community-dwelling elderly persons.

We studied associations between SES and social support with depressive symptoms (Figure 2). The analysis was also adjusted for chronic diseases, functional status, pain and cognition. The 15-item Geriatric Depression Scale (GDS-15) was used to determine the presence of depressive symptoms, scores range from 0 to 15, and scores ≥ 5 were suggestive of depression[6].

Figure 2 - Measurements of and associations between SES, and social support with depression



Associations between SES, and social support with depression

Of 2,447 responses analysed, 188 (7.8 per cent) elderly persons had depressive symptoms. When compared to elderly persons with no depressive symptoms, those with depressive symptoms were more likely to have the following characteristics:

- Lower income housing (2-room)
- Living alone or with domestic helper
- Infrequent leisure time with family (< once a month)
- Childless
- Occasionally or often feeling socially isolated

The impact of social support on depression was however not consistent across SES groups. While we expected social support to alleviate the effect of SES on depression, we found that when compared to elderly persons living with spouse and children in 4/5-room housing, those living:

- (i) With spouse and children in 2-room housing; (ii) With children only in 3-room housing; and (iii) Alone or with domestic helper in 4-/5-room housing, were more likely to have depressive symptoms
- With others (friends & tenants) in 2-room housing were least likely to have depressive symptoms
- With spouse only appeared to be a protective factor against depressive symptoms across SES classes, although the effect was not statistically significant

Conclusion

Depression interventions for the elderly should take a holistic approach to attend to the financial and social needs of older adults. Specific interventions need to target different SES groups to better help older adults who may be at risk of developing depression.

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Patient-Centred Care: The Road Ahead

Assessing the health-related quality of life among the elderly in preparation for the silver tsunami

Dr Pradeep Paul
Principal Research Analyst
Health Services & Outcomes Research
National Healthcare Group

> Patient-centred care has been one of the National Healthcare Group's four key principles.

Health Services Research (HSR) is about access to care, at affordable cost and their outcomes. At Health Services and Outcomes Research (HSOR), I was fortunate to have done projects which covered all these aspects of HSR. I would like to briefly share about a study which was a part of the "Marine Parade Elderly Needs Survey" in which we measured health-related quality of life (HRQoL) among the elderly in the community.

Before we move on to HRQoL, let me explain the linkage between HRQol and patient-centred care. Patient-centred care has been one of the National Healthcare Group's four key principles. Patient reported outcomes such as health-related quality of life, satisfaction with care, trust, psychological well-being and utility of preferences play a key role in bringing the patient's voice to the patient-centered care. Furthermore, the ageing population and the shift of health care resources from treatment of acute to chronic illnesses have resulted in a need to measure functional status and HRQoL of the elderly in planning interventions.

Health utilities (HU) are commonly used for assessing HRQoL in evaluation of healthcare interventions such as the cost-utility analyses (CUA). In CUA, a utility score is assigned to the health state on the cardinal scale in which dead = 0 and perfect health = 1, which indicates respondent's preferences for different outcomes. This utility score is incorporated into quality-adjusted life-year (QALYs) which combines life expectancy and quality of life (HU) into a single index.

Marine Parade Elderly Needs Survey

The Marine Parade Elderly Needs Survey was conducted among a random sample of community-dwelling elderly to assess the health status, HRQol of individuals aged 60 years and above.

A structured questionnaire was used to collect data on demographic characteristics, chronic disease profile, physical activity, activities of daily living (ADL) and functional ability and health-related quality of life. Quality of life was assessed using EQ-5D. Ordinary least squares (OLS) regression was used to identify independent predictors of health-related quality of life. Independent predictors of HRQoL with greatest decrements in the EQ-5D index and visual analog scores (VAS) were unemployment, self-reported depression, arthritis and osteoporosis and elderly with limitations in ADL for activities such as showering, doing housework and elderly with depressive symptoms (Geriatric Depression Score ≥ 5).

HRQoL is an important patient reported outcome to guide and promote healthcare. Our study provided valuable information for the planning of potential active ageing interventions in preparation for the looming silver tsunami.

Primary Care Mental Health Service in Singapore

Primary care services see an increasing number of patients with mental health complaints. Patients who are elderly with co-existing chronic diseases and socially isolated exhibit a higher risk of depression.

Dr Colin Tan Yong Hui
Deputy Director
Collaborative Care
Clinical Services
National Healthcare Group Polyclinics

Mental health disorders in Singapore are a growing health concern. It is expected that 3.3 per cent of the adult population, which amounts to 115,500 people, will suffer from mental health disorders by 2016.

Primary care services see an increasing number of patients with mental health complaints. Patients who are elderly with co-existing chronic diseases and socially isolated exhibit a higher risk of depression. There is thus a need to manage these patients holistically using the bio-psycho-social model of care, taking into consideration their physical and mental health needs.

Health and Mind Clinic

The Health and Mind Clinic (HMC) was set up in 2008 to attend to these patients. Current data shows that two-thirds of the patients visiting these clinics tend to have depression, anxiety and insomnia usually of the mild-moderate severity. Up to half have an existing chronic disease such as diabetes, hypertension and hyperlipidaemia. And they are predominantly female and belong to the middle-elderly age group.

This doctor-centric service (HMC) has since developed into a team-based care known as the Health and Mind Care Team (HMCT) which is made up of family physicians, nurses, psychologists and medical social workers. Each healthcare professional brings with them their expertise and unique contributions in collaboration.

In 2012, our psychologists started doing risk stratification, triaging and providing talking therapy even before doctor's consultations. In doing so, we are now able to improve patient's accessibility to mental health services, serving more patients. Those with severe or higher risk of severity are seen by doctors earlier and offered appropriate treatment more efficiently.

Our psychologists have also started to monitor patient outcomes from various mental health scales such as PHQ9 for symptoms of depression, GAD7 for symptoms of anxiety and the Insomnia Severity Index (ISI) for insomnia, during consultations. Other physical health parameters also monitored include, blood pressure, HbA1c and LDL levels.

In the months to come, we hope to be able to show positive outcomes from these services as well as understand their health trends. Understanding their health-seeking behaviour and the correlation between physical and mental health would be most useful for any clinician and health care professional in delivering such care.

Development of flip-chart

A flip-chart development is also on-going to facilitate inter-professional collaboration among the multidisciplinary health care professionals delivering mental health. The roles, capabilities and interventions of each team member are delineated and shared with each other to facilitate inter-referrals. Patients would benefit from these flipcharts as the information delivered to them would be clear, consistent and synchronised.

With the above initiatives being developed, it is hoped that primary care can play a more meaningful and important role in providing quality, accessible and affordable care for patients with mental health needs.

Dr Colin Tan (back row, 5th from left) with the Health and Mind Care Team (HMCT) on their visit to Hong Kong in 2012

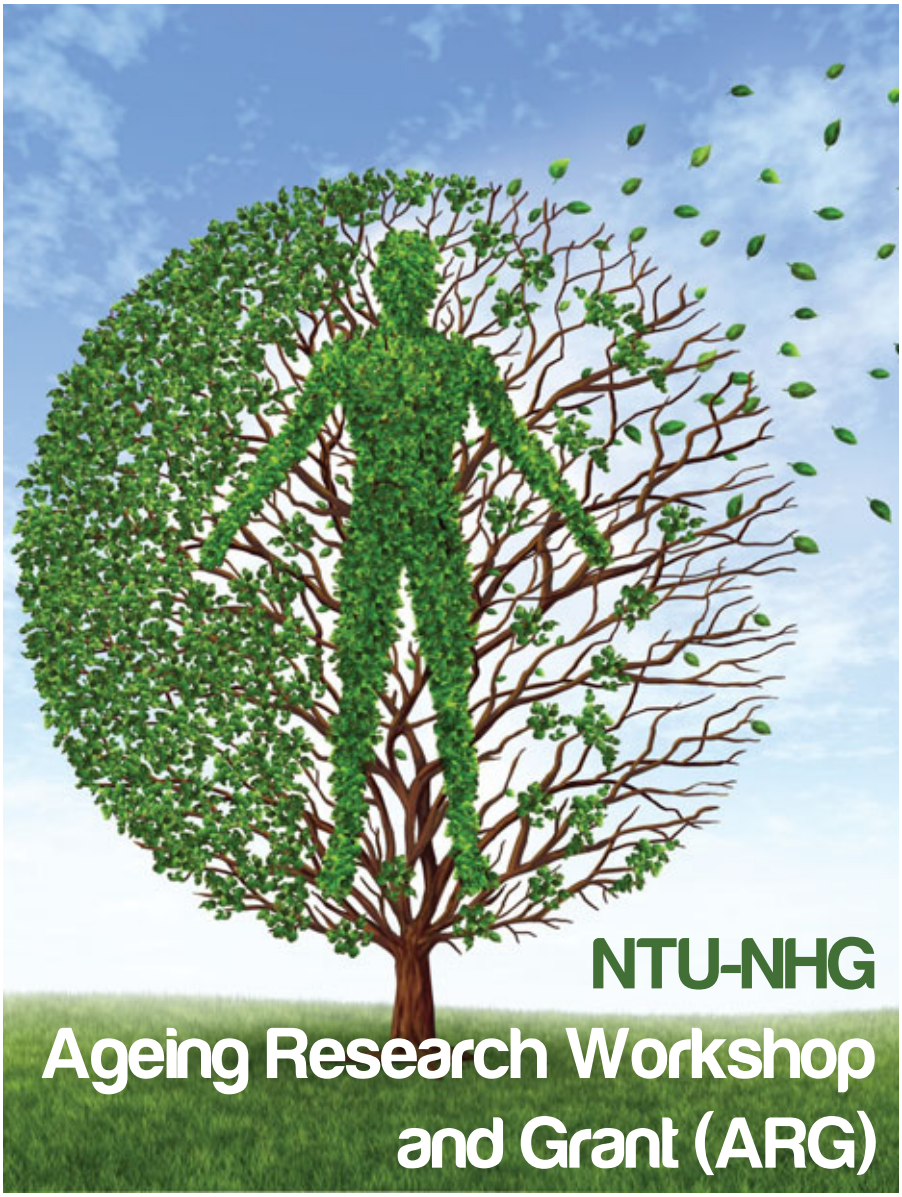
Interest in ageing research has increased significantly in recent years in the light of Singapore's rapidly ageing population. It is estimated that by 2030, 1 in 5 Singaporeans will be 65 years old and above.

The National Healthcare Group (NHG) together with Nanyang Technological University (NTU) organised an Ageing Research Workshop on 24 March 2013 at Tan Tock Seng Hospital. Clinicians and researchers from both institutions shared on latest research projects in their respective fields.

The workshop aimed to address the healthcare issues arising from an ageing population, and to explore how clinicians and researchers can work together to find new solutions. A total of 6 NHG clinicians and 6 NTU researchers participated in the workshop. The presentations were followed by intense discussions, and generated interest among clinicians and researchers to work together.

In response to the positive responses, NHG and NTU launched the NTU-NHG Ageing Research Grant (ARG) in August 2013. This grant aims generate new knowledge and outcomes that will have an impact on the delivery of care for the ageing population.

For more information on NTU-NHG ARG, please visit the NHG Research Website at www.research.nhg.com.sg.



Workshop participants

Clinician	Institution	Research Project Title
Dr Tey Hong Liang	National Skin Centre	Dermatologic Research in Diseases of Aging
Dr Rinkoo Dalan	Tan Tock Seng Hospital	Aging and Vascular/Metabolic Research
Dr Chong Mei Sian	Tan Tock Seng Hospital	Ageing Research
Dr Augustinus Laude	Tan Tock Seng Hospital	Morphological features of the ageing eye
Dr Leong Khai Pang	Tan Tock Seng Hospital	Arthritis Research
Dr Yung Chee Fu	Tan Tock Seng Hospital	Vaccine Preventable Diseases (VPD) research programme
Researcher	**Institution**	**Research Project Title**
A/Prof Zheng Jie	NTU School of Computer Engineering	In Silico Modelling of Ageing and Stem Cell Based Rejuvenation on Waddington's Epigenetic Landscape
Prof Sven Pettersson	NTU Lee Kong Chian School of Medicine	The Gut microbiome-to-Brain communication: An environmental factor contributing to aging?
A/Prof Theng Yin Leng	NTU Wee Kim Wee School of Communication and Information	a) Virtual Exercise Therapist System (VETS) b) CuePBox: An Integrated Physical and Virtual Pillbox for Patient Care
A/Prof Kong Wai-Kin Adams	NTU School of Computer Engineering	Non-Invasive Skin Parameter Estimation Based on Color Images
A/Prof Ravi Kambadur	NTU School of Biological Sciences	Sarcopenia in Singapore subjects
A/Prof Ser Wee	NTU School of Electrical and Electronic Engineering	Multimodal Monitoring of the Activities of Daily Living (ADL) for the Elderly

We Are Hiring

The National Healthcare Group (NHG) is a leading public healthcare provider in Singapore. We manage: Two Hospitals — Tan Tock Seng Hospital and the Institute of Mental Health/Woodbridge Hospital; One National Centre — National Skin Centre; the NHGP chain of nine polyclinics in — Ang Mo Kio, Bukit Batok, Choa Chu Kang, Clementi, Hougang, Jurong, Toa Payoh, Woodlands, and Yishun; One Specialty Institute — NHG Eye Institute; and five Business Divisions — NHG 1-Health, NHG Diagnostics, NHG Pharmcy, Singapore Footcare Centre, and Primary Care Academy; and the Johns Hopkins Singapore International Medical Centre.

National Healthcare Group
Adding years of healthy life

DSRB ASSISTANT ANALYST, RESEARCH & DEVELOPMENT OFFICE

All research conducted in NHG premises or involving NHG staff currently falls under the purview and ethical oversight of the Domain Specific Review Board (DSRB) of the Office of Human Research Protection Programme (OHRPP) at the NHG Research & Development Office. Right now, DSRB is seeking a dynamic and meticulous Assistant Analyst to be part of this highly systematic team to ensure that the rights, safety and welfare of participants are protected by creating a culture of research that operates on high ethical standards.

As an Assistant Analyst, you will be instrumental in supporting the administrative functions of the DSRB operations.

Key responsibilities include:

- Ensuring investigators are informed of deadlines for continuing reviews and performing preliminary review of study renewals in consultation with the DSRB Analyst.
- Performing the administrative reviews of study amendments, non-compliances, UPIRTSO, and other notifications to ensure completeness of submission and correctness of information.
- Serving as a resource for investigators regarding the adaptation and implementation of DSRB policies, procedures and forms.
- Preparing outcome letters and maintaining accurate records of the ethics reviews in the study folders and databases.
- Providing administrative support for the ethics review boards' meetings, including collating RSVPs, arranging for meeting logistics, book meeting room, presentation equipment, etc.
- Maintaining of the office equipment and resources.
- Assisting in organising research ethics seminars and training sessions.

The Requirements

- "A" Level /Diploma of any discipline or equivalent.
- Preferably with experience as an Administrative Support Staff in the Healthcare Industry.
- Proficient in MS Office applications is essential. Preferably with experience using Databases (e.g. MS Access).
- Able to work independently and meticulously.
- Possess strong organisation and planning skills, and demonstrate strong written and verbal capabilities.
- Ability to handle extremely detailed and highly confidential information with tact and discretion.
- Performs well under pressure, meeting deadlines, and is detail-oriented.
- Willing to assume responsibilities as directed.

To apply for the positions above, please email **jenny_tong@nhg.com.sg**

(We regret that only shortlisted candidates will be notified.)

ASSISTANT DIRECTOR/ MANAGER, OFFICE OF RESEARCH SUPPORT – RESEARCH & DEVELOPMENT OFFICE (RDO)

You will oversee the operational aspects of research support in NHG HQ Research and Development Office (RDO), such as budget, research grants administration and management, research training and development, clinician scientist development, clinical research project management, and research informatics. You will also perform the role of a lead secretariat to the NHG Research Committee and work in close collaboration with institution research units and heads, as well as strategic partners from the academia and industry. In addition, you will work closely with the Management to shape the future of research at NHG and implement strategies to achieve the research goals.

Requirements:

- Bachelor's Degree in Biomedical Sciences or Health Sciences preferred
- Knowledge of finance will be an advantage
- Strong organisational and interpersonal skills
- Good oral and written communication skills
- A highly-motivated team player who is meticulous, creative, and results-or ented
- Able to multitask and lead teams

SENIOR EXECUTIVE, RESEARCH & DEVELOPMENT OFFICE – RESEARCH TRAINING & DEVELOPMENT UNIT (RDO-RTDU)

You will be a member of the Research Training & Development Unit (RTDU), a division under the NHG Research & Development Office (RDO) that strives to train and develop clinician-scientists, clinician investigators, and research support staff. You will develop and implement educational platforms for clinical research (e.g. courses, forums, and conferences), administer programmes, and lead or partake in initiatives that elevate standards of training and education.

You will also lead an Editorial Team, comprising institutional representatives, in the conceptualisation and development of the quarter-yearly NHG Research Newsletter that aim to showcase researchers and their work. In addition, you will develop and maintain the Department's policies and procedures, assume secretarial duties for various Scientific Committees supported by RTDU, and lead or partake in intra- and inter-departmental assignments as presented by the Head of the Department.

Requirements:

- Bachelor's Degree in any discipline
- At least 1 year of experience in Project/Event Management or Curriculum Development
- Experience in the Clinical Research industry or a related field will be an advantage
- Able to manage multiple projects with tight timelines
- An effective leader who is proactive, results-oriented, and meticulous
- A good team player with excellent organisational, interpersonal, and communication skills

NATIONAL SKIN CENTRE

BIOSTATISTICIAN / DATABASE MANAGER

The Challenges:
You will provide biostatistical expertise and support for all NSC research studies, as well as oversee the design and management of research databases in NSC.

The Requirements:

- Bachelor's Degree in Biostatistics or a related field
- Experience in healthcare services outcome research (HSOR) or medical research
- Experience in database management will be an advantage

To apply for the positions above, please submit a detailed resume stating your current and expected salary, along with a recent passport size photograph to:

National Skin Centre (S) Pte Ltd
Human Resource Department
1 Mandalay Road
Singapore 308205
Fax: 6253 3225
Email: nsc_hrd@nsc.gov.sg

Please indicate the position applied for in the subject/title of the email or on the front of the envelope.

(We regret that only shortlisted candidates will be notified)

Studying frailty phenotype and its relation with disease progression in

Mild Cognitive Impairment and Mild-Moderate Alzheimer's Disease Subjects

Dr Chong Mei Sian
Senior Consultant
Department of Geriatric Medicine
Tan Tock Seng Hospital

In Geriatric Medicine, we see many older persons with early cognitive impairment, namely a pre-dementia state termed mild cognitive impairment (MCI) and mild- moderate Alzheimer's disease (AD).

In Geriatric Medicine, we see many older persons with early cognitive impairment, namely a pre-dementia state termed mild cognitive impairment (MCI) and mild- moderate Alzheimer's disease (AD).

MCI is a heterogenous state where some subjects remain stable while others progress onto to dementia. As geriatricians, we get frequently asked by relatives and caregivers of our patients regarding the likelihood of their loved ones progressing rapidly within a short time. Understandably, this is important as it helps their children and caregivers put in place care systems to support their loved ones in anticipation of the cognitive and functional decline as the disease progresses. However, some of these patients may be of the old-old age group (i.e. above 85 years old) and look physically frail; and yet, their cognition remains fairly steady over time while their physical health deteriorates. On the converse, there may be robust, otherwise physically-healthy individuals

The current assessment methods and risk factor stratification focuses primarily on taking traditional cognitive risk factors to predict who might progress quickly.

Our research assistants performing hand grip strength measurement (top) and giving instructions during gait speed performance (right) Photos taken with written permission from patients/ caregivers

whose memory deteriorates fairly rapidly. The current assessment methods and risk factor stratification focuses primarily on taking traditional cognitive risk factors (such as educational attainment, age, vascular risk factors and genetic factors) to predict who might progress quickly.

Frailty is a physiological state of increased vulnerability to stressors that results from decreased physiological reserves and even dysregulation of multiple organ systems. It is typically characterized by slowness in gait, muscle weakness, fatigue and weight loss. It is a dynamic state, with a potential for full recovery if the underlying cause is adequately addressed. Importantly, this is a better predictor of adverse outcomes of disability and mortality than chronological age alone. Also, much of the current frailty literature focuses primarily on physical outcomes although in the recent years, it is increasingly recognized that cognitive function plays a major role, rather than just a pure biomedical, physiological model of frailty.

Hence, this led us to study the 2 geriatric giants of Cognition and Frailty to examine how physical frailty predicts rapid disease progression and to see how physical frailty enhances the traditional predictive risk factor model in cognitive impairment. Additionally, we wanted to see if this was mediated by sarcopenia (muscle ageing) and Vitamin D (which could have an effect on muscle or cognition independently). The attractiveness of examining the frailty phenotype lies in its utility as a potential therapeutic target, in contrast to the current negative disease-modifying therapeutic trials in Alzheimer's disease.

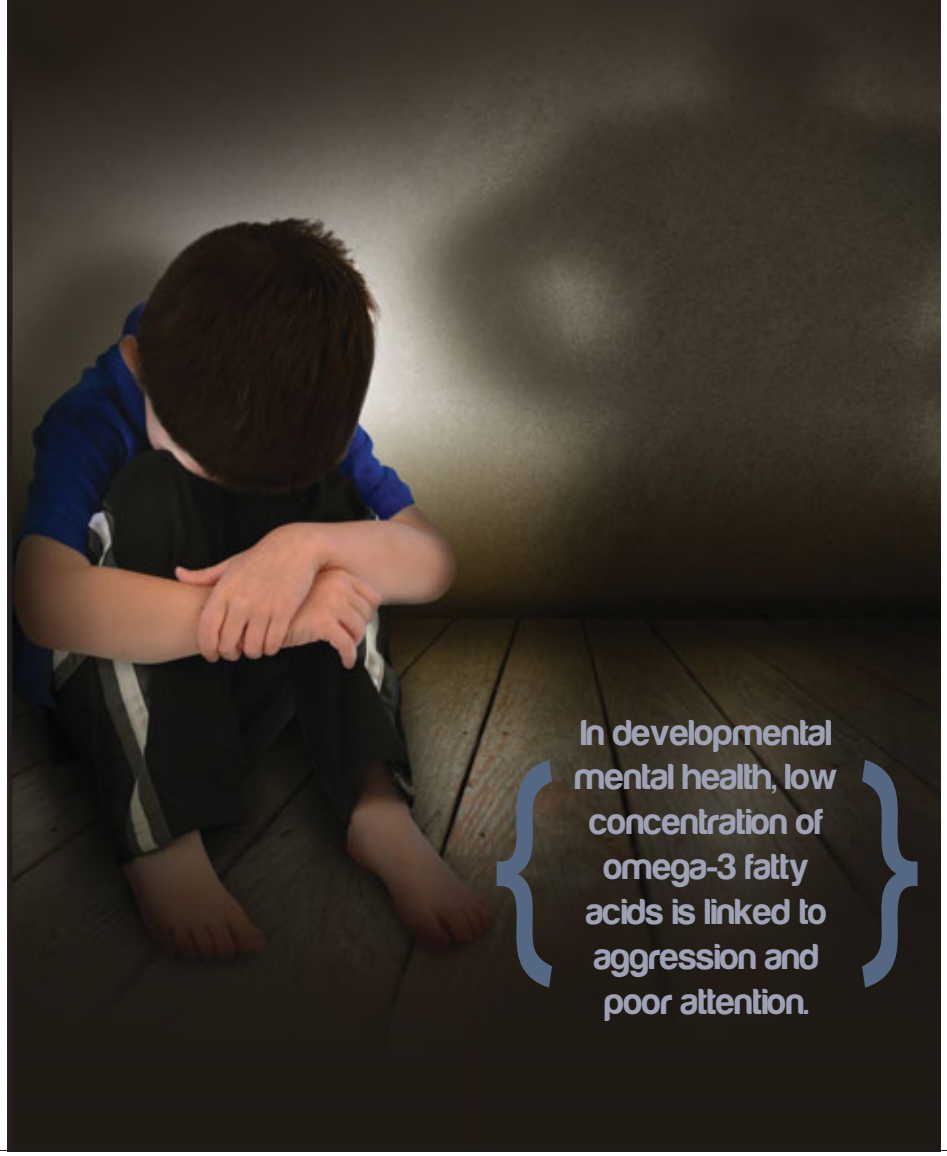
We are currently still recruiting our study subjects, supported by the Cognition and Memory Disorders Service team members and our research team (shown carrying out performance measurements). We are grateful to our patients and their caregivers who have willingly agreed to participate in this research study. Preliminary findings suggest that physical frailty increases with increasing cognitive impairment (independent of functional status). Among the frailty sub-domains, strength performance (both grip strength and knee extension strength) seem to best correlate with cognitive impairment. This did not appear to be explained solely by sarcopenia, suggesting a separate pathogenic mechanism, which requires further study. We await the completion of recruitment to make firm conclusions from these initial interesting findings.

Singapore has one of the most rapidly ageing population in the world. Dementia prevalence and other geriatric issues are set to increase. Early risk assessment in predicting rapid MCI-converters and AD fast-progressors will allow the study to consider measures to improve frailty status and aggressive vascular risk factor management to slow down or halt disease progression and potentially decrease the anticipated healthcare burden and cost of the dementia epidemic in the longer term.

The project titled "The influence of the frailty phenotype on fast-progressors amongst community-dwelling older persons with early cognitive impairment" is funded by the NHG Clinician Scientist Career Scheme.

'SASSI' Clinical Trial

Study on the use of Supplements and Social Skills Intervention (SASSI) to improve attention and reduce aggression in children.



In developmental mental health, low concentration of omega-3 fatty acids is linked to aggression and poor attention.

Nikki Lim-Ashworth
Psychologist
Child & Adolescent Psychiatry
Institute of Mental Health

Much has been said about the benefits of Omega-3. While the empirical evidences thus far have been varied and non-conclusive, among other benefits Omega-3 supplementation is thought to promote better cardiovascular health, aid cognitive performance and lower risk for some psychiatric disorders. In developmental mental health, low concentration of omega-3 fatty acids is linked to aggression and poor attention.

Associate Professor Daniel Fung from the Department of Child & Adolescent Psychiatry at the Institute of Mental Health and his team are conducting a large scale, randomised, double blind placebo-controlled clinical trial to examine whether omega-3 supplementation and social skills training in combination is more effective than either approach alone in alleviating aggression and improving attention of children with hyperactivity and conduct problems.

This Supplements and Social Skills Intervention (SASSI) study is funded by an Individual Research Grant from the National Research Council.

The study culminated from a casual chat more than a decade ago among three passionate researchers, and evolved into a multi-institutional collaboration including Nanyang Technological University (NTU; Singapore), University of Pennsylvania (USA), Singapore Institute of Clinical Sciences (SCIS; Singapore), and the National Institute of Health (NIH; USA).

About SASSI

Recruitment for the study began in the third quarter of 2009. Altogether 282 participants between the ages of 7 and 16 were involved in the study which was concluded in June 2013.

All of the participants were supplemented for a period of 6 months with either omega-3 filled soft-gel capsules (1000mg daily dosage; 600mg of eicosapentaenoic acid [EPA] & 400mg of docosahexaenoic acid [DHA]), or placebo capsules (high content of oleic sunflower oil with a tinge of fishy taste).

Half of the participants were provided with group social skills intervention. All parents of the participants also received monthly consultation with a clinician on the management of their child's symptoms and standardised parenting sessions.

Treatment for the participants continued as usual.

A/Prof Daniel Fung and his team during the span of the trial extensively shared preliminary findings through posters and symposium in major conferences. More recently, the team made a publication on recommending the importance of rigorous blinding and careful placebo choice in the integrity maintenance of omega-3 trials.

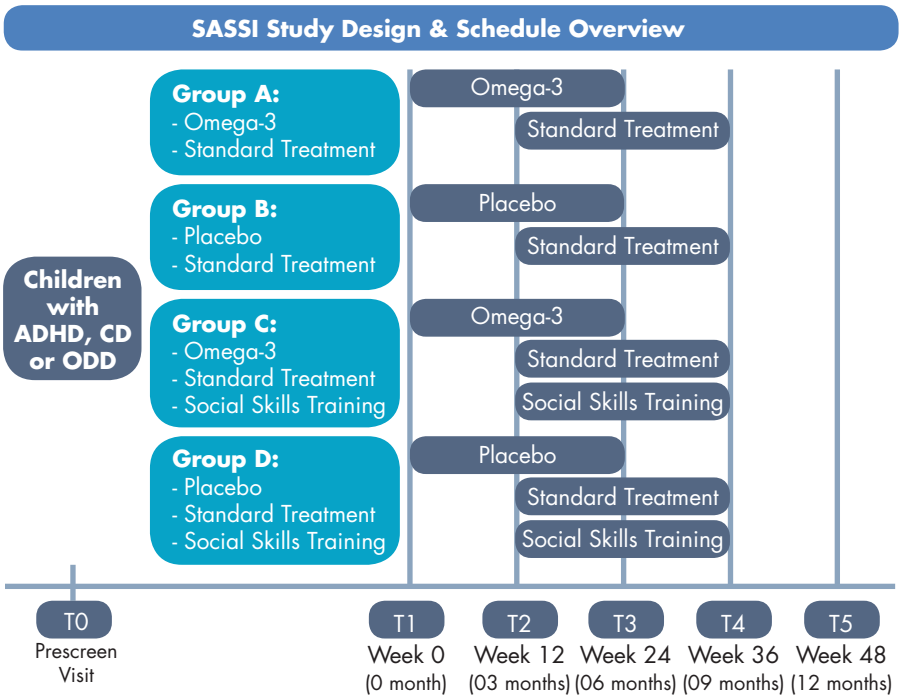
An initial analysis was also completed using a sub-sample of 177 child participants. Results suggested the potential of omega-3 supplementation and social skills training in addressing developmental aggression and attention problems. The scientist-practitioner modus subscribed by the team also meant that constructive perspectives learnt from the clinical trial are shared.

The group social skills training protocol will be published shortly and adapted for use within the DCAP as a mainstay group therapy treatment for children with disruptive behaviours, as well as with our community partners.

By the end of this year when all data analysis is completed, this group of researchers will have the answers to whether omega-3 improves children diagnosed with hyperactivity and conduct disorders, and if it does, how the associated mechanisms affect behavioural and brain functions.

One thing for sure at this stage is that more research is needed to expand the empirical base on how omega-3 supplementation can be beneficial for various child and adolescent mental health population.

A/Prof Daniel Fung is the Chairman Medical Board at the Institute of Mental Health (IMH). He is an Adjunct Associate Professor with both the Yong Loo Lin Medical School and Duke-NUS Graduate Medical School, National University of Singapore.



Pictorial representation of the SASSI study Design & Schedule

A/Prof Fung is a Principal Investigator and Co-Investigator for various studies involving innovative clinical interventions on disruptive behaviour disorders and anxiety disorders. His research is supported by the National Medical Research Council and other funding agencies. A/Prof Fung has been involved in over 10 research grants and is a PI in several NMRC funded grants. He has coauthored over 50 peer reviewed research papers, more than 20 books and 8 book chapters.

About the Principal Investigator

My Journey into the Land of Research

A/Prof Daniel Fung
Chairman Medical Board
Institute of Mental Health

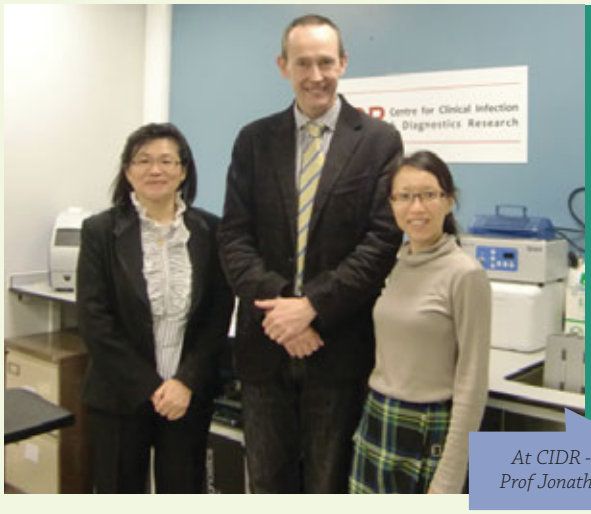
I am a strong proponent that the practice of medicine is quintessentially research because we need to ask questions and find answers for them. Clinical research is therefore about developing novel experiments that answer the clinical questions of our practice. This is an engaging experience for me personally. I started out trying to do research in my own blunderbuss way and recalled once how a senior researcher threw my research study notes into the bin after he reviewed them. This incident happened very early in my career as a researcher but remained vividly etched in my mind. Fast forward many years later, with numerous learning opportunities and collaborations with mentors locally and worldwide, I am proud to say that my team has been developing a number of worthy studies and exploring novel premises with new innovation. The SASSI study is one of them.

The SASSI study was the largest grant I have received as a clinician who also dabbles in research. It meant a steep learning curve as I needed to form a team to help support this large scale clinical trial. We had to also set aside budget to do the many functions that the study promised and work with various experts in the field collaborating widely. It is a great way to have both personal experience in leading a study as well as receiving guidance from our numerous international collaborators. It was both a learning experience as well as a chance to form bonds with our research team and friends from overseas. SASSI meant that I could develop international partnerships that went beyond research.

With the SASSI study moving into the final stages of data analysis, I am exploring other clinical areas where research can bridge potential gaps. The direction forward will be to continue seeking fresh and innovative means of improving the lives of our patients and new ways to measure value. One of my current interests is in serious games and how they help in mental health disorders in youths. I also hope to develop an evidence base for the

Jumping for joy after obtaining the SASSI grant; a post-hoc analysis.

delivery of a population based mental health programme for the young. It is important to find a conducive way to study positive effects not just from clinical symptoms view point but also from a functional as well as the patient's perspectives and then to look into the cost effectiveness of these interventions. Like a fish out of water, health service research is an area which I am largely unfamiliar with and would need lots of help and mentoring. I look forward to the new research challenges that our organisation, IMH as a whole, is now facing.



Forging International Partnerships with:

Centre for Infection Prevention and Management @ Imperial College London and Centre for Clinical Infection & Diagnostics Research at Kings College London

At CIDR - From left: A/Prof Leo Yee Sin, Prof Jonathan Edgeworth, Dr Angela Chow

A/Prof Leo Yee Sin & Dr Angela Chow
Institute of Infectious Disease & Epidemiology
Tan Tock Seng Hospital

The threat of antimicrobial-resistant organisms is a global one and the challenges faced in infection prevention and control are universal. One of the best strategies to tackle them is to collaborate and learn from the best practices near and far.

With the award of the inaugural UK-Southeast Asia Partners in Science Collaboration Development Awards in Public Health by the British High Commission in Singapore from the Foreign Commonwealth Office's Global Partnership Fund, Dr Angela Chow, together with A/Prof Leo Yee Sin, visited the Centre for Infection Prevention and Management (CIPM) @ Imperial College London and Centre for Clinical Infection & Diagnostics Research (CIDR) at Kings College London. The objective of the visit was to spend time with potential collaborators at the two institutions to gain an in-depth understanding of their work and explore opportunities for research and educational collaborations on the prevention and control of healthcare associated infections, and the use of novel technologies and strategies to optimise antibiotic stewardship.

During the visit to CIPM, A/Prof Leo and Dr Chow met with Professor Alison Holmes, Co-Director CIPM and Director of Infection for Imperial College Healthcare Trust, the clinical and research staff from her group, as well as with CIPM's collaborators from the Imperial College London's Faculty of Engineering and its Business School. The Singapore team also toured the Hammersmith Hospital and Imperial College London's School of Medicine. The team was very impressed with CIPM's multidisciplinary team which included infectious disease physicians, pharmacists, and epidemiologists, and the close working relationships that it has forged with partners from the engineering and business schools.

The two-day visit to CIPM provided an invaluable opportunity for mutual sharing and exchanges on work and experiences, and the exploration of potential areas of research and educational collaboration. Both teams acknowledged the similarities in challenges faced albeit differences in climate and culture, and identified common research interests in the exploration of the use of novel technologies to shape prescribing behaviour and on cost-effectiveness studies to evaluate the impact of infection prevention interventions and practices on healthcare-associated infections. Going forward, regular discussions will continue, with the view of developing successful research alliances.

During the visit to CIDR, the Singapore team met with Professor Jonathan Edgeworth, Director of CIDR, and his group comprising clinical microbiologists, infection control doctors and nurses, pharmacists, and epidemiologists. The team also toured St Thomas' Hospital and CIDR's research laboratory and bio-bank which were embedded within the diagnostic laboratory that services the three tertiary hospitals and affiliated step-down care facilities of Kings Health Partners. The Singapore team was highly impressed by the organisation of the research laboratory, the research bench space availabe, and the storage capacity of isolates dating back to the first methicillin resistant Staphylococus aureus (MRSA) patient identified in the hospital decades ago.

The discussions with various members of the CIDR team were very interesting and both groups benefited from the mutual exchanges on experiences and research on infection prevention and control. Both teams identified common research interests in the understanding of the molecular epidemiology of MRSA in acute hospitals and their affiliated healthcare facilities, and comparative studies on the impact of universal bathing with antiseptic solutions on the incidence of MRSA infections. Communications between the two groups will continue after the visit, with regualr sharing on each other's work and the view of developing these common interests into joint research publications.

At CIPM - Front from left: Dr Angela Chow, Prof Alison Holmes, A/Prof Leo Yee Sin

Members of the IMH Pharmacy Clozapine research team (Ng Boon Tat, Celine Tan, Emily Liew)

Monitoring Blood Count in Patients on CLOZAPINE

Emily Liew
Principal Pharmacist (Clinical)
Institute of Mental Health

This project was awarded first prize (poster presentation) at the 13th Congress of Asean Federation of Psychiatry & Mental Health, 16-17th November 2012.

Clozapine is a second-generation antipsychotic licensed for use in patients with treatment-resistant schizophrenia. It has also shown to be effective in reducing suicidality, aggression and substance misuse.

Due to the risk of potentially fatal clozapine-induced agranulocytosis (a state of deficiency of white blood cells resulting in a person's vulnerability to severe infections), mandatory white blood cell (WBC) monitoring is required for all clozapine users.

In Singapore, this involves weekly WBC monitoring for the first 18 weeks of starting clozapine, followed by monthly monitoring thereafter. A safe time to discontinue long-term mandatory WBC monitoring has not been established.

Study in IMH

A study was conducted at the Institute of Mental Health to document the incidence and onset of agranulocytosis, leukopenia and neutropenia in clozapine users, in order to estimate an appropriate time to stop or decrease the frequency of blood monitoring in an Asian population.

Retrospective hematological, demographic and prescribing data for patients with clozapine-induced agranulocytosis, leukopenia or neutropenia were analysed. Onset was estimated from the date clozapine was started to the date of the blood test with leukopenia, neutropenia or agranulocytosis.

The incidence of agranulocytosis (0.2 per cent) was found to be lower in our population compared to published data from other countries. The onset of agranulocytosis was within the first 18 weeks of clozapine treatment, which is consistent with the known period of highest risk for hematological abnormalities. Beyond 18 weeks of clozapine treatment, all clozapine-induced leukopenia/neutropenia cases observed were of mild severity.

The incidence of leukopenia and neutropenia decreased with the duration of clozapine treatment, and no new cases were reported in this population after the 9th year of treatment.

Clinicians should continue to remain vigilant against clozapine-induced agranulocytosis especially in the first few months of clozapine treatment. For patients who wish to stop WBC monitoring, it is essential to balance the risks of stopping WBC monitoring against the loss of clinical control of symptoms if clozapine is withdrawn.

If the patient is mentally competent, and has been well informed of the risks involved, this study suggests that discontinuation or less frequent WBC monitoring after the 9th year of clozapine treatment may be justifiable, and is preferable to stopping clozapine treatment since clozapine reduces overall mortality. However, WBC count must still be monitored immediately if there is any clinical suspicion of agranulocytosis.

About Emily Liew:

Emily Liew graduated with Pharmacy Honours degree from National University of Singapore and joined IMH in 2002. She obtained Postgraduate Diploma in Psychiatric Pharmacy from Aston University (UK) in 2005.
As a Board Certified Psychiatric Pharmacist, Emily is currently a member of the multi-disciplinary team at the psychogeriatric wards and one of the clinical pharmacists with the IMH Clozapine clinic.

My thoughts about research:

Medication side effect and monitoring is often a concern for patients and clinicians. However, information on medication side effects especially during long-term treatment is often limited due to the short study duration in clinical trials. I think it is meaningful to contribute to the knowledge of medication effects from routine clinical practice, so that patients can be better informed and monitored appropriately during their course of treatment.

With full blood count monitoring, clozapine was also found to be linked to other blood dyscrasias, such as thrombocytopenia. In view of the lack of local published data, IMH pharmacists have embarked on other studies to estimate the incidence of other blood dyscrasias with clozapine, and to highlight any relevant associated factors. We hope that this information can enable us to draw meaningful conclusions about the effects of clozapine on the local population and provide guidance on how to use it more effectively.

Study Title	Investigators involved
Onset and Incidence of Clozapine-induced Agranulocytosis, Neutropenia and Leukopenia in Singapore	Emily Liew, Jasmine Goh
Blood dyscrasias associated with Clozapine use in Outpatients in Singapore	Ng Boon Tat, Tay Jia Yuan, Ong Pei Shi
A Pilot Study on Clozapine-induced Blood dyscrasias among Singaporean Inpatient Clozapine users	Ng Boon Tat, Celine Tan, Ong Pei Shi

Table 1: List of Clozapine-related projects conducted in IMH Pharmacy department

Tackling ANTIBIOTIC Resistant Infections on the Ground

Ng Tat Ming
PharmD, BCPS
Infectious Disease Pharmacist
Tan Tock Seng Hospital

I have always been interested in the treatment and control of nosocomial multi-drug resistant bacteria. As a young pharmacist in 2009, a great opportunity presented itself when I was tasked to work with infectious disease physicians to form the antimicrobial stewardshp (ASP) team. The primary goal of antimicrobial stewardship is to optimise clinical outcomes while minimising unintended consequences of antimicrobial use, including toxicity, the selection of pathogenic organisms, and the emergence of resistance.

Research on antibiotic resistance

To fulfill the goals of our service, research is an important tool which can identify areas where limited resources can be focused and then test if our interventions are successful.

One of the most problematic organisms that we have faced to date is Acinetobacter baumannii. It has great potential for nosocomial spread as it survives for long periods in hospital environments and is a very effective human coloniser. It is associated with mortality ranging 23 to 43 per cent . In Tan Tock Seng Hospital from 2006 to 2010, 31per cent of all A. baumannii bacteremia were sensitive only to Polymyxin B (XDR A. baumannii).

There is also significant burden of these organims in the Southeast Asia region. We were fortunate to be able to collarborate with Thammasat University Hospital in Pratumthani, Thailand. With the objective of identifying risk factors of acquisition and mortality of XDR A. baumannii bacteremia, we conducted a case-case control study.

Results of research

We found that the use of central venous catheters (adjusted odds ration (aOR), 12.644, 95 per cent CI; 2.143-74.620), use of carbapenems (aOR, 54.391, 95 per cent CI; 3.869-764.674) and piperacillin-tazobactam (aOR, 55.035 95 per cent CI; 4.803-630.613) were independently associated with XDR A. baummannii bacteremia. Concurrent infections (aOR 3.527 95 per cent CI; 1.479-8.411), cancer (aOR 3.172, 95 per cent CI; 1.135-8.865) and respiratory source (aOR 2.690, 95 per cent CI; 1.160-6.239) were associated with an increased risk of 30-day mortality. Our results supports that resistance to major antimicrobial drugs, is important and may explain the persistence of A. baumannii in the hospital environment.

In addition, broad spectrum antibiotics in general rather than a specific group provides the additional conditions for emergence of the XDR phenotype. This underscores the importance of controlling antibiotic pressure in addition to infection control measures.

Our results also suggest that patients who exibit the risk profile of increased mortality could be selected to receive empiric polymyxin B; an antibiotic agent with a nephrotoxicity rate of 20 per cent.

Utility of our research

Our daily tasks as the ASP team are to revivew every carbapenem and piperacillin-tazobactam order in the hospital to ensure it was appropriately used. Our results confirmed that the targeted review of carbapneem and piperacillin-tazobactram is appropriate and we need to work closely with infection control to help contain XDR A. baumannii.

The primary goal of antimicrobial stewardship is to optimise clinical outcomes while minimising unintended consequences of antimicrobial use, including toxicity, the selection of pathogenic organisms, and the emergence of resistance.

Author 3rd from left

Interprofessional Practice and Learning Interest of Allied Health Professionals in Tan Tock Seng Hospital

Florence Cheong
Senior Manager
Occupational Therapy
Tan Tock Seng Hospital

Mohamed Damiri Mohamed Hosain
Senior Occupational Therapist
Occupational Therapy
Tan Tock Seng Hospital

Globally, the health care landscape is changing. Among the challenges we now face are - the ageing population, the increase in prevalence of chronic diseases and an increase in demand of quality care.

The World Health Organization (WHO) recognises that a team-based, collaborative approach is needed to deliver care to patients with complex needs. The WHO has identified and emphasises the role of interprofessional education (IPE) in the development of a healthcare workforce that is ready to practise collaboratively.

Interprofessional Education (IPE)

Interprofession education is defined as "occasions when two or more student or professionals learn with, from and about each other to improve collaboration and quality of care." Systematic reviews have shown positive evidence of IPE promoting positive interaction among different professionals as well as improving attitudes towards other professions thereby resulting in better patient care and satisfaction.

As there is no research done previously on allied health professions' readiness for IPE, our team decided to do an exploratory dipstick survey to look at the readiness of the allied health professionals (AHPs) in Tan Tock Seng Hospital (TTSH) with respect to IPE.

Methodology

The Readiness for Interprofessional Learning Scale (RIPLS) which is a 19-item self-report inventory, with a 5-point Likert scale, developed to investigate the readiness towards IPE was chosen for the survey. It consists of three subscales: teamwork and collaboration, professional identity and patient centeredness. Demographics of the participants were also included.

The research team uploaded the survey onto an online survey platform. Allied Health Professionals were invited to access this online survey platform via a link sent to their work emails. After completion of the survey, they received a food voucher for their participation. Before the link to the survey was sent out, the research team presented to each allied health departments to introduce the study.

Findings from the survey

Out of 378 AHPs from 10 allied health departments, 282 participated (74.6 per cent response rate). Results were analysed using the Statistical Product and Service Solutions (SPSS) software and the team found two key findings.

Key finding 1: Allied Health Professionals below the age of 30 were more open to Interprofessional Education (IPE) and Interprofessional Collaboration (IPC)

The first was that AHPs in TTSH who were below the age of 30 were more open to IPE and IPC as compared to those ages 30 and above (table 1). A further analysis into the subscales showed that those below 30 years old had higher scores for teamwork and collaboration and professional identity (table 2).

Key finding 2: AHP's with 5 years of work experience or less were more open to IPE and IPC

The next key finding was that AHPs who had five years of work experience or less in their current AHP role in TTSH were more open to IPE and IPC as compared to those who had more than five years of work experience in their current AHP role in TTSH (table 3).

A further analysis into the subscales showed that those with five years of experience and less in their current AHP role in TTSH had higher scores for teamwork and collaboration and professional identity (table 4).

From the key findings, it shows that future projects involving IPC may require specific strategies put into place to help overcome the difference in openess to IPC highlighted above. A further study can also be done to find out what factors may have contributed to the difference in openess to IPE and IPC.

In conclusion, our study shows that age and years of work experience needs to be taken into account when planning IPE programmes.

Charts

RIPLS Scores

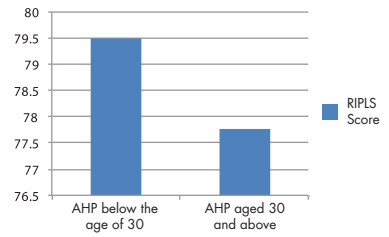


Table 1: RIPLS score of AHP's below 30 against AHP's aged 30 and above. The scores show that AHP's below the age of 30 are more open to IPE as compared to those above 30.

RIPLS Scores with respect to subscales

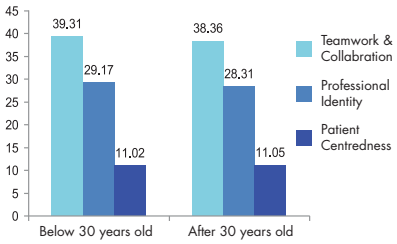


Table 2: RIPLS subscale scores of AHP's below 30 against AHP's 30 and above, with significant difference for subscales teamwork and collaboration and professional identity. The scores shows that AHP's above 30, who are more open to IPE, also have higher scores for subscales teamwork and collaboration and professional identity.

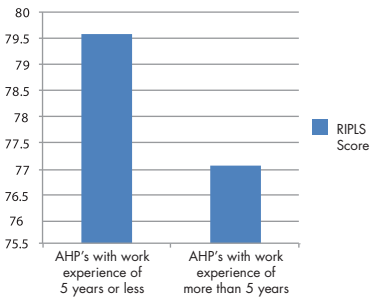


Table 3: RIPLS scores of AHP's with work experience of 5 years or less against AHP's with work experience of more than 5 years. The scores show that AHP's with work experience of 5 years or less are more open to IPE.

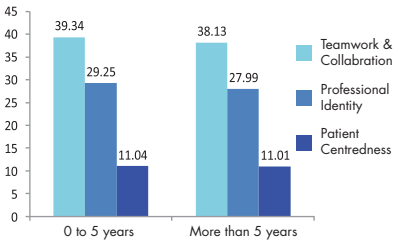


Table 4: RIPLS subscale scores of AHP's with 5 years work experience or less against AHP's with more than 5 years work experience, with significant difference for subscales teamwork and collaboration and professional identity. The table shows that AHP's who have work 5 years or less, who are more open to IPE, also have higher scores for subscale teamwork and collaboration and professional identity.

Qualité

The program with a mission to ensure and enforce the responsible conduct of research meeting high ethical standards.

Standardising Research

Changes to the Proper Conduct of Research (PCR) Standard Operating Procedures (SOPs) which are effective from 31st July 2013.

The Research Quality Management (RQM) unit in the Office of Human Research Protection Programme (OHRPP) reviews its Proper Conduct of Research (PCR) standard operating procedures (SOPs) on a regular basis to keep abreast of developments within the industry, while maintaining their operational relevance to research staff on the ground.

Changes to PCR SOPs

The latest round of PCR SOP review has seen notable changes made to the informed consent process, data collection and handling, as well as the need for delegation of research-related responsibilities when the principal investigators (PI) are away for an extended period of time. These changes are effective from 31st July 2013.

Here is a summary of the PCR SOP changes:

PCR SOP 501-A02 – Responsibilities of the Research Team

The changes in this SOP will apply to PIs going away for a prolonged period of time and who will be unable to discharge his / her research-related responsibilities during the period of absence.

In such circumstances the PI will be required to either:

- Delegate his / her responsibilities as a PI to a suitably-qualified deputy (e.g. the co-investigator) and document this arrangement on the study delegation log; or
- Formally transfer the research study to another suitably-qualified PI. The Domain Specific Review Board (DSRB) should be informed of this change of PI, and the incoming PI should assume oversight of the study only upon obtaining DSRB approval.

The following guidelines for the period of absence will apply:

- More than minimal risk studies – The study should be formally transferred to another PI if the original PI will be away for more than three months.
- Minimal risk studies – Where there are subject recruitment and ongoing follow-up activities, the study should be formally transferred to another PI if the original PI will be away for more than six months.

PCR SOP 501-C01 – Informed Consent Form and Process

1. Study staff authorised to take informed consent

The informed consent discussion with subjects should be conducted by appropriately trained and qualified study staff, who have been listed in the DSRB application form as the designated person(s) to take consent. It is the responsibility of the PI to ensure that the study delegation log is updated to indicate study team members who are authorised to take consent.

2. Informed consent process for mentally competent subjects who are unable to sign and date the informed consent form

A formal process for obtaining consent from mentally competent subjects who are unable to sign and date the informed consent form has been established in the revised SOP. Examples of subjects for whom this informed consent process may be applicable to are illiterate subjects or persons with physical disabilities that prevent them from being able to write.

It should be ascertained that these subjects demonstrate mental competence and are able to understand the informed consent discussion. Subjects should also be able to indicate clearly whether they wish to participate in the study or not. An impartial witness is required to attend the informed consent discussion involving such subjects.

To document consent, the subject will be required to affix his / her thumbprint on the informed consent form. The impartial witness is allowed to fill in the subject's name and date of consent on the form, on the subject's behalf.

Importantly, the informed consent process should be clearly described and documented in the subject's medical records.

3. Consent requirements in emergency situations

The SOP has been revised to provide greater clarity on the consent requirements for clinical research studies and clinical trials conducted in emergency situations respectively. These are studies in which taking informed consent from subjects or their legal representatives prior to study enrolment is not possible.

For *clinical research studies* conducted in emergency situations, the PI and 2 independent specialists (who are not participating in the study) are required to make a written certification *prior to enrolling each subject*. This written certification should be retained on file for verification.

Additional procedures apply for clinical trials conducted in emergency situations. *Prior to initiating the study*, the PI and 2 independent specialists must provide a written certification attesting to specified criteria. Subsequently *at the point of enrolling each subject,* the PI and 2 independent specialists must provide another written certification attesting to another set of specified criteria relating to the subject being enrolled. It should be noted that both sets of written certifications must be promptly submitted to the Health Sciences Authority (HSA) at the time each the certification is made. In addition, copies of the written certifications should be retained on file for verification.

After enrolling the subject into the clinical research study or clinical trial, the following consent procedures must be followed through:

- At the earliest possible opportunity, consent from the subject or his / her legal representatives should be sought for continued participation.
- If the PI is made aware of any objection by the subject, his / her legal representative and / or any family member(s) for continued participation in the study, the subject should be immediately discontinued.

PCR SOP 501-B05 – Documentation

The minimum retention period for documents from completed clinical research studies (excluding clinical trials) has been extended from 3 years to 6 years. For clinical trials, there is no change to the current minimum retention period of 6 years after completion of the clinical trial, or alternative duration as otherwise specified in the Medicines (Clinical Trials) Regulations.

Qualité

Availability of New Study Templates

In keeping with the PCR SOP changes, several study document templates have been developed to aid investigator-initiated studies with creating essential documents. Concurrently, a significant number of existing study document templates has also been revised.

The new study document templates are listed below.

New Template Available	Purpose of Template
Corrective Action & Preventive Action Plan (CAPA) Template	The CAPA template may be used to detail the corrective actions and preventive actions taken to address study findings detailed in study review reports. The study team should work together to complete the CAPA, which should be submitted to the study reviewer by the stipulated deadline.
Note to File Template	This template may be used to document explanations or supplement inadequate information in the study documentation. The completed note to file should be retained in the study file.
Template for Documentation of Adverse Event in Medical Records	This template format may be directly entered into the subject medical records by the investigator performing the documentation. The template serves as a guide on the necessary fields and details that should be documented pertaining to the adverse event(s) experienced by the subject.
Adverse Event / Serious Adverse Event Tracking Log	This template helps investigators track the adverse events (AEs) or serious adverse events (SAEs) that occur during the study, particularly for the purpose of determining whether these event(s) qualify for expedited reporting to the sponsor and / or regulatory authorities.
Investigational Product Dispensing & Accountability Log (Multiple Subjects)	This template is used to document the receipt, supply and return of the investigational product(s) used in a clinical trial. Two different formats of the same template are available to cater to different study requirements.
Investigational Product Dispensing & Accountability Log (Per Subject)	
Subject Identification Log	This template is used to document the personal particulars of all subjects participating in the study.
Temperature Log	This template is used to document the temperature monitoring records of the premises in which the investigational product is stored.
Study Initiation Meeting Attendance Log	This log serves as a record of the study staff who attended the study initiation meeting. This log also constitutes documentation of study-related training records.

Principal investigators and all research staff are advised to read the above-mentioned PCR SOPs in their entirety to obtain a better understanding of the SOP changes. The new and revised study document templates are also available for downloading from the NHG research website. Researchers may adapt and customise the various templates to suit the individual study requirements.

To access the full listing of PCR SOPs and study document templates, please refer to the following link: http://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/research+sops

References

4. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-A02 – Responsibilities of the Research Team
5. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-C01 – Informed Consent Form and Process
6. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-B05 – Documentation

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Lim Boon Hwee

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GCP Frequently Asked Questions – How to Write a CAPA

In our last issue, we introduced readers to the scope and directives of the Research Quality Management unit under the Office of Human Research Protection Program (OHRPP). The attentive reader may recall one of the core functions of RQM introduced – that is, the conduct of study reviews on research studies that are currently ongoing in NHG and partner institutions. Principal investigators whose research studies have undergone study reviews would be issued a study review report by RQM. To address the findings in the study review report, the principal investigator would be tasked to submit a corrective action and preventive action plan (CAPA) by the stipulated deadline.

What is a CAPA?

Based on the ISO 9000 definition, corrective actions are steps taken to eliminate the causes of existing non-conformities in order to prevent recurrence of the deviation. Consequently, preventive actions are steps taken to prevent the occurrence of non-conformities or undesirable situations that do not yet exist. Occurrence is prevented by eliminating the potential causes of such situations. Originally a Good Manufacturing Practice (GMP) concept, the use of CAPAs has been adopted in the clinical research industry as a compliance and quality improvement strategy.

Creating a CAPA

As the CAPA can be an effective way to address non-compliances within a research study, it is typically requested for by the relevant authorities following an audit and / or inspection visit. In creating a CAPA, the following important steps should be considered:

1. **Determine the problem**
   Review the finding raised by the auditor / inspector, as well as the evidence cited to substantiate the finding, to pinpoint the nature of the non-compliance.

2. **Determine the corrective actions to be taken**
   Identify the action(s) that can be taken to rectify the problem, as well as the person(s) responsible for implementing the corrective actions proposed. In instances where the non-compliance has already occurred and cannot be corrected or reversed, the only action that can be taken is to document the problem by means of a file note or protocol deviation report.

3. **Conduct a root cause analysis**
   Determine the root cause of the finding, particularly to establish if it is a systematic or isolated problem. A systematic problem could mean that other studies may also be affected. Examples of systematic problems include lack of training, or inadequate standard operating procedures (SOPs).

4. **Determine the preventive measures that may be taken**
   Propose solutions to address the root cause of the problems, taking into account existing regulations, guidelines and resources that may be allocated for the study. Again, an accountable person should be appointed to oversee the implementation process.

5. **Set realistic deadlines**
   Consider the manpower and resources that can be assigned to implement the corrective and preventive measures proposed above. A reasonable time frame for achieving these measures should be proposed and documented on the CAPA.

A Collective Effort by the Study Team

Completion of the CAPA should never be a lone effort. Conversely, it is recommended that the principal investigator and his / her study team collaborate closely to address study findings following a study review visit. In instances where the protocol non-compliances are significant, the study team may approach the auditor(s) / inspector(s) for advice or additional guidance on proposed actions that can sufficiently address the problem.

Resources for More Information

A CAPA template has been developed by NHG's Research Quality Management (RQM) unit for investigators' use and reference. The CAPA template is available for download from the NHG research website, at: http://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/research+sops

References

1. Resources, NHG Research Website. Accessed on 26 Jun 2013. http://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/research+sops
2. Here are quick tips on corrective action plans. (2011).Clinical Trials Administrator. Retrieved from http://search.proquest.com/docview/908312855?accountid=12763; http://sirious.library.unsw.edu.au:9003/sfx_local?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3Ahealthcompleteshell&atitle=Here+are+quick+tips+on+corrective+action+plans&title=Clinical+Trials+Administrator&issn=15448460&date=2011-12-018&volume=&issue=&spage=&au=&isbn=&jtitle=Clinical+Trials+Administrator&btitle=
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4. Writing an Effective Corrective Action Plan. Northwestern University Institutional Review Board. Website accessed on 26 Jun 2013. http://irb.northwestern.edu/policies/compliance/corrective-action-plan
5. ISO 9000, 9001 and 9004 Plain English Definitions. Praxiom Research Group Limited. Website accessed on 26 Jun 2013. http://www.praxiom.com/iso-definition.htm#Corrective action

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Non-Compliance Report: Major Deviations in Study Conduct from the DSRB-Approved Protocol

Background

The National Healthcare Group (NHG) Research Quality Management (RQM) team conducts regular and random study reviews on ongoing clinical research studies carried out in NHG and its partner institutions, under the oversight of the NHG Domain Specific Review Board (DSRB).

The purpose of these study reviews is to increase awareness among investigators and their study staff on proper research practices and documentation techniques; and ultimately, to safeguard the rights, safety and well-being of trial subjects.

Study Review Findings

A recent study review visit by the RQM team revealed that a study team had conducted study procedures differently from how they had been described in the DSRB-approved protocol.

Pertinent findings identified had included:

The number of times that blood had to be taken from each subject had not been clearly stated in the informed consent form.

The quantity of blood collected from each subject was different from that specified in the approved protocol, constituting a protocol deviation.

Useful Tips & Recommendations

Here are some practical tips that investigators can take note of to avoid similar lapses in their research studies:

1. **Start with a well-written protocol:**
   Before initiating a trial, the Principal Investigator (PI) should ensure that the protocol clearly describes the procedures to be performed on subjects, and that the procedures described are practically feasible to carry out. Information included in the informed consent form should correspond with that in the study protocol and DSRB application form.

2. **Have a process in place for identifying, tracking, reporting and correcting protocol deviations/violations:**
   It is the PI's responsibility to document and explain any deviation(s) from the DSRB-approved protocol. Processes should also be established to evaluate and determine if any corrective action is required to rectify the deviation, or whether a protocol amendment is needed. Protocol non-compliances should be reported by completing the ROAM Online DSRB Non-Compliance / Protocol Deviation Form, which should be submitted within a week of first knowledge of the deviation. To reduce the incidence of study deviations, it is recommended that routine meetings be held with study staff to discuss study-related issues, review trial progress and update study team members on any changes to the protocol study procedures.

3. **Ensure that research staff are appropriately trained and qualified:**
   It is the PI's responsibility to ensure that all study team members involved in the research are appropriately qualified and trained on the study protocol. All investigators and study staff are also required to meet the minimum training requirements set by DSRB [e.g. Good Clinical Practice (GCP) training, Collaborative Institutional Training Initiative (CITI) programme].

4. **Acquaint oneself with the guidelines and regulations governing the conduct of research:**
   Besides having good knowledge of the protocol details, PIs and study team members are strongly encouraged to familiarise themselves with institutional guidelines, standard operating procedures and regulatory requirements governing research. It is the PI's responsibility to ensure that research is conducted in compliance with all applicable guidelines and regulations.

5. **Keep the DSRB informed of any study amendments:**
   Only the approved protocol and research documents should be implemented. Where the need for a protocol amendment arises, the PI is responsible for informing the DSRB via the Study Amendment Cover Note. The amended documents should also be submitted for approval. The PI may only implement the protocol amendments after written approval from DSRB has been obtained.

References

1. Singapore Guideline for Good Clinical Practice (SG GCP)
2. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-A02 – Responsibilities of the Research Team
3. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-A03 – Training and Education
4. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-B04 – Interactions with Domain Specific Review Board

Contributed by

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Responsible Conduct of Research (RCR) –

Peer Review

In research, the term "peer review" is used to describe the impartial and independent assessment of research by fellow colleagues working in the same or related field.

Peer review has a number of important roles in research, such as in the assessment of grant applications, selection of materials for publications, review of the performance of researchers and teams, as well as selection of staff.

On its own, peer review cannot ensure research integrity. However, it has played an important role in detecting fraud in research. Therefore, institutions should encourage participation in the peer review process as it provides expert scrutiny to a project, helps maintain high standards, and encourages accurate, thorough and credible research reporting.

Responsibilities of Institutions:

- Encourage researchers' participation in peer review.
- Recognise the importance of the peer review process, and give sufficient support to researchers to participate in peer reviews.

Responsibilities of Peer Reviewers

- Peer reviewers who are reviewing others' work should conduct the review process responsibly. It is important that the reviewers:
- Are unbiased and timely in their review.
- Act in confidence and do not divulge the contents or outcome of any process for which they are involved.
- Declare all conflicts of interests, do not allow personal prejudices to influence the peer review process and do not introduce considerations that are irrelevant to the review criteria.
- Do not take calculated or undue advantage of knowledge gained during the peer review process.
- Ensure that the criteria to be applied are complied with.
- Decline invitations to perform reviews outside their area of expertise.
- Give proper consideration to research projects that challenge current norms and practices.

Responsibilities of Researchers

- Do not interfere with the peer review process, i.e. researchers whose work is undergoing peer review should not attempt to influence the process or outcome.

On its own, peer review cannot ensure research integrity. However, it has played an important role in detecting fraud in research.

- Supervisory researchers have a responsibility to mentor trainee researchers, guide them in developing the necessary skills for peer review and understand their obligation to participate.
- Peer review is recognised as a central mechanism of research assessment. Reviewers should exercise discretion during the peer review process, and declare all conflicts of interests as required. Those invited to perform reviews for the first time are advised to take up pre-requisite training, follow any guidance provided by the organisation making the review request, as well as consult mentors or colleagues during the process where appropriate.

Contributed by

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Launch of the NHG Investigator's Manual 2nd Edition

The Investigator's Manual for DSRB Biomedical Domains 2nd Edition is out! As the successor to its earlier edition, this manual promises to be a comprehensive reference detailing the submission procedures and research requirements for studies conducted under the purview of the Domain Specific Review Board (DSRB).

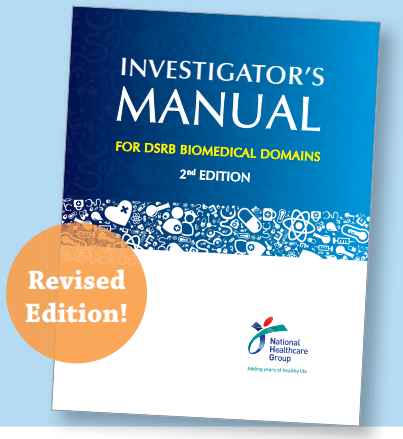
The revised edition features new amendments to the DSRB standard operating procedures (SOPs). Some of these include:

- Use of the short consent form
- Additional pointers on the informed consent process
- Consent requirements for studies conducted in emergency situations
- Minimum qualifications and training requirements for Principal Investigators
- Specific guidance for the delegation of research responsibilities when the Principal Investigator will be away for a prolonged period of time
- References to research resources such as guidebooks, study documents and templates that may be downloaded from the NHG research website.

The PDF copy of the Investigator's Manual 2nd Edition may also be downloaded in full from:

http://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/research+online+guidebooks

Printed copies of the Investigator's Manual 2nd Edition are available for purchase at SGD$20 per book. Please email your purchase request to adam_jh_koh@nhg.com.sg.



Research Ethics Public Forum

Eling Ho
IRB Analyst
Domain Specific Review Board
National Healthcare Group

On 20 July 2013, the NHG Office of Human Research Protection Programme (OHRPP) organised a Public Forum to educate the community about research. This event was held at the School of the Arts (SOTA) Drama Theatre, and focused on the essentials of research, with the theme of: Research and You – What You Need to Know about Participating in Research.

The Public Forum invited four experienced research ethics experts and subject advocates to share with the public honest and accurate information on how to make an informed decision before engaging in research activities.

NHG OHRPP Public Forum 2013 Team

Game Booths at the Forum

Exhibition Booths at the Forum

The speakers comprised:

- A/Prof Chin Jing Jih, Chairperson of the NHG Research Ethics Committee, Senior Consultant, Department of Geriatric Medicine, Tan Tock Seng Hospital, who gave an overview of research and the role and rights of research volunteers.
- Dr Lee Soo Chin, Chairperson of NHG Domain Specific Review Board B1 and Senior Consultant, Department of Haematology-Oncology, National University Hospital, who shared on the informed consent process and what questions a potential research volunteer should ask before consenting to participate in any research.
- Ms Cynthia Chan, Senior Manager, Department of Legal Services, Tan Tock Seng Hospital, who provided forum participants insights on a subject's legal rights, and how personal particulars and data are being protected in clinical research.
- Dr Yong Wei Peng, Chairperson of NHG Domain Specific Review Board C and Senior Consultant, Department of Haematology-Oncology, National University Hospital, who shared on how the research scene has evolved, and how society has benefited from research that has been carried out.

At the interactive exhibition and games area, participants interacted with OHRPP staff through participating in activities aimed at enhancing their understanding of research ethics and principles of research. Exhibition posters on research studies were also displayed at the foyer area, and participants heard from the poster presenters on how their research had benefited society.

Question and Answer (Q&A) session

KEY LEARNING POINTS SHARED AT THE PUBLIC FORUM:

- The choice to participate or not in research is ultimately yours.
- Whether you participate or not should not affect the quality of your continuing medical care.
- Ask questions and get information until you are satisfied enough to agree to take part in the research.
- The three basic ethical principles protecting research subjects are: Respect for Persons, Beneficence and Justice.
- Continued research allows us to stay current in our understanding of medical treatments and services available, and to identify any gaps.
- Research aims to provide faster, better, safer and affordable care for all patients.

Updates on the Master Research Collaboration Agreement (MRCA)

Purpose of the MRCA

The purpose of the Master Research Collaboration Agreement (MRCA) was to help facilitate and expedite research collaborations between Singapore Public Sector Organizations. The first MRCA was developed in April 2008 by Agency for Science Technology and Research (A*STAR), National University of Singapore (NUS), Nanyang Technological University (NTU), National Healthcare Group Pte Ltd and Singapore Health Services Pte Ltd (SingHealth) in response to an increase in the number of research collaborations between them. In April 2013, the MRCA was reviewed and effected for a period of five (5) years with the following changes:

1 As of 1 April 2013, the Organizations who are part of the revised MRCA are Agency for Science Technology and Research (A*STAR), National University of Singapore (NUS), Nanyang Technological University (NTU), National Healthcare Group Pte Ltd (NHG), Singapore Health Services Pte Ltd (SingHealth), Alexandra Health Systems Pte Ltd (AHS), Singapore Clinical Research Institute Pte Ltd (SCRI), Ngee Ann Polytechnic (NP), Singapore Polytechnic (SP), Republic Polytechnic (RP), Temasek Polytechnic (TP), Nanyang Polytechnic (NYP), National University Health System Pte Ltd (NUHS), Jurong Health Services Pte. Ltd. (JurongHealth), Eastern Health Alliance Pte Ltd (EHA), Singapore University of Technology and Design (SUTD), Institute of Technical Education (ITE) and Singapore Management University (SMU).

2 The National University Health System (NUHS) was formed with National University Hospital Pte Ltd (NUH) being part of NUHS. Institute of Mental Health (IMH), National Healthcare Group Polyclinics (NHGP), National Skin Centre Pte Ltd (NSC) and Tan Tock Seng Hospital Pte Ltd (TTSH) remain as part of the NHG cluster. Other reorganisations of other Organizations are also reflected in the revised MRCA.

3 A time-frame has been added for determination of each Party's Inventive Contribution and resulting ownership of Foreground IP - which is within three (3) months of the date of submission of a technology disclosure in respect of the Foreground IP, in addition to the already existing option of confirmation in writing within three (3) months of the expiration or earlier termination of the Project.

4 The infringement clauses have been refined.

5 Clauses pertaining to Force Majeure Events have been added.

6 The clauses on Notices were also updated to include e-mail notices.

7 A clause referring to the application of Part II of the International Arbitration Act (Cap. 143A) and the Model Law referred to therein was removed as it was not applicable, since all of the Organizations are Singapore-registered Organizations.

Impact of changes in new MRCA

There are no critical amendments to the MRCA apart from some updating of Organizations and some minor changes to the terms and conditions. A new format for Project Agreements was included in the new MRCA and shall be used with immediate effect.

Upcoming Intramural Grants

Grant Name	Grant Description	Funding Quantum
NTU-NHG Ageing Research Grant (ARG)	The NTU-NHG Ageing Research Grant (ARG) is a joint grant call launched by Nanyang Technological University (NTU) and National Healthcare Group (NHG) to fund collaborative projects in ageing research. This grant aims to provide a boost to medical innovation and improvement in healthcare areas to generate new knowledge/outcomes that would have an impact on the delivery of care for the ageing population. In addition, it also aims to foster greater collaboration between NTU and NHG, and to prepare investigators to compete successfully for national funding.	Maximum of S$400,000 for up to 3 years.
	Start of Application: August 2013	Website:www.research.nhg.com.sg
Clinician Leadership in Research (CLR)	The CLR is a 2-year programme that consists of 3 components: Mentorship, Training and Funding. The Programme aims to groom and nurture aspiring clinicians with little or no prior experience in research, but are keen on both research and clinical work, and wish to enhance their knowledge and skills in research.	S$5,000 seed funding and S$500 academic allowance, per year for 2 years.
	Start of Application: Oct 2013	Website: www.research.nhg.com.sg
Small Innovative Grant (SIG)	The SIG aims to fund clinically relevant research projects that can contribute directly to improve patient care or to enhance clinical research capabilities in NHG. It is designed to support exploratory and innovative studies with the aim of preparing young investigators to initiate larger investigations and vie for competitive grants on a national level.	Maximum of S$50,000 per year for up to 2 years.
	Start of Application: Oct 2013	Website: www.research.nhg.com.sg

Upcoming Extramural Grants

Grant Name	Grant Description	Funding Quantum
NMRC Bench & Bedside Grant (B&B)	The Bedside & Bench (B&B) Grant aims to foster closer interactions between the basic scientist and the clinicians to translate scientific discoveries in the laboratory to clinical useful and commercially viable applications to improve health outcomes. The B&B Grant will fund collaborations between 2 Co-Principal Investigators (PIs), one of whom is a basic scientist and the other a clinical investigator, with each Co-PI providing symmetrical intellectual inputs into the project. The applicants will need to show evidence of understanding required to bring a novel idea to clinical use and define these clearly as milestones, outcomes and future value.	Maximum of S$2 million per project for 3 years with additional 20% indirect costs. Additional funding of up to S$3M, inclusive of 20% indirect costs, may be provided by the BMRC for proposals involving a scientist from the BMRC research institutes or units.
	Start of Application: August 2013	Website: www.nmrc.gov.sg
NMRC Clinical Trial Grant (CTG)	The CTG aims to support clinicians in carrying out clinical trial studies for the development of novel therapies for healthcare needs. There will be three schemes under the CTG program, namely the (i) Co-Development Scheme which supports clinicians who wish to collaborate with the industry, and the Investigator-Initiated Trials - (ii) Early Phase and (iii) Late Phase Schemes which support clinicians who wish to conduct clinical trial studies on therapies of their own interest. These will help to develop the next generation of clinical investigators, promote translational and clinical research studies, and move promising ideas from bench to bedside.	<u>The Co-Development Scheme:</u> Co-investment of cash or in-kind is required from an industry partner (50% or more of the total project costs). A maximum of S$5million for 3 years, inclusive of 20% indirect costs, could be provided for expenditure incurred by the lead PI and institutions. <u>PI-Initiated Scheme(Early Phase Trials):</u> Maximum of S$5million for 3 years inclusive of 20% indirect costs. <u>PI-Initiated Scheme(Late Phase Trials):</u> Maximum of S$2million for 3 years inclusive of 20% indirect costs.
	Start of Application: The Co-Development Scheme: Open throughout the year PI-Initiated Schemes: Next call in 2014.	Website: www.nmrc.gov.sg
MOH Industry Alignment Fund Category 1 (MOH IAF Cat 1)	The MOH IAF aims to facilitate partnerships between clinicians and industry in pre-clinical and clinical studies to encourage commercially relevant research, foster new directions in translational biomedical research and support multi-disciplinary and multi-institutional collaborations which will bring new perspectives to the field. MOH IAF Category 1 is aimed at supporting partnerships that are important for the development of the biomedical cluster in Singapore. They can be composed of: (i) Multiple individual projects involving multiple local research partners and multiple industry partners, forming comprehensive, long-term collaborations with a high probability of leading to substantive R&D programs or impactful outcomes. (ii) Individual projects that are of significance to the national Biomedical Sciences (BMS) research agenda and industry relevance.	MOH IAF Category 1 will cover up to 30% of the Total Project Costs, and the remaining 70% of project costs must be contributed (cash or in-kind) by the industry partner. For projects where the industry partner has agreed to contribute more than 70% of costs, MOH IAF Category 1 will cover the remaining project costs. Funding support from MOH IAF Category 1 will be capped at (inclusive of 20% indirect costs): (i) S$500,000 per project for pre-clinical projects; (ii) S$1mil for clinical projects; (iii) In the case of translational projects involving both pre-clinical and clinical elements, a cap of S$1.5mil will apply.
	Start of Application: Open throughout the year	Website: www.nmrc.gov.sg

MOH Healthcare Research Scholarship

(Master of Clinical Investigation, MCI) 2013

Dr Aung Myint Oo
Department of General Surgery
Tan Tock Seng Hospital

Dr Liew Tau Ming
Registrar,
General Psychiatry 2
Institute of Mental Health

The National University of Singapore - Master of Clinical Investigation (NUS MCI) Program is designed to meet the needs of clinicians in healthcare institutions who desire to incorporate scientifically sound research into their clinical practice. To promote clinical and translational research in Singapore, the Ministry of Health provides scholarships for outstanding clinicians who are interested in enrolling in the MCI programme. The scholarship is open to clinicians who are Singaporean citizens or permanent residents.

We would like to congratulate the following NHG recipients of the MOH Healthcare Research Scholarship (Master of Clinical Investigation, MCI) 2013:

Download your very own softcopy of Catalyst at www.research.nhg.com.sg (Resources → Catalyst) today!

NHG Research Training Calendar for October 2013

Date	Time	Training Programme	Venue	No of Seats
Ongoing	00:00 - 23:59	Proper Conduct of Research Online - Basic I & III (PC101 & PC103) Workshop	www.elearning.nhg.com.sg	100
		Proper Conduct of Research – Basic II^ (PC102) Workshop		
10 October 2013	09:00 -13:30	Study Design Seminar	Class 3.3 @ Lee Kong Chian School of Business Singapore Management University	25
10 October 2013	14:15 -18:00	Manuscript Writing and Poster Presentation Seminar		25
24 -25 October 2013	09:00 - 17:30 (Day 1) 09:00 - 13:30 (Day 2)	Translating From Ideas to Commercialization in Healthcare	National University Hospital, Kent Ridge Wing, Level 2 ASTC, ST Lab	25

For registration and full details, please visit www.research.nhg.com.sg (Training & Education → Register for a Course)

*Dates are subjected to changes without prior notice
^For more information, refer to www.research.nhg.com.sg (Training & Education → Proper Conduct of Research Courses)

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