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A Newsletter For The Research Community In Singapore

National Healthcare Group
Adding years of healthy life

catalyst
ACCELERATING **RESEARCH**

Research on CHRONIC DISEASED POPULATION

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Dear Readers,

Thank you for your continued support for our Catalyst - a newsletter for the research community in Singapore, proudly brought to you by NHG Research & Development Office.

Aligning with our vision of "Adding Years of Healthy Life", chronic disease research remains a focus for NHG. Chronic diseases such as diabetes accounts for about 1/3 of disease burden especially in Singapore's Central Region. As Singaporean lives longer, more years are spent in poor health due to complications associated with chronic diseases. In this issue of Catalyst, we are pleased to share updates on various chronic diseases research in conditions such diabetes and diabetic retinopathy, schizophrenia and chronic skin conditions such eczema and psoriasis.

To further galvanize research efforts the Institute of Mental Health (IMH), Tan Tock Seng Hospital (TTSH), National Skin Centre (NSC) and Communicable Disease Centre (CDC) were awarded the Centre Grant from National Medical Research Council (NMRC) in 2013. The Centre Grant aims to enable long-term institutional focus on translating research ideas into clinical outcomes. This will boost the awardees to further enhance their research capabilities and allow progressive developments in their respective areas of focus which will be shared in greater details here.

We are also pleased to note the appointment of Professor Philip Ingham as the Vice Dean, Research for Lee Kong Chian School of Medicine (LKCMedicine) earlier this year. Under his leadership, we hope to bring about greater research collaborations, synergism and partnerships between NHG and its academic partner - LKCMedicine.

On behalf of the editorial team, we wish all readers a prosperous and successful year of the horse.

Till next time!

Yours Sincerely,

Farah Haniff
Editor-in-Chief

National Healthcare Group
Adding years of healthy life

Error in Issue 17 (Dec/Jan 2013)

In Issue 17 (Dec/Jan 2013), for the article " In The Beginner's Mind There Are Many Possibilities" on page 11, there was an error in the salutation of the author.

The author of the article is Dr Amélie Clémentine Seghers. We apologise for the error made.

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Lee Kong Chian School of Medicine Appoints Professor Philip Ingham as Vice Dean, Research

LKCMedicine is pleased to announce Professor Philip Ingham, FRS, Professor of Developmental Biology and Toh Kian Chui Distinguished Professor, as the School's Vice-Dean, Research commencing 20 January 2014.

Professor Philip Ingham is an influential world-class scientist and scientific leader, who has established himself as a top level faculty of the School and highly regarded member of the scientific community internationally. Prior to his appointment in LKCMedicine, Professor Ingham was the Director of the MRC Centre for Developmental & Biomedical Genetics at the University of Sheffield, UK and Deputy Director of the A*STAR Institute of Molecular and Cell Biology, where he still retains an appointment. He is world-renowned in the field of developmental genetics for his pioneering analyses of the Hedgehog signalling pathway which laid the foundation for the development of novel anti-cancer drugs. The exceptional accomplishments of Professor Ingham is clearly evidenced by his impressive academic track record of over 165 publications in top-ranking journals, his membership on editorial board of prestigious scientific journals and international advisory boards such as the Max Planck Institutes for Developmental Biology (Tubingen) and for Heart and Lung Research (Bad Nauheim), and most importantly, his outstanding leadership at the MRC Centre for Developmental and Biomedical Genetics of the University of Sheffield, which expanded significantly since his appointment and now attracts annual grant income in excess of £2m.

Since his appointment as Professor of Developmental Biology at the School in May 2013, Professor Ingham has been involved in the development of the School's PhD programme in conjunction with further developing the research strategy of the School. In the process, he has demonstrated leadership qualities in organising faculty across different themes to advance the School's research and graduate studies strategy. On 2 January 2014, he was appointed the Toh Kian Chui Distinguished Professor, the first donor-endowed professorship at LKCMedicine. The professorship was made possible by a generous $20 million gift from the Toh Kian Chui Foundation in December 2012. A portion of the gift was used to establish the endowment for the Distinguished Professorship which provides the holder with an annual research grant of S$500,000.

As Vice-Dean, Research, Professor Ingham will work closely with the Dean and Core Leadership of LKCMedicine to develop and drive forward our research strategy and capability. He will take charge of our research programmes, governance and administration to ensure investments and efforts in research activities, infrastructure and facilities are well maximised. He will develop research synergies between Imperial College London, Nanyang Technological University, the National Healthcare Group and our hospital partners to promote fundamental and translational research to clinical advantage. Additionally he will lead and oversee the development of the School's PhD and graduate studies programmes.

In making the announcement, Dean of LKCMedicine, Professor Dermot Kelleher said, "Professor Ingham's experience and leadership will be invaluable to help steer LKCMedicine towards achieving academic excellence of global standards."

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CDC, IMH, NSC & TTSH Awarded the NMRC Centre Grants

The National Medical Research Council (NMRC) Centre Grants (CGs) is targeted at supporting institution-based research programmes aimed to promote collaborations between researchers with diverse expertise. By encouraging the formation of a multidisciplinary team, it in turn, hopes to promote the translation of ideas into clinical benefits. CGs are awarded in an annual quantum of either $3 million or $1.5 million for a period of three to five years. In 2013, the following were awarded the Centre Grants – Communicable Disease Centre (CDC), Institute of Mental Health (IMH), National Skin Centre (NSC) and Tan Tock Seng Hospital (TTSH).

Communicable Disease Centre

The Communicable Disease Centre (CDC) at Tan Tock Seng Hospital is Singapore's defacto national centre for clinical management of infectious diseases. As such, the CDC brings together the disciplines of clinical infectious disease and public health working synergistically on prevention and control, and to ensure seamless flow of data for effective research for clinical decision-making and policy formulation.

In 2013, the CDC was selected as one of the medical centres to receive a Centre Grant (CG) amounting to $3m over four years from the National Medical Research Council (NMRC). This funding will significantly enable CDC to further grow its research scope and depth as well as to build up the necessary supporting research infrastructures to transform itself into the Institute of Infectious Disease and Epidemiology (IIDE).

There are four strategic areas where the CG will be utilised to grow the IIDE's research activities are:

- Developing Human Capital;
- Strengthening our core Research capabilities and Infrastructure;
- Building upon an established foundation in Research; and
- Expand and establish new partnerships and collaborations in research.

Developing Human Capital in Research

The Centre Grant will complement IIDE's existing efforts to develop human capital in research staff and future clinical and scientific leaders at IIDE. The research themes and infrastructure will provide early exposure and mentorship to our young clinician researchers and support mid–career and senior clinicians to embark on the 'clinician-researcher' track.

IIDE will bring in and train core-funded research support staff to meet the collective basic statistical, epidemiological and data analysis, laboratory and administration requirements of the proposed thematic programmes. Additional research grant funding will enable individual studies to build upon this by having additional study-specific staff and system requirements.

Strengthening Core Research Capabilities and Infrastructure

The Centre Grant will consolidate and strengthen IIDE's core research capabilities and infrastructure. IIDE will appoint a multi-disciplinary IIDE Research Steering Committee (IRSC) to guide research and to articulate the IIDE's long term strategic vision for research focus and development. A Research Office, the IIDE Research Unit, will be established to execute the research strategy and provide secretariat support to the IRSC.

In 2018 as part of the Health City Novena Masterplan, the National Centre for Infectious Diseases (NCID) building will replace the existing Communicable Disease Centre. This new centre will be a critical medical facility which will significantly increase our ability to manage outbreaks and act as a containment facility in the event of an outbreak similar to the severe acute respiratory syndrome (SARS).

In addition to the new clinical facilities, NCID will also house IIDE's research infrastructure as a single array of shared facilities and platforms. This will enable IIDE to provide a wide range of scientific and support services to our researchers in the most cost-effective manner at one location.

Building Upon an Established Foundation in Research

The foundation of the current research programme at IIDE is the strong investigator-led projects in five established areas of research which are namely HIV; emerging infections such as dengue, chikungunya, influenza; travel medicine; infection control and antimicrobial resistance.

To build further upon this foundation, the Centre Grant will be used to establish a series of related thematic investigator-driven studies which will address key clinical and policy questions on significant infectious dieses and disease syndromes in Singapore as well as clinical practice improvement and effectiveness studies. Vaccine-preventable diseases will be a new area of study that will be developed at IIDE.

These thematic research programmes will leverage on existing expertise in patient management, translational research from basic science to clinical management and epidemiological studies to decision making, and surveillance and response. In addition, the programmes will aim to develop new technologies and techniques for use in clinical practice, including point-of-care diagnostic test kits and novel technologies, patents, and integrated surveillance platforms.

Expand and Establish New Partnerships and Collaborations in Research

The Institute of Infectious Disease and Epidemiology already has significant collaboration links and integration with all stakeholders in Singapore's infectious diseases and biomedical sciences research initiative. We have close connections with the Singapore ID Programme as well as both regional (SEAICRN) and international (ISARIC) clinical research networks; our academic research partner- NTU-LKC School of Medicine; and the National Public Health Laboratory (NPHL).

Our proposed themes aim to build new networks and leverage on existing links between researchers in Singapore and beyond. The themes will bring together the operational arms of IIDE, IIDE research cores, TTSH research support services provided by Clinical Research & Innovation Office (CRIO) and advanced technologies through academic institutions like NUS, A*STAR as well as the polytechnics. These synergistic relationships allow for data and specimens to be maximally mined to drive leading edge scientific research and further enhance Singapore's reputation in scientific research. Building links with key collaborations in Singapore and overseas will allow research at IIDE to develop into a world-class programme.

Institute of Mental Health

The Institute of Mental Health (IMH) is the largest care provider for mental health in Singapore and it is also the only state mental institute serving the entire Singapore population. The inpatient facility has a total bed capacity of 2,000 and the outpatient services across Singapore looks after a pool of more than 35,000 patients. The Institute has a wide range of clinical expertise for the treatment of the various mental disorders that spans from childhood disorders to that afflicting the elderly.

The Centre Grant awarded by National Medical Research Council (NMRC) to IMH could take mental health research to a higher plane. The work is driven primarily in two main programmes: the Programme of Mental Health Policy Studies and the Programme for Translational Clinical Research.

Programme for Mental Health Policy Studies

There will be two themes within this programme: Epidemiological and Population Research in Mental Health, and Health Services and Outcome Research in Mental Health. These themes will extend our present work in population-based epidemiological research in various groups in the community and clinical settings using state of the art technology. We will also conduct multi-faceted outcome evaluation of various clinical programmes at the institutional and national levels.

Programme for Translational and Clinical Research

The aim of this programme is to generate scientifically relevant research that will contribute meaningfully to understanding the underlying mechanisms of mental disorder, treatment response, recovery; and/or translating these discoveries into interventions that will relieve the suffering of people with mental disorders. We have established a rich collaborative network with other research centers in Singapore that possess the relevant technological know-how and equipment in building a platform that could enable us to study disease mechanism from the molecular, cellular and system level.

The strategies and initiatives within this CG represent the further steps of our ongoing plan to establish a critical mass of researchers – not just clinician scientists, but researchers in other fields including neurocognition, health service research, epidemiology, biostatistics, and economic evaluation and outcome research; as well as to build platforms of focused areas of mental health and neuroscience research. These platforms which will span across various disciplines and research centres will have their respective hubs within IMH.

National Skin Centre

National Skin Centre (NSC) is committed to high quality and clinically-relevant research to advance dermatological knowledge and improve clinical services. Through committed leadership to develop a strong research mandate, we plan to foster a conducive research environment by attracting, nurturing and retaining a core group of clinician-researchers who will build on the existing research strengths and lead new research initiatives in the next three to five years. Being an established clinical centre and capitalising on the unique ethnic composition of our patients, we aim to establish NSC as the leading centre for skin research and industry-sponsored trials in Asia.

With the recently-awarded Centre Grant, NSC will be able to take a step further in the field of research through developing strategic platforms for "basic science to the clinics" forms of research programmes. We plan to develop research platforms on skin imaging, immunohistology, tissue and cell repository, skin physiology and molecular dermatology.

Concurrently, our research efforts will target key clinical areas to achieve a coherent research strategy. Clinical areas that we have planned to focus our research, based on their translational and industry potential, are atopic dermatitis, pigment disorders, cutaneous oncology, hair biology and regeneration, itch, wound healing, skin aging and regeneration, and genetic skin diseases.

Tan Tock Seng Hospital

Tan Tock Seng Hospital (TTSH) is one of Singapore's largest multi-disciplinary hospitals with more than 170 years of pioneering medical care and development.

Development of translational and clinical research capabilities is essential in advancing treatment and patient care. In line with our vision 'Adding years of healthy life', TTSH is expanding its infrastructure to support clinically-relevant research.

In April 2013, TTSH secured a $10-million four-year grant from the Ministry Of Health to strengthen the research capabilities in hospitals. We proposed a project on Personalised Medicine. The three aims of personalized medicine are to: (1) identify early diagnostic markers; (2) rationalise treatment on a case-by-case basis to optimise the benefit/risk ratio; (3) engage patients in a preventive approach by increasing patient adherence and compliance while adapting prevention programmes to patient profiles.

The fund is used for manpower and to build modules that support the research committee in TTSH. A research laboratory equipped with biobanking and clinical research capabilities is set up. Besides scientists and research personnel, the research committee is also supported by a team comprising biostatisticians, bioinformaticians, software engineers, epidemiologists, project managers and data managers.

In-depth research into five themes were identified: dementia, eye disorders, cardiovascular risk reduction in patients with metabolic disorders, cancer studies and rheumatoid arthritis. Each theme is led by an investigator with relevant domain expertise. The research is expected to generate new biomarkers, therapy and techniques to improve the standard of care both in Singapore and the South East Asian region. In many centres, personalised medicine is concentrated on cancer therapy. We depart from this and most of the themes chosen are non-oncologic.

Within the next four years, we hope to establish a full-fledged research laboratory storing some of the best sets of clinical specimens paired with clinical data. Building on this sample bank will enable collaborations' into identifying new biomarkers and help pave the way for individualised medicine. This prominent programme will not only galvanise research efforts in TTSH but also serve as a beacon for students, residents and trained specialists.

Reducing Hypoglycaemia in Type 2 Diabetic Patients

Dr Seah Ee-Jin, Darren
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Family Physician
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Toa Payoh Polyclinic

Diabetes is a disease in which the patient experiences abnormally high blood glucose level. There are 2 types of diabetes - Type 1 and Type 2. Type 1 diabetes occurs as a result of the destruction of insulin-producing beta cells in the pancreas while Type 2 diabetes is a disorder in which body cells are resistant to insulin or there is insufficient insulin production.

Glibenclamide, a long acting sulphonylurea commonly prescribed for Type 2 diabetic patients has been shown to increase the risk of hypoglycaemia. Hypoglycaemia is a condition in which the body experiences abnormally low blood glucose levels and it is a common complication of intensive glycaemic control. Diabetic patients who are at a higher risk of severe hypoglycaemia are elderly, above 65 years old and those with impaired renal function. Severe hypoglycaemia can lead to an inadequate supply of glucose to the brain, resulting in impairment of function and hospitalisation may be required.

Therefore, this study investigated the effect of reducing the use of Glibenclamide on the incidence of hypoglycaemia related hospital admissions among type 2 Diabetic patients from National Healthcare Group Polyclinics.

The team has continuously reviewed the usage of Glibenclamide throughout nine polyclinics under NHG and multiple reminders were given to clinicians to actively switch high risk diabetic patients from Glibenclamide to shorter acting sulphonylureas.

The study revealed that by reducing the number of high risk patients who have been prescribed Glibenclamide, it resulted in a significant reduction in the incidence of hypoglycaemia-related hospitalisation among patients. The use of Glibenclamide among high risk Type 2 diabetics patients should be avoided due to potential hypoglycaemia and risk of subsequent hospitalisation. In addition, there has been no increase in the number of high hypoglycaemia risk patients since cessation of active reminders.

With a growing ageing population and rising prevalence of diabetes in Singapore, managing the risk of hypoglycaemia prudently will be a pillar of high quality diabetes care provision.

Reduction in Incidence of Hypoglycaemia

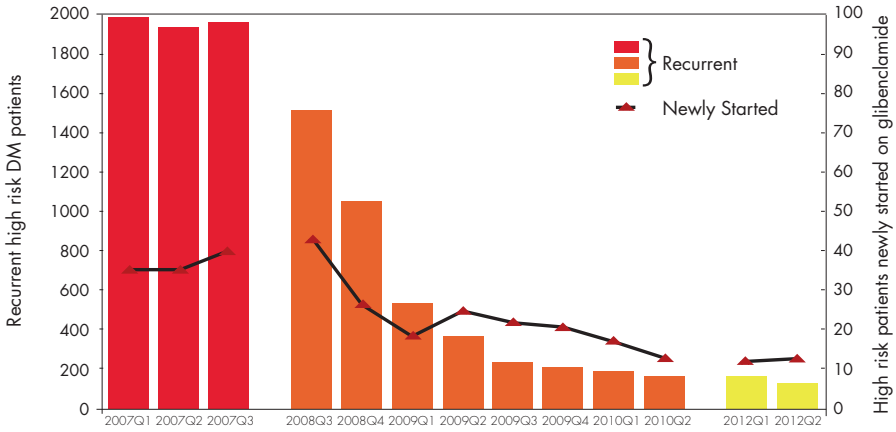


Figure 1. Reduction in the number of patients who are newly started and who have been prescribed Glibenclamide in the last 6 months.

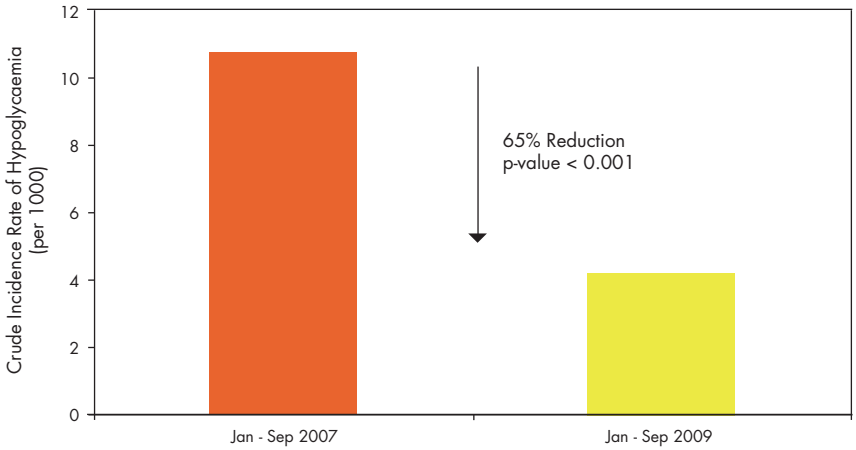


Figure 2. The crude incidence rate of Hypoglycaemia has reduced from 10.8 hypoglycaemia cases per 1000 diabetic patients to 4.2 hypoglycaemia cases per 1000 diabetic patients.

Hypoglycaemia is a condition in which the body experiences abnormally low blood glucose levels and it is a common complication of intensive glycaemic control.

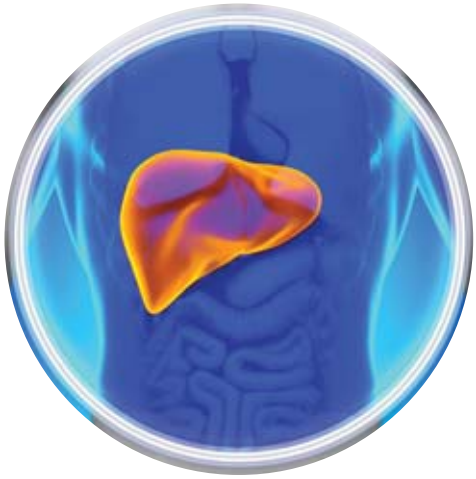
Can Transient Elastography Replace Liver Biopsy in Evaluating Patients on Methotrexate?

Dr Tee Shang-Ian
Consultant
Medical Department
National Skin Centre

Methotrexate (MTX) is an immunosuppressive drug that is commonly prescribed in National Skin Centre (NSC), mainly for patients with moderate to severe psoriasis, but also in treatment of eczema and immunobullous diseases. MTX therapy is associated with hepatotoxicity and liver fibrosis. Because of this, guidelines for patients receiving MTX recommend a liver biopsy at every cumulative dose of 1.5g in order to exclude liver fibrosis. However, this procedure is invasive and comes with its own risks. Complications of a liver biopsy include pain, localized bleeding, pneumothorax, haemothorax, bile peritonitis, haemobilia and inadvertent puncture of the kidney or intestine. There is also a 0.01-0.1% risk of mortality.

There is therefore a need to introduce non-invasive methods of diagnosing liver fibrosis. One such technique is transient elastography (TE), also known by the trade name Fibroscan. TE works by generating a mechanical pulse at the skin surface, which is propagated through the liver. The velocity of the wave is measured by ultrasound. The velocity is directly correlated to the stiffness of the liver, which in turn reflects the degree of fibrosis - the stiffer the liver is the greater the degree of fibrosis. This procedure is completely safe for the patient. By comparison, TE is completely safe and with no known complications. A local study (Chang PE, Aliment PharmacolTher 2008) evaluating its use in patients with viral hepatitis and steatohepatitis have found a good correlation between TE and fibrosis. A separate overseas study (Berends MA, Liver Int. 2007) was also conducted on patients with psoriasis on methotrexate, concluding that Fibroscan gives a sensitivity of 83% and a specificity of 61% in detecting a METAVIR fibrosis score of F2 or greater. We do not have any data supporting its use in screening our local patients who are on methotrexate, and therefore aim to determine if TE may also accurately predict the presence or absence of methotrexate-induced liver fibrosis in local patients.

Patients were recruited from the dermatological outpatient clinics at NSC. Those who were receiving oral methotrexate and who are scheduled for a liver biopsy to exclude liver fibrosis were invited to participate in the study. Exclusion criteria included pregnancy, ascites, Body Mass Index > 28, right heart failure, permanent pacemakers, severe coagulopathy, infection of the hepatic bed, extrahepatic biliary obstruction, possible vascular lesions, amyloidosis or hydatid disease. Once enrolled, the study subjects underwent the following tests: liver function test, TE and liver biopsy. The latter 2 procedures were performed at Singapore General Hospital (SGH). Liver biopsy specimens were scored for degree of MTX-induced liver fibrosis according to the Roenigk classification (Patients with Roenigk scores of 1 or 2 may continue with MTX therapy; Roenigk 3A or 3B implies caution and discontinuation, respectively). The study was conducted in collaboration with Dr Jason Chang, Consultant Gastroenterologist, SGH.



4 patients completed the study and their results were analysed. 2 patients were classified Roenigk I, another was classified Roenigk II and the last was classified Roenigk IIIB. Roenigk scores were plotted against their TE-determined liver stiffness measurement (LSM) as well as LFT. There appears to be a fairly linear correlation between LSM and Roenigk scores (Fig 1). The upper limit of LSM for continuation of MTX appears to lie between 7-9 kPa; however this cannot be verified due to the small sample size. Importantly, there does not appear to be a correlation between transaminase levels and Roenigk scores (Fig 2).

The main limitation of our study was its small sample size. Indeed, many patients opted to discontinue MTX rather than enduring a liver biopsy. This in fact highlights the urgent need for non-invasive methods of evaluating patients for liver fibrosis. Despite this limitation, our study showed a correlation between paired results of TE and liver biopsy and suggests this to be an alternative means of determining liver fibrosis. Finally, this study also demonstrates that LFT is not useful in determining liver fibrosis and should not be used alone.

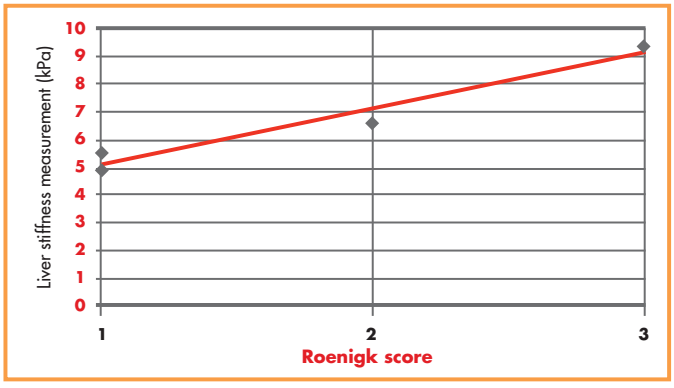


Figure 1: Correlation between LSM and Roenigk score

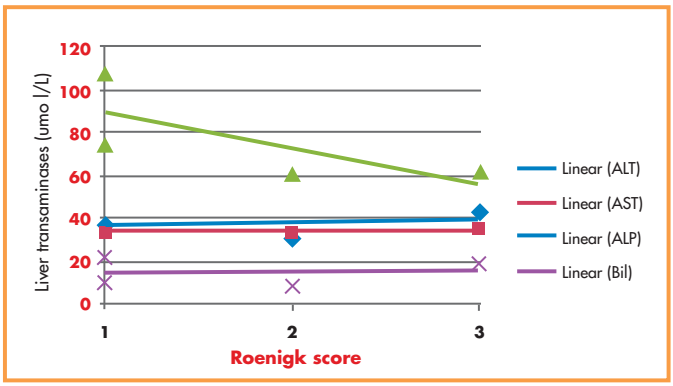


Figure 2: Correlation between liver transaminases and Roenigk score

Dr Carina Grönhagen

Dr Carina Grönhagen is a dermatologist from Sweden who joined the National Skin Centre (NSC) in September 2013. She received her PhD from Karolinska Institute, Stockholm.

The title of her thesis was "Cutaneous Lupus Erythematosus; Epidemiology, Association with SLE and Comorbidity". Besides her clinical duties, she worked with large databases and dermatoepidemiology at the Karolinska Institute, before relocating to Singapore.

At NSC, she works as a Clinical Research Fellow and will work with organising and planning a database register and tissue bank for patients with atopic dermatitis. She will also be involved in other research projects and clinical work.

Atopic Dermatitis

Atopic dermatitis (atopic eczema) is a chronic, relapsing skin disease affecting about 10-30% of children and 2-10% of adults.

It is the most common inflammatory skin disease in the general population and one of the most important diseases during childhood, with a considerable impact on the lives of children and their family units.

The most common symptom of atopic dermatitis is an itchy red rash in dry skin. The localization of the eczema changes with age but the most typical localizations is the flexural skin of the elbow and knee joint. Atopic dermatitis results from barrier defects combined with abnormal innate and adaptive immune responses and can be triggered by infection, allergens and stress.

Furthermore, loss-of-function mutations in the filagrin (FLG) gene predispose atopic dermatitis patients to sensitization with environmental factors, and lead to more severe atopic dermatitis and a greater risk to develop asthma in atopic dermatitis patients.

Earlier research at the National Skin Centre (NSC) has shown that in Asia, a maximum of about 27% of atopic dermatitis cases has been linked to the FLG-null genotype 21 while replication studies in Europe have reported up to 50% of all atopic dermatitis cases carrying one or more FLG-null mutations.

In the majority of atopic dermatitis patients, total serum IgE and allergen specific IgE are increased. It is still unclear, however, whether serum IgE represents just a co-factor of the disease or directly impacts relevant pathways in atopic dermatitis. Patients with atopic dermatitis also have a greater risk of developing other atopic comorbidities, such as asthma, allergic conjunctivitis and rhinitis.

Database

NSC would like to create a database and tissue bank for all patients with atopic dermatitis who visit the centre. The aim is to provide a framework for further etiological research into genetic, lifestyle, environmental and medical care factors affecting patients with atopic dermatitis. We also want to set up a data-based registry that functions as a repository for research data in NSC in order to store clinical and biological data on patients with atopic dermatitis.

With this database and tissue bank, we will be able to register and monitor patients with atopic dermatitis, follow them over time and include them in different studies.

The database will include all patients diagnosed with atopic dermatitis at NSC and will gather different kinds of information such as patient data, treatment, blood samples and DNA data. It will also include data from patients' questionnaire, clinical examination and evaluation of the atopic dermatitis, blood samples, DNA samples (for genetic and miRNA analyses).

This database will facilitate future pre-clinical and clinical research studies in a very efficient way.

Preventing Diabetic Retinopathy

Diabetes affects approximately one in 12 Singaporeans aged 18 to 69 years, and in those aged 60-69 years, this figure is even higher (32.4%). This situation is likely to worsen over time, compounded by factors such as dietary and lifestyle changes.

Diabetic Retinopathy (DR) is one of the most important complications of diabetes, and a leading cause of blindness among working-aged people. In certain populations in Singapore (e.g. Malays), the overall prevalence of 'any' DR was found to be up to 35% and the corresponding figures for the more severe stages of DR such as macular edema and vision-threatening DR, were around 5.7%, and 9.0%, respectively. This represents a significant percentage of our population with important consequences from a potentially preventable complication of diabetes.

Singapore Integrated Diabetic Retinopathy Programme (SiDRP) is a national comprehensive Diabetic Retinopathy (DR or Diabetic eye disease) screening programme which aims to improve the level of diabetic eye screening standards at the primary eye-care level, which currently leverages on polyclinic doctors as readers and graders.

The SiDRP has established two national-level centralised DR screening and assessment centres namely National Healthcare Group (NHG) Eye Institute Reading Centre and Singapore Advanced Imaging Laboratory for Ocular Research (SAILOR) Reading Centre with a robust system of clinical governance and quality assurance that will initially support government polyclinics. The programme may, in future, be extended to private GPs, specialist centres, opticians and mobile clinics after the successful implementation at the polyclinics.

All DR screening and assessment will be carried out by a team of readers/graders. These graders go through rigorous training and accreditation.

In brief, the programme focuses on the following areas:

1. An online network for DRP screening system will be built to link the Reading Centres & Primary Care providers. This new IT platform will enable timely DRP reporting and shorter turnaround time for the reports.
2. Uniform assessment and referral guidelines for DR reports will be used to standardise patient care and attain better quality and accuracy for reports.
3. A formalised training, accreditation and audit system for the graders of both Reading Centres. Accreditation will be established at a national level for the individual competencies.

As of 2013, up to 13855 images have been processed by the NHGEI Reading team. Initial audit results have been very encouraging, with high sensitivity and specificity rates, a one-third reduction in referrals to tertiary care, and a markedly shortened report turnaround time.

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National Healthcare Group

Adding years of healthy life

DSRB Assistant Analyst
Research & Development Office

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**;**

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**;**

Five Business Divisions — NHG 1-Health, NHG Diagnostics, NHG Pharmacy, Singapore Footcare Centre, and Primary Care Academy**; and**

Johns Hopkins Singapore International Medical Centre.

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.

Interested candidates may apply for this position by submitting their resume through the NHG website: **corp.nhg.com.sg/Careers/Pages/Your-Career.aspx**

The National Healthcare Group (NHG) Headquarters and National Healthcare Group Polyclinics (NHGP) Corporate Offices have relocated to their new office premises at the following location:

3 Fusionopolis Link
Nexus@one-north
Levels 3 - 5
Singapore 138543

For more information on
NHGHQ, please visit www.nhg.com.sg
NHGP, please visit www.nhgp.com.sg

Effects Of The MEDISAVE Diabetes Management Programme In Singapore

Ms Tan Woan Shin
Principal Research Analyst
Health Services and Outcomes Research
National Healthcare Group

Diabetes is a complex disease that is associated with an increased risk for cardiovascular disease. To improve health outcomes and contain costs, health systems have implemented disease management programmes to manage patients in accordance to accepted clinical guidelines, patient education, aggressive screening for complications, and early and appropriate specialty referral. Cost can be contained by slowing the development of diabetes-related complications, which can be costly to treat. While individuals value interventions from which an immediate benefit can be derived, benefits from preventive interventions that accrue into the future are often underestimated. Therefore, disease management programmes are often covered by third party payers to reduce expenditures.

In October 2006, the Medisave for Chronic Disease Management Programme (CDMP) was launched. Diabetes mellitus was the first condition to be covered. In this study, we aim to examine if participants on the CDMP had (1) better compliance with the recommended processes of care, (2) lower risk of all-cause and diabetes-related hospitalisation, and (3) lower total all-cause annual healthcare costs and diabetes-related inpatient costs. We also investigated if the results differed across patient sub-groups according to presence of diabetes-related complications and level of glycemic control at baseline.

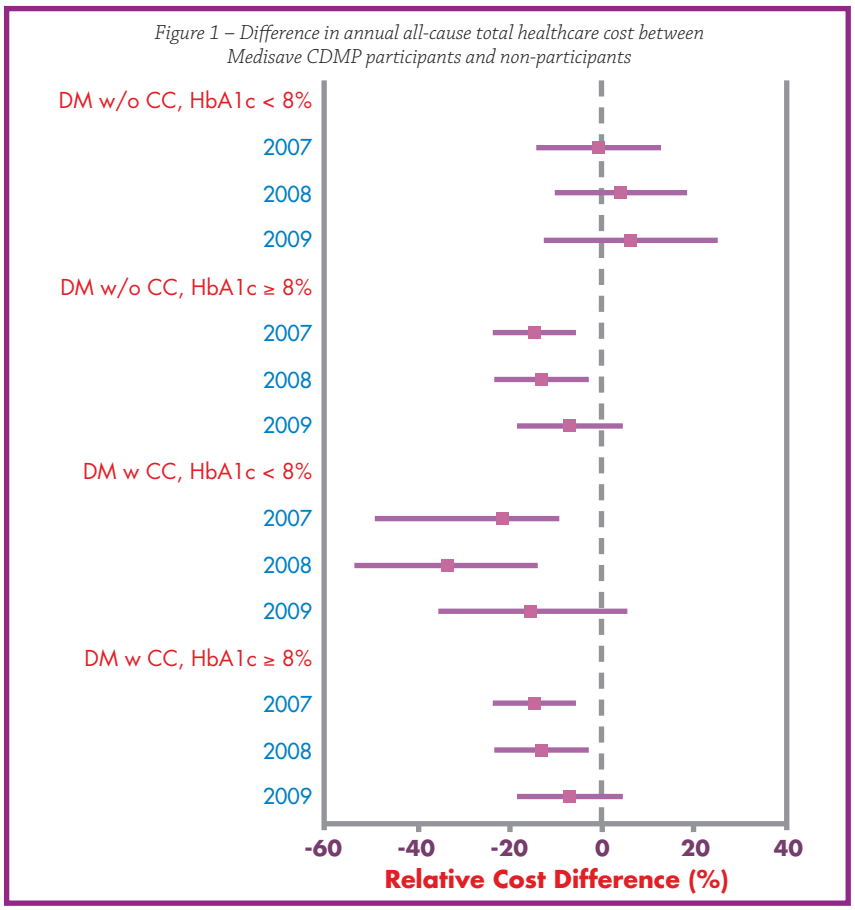
We compared the differences in compliance with recommended diabetes care processes, hospitalisation, and costs among Medisave CDMP participants and propensity-matched non-participants. Data on patients diagnosed with Type 2 diabetes mellitus who participated in the Medisave for CDMP (n=10,559) and eligible patients who did not participate (n=22,089) were extracted from the National Healthcare Group (NHG) diabetes registry. Participants and non-participants were propensity-score matched. Process of care, hospitalisation risk, and total healthcare cost incurred in 2007, 2008 and 2009 were compared between groups.

After adjusting for baseline differences between propensity-score matched sample of 8,881 Medisave CDMP participants and 8,881 unique non-participants, compliance with recommended process of care improved significantly for programme patients. Compared to non-participants, all-cause hospitalisation risk for Medisave CDMP participants was significantly lower in 2007 (OR: 0.76; 95% CI: 0.65-0.88) and 2008 (OR: 0.79; 95% CI: 0.68-0.92) but the difference was not statistically significant in 2009 (OR: 0.91; 95% CI: 0.79-1.05). Total healthcare cost was 14-15% lower for participants in 2007 and 2008 but not significantly different in 2009 (Figure 1). Similar results were observed for diabetes-related hospitalisation rates and inpatient costs. The policy did not have a significant impact on participants with well-controlled diabetes at baseline.

The change in policy is a necessary step towards addressing the misalignment in health and economic incentives between acute and outpatient settings. Compliance with the processes of diabetes care improved among Medisave CDMP participants in a primary care setting. Overall, the policy reduced hospitalisation risk and total healthcare cost in the short-term but effects were not sustained by the third year. Our results also suggest that the policy had varying impacts on different patient subgroups. The likelihood of hospitalisation and health care cost of participants who had well-controlled diabetes were not reduced.

In October 2006, the Medisave for Chronic Disease Management Programme (CDMP) was launched. Diabetes Mellitus was the first condition to be covered.

Figure 1 – Difference in annual all-cause total healthcare cost between Medisave CDMP participants and non-participants



DM: Type 2 diabetes mellitus; CC: complications

Understanding Schizophrenia

Contributors from the Institute of Mental Health:

A/Prof Sim Kang
Deputy Chief & Senior Consultant
Department of General Psychiatry
Deputy Director, Research Division

Dr Jimmy Lee
Consultant
Department of General Psychiatry & Research Division

Dr Tan Bhing Leet
Head & Principal Occupational Therapist
Department of Occupational Therapy

Schizophrenia was ranked 18th as a cause of Disability-Adjusted Life Years (DALY) in Singapore in the Global Burden of Diseases 2010. It is a severe mental disorder with its onset typically in the adolescence, and bears a chronic lifelong course.

Current treatments are effective in managing some aspects of the condition, such as amelioration of positive symptoms (hallucinations, delusions and disorganized thinking), but the other facets of the condition such as negative symptoms (avolition, apathy, anhedonia) and cognitive impairments have fewer therapeutic options and continue to affect the individual's life. Besides the psychiatric disorder, individuals with schizophrenia are often burdened with a higher incidence of physical disorders such as obesity and metabolic conditions, with a consequent increase in related mortality rates.

A pool of clinicians at the Institute of Mental Health (IMH) have teamed up in a bid to address some of these issues, and identified a need to deepen our understanding of schizophrenia, as well as in seeking better ways to deliver and coordinate care.

A/Prof Sim Kang and Dr Jimmy Lee are leading groups looking into brain structure, cognition, negative symptoms and genetics; hoping to increase our understanding of schizophrenia. In the longitudinal neuroimaging studies led by A/Prof Sim Kang, we aim to understand in greater detail the progressive brain changes present or otherwise observed in our patients with bipolar disorder and schizophrenia and correlate the brain white matter changes with clinical outcome measures.

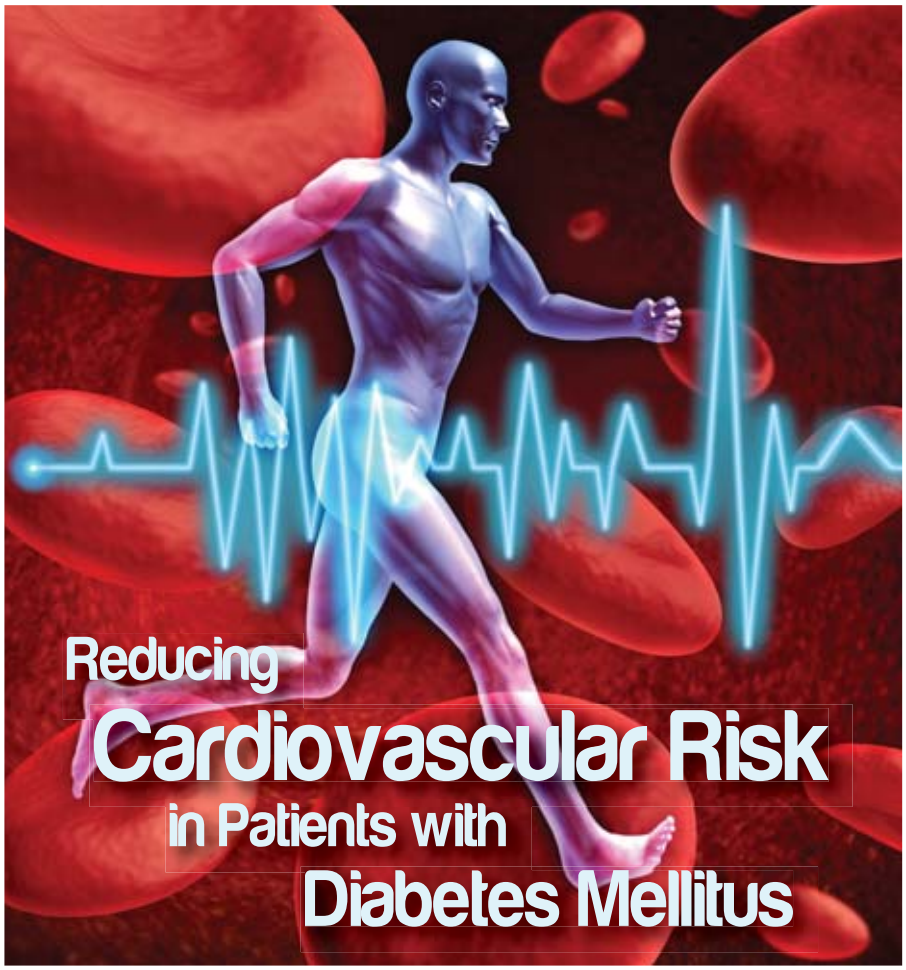
National Medical Research Council (NMRC) Transition Award (TA) winner, Dr Jimmy Lee, continues his earlier work which demonstrated the potential of blood-based biological markers (biomarkers) in identifying individuals with psychosis. He is also evaluating the ability of these blood-based biomarkers in predicting clinical outcomes, especially with regard to selection of a suitable therapeutic regimen or vulnerability to development of side effects.

Dr Tan Bhing Leet is working on applying and developing interventions that could improve cognition and aid functional recovery. One of her team's recent studies explored the use of computer-assisted cognitive remediation to improve cognition and functional recovery among outpatients with schizophrenia. Results have shown that cognitive remediation, as an adjunct to psychiatric rehabilitation, can improve cognition and functional (vocational and community ability) outcomes (Tan and King, 2013).

Close to a third of patients with schizophrenia develop pharmacological resistance to most antipsychotics, a state known as treatment resistance, and move onto clozapine – a third line agent. This group of patients has been reported to contribute significantly to health resource utilization. Up to half of patients with treatment resistant schizophrenia do not respond to clozapine. Dr Jimmy Lee is looking at these two groups of patients, to understand factors mediating treatment resistance and to develop effective management strategies.

Schizophrenia was ranked 18th as a cause of Disability-Adjusted Life Years (DALY) in Singapore in the Global Burden of Diseases 2010. It is a severe mental disorder with its onset typically in the adolescence, and bears a chronic lifelong course.

Recognising that schizophrenia is a chronic disease and with a sizeable patient population, IMH launched the integrated patient assessment and continuous engagement (iPACE) programme in 2010 which sought to enhance the current care delivery framework for patients with schizophrenia and delusional disorders through an integrated mental health care system. With the aid of a robust information technology (IT) system, this program monitors patient care delivered and regularly prompts clinicians to assess the patients' needs.



Dr Rinkoo Dalan
Consultant
Department of Endocrinology
Tan Tock Seng Hospital

Cardiovascular disease is the main cause of diabetes-related mortality

Diabetes Mellitus (DM) affects about 11.3% the Singapore population and is one of the top 10 causes of deaths in Singapore. Cardiovascular disease (CVD) is the main cause of diabetes-related mortality and although strict control of hyperglycaemia is known to reduce the risk of microvascular complications, the evidence is still lacking for CVD.

DM type 2 affects small (microangiopathy) or large vessels (macroangiopathy). Microvascular disease is the hallmark of retinopathy, neuropathy, and nephropathy, whereas macroangiopathy in diabetes is manifested by accelerated atherosclerosis.

Atherosclerosis in patients with DM type 2 is multifactorial and includes a very complex interplay between hyperglycaemia, hyperlipidaemia, oxidative stress, accelerated aging, hyperinsulinemia and alterations in coagulation and fibrinolysis. A current hypothesis for the initial lesion of atherosclerosis is endothelial dysfunction. We have seen that although some of our patients have excellent control of traditional risk factors, they still suffer from cardiovascular complications like ischemic heart diseases and strokes.

Hence, there is a dire need for us to understand the pathophysiology of these complications and explore unconventional means to reduce the risk in a personalised manner. Despite Singapore being a tropical country, we still see many DM patients with low vitamin D levels.

As Vitamin D is involved in maintenance of the endothelium in quiescent state and in repair of the endothelium, this led us to perform a study to explore whether supplementation of Vitamin D in patients with DM type 2 and Vitamin D deficiency results in improvement of endothelial function (Clinical Trial Registration no: NCT01741181). It is an indirect way of determining the cardiovascular risk or stiffness of vessels in a patient with DM.

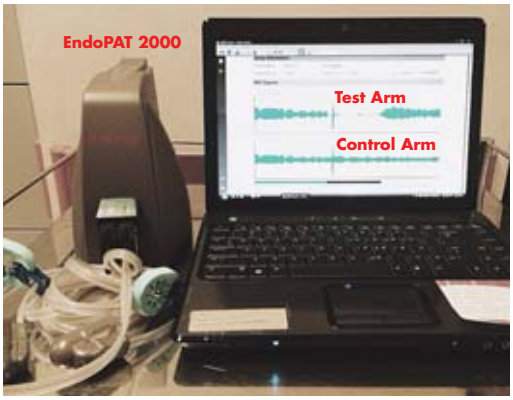
This project has also enabled us to examine the endothelial function in our population with DM. In the picture, our study coordinator is estimating the reactive hyperemia index (RHI) in a study patient using the EndoPAT 2000 (Itamar). We are currently still recruiting our study subjects, supported by the Department of Endocrinology and our research team – the TTSH DM study group.

Our study coordinator performing the EndoPAT measurements to estimate the reactive hyperemia index (RHI).

We have previously seen that high-sensitivity C-reactive protein (hs-CRP), a marker of inflammation, is higher in the Indians as compared to other ethnicities (CREDENCE).

In a subsequent analysis, after a five-year follow up, we have seen that the initial high hs-CRP concentrations were not associated with ischemic heart disease in Indians although they had a higher incidence of ischemic heart disease than the other compared ethnicities. To explore this relationship further, we are currently performing a pilot study which aims to characterise the gene sequences, transcriptomic profiles, entire range of inflammatory markers and the immune characteristics in the three ethnicities of Singapore in patients with DM type 2.

We are currently planning multiple projects with the aim to identify markers which can help in predicting vascular disease, understand the pathogenesis and mechanics of vascular disease, identify interventions that can help to halt or reverse disease progression and in effect reduce the risk of these complications.



The EndoPAT device showing the final results in a patient.

Impact of Genome Wide Supported Psychosis Susceptibility NRGN Gene on Thalamocortical Morphology in Schizophrenia

Ms Sum Min Yi
Research Assistant
Institute of Mental Health

Introduction

Our study investigated the association between genetics and brain structures in schizophrenia. Schizophrenia is a psychiatric disorder with a complex etiology. It is therefore important to identify the link between schizophrenia and the underlying mechanisms to better understand the causation of the illness. Our study aims to identify genes that may serve as potential biomarkers for illness severity and progression, as well as treatment response and long term clinical outcomes.

Findings

It has been found in recent years that there is a strong genetic component involved in the pathogenesis of schizophrenia. One of the gene markers identified by genome wide association studies as conferring increased risk for schizophrenia is the NRGN SNP rs12807809. While we know that the NRGN is expressed in the brain, it is unclear how this gene impacts on neural substrates such as cortical thickness and subcortical brain structures in schizophrenia. Hence, we used magnetic resonance imaging (MRI) to study the influence of NRGN rs12807809 on cortical thickness and shapes of subcortical brain structures in patients with schizophrenia. We found that schizophrenia patients with the risk genotype were associated with widespread cortical thinning, and also that these same patients were also associated with thalamic shape abnormalities involving regions found to be affected in schizophrenia.

Conclusion

Our findings reveal the influence of NRGN on brain structures in schizophrenia. We hope that our findings will stimulate further investigation into how these brain structural changes are related to alterations in brain functions, and allow for better understanding of the genetic and neural basis of this potentially crippling psychiatric condition.

About the Investigator

I first came into contact with neuropsychology research during my honours year in the University of Western Australia, where my honours project was an EEG study, studying the error related negativity in children of ages 7 to 9, after an error was made during a task (the Eriksen flanker task). It was after this exposure to the neural aspects of psychology that I developed a keen interest in the neurological area covered in psychology as it is a developing area and there are lots to be learnt about it.

Upon working at the Institute of Mental Health as a research assistant under Adj. A/Prof Sim Kang, I was involved in imaging-genetics studies in psychosis, which has allowed me a better understanding of conditions like schizophrenia and bipolar disorder. I have also gained valuable experiences on the various aspects involved in carrying out research projects during these two years in IMH.

I am very grateful to Adj. A/Prof Sim Kang for providing abundant opportunities and guidance for me to learn and grow in the field of research. I will also like to thank A/Prof Chong Siow Ann (Vice Chairman Medical Board, Research), Adj. A/Prof Mythily (Director, Research Division) and Dr Jimmy Lee for their support. Lastly, I will like to acknowledge the support from our collaborators, as well as all patients and staff who have participated in our projects.

The author is the winner of the Silver Award for the Singapore Young Investigator Award (Clinical Research) at the Singapore Health & Biomedical Congress (SHBC) 2013

Well-being of the Singapore Elderly

The Well-being of the Singapore Elderly (WiSE) study headed by the Institute of Mental Health aims to provide evidence of the burden of dementia and depression among the elderly in Singapore and to increase knowledge on their associated risk factors, healthcare use and economic impact.

Trained interviewers administer various questionnaires to the randomly selected elderly participants and an informant identified by the latter. Information such as socio-demographic profile, mental and physical health and informants' health and views are collected. A physical and neurological examination is also conducted at the end of the interview.

The three-year nationwide epidemiological survey, funded by the Ministry of Health and the Singapore Millennium Foundation of the Temasek Trust, is nearing its completion. We would like to take this opportunity to thank our sponsors, collaborators and most importantly our WiSE study participants.

With the study still on going, several of the researchers have started to analyse the data in various aspects of the study.

We would like to introduce three researchers that were featured at the Singapore Health & Biomedical Congress (SHBC) 2013 for the projects under the WISE study.

The larger WiSE team including the three featured researchers and Principal Investigators of the study: A/Prof Chong Siow Ann (front row, 2nd from right) and Asst/Prof Mythily Subramaniam (front row, 3rd from right).

Mr Seow Lee Seng Esmond (Research Assistant) – Awarded the Silver Award in the Singapore Young Investigator Award (Quality, Health Services Research) category for his project on "Prevalence, Awareness, Treatment and Control of Hypertension among Singapore Elderly Residential Population".

Ms Saleha Shafie (Research Officer) – Awarded the Silver Award in the Best Poster Award (Quality, Health Services Research) category for her project on "Factors Affecting Psychological Distress in Informal Caregivers of Singapore Elderly".

Ms Rajeswari Sambasivam (Research Assistant) – Finalist for the Singapore Young Investigator Award (Quality, Health Services Research) category for her project on "Exploratory Factor Analysis of the Zarit Burden Interview in a Multi-Ethnic Asian Community Sample".

Singapore Young Investigator Award-Silver (Quality, Health Services Research)

Prevalence, Awareness, Treatment and Control of Hypertension among Singapore Elderly Residential Population

Mr Seow Lee Seng, Esmond
Research Assistant
Institute of Mental Health

Hypertension has always been an important cause of mortality and morbidity in the elderly. Its prevalence rises with age and is a major risk factor for stroke, coronary artery disease, intra-cerebral hemorrhage, heart failure and renal failure. The study thus aims to investigate the prevalence, awareness, treatment and control of hypertension among the elderly in Singapore.

Based on the WiSE data, we identified a notable undetected rate of hypertension and the suboptimal control of the condition among local elderly population. We hope that our findings can contribute towards better clinical care and more effective medical screening for hypertension in our vulnerable group.

Epidemiology and public health research has always been an area that I am interested in and wish to explore as a researcher. Between my National Service (NS) completion and university admission in 2008, I was fortunate to be employed by my current workplace – the IMH Research Division as a temporary research assistant for Ministry of Community Development, Youth and Sports (now known as Ministry of Social and Family Development) study that seeks to explore the financial needs of mentally ill patients and their caregivers. My supervisors, Ms Janhavi and Ms Jenny Tay provided me with opportunities to learn about subject recruitment, administering surveys and data analysis.

The valuable experience and skills acquired during the eight months gave me a good head start over my fellow psychology peers in research assignments. Moving on to the university, I read up on cognitive neuroscience research and took up a Functional Magnetic Resonance Imaging (fMRI) study in healthy ageing as my final year project under A/Prof Annabel Chen who specialises in clinical neuropsychology research in Nanyang Technological University. I also had an insight into Electroencephalography (EEG) and neurotoxicity research through my professional attachment. Given the different exposure, I aspire to initiate psychiatry & mental health research projects one day and to eventually see my work benefiting mankind.

Last but not least, the award at SHBC 2013 would not have been possible without the opportunity given by my Research Director, Dr Mythily Subramaniam to a newly joined staff, as well as the guidance she has given along with A/Prof Chong Siow Ann (Vice Chairman Medical Board, Research) and other senior colleagues. IMH Research Division has been a wonderful learning platform for me and I am glad to be back again this year.

Factors Affecting Psychological Distress in Informal Caregivers of Singapore Elderly

Best Poster Award-Bronze (Quality, Health Services Research)

Ms Saleha Shafie
Research Officer
Institute of Mental Health

Studies have shown that distress of caregivers of elderly people is associated with their relatives' behavioural and psychological symptoms (BPSD). This study aims to examine informal caregivers' distress and its relationship with BPSD in the elderly and factors affecting this relationship in a multi-ethnic Asian population.

As part of the WiSE study, caregivers of elderly, those aged 60 and above, in Singapore completed the Self-Reporting Questionnaire (SRQ-20) and Neuropsychiatric Inventory Questionnaire (NPI-Q). Caregivers also provided socio-demographic details and information on social support they received from family and friends, and paid/unpaid helpers.

It was found that informal caregivers' distress was significantly associated with their relatives' BPSD, even after adjusting for caregivers' socio-demographic factors and social support. Based on our results, we think that caregivers need help in managing BPSD through education on the illness and behavioural interventions for the elderly. Flexible work arrangements should be an option for caregivers, particularly full-time workers so that they can fulfill their responsibilities at work and at home better.

Currently, I am part of the Research team from the Institute of Mental Health (IMH) led by A/Prof Chong Siow Ann and Dr Mythily Subramaniam. I am working with the team on the WiSE study which is expected to be completed by December 2013.

As a team, we train interviewers before they are certified to go on the field to administer the questionnaires, keep track of interviewers' progress and get feedback on the challenges that interviewers have on the field. We also conduct regular checks on study documents and observe interviewers on the field to ensure that study procedures are followed. I am also involved in Malay language related aspects such as translating and communicating with Malay language speakers in this study.

Given Singapore's rapid ageing population, such data is needed to plan for services in the future. Thus, I am honoured to be part of this nationwide study on the elderly and through which I have learnt a lot about mental health research. I would like to be actively involved with the team in upcoming mental health related research projects that will contribute useful data for policy making and planning of services.

I would like to express my sincere thanks to A/Prof Chong Siow Ann and the team for their encouragement.

Exploratory Factor Analysis of the Zarit Burden Interview in a Multi-Ethnic Asian Community Sample

Singapore Young Investigator Award-Finalist (Quality, Health Services Research)

Ms Rajeswari Sambasivam
Research Assistant
Institute of Mental Health

The ageing population along with the increasing need for caregivers and the burden of care for these caregivers intrigued us to further analyse the Zarit Burden Interview (ZBI) that was encompassed in the Well-being of the Singapore Elderly study (WiSE). The ZBI is quick and easy to administer, and has been the most widely used instrument to measure burden in disease-specific samples. The aim was to explore the structure of the ZBI for informal caregivers of community-dwelling elderly in a multi-ethnic population. Caregiver burden comprises components such as physical, social, financial and psychological. Burden is generally measured as a total score and there is usually no distinction made between these different components.

Data from the WiSE study was used to analyse the factor structure of the ZBI. Multi-ethnic respondents aged 60 years and above were randomly selected from a national database of Singapore citizens and permanent residents. Interviewers who had undergone a 2-week training visited these households to arrange for a convenient date and time for the interview to be completed. A five factor structure was identified on analysis: social and psychological impact on self, antipathy, demands of care, stigma and guilt.

The identification of specific components of burden is vital to cater to the specific needs of caregivers of the elderly. We want our findings to help caregivers to be better supported, thus ensuring that they are in turn able to care and support the elderly in the community.

My journey in research at the Institute of Mental Health began when I was interviewed for the position of research assistant by Dr Mythily Subramaniam (Director, Research Division) and Ms Janhavi Vaingankar (Manager, Research Division) 2 years ago. I am still learning and IMH Research Division is a great platform for any aspiring researcher. The support and opportunities provided have helped me to enhance my capabilities and has motivated me to further explore the field of mental health research. I see this project and the opportunity to present my work as the first step in my research journey. Moving forward, with more projects coming our way I hope to work together with my team and make more valuable contributions to this field.

My Research Journey

Dr May Me Thet
Research Analyst
Health Services and Outcomes Research
National Healthcare Group

I started as a Research Officer in the Biomedical Research Centre at the Department of Medical Research (Lower Myanmar), where I participated in virological disease research projects together with clinicians and co-authored a few publications in the local medical journals.

After finishing my Master of Public Health, I had the opportunity to join the Health Services and Outcomes Research (HSOR) unit at the National Healthcare Group. This began my transition from biomedical research to public health research.

While working at HSOR, I gained new knowledge from conferences and trainings, and developed myself through participating in research projects. Through my work at HSOR, I have also witnessed how research plays a critical role in improving patient care, and the translation into practice.

Mentoring

In my pursuit of a career as a researcher, I believe that good mentoring and guidance are critical. Having supportive and inspiring mentors in my unit have given me a chance to be involved in the health services research projects and programme evaluations, research grant applications and scientific paper publications.

Research Projects

Among the projects I am currently involved in, I am working with Dover Park Hospice to evaluate the effectiveness of a new model of home hospice care in comparison to an existing model. The intervention group consisted of patients in the Dover Park Home Hospice Care Programme while the comparison group consisted of patients from Assisi Hospice, Agape Methodist Hospice, HCA Hospice Care, Metta Hospice Care and Singapore Cancer Society.

Health services utilisation such as the number of emergency department visits, number of hospitalisations, hospital length of stay, number of specialist outpatient clinic visits in the last year of life were compared. A telephone survey was also conducted one to three months after patient's demise with their family to assess the satisfaction of the families on the new programme.

Another interesting project is deriving a scoring system for the Emergency Department (ED) of Tan Tock Seng Hospital in making clinical decisions for Medical Intensive Care Unit (MICU)/High Dependency Unit (HDU) transfers. A retrospective observational cohort study design was used. Information on demographics, pre-admission functional status, co-morbid conditions, clinical and laboratory parameters on arrival at ED and treatment initiated at ED were collected through case notes review.

I value ongoing learning and growth in the field, and I look forward to working on new and exciting research projects which would make a significant contribution to public health care. Last but not least, I would like to express my sincere gratitude to my Director, Dr Heng Bee Hoon and the team for their kind and ongoing support throughout my journey.

My Interest in Health Services Research

Dr Ang Yee, Gary
Registrar
Health Services and Outcomes Research
NHGP Clinical Services

I chose the specialty of Public Health because unlike clinical medicine, the focus of public health is on populations and the emphasis is on disease prevention and health promotion for the whole community. As part of my requirements in the Advanced Specialty Training (AST), I chose to do health services research as part of my training.

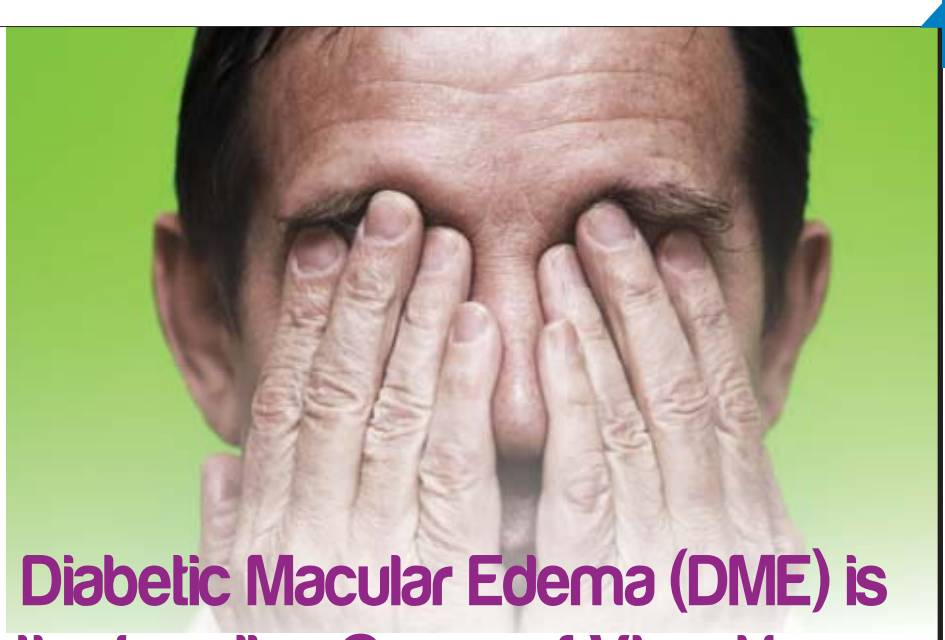
My interest in Health Services Research started during my two years part-time Master of Public Health (MPH) course in National University of Singapore where I did a module on Introduction to Health Services Research.

During the module, I was exposed to researchers from diverse fields but the unifying feature is that they are all doing Health Services Research. As part of my MPH, I completed a practicum on the rate of progression of subjects with impaired fasting glycaemia to Type 2 Diabetes Mellitus using the NHG Diabetes Registry. This study has been accepted for publication by Journal of Diabetes and an oral presentation based on the study at the 45th Annual Singapore Malaysia Congress of Medicine 2011 has won merit award.

Subsequently, I applied for the NHG-KTPH Clinician Leadership in Research (CLR) Programme, an NHG research manpower development scheme, to find out what the predictors of rapid progression in patients with chronic kidney disease were. The results have been presented in the Singapore Health and Biomedical Congress 2012 and published in the Dec 2013 issue of Annals Academy of Medicine Singapore. I highlighted that the number of Chronic Kidney Disease patients in National Healthcare Group Polyclinics has increased significantly from 2007 to 2011 at an average annual rate of 21.3%. Majority of patients in the study conducted in 2011 were in stage 3A and stage 3B which were considered early as there are five stages of Chronic Kidney Disease.

Looking back on my decision to do research instead of practising as a full-time clinician, I realised that research is about seeking the 'truth' and it may not suit everybody but for those who seek knowledge instead of fame and fortune, it is a career that is fulfilling and allows one to explore one's interest day in and day out.

Dr Cheong Kai Xiong
Transitional Year Programme Resident
Tan Tock Seng Hospital



Diabetic Macular Edema (DME) is the Leading Cause of Visual Loss Among Patients with Diabetes Mellitus

I am privileged to be part of a research team from the Department of Ophthalmology, Tan Tock Seng Hospital, which explored the relationship between retinal thickness measured using Optical Coherence Tomography (OCT) and visual acuity (VA) in patients with DME. We have demonstrated that VA correlates significantly with the change in retinal thickness and have identified a specific subtype of DME for which the retinal thickness has a significantly better correlation with VA.

VA is an important clinical outcome in the treatment of DME. Since VA assessment is subjective as it is dependent on patient cooperation and literacy, it is useful to have identified qualitative and quantitative features using OCT which serve as objective measures of visual function and treatment response.

Here, I will like to share my reflections on research.

Good Mentors

I credit my progress thus far to the mentorship of a few exceptional mentors. I will like to make special mention of Dr Colin Tan Siang Hui and Dr Lo Hong Yee. Common traits which I have observed in them are their inquisitive minds and passion in their work, determination to push through obstacles, and humility to consider alternatives when results refute prior hypotheses. The best mentors always accept all my strengths and weaknesses and attempt to bring out the best in me. They provide a safe space for me to have faith and achieve what might have initially appeared overwhelming or difficult.

> The best mentors always accept all my strengths and weaknesses and attempt to bring out the best in me.

Determination

Although research is exciting and rewarding, it is not always glamorous, as some may initially believe. It involves hard work and long hours. There are many difficult moments such as manuscript rejections and failures which require perseverance and a willingness to sacrifice personal time to push through.

Teamwork and Synergy

I have also realised the importance of developing a long term working relationship with a research team. A team is much more than the mere sum of the individuals. Every member has different experiences and skills, and it is the synergism of all the expertise that allows goals to be achieved.

Team Chemistry

Since research skills need time to be developed, I find it essential at my stage of training to be able to choose the mentors and teams with whom I can work comfortably. Every team has different working styles and there is no single way of doing things. Certain complementary similarities and differences in behaviour and personalities of the members are requisite to forming and maintaining successful teams.

Personal Motivations

Lastly, I am often asked why I spend time on research when most of us barely have enough time. Although developing clinical proficiency is crucial, research is equally important because patients have problems and needs which should be identified. Clinicians possess unique advantages in clinical research because our work are moulded by direct involvement in patient care, and the new knowledge tangibly impacts patient care. Academic medicine is a requisite for the health institutions in Singapore to progress and to differentiate themselves, like Mayo and Johns Hopkins. I hope to be a stakeholder of this revolution one day.

Dr Cheong Kai Xiong is a Transitional Year Programme resident at the Tan Tock Seng Hospital at the time of writing. He recently received the Singapore Clinician Investigator Award at the Singapore Health and Biomedical Congress 2013 for the abovementioned study. He has also received the Ophthalmology Research Day 2012 Best Paper Presentation award and the National Healthcare Group Eye Institute Abbott Merit Prize in 2011. He is also a recipient of the Singapore Armed Forces Medicine Scholarship.

How I Started in Clinical Infectious Disease Research

Dr David Lye
Senior Consultant
Department of Infectious Disease
Communicable Disease Centre
Institute of Infectious Disease and Epidemiology
Tan Tock Seng Hospital
Adjunct Assistant Professor
Department of Medicine
Yong Loo Lin School of Medicine
National University of Singapore

I decided to study medicine because I wanted to be a scientist. I thought medicine would be a good back-up career if science did not turn out well. Two months of research in Baker Heart and Diabetes Institute, Melbourne, Australia, cured any delusion I may have about wet bench research.

I enjoyed clinical medicine. The ability to diagnose an illness by asking questions and performing physical examination is an art that continues to inspire me today. However, much more miraculous to me is the ability to cure by applying evidence-based medicine. At St. Vincent's Hospital, Melbourne, I learnt as a medical student by reading review papers from leading medical journals. My consultants explained their management by discussing pertinent randomised controlled trials when I was a young doctor. At Westmead Hospital, Sydney, I learnt infectious diseases by performing PubMed search and going to the hospital library to photocopy journal papers. I have never read an internal medicine or infectious disease textbook. At the end of my specialist training I only published two papers; I preferred to focus on developing my clinical acumen.

After I started working as an infectious disease physician, I started developing an interest in clinical research. When I encountered a clinical problem for which I could not find an answer from literature review, I began to think if I could find the answer by doing clinical research. Much of my research was unfunded, with data collected by myself, pharmacists, medical officers, registrars and medical students

I learnt clinical research by emulating research methodology in the journal papers that I read. Many of my publications came from external collaborations; I learnt clinical research from experienced colleagues in Singapore and overseas. Most publications went through many rounds of journal submission; I learnt clinical research from the feedback of peer reviewers.

I became involved in funded research via STOP-dengue (www.stopdengue.sg). Funded research is a competitive business not for the faint-hearted. The science must be leading edge but negotiating the tussle among funders, collaborators, competitors, reviewers and maintaining a good research team can be exacting.

The lessons I learnt are many. One should only do research for the right reason as research is a highly competitive business that is driven by grant and productivity. One should not do research primarily to improve one's curriculum vitae, be it to get into junior or senior residency or for coveted promotion.

My interest in research was fostered by the impact of evidence-based medicine in clinical practice, and I continue to do research to seek answers for clinical problems that I encounter. Applying one's research findings is gratifying and provides motivation to persevere in the face of seemingly insurmountable hurdles. Giving up substantial clinical practice necessitated by clinical scientist career path may be counterproductive to maintaining focus in clinical research.

> When I encountered a clinical problem for which I could not find an answer from literature review, I began to think if I could find the answer by doing clinical research.

While research grant application is highly competitive, getting one's research published is no less so. Timing is important, and being responsive and quick improves one's chances of getting published. The rewards in research do not come fast and early, and patience and perseverance are important traits that keeps one going.

It is important to ask the right question and design a study that is methodologically sound to answer one's study hypothesis. Training in literature review and evidence-based medicine as a medical student or officer can be the first step to clinical research.

Collaboration with other researchers and mentoring younger researchers take time but yield dividends in research productivity. In collaboration, it is helpful to be flexible and important to avoid being demanding.

At some stage I will have to review my roles as a clinician, an educator, an administrator and a clinical researcher. At the moment, I am enjoying the satisfaction of keeping my patients healthy, convincing my students that they should place being a good doctor above passing examinations, continuing to drive professional and quality programmes, and undertaking clinical infectious disease research.

NHG Research Training Calendar for April – May 2014

Date	Time	Training Programme	Venue
Ongoing	00:00 – 23:59	Proper Conduct of Research Online – Basic I & III (PC101 & PC103) Workshop	www.elearning.nhg.edu.sg
		Proper Conduct of Research – Basic II^ (PC102) Workshop	
15 – 16 April 2014	9:00 – 18:00	Intellectual Property Seminar	NHG College, Skills Lab 1 & 2, 3 Fusionopolis, #03-08, Nexus@one-north, Singapore 138543
24 April 2014	9:00 – 18:00	Proper Conduct of Research – Advanced II (PC302) Workshop	To be advised
29 April 2014	9:00 – 18:00	Research Preparatory and Study Design Seminar	To be advised
29 – 30 May 2014	9:00 – 18:00	Singapore Guideline for Good Clinical Practice Course	To be advised

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)

Dr Mythily Subramaniam
Director of Research
Institute of Mental Health
Adjunct Assistant Professor
Saw Swee Hock School of Public Health
National University of Singapore

How it STARTED

More than 13 years ago, I responded to an advertisement for a Research Assistant at the then newly restructured Institute of Mental Health (IMH) with little understanding of mental health, research or even of my long-term plans. Today it is difficult for me to imagine any other career and doing anything different from what I have done and continue to do in my rather serendipitous journey in the field of mental health research. As a research assistant and as a project manager, I took on whatever studies that came my way. This gave me a broad understanding of both psychiatry and research and I had the good fortune to work with various experts who guided me patiently and pushed me when warranted.

The TURNING Point

I gradually developed an interest in two main areas - psychosis and addiction, and subsequently realised that I wanted to do more health services research. The Singapore Mental Health Study (SMHS) was the turning point in my life where we learnt from some of the experts how to conduct large scale surveys and from there I developed an interest in qualitative research. This study and the interaction with policy makers in the Ministry of Health, gave me an appreciation of policy matters, taught me how to work as part of a larger team both within and outside Singapore.

It instilled a sense of discipline in me that research like any other skill needs to be sharpened and honed every day and it brought home the point that mental health research needs to be pushed in terms of what we can do as researchers, how to work effectively with policy makers and service providers, and how best to disseminate findings to the public to create a better understanding of mental health issues and help advocate for those with mental illness.

We strived to meet these goals and I am proud of what we have achieved not just in terms of publications but the relevance and application of our findings to health policies and programme development, and the awareness that has been created about the pressing issues in mental health like the large treatment gaps for almost all the mental illnesses, the detrimental effect of multi-morbidity, quality of life, and not forgetting positive mental health.

Journey of CONTINUOUS LEARNING

While understanding the various aspects of psychiatry was challenging, the terminology and fundamental understanding was helped by my prior training in medicine and biochemistry, research on the other hand was an entirely different cup of tea. I struggled to get the nuances right and even today I acknowledge there is much to learn. It is a constant struggle to balance my personal research interests with that of IMH and even the country.

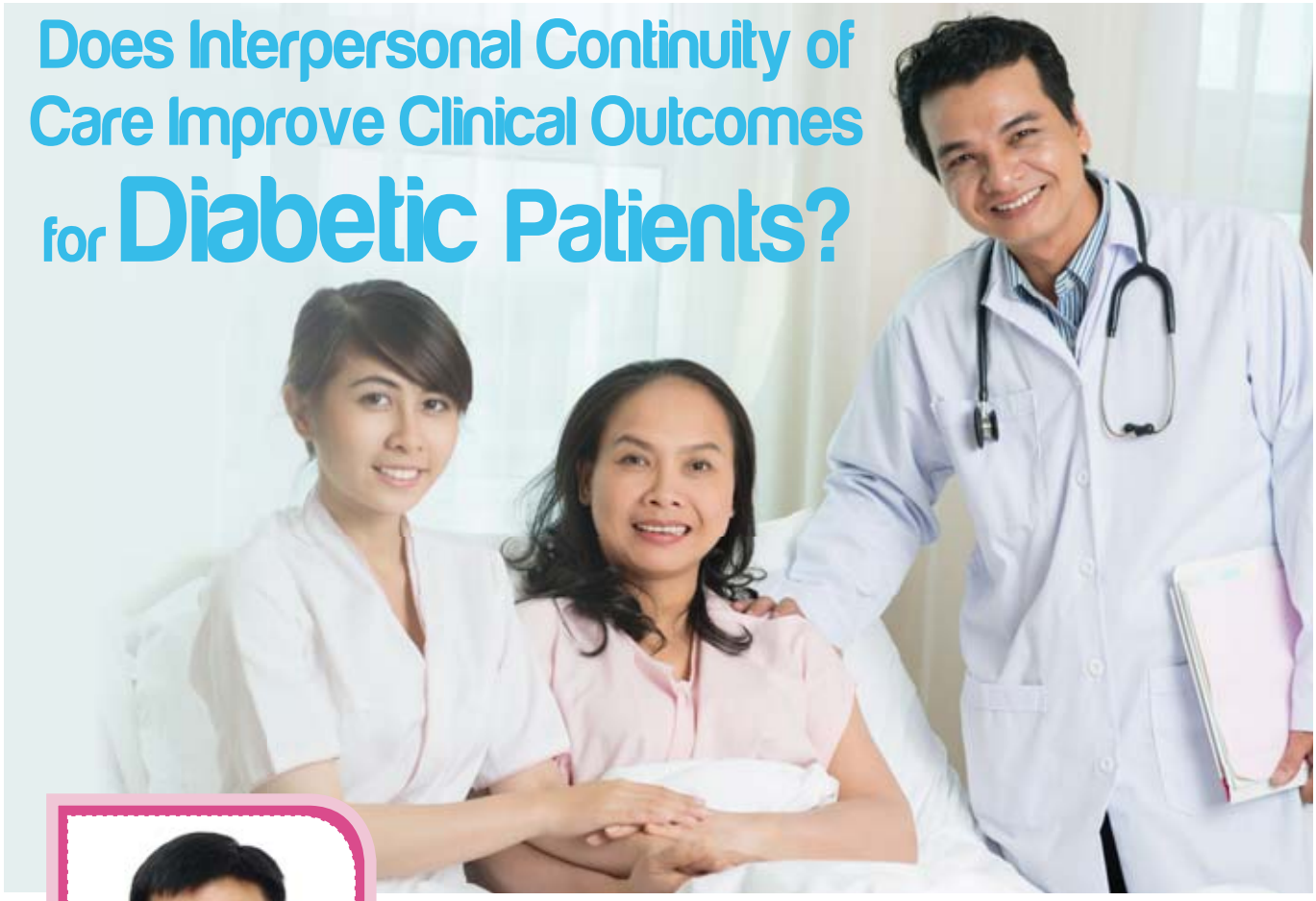
However, the rewards include a deeper understanding and appreciation of the constraints placed on our multi-tasking clinicians while they continue to pursue their research interests; and being humbled by fellow researchers who work beyond office hours and even when they are on holiday to meet impending deadlines. These experiences make me more determined to excel in what I do. Presently, I am furthering my training with the help of a Fellowship Award from the National Medical Research Council (NMRC) while leading the nation-wide epidemiological study on dementia and depression among the elderly in Singapore.

Get HELP along the Way

This journey would not have been possible without a few key people: A/Prof Chong Siow Ann my mentor who has always pushed me past my doubts, misgivings and barriers; Dr Swapna Verma who has taught me so much about psychiatry, my colleagues, Jenny and Janhavi, without whose unending support I would never have dared take on and deliver the projects, and lastly my team that has morphed and expanded over the years – what has remained constant is a group that cares deeply about those with mental illness that drives us to do those research that will change the way we think about mental illness and change the way we treat people with mental health problems.

Today it is difficult for me to imagine any other career and doing anything different from what I have done and continue to do in my rather serendipitous journey in the field of mental health research.

Does Interpersonal Continuity of Care Improve Clinical Outcomes for Diabetic Patients?



Dr Lee Kwang How
Family Physician
Bukit Batok Polyclinic
National Healthcare Group Polyclinics

I would first like to thank Dr David Ng Wei Liang and Ms Sim Yu Fan for being part of this team and making this project happen. Deepest gratitude to the Clinical Research Unit of the National Healthcare Group Polyclinics too, especially to Dr Tang Wern Ee and Ms Vivien Ong for spending so many after-office-hours with us to guide us through this project.

The project probably hatched when David popped the question "Would things be different if we are able to see the same patients for the follow up of their diabetes?"

We have in place informational and longitudinal continuity of care in our polyclinics i.e. patients' information are accessible by physicians working in the same clinic and most patients return to the same clinic (their medical home) for the review of their diabetes. However, they do not see the same physician at every visit. We therefore wonder if building an interpersonal relationship between patients and their physician by allowing them to consult the same physician at their reviews would yield better outcomes in the control of diabetes.

With the aim of this project being a pilot study, a retrospective case control study was conducted. Patients with poor control of diabetes (Hba1c >8% in end 2009) were extracted from our database. 176 patients from this cohort were seen by the same physician for more than 65% of the visits. They were matched with 176 patients who were seen by different physicians for their care till 2012 (a period of two years). Outcome measures were Hba1c, low density lipoprotein cholesterol (LDL-c), blood pressure, diabetic foot and eye screening and the use of insulin.

Unfortunately, results showed that none of the outcomes were significantly different between the two groups of patients. This retrospective study suggests that seeing the same physician on top of our current system may not have an impact on these outcomes in the control of diabetes.

Admittedly, this was my first research project and already it is teaching me the harsh reality of evidence based medicine. What we have hoped for and hypothesised did not seem to be the case.

My first encounter with research came during my third year in medical school when we were encouraged to take up elective projects in between the school terms. Though I felt it was interesting back then, the importance of research and evidence based medicine only weighed on me when I started clinical work. Faced with a myriad of treatment options for each condition, relying on evidence helped me decide what would be best for the patient.

An equally important lesson I picked up from this project was that research's similar to the management of patients with diabetes. It takes a team based approach to succeed. The project would not have gone through without the enthusiasm and input from everyone in the team. The guidance offered by our Clinical Research Unit was also invaluable given my inexperience in research.

The outcome from this project would probably spur me on to continue conducting studies. It serves to remind me that before deciding on any treatment or changing the system of healthcare delivery, first look for evidence that it works.

> Would things be different if we are able to see the same patients for the follow up of their diabetes?

Using Research to Facilitate Nursing Administration

Dr Xie Huiting
Senior Staff Nurse
Nursing Training
Institute of Mental Health

Asst Director of Nursing Madam Chin How Lin makes time for research in spite of her busy work schedule.

Research is essential to the evolution of best practices in patient care. We have all heard about the importance for health care workers to engage in research to improve the care for patients. However, it is also not uncommon to hear that they do not have the time to engage in the research process. This issue of Catalyst presents to you a member of the senior nursing management team who has found time in spite of her busy work schedule to engage in research activities.

Madam Chin How Lin is an Assistant Director of Nursing at the Institute of Mental Health (IMH). She has a wealth of nursing experience in the field of mental health care and nursing administration. Her research impacts patient care by resolving the administrative issues to ensure the smooth operation of patient care units.

Madam Chin's study titled "Time-motion Study for Nursing Aides Activities" revealed that much of nursing aides' time was spent on pantry activities. These findings have led to inter-disciplinary discussions on out-sourcing pantry activities such as food preparation and washing of kitchenware to non-nursing personnel or using automation. This has the potential to allow more time to be directed towards patient care, possibly enhancing the delivery of safe patient care and increasing the efficiency of nursing aides' role. This study has been selected for poster presentation at the Singapore Health and Biomedical Congress 2013.

Besides engaging in primary research studies, Madam Chin's research involvement also spans into the realm of the synthesis and review of published evidence. Her paper titled "The Impact of Nurse Staffing on Quality of Patient Care in Acute Care Settings: An integrative Review Paper" brings to our attention that elevated nurse staffing levels and higher Registered Nurse (RN) proportions with better quality of patient care. The findings can assist hospital administrators in nurse staffing planning and nurse administrators in developing an appropriate staffing model to achieve quality patient outcomes. Findings of the study have been published in the Singapore Nursing Journal, volume 40, Number 4.

Madam Chin has demonstrated that research and nursing administration are intricately linked. The data collected through research methodologies could inform nursing administrators on the best practice to enhance nursing operations. Administrative leadership may also inspire, encourage innovation and promotes excellent nursing. With Madam Chin How Lin as the role model, may many more nurses from all levels of nursing find time to engage in research activities amidst carrying out their nursing duties.

Medication Reconciliation for Better Medication Safety in Ambulatory Care

Mr Heng Shi Thong
Inpatient Pharmacist
Tan Tock Seng Hospital

Medication reconciliation (MR) is a process of comparing patients' medication orders to their active medications. MR has been shown to reduce medication errors and adverse events significantly in many studies. Pharmacist-led MR has become part of many hospitals' standard practices, including inpatient wards in Tan Tock Seng Hospital (TTSH). A US pharmacy study found that medication discrepancies are significant in community settings; each patient had an average of six discrepancies when comparing medication fill history and prescription order. The findings suggest that discrepancies may be much more prevalent than expected in outpatient settings. Hence our study sought to obtain some insights into medication discrepancies in the local settings when pharmacist MR was conducted.

A prospective study was conducted at the PEARL endocrine clinics in TTSH over three months from November 2012 until February 2013. 40 patients with first time visit to PEARL clinic were recruited for the study. They were randomised into two groups using a computer-generated random number table.

In this study, MR would be conducted by a clinic pharmacist for every patient before clinic consultation For the first randomised group, MR lists generated by pharmacists were passed to the doctors before consultation. For the second group, the lists were not passed to the doctors. After the visits, the MR lists and doctor's case-notes of each patient were compared for discrepancies in medication records, and all documented pharmacy interventions were analysed.

Members of the project team (From right: Joanne Lau, Heng Shi Thong, Lee Jye Chyi, Koh Chwee Ling)

We found a total of 15 discrepancies between the pharmacist's and the doctor's list, and 80per cent of the discrepancies were reported from the second patient group when the pharmacist lists was not passed to the doctors.

A summary of all reported discrepancies can be found in Table 1. In this study, the most common discrepancy reported is incomplete medication record, which is a significant issue as it could potentially lead to unintended medical consequences, such as drug interactions, duplication of medications and adverse drug events.

In terms of pharmacy interventions on prescriptions, the second group also had a higher number of documented interventions. It seems to suggest that pharmacist MR may reduce the number of prescription interventions as a result, although the difference is not statistically significant.

This project was a collaboration between TTSH Outpatient Pharmacy and Endocrine Department. It was conducted in PEARL clinics, which are clinics dedicated to private patients in TTSH. The opportunity was given to the author during his training as a pre-registration pharmacist. He would like to thank Jye Chyi, Judy, Chwee Ling, Xiuting and Joanne from Pharmacy, as well as Dr Daniel Chew from Endocrine Department for the support on this project.

The author is currently a registered inpatient pharmacist in TTSH. His personal aspiration is to advance his practice in inpatient care. He is thankful for the award, and hopes that his project will encourage new pharmacists to contribute new ideas to the local arena of healthcare research.

Table 1: A summary of reported discrepancies in the study

Type of discrepancies between MR list and doctor's casenotes	Number of discrepancies
Incomplete medication record	8
Inactive medication	1
Dosing mismatch	2
Indication mismatch	1
Dosage form mismatch	1
Others	2

In conclusion, we found a significant number of discrepancies in medication records clerked by pharmacists and doctors in our clinic. Our findings suggest that pharmacist-led medication reconciliation should be conducted actively in outpatient clinics to ensure better medication safety. This may be strongly indicated to patients with polypharmacy or with diseases prone to polypharmacy, such as diabetes, heart failure and chronic kidney disease, due to the well-studied association of polypharmacy to many drug-related problems.

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Director Emeritus, Program in Medical Ethics
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USA

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Investigator Site Development Lead
Clinical Trial Support and Compliance
Pfizer Limited
Pfizer Centre
Mumbai, India

Dr Marjorie A Speers
Research Ethics Expert
USA

Ms Sumitra Sachidanandan
GCP Inspection Consultant
Clinical Trials Branch
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Professor
Nicholas Cardinal Cheong Graduate School for Life,
The Catholic University of Korea

Ms Catherine Lee
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Clinical Trial Support and Compliance Asia Pfizer Inc
Taiwan

Mr Bhausaheb Patil
Senior Director and Head
Clinical Site monitoring Quality Management (CSMQM) Asia,
Quintiles East Asia Pte Ltd
Singapore

Track 4: Hot Topics in Research Ethics

Dr Emily Shen
Visiting Medical Officer
Department of Medicine
Maroondah Hospital
Department of Gastroenterology
Eastern Health
Australia

Dr Karabee Mukherjee
Manager and Clinical Trainer
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Kolkata India

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See you at APREC 2014!

Qualité

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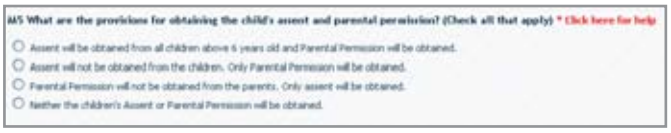
Improving your DSRB Ethics Application Process

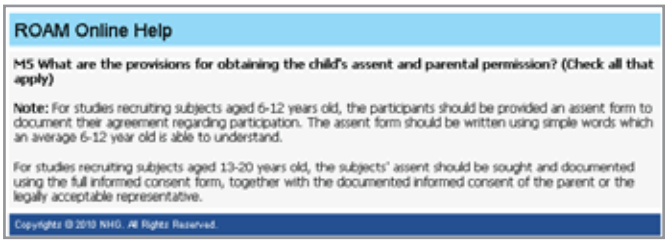
Before you embark on your next ethics application to the Domain Specific Review Board (DSRB), here are five new enhancement initiatives that can help improve the turnaround time of your ethics application.

Applications which contain irrelevant and/or incomplete information often result in multiple clarification cycles between the principal investigator (PI) and the DSRB. In order to reduce application turnaround times, five new enhancement initiatives have been recently introduced to facilitate the submission and review process.

1. Updated DSRB Application Form – Questions and New Helplinks [available in ROAM]



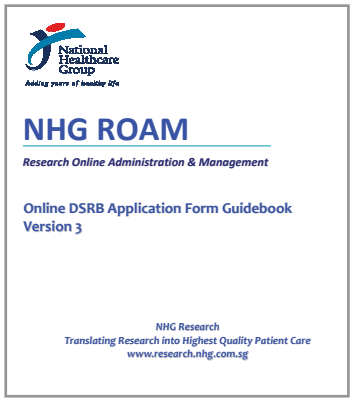
The questions have been updated and new helplinks have been added to help PIs better understand the requirements so that they can provide clear and relevant answers. An example is shown below.



Look out for the new helplinks within the ROAM application form for further explanations.

2. Updated DSRB Application Form Guidebook (Version 3)

The DSRB Application Form Guidebook provides a comprehensive section-by-section description of the requirements in the DSRB application form. This revised guidebook offers expanded explanations for sections of the application form that are particularly problematic for PIs.



To download the DSRB Application Form Guidebook, please visit the NHG research website at: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/research+online+guidebooks

F8	**Discuss in detail the experimental design and procedures to be used to accomplish the specific aims of the study. If this study involves a retrospective medical record review, please specify the period of data collection. ***
Definition / Explanation	Please provide details on the experimental design used to accomplish the specific aims of the project (e.g. two period crossover, case control, placebo controlled). The description should include, but is not limited to, information on blinding, randomization, number of study arms, phase of trial, approximate time to complete study recruitment, expected duration of subject participation, sequence and duration of all trial periods (including follow up), changes in scheduling, single or multi centre, healthy or sick population, in or outpatient etc. If this study involves a **retrospective medical records review**, please also specify the period of data collection. Please note that for retrospective studies, all the data to be collected should already be in existence and not prospectively collected. If this study involves the administration of an **anonymous survey**, please also describe in details, how the questionnaire/demographic data collection form will be distributed and collected back to ensure anonymity (e.g. the questionnaire/ demographic data collection forms will be given to participants at the clinic and they can return the completed forms by dropping them into a collection box or by using the return envelope provided).

3. Updated DSRB Application Form FAQs

Ten new DSRB application form FAQs have been added to the current FAQ list, to provide guidance and clarifications on common questions that PIs have difficulty providing an appropriate response to.

For the full list of the DSRB FAQs, please visit the NHG research website at: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/hspp/dssrbfaq

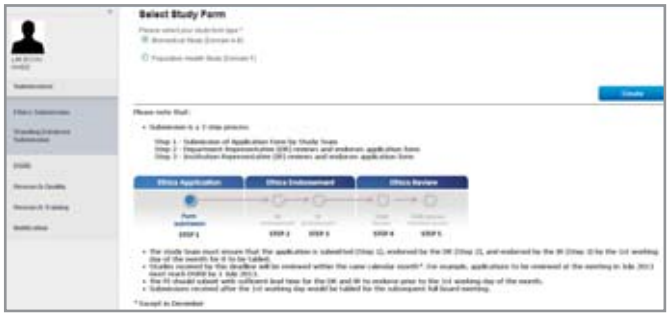
4. DSRB Full Board Meeting Dates are Online

DSRB Full Board meeting dates for the whole year can be found online so that PIs/Sponsors can plan and submit their DSRB applications ahead of the monthly submission deadlines.

For the full listing of DSRB full board meeting dates, please refer to the NHG research website at: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/hspp/dsrbintro

5. Submission is a three-step process! [available in ROAM]

A reminder has been added to notify PIs and sponsors about the three-step submission process so that they can allow sufficient lead time to draft and submit their DSRB applications (e.g. 1 week before the submission deadline). Every application must be endorsed by the Department Representative(s) and Institution Representative(s) before it is received by the DSRB.



We hope that these resources will be useful in your ethics applications.

**Note: The information provided above refers only to the Biomedical Study Application Form. There may be differences if you are submitting a Population Health Study Application Form.*

Ms Felicia Wong
Assistant Manager
Domain Specific Review Board (DSRB)
Office of Human Research Protection Programme (OHRPP)
Research & Development Office
National Healthcare Group

Qualité

Non-Compliance Report: Informed Consent Process for Non-English Speaking Subjects

At a recent review of an investigator-initiated study, it was noted that the informed consent process with non-English speaking subjects had not been carried out according to the NHG Proper Conduct of Research (PCR) procedures.

The study team had used an approved English version of the informed consent form (ICF) to consent non-English speaking subjects, and this consent process had been done using a study team member as the witness.

What the study team should have done:

(A) To recruit non-English speaking subjects, the study team should have utilized utilsed properly translated informed consent forms which had been submitted and acknowledged by DSRB.

(B) When recruiting non-English speaking subjects, if the study team member was using an English consent form with a translated short consent form, an impartial witness would be required. This witness should not be a member of the study team.

Tips to Help in Your Study Conduct

1. Make sure you are prepared for recruitment of subjects:

Evaluate the recruitment strategies of the study and ensure that there are sufficient resources to carry out subject recruitment. It is important to note that ultimately, it is the Principal Investigator's (PI's) responsibility to ensure that adequate and appropriate resources are available to obtain proper informed consent from all subjects.

2. Ensure proper informed consent documents for non-English speaking subjects are available:

For non-English speaking subjects, the preferred method of informed consent is to provide the subjects with consent forms written in a language understandable to them. As such, it is preferable that a fully translated copy of the approved English ICF should be provided to the subjects. This translation should be performed by either a qualified translator or translation company.

- The fully translated ICF(s) must be submitted to the Domain Specific Review Board (DSRB) for acknowledgement before they can be used at site.

For investigator-initiated studies, where the cost of translation is a concern, informed consent documents can be fully translated by an individual who is fluent in the given language.

- These fully translated ICF(s) must also be submitted to DSRB for acknowledgement before they can be used at site.

In the event that the ICF cannot be translated, investigator-initiated studies can combine (1) the approved English language ICF together with (2) the short consent form (SCF) in the language understandable to the subject, and use it for the informed consent process.

An appropriate naming convention of this combined document (1) + (2) would be:

- "Short Consent Form (Chinese) Version X dated XXX for approved English ICF Version X dated XXX".

The SCF template in simplified Chinese, Malay and Tamil are available on NHG Research website.

- The combined consent documents must be submitted to DSRB for acknowledgement before they can be used at site.

3. Informed consent process when utilising the translated SCF:

When the combined SCF document is used, do ensure that:

- The oral presentation and the SCF should be in a language understandable to the subject;
- An impartial witness is available and the impartial witness should be fluent in both English and the language understandable to the subject;
- The study team member who is obtaining consent is not the witness to the consent process;
- The subject / subject's legally acceptable representative, the study team member who is obtaining consent and the impartial witness must sign on both the approved English language ICF and the SCF;
- The subject / subject's legally accepted representative must be provided with a copy of the signed English language ICF and the SCF.
- An original signed copy of the ICF and SCF should also be retained at site.

As described in the Singapore Guideline for Good Clinical Practice (SGGCP) section 1.26, an impartial witness is a person who is independent of the clinical trial. As such, study team members listed in the study responsibility / delegation log should not act as an impartial witness.

The informed consent process should also be clearly documented in the subject's source documents (e.g. medical case notes / study-specific source document templates). The following information should be included:

- Protocol reference (e.g. study name / study number)
- Date of informed consent
- Details of the informed consent process (e.g. use of a translator / impartial witness)
- Documentation that a copy of the informed consent document was provided to subject

WRITE IN TO US!

Confused about what essential documents you need to maintain for your research study? Puzzled about how certain study procedures should be carried out? Clueless about the local regulations and guidelines governing research? Wondering where you can find information and resources to aid your research? Unsure about what proper conduct of research entails?

If you have a research-related question you are unsure about, you are invited to write in to us at researchcoord@nhg.com.sg. Your questions, together with our recommendations, may be selected for feature in subsequent issues of Qualite. In your email, please include your name, job designation, institution and contact information, together with your query.

Remember, other readers facing similar issues may benefit from the questions you ask. We look forward to hearing from you!

Qualité

Guidance Table on the Informed Consent Process Requirements

Subject or Subject's LAR	Principal Investigator or delegated study team member	Language of written informed consent form	Requirement for Oral Translator / Presenter	Requirement for Impartial Witness
Literate in English	Literate in English	English	**No**	**No**
Literate in local language	Literate in local language	Local language	**No**	**No**
Literate in local language	Literate in English and unable to communicate with the subject / subject's LAR in the required local language	Local language	**Yes**	**No**
Literate in local language	Literate in local language	†English ICF with added SCF in local language	**No**	**Yes**
Literate in local language	Literate in English and unable to communicate with the subject / subject's LAR in the required local language	†English ICF with added SCF in local language	**Yes**	**Yes***
Illiterate or unable to read due to visual impairment	Literate in English and unable to communicate with the Subject/ Subject's LAR in the required local language	English	**Yes**	**Yes***
Illiterate or unable to read due to visual impairment	Literate in English and able to communicate with the Subject/ Subject's LAR in the required local language	English / Local language (the choice of language here should be the language which the impartial witness is literate in)	**No**	**Yes**

† Used only in the event where a fully translated consent document is not available.
** The impartial witness may act as the oral translator if he / she is able to speak the subject's local language.*

References

1. Singapore Guideline for Good Clinical Practice
2. NHG Proper Conduct of Research Standard Operating Procedures (PCR SOP) 501-C01 - Informed Consent Form and Process
3. Short Consent Form templates, available at: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/resources/dsrb+forms+and+templates

Ms Maggie Lee
Senior Executive
Research Quality Management
Office of Human Research Protection Programme (OHRPP)
Research & Development Office
National Healthcare Group

Responsible Conduct of Research

The Responsible Conduct of Research (RCR) Unit under the Office of Human Protection Programme (OHRPP) oversees the propagation of an RCR culture within the NHG research community. It also aims to equip researchers with knowledge of research best practices to guide them in making the right decisions, especially in instances that challenge individual values and integrity.

Here is a brief of the eight components of RCR:

- Research misconduct
- Protection of human subjects
- Conflicts of interests & commitment
- Data management practices
- Collaborative research
- Authorship and publications
- Peer review
- Mentor and trainee relationship.

RCR Case Study

The example below illustrates some RCR concepts.

X was a professor at the University of A Big Country (ABC). He was working on a very important research project with his postdoctoral mentee Mr Z. The Dean of University of ABC informed Professor X that he would be recommended for a tenure position if his potential lifesaving research showed promising data within the next few months. Professor X and Mr Z were feeling the pressure to produce results. Mr Z wanted to help Professor X achieve tenure as the professor had been a very good mentor. To this end, Mr Z decided to fabricate some data in order to yield some reportable "positive" findings to the Dean, even though the research had not produced any significant data to date.

Which component or RCR would Mr Z's actions be categorized under?

a. Data Management Practices
b. Collaborative Research
c. Mentor & Trainee Relationship
d. Research Misconduct

Subsequently, the Dean congratulated Professor X and Mr Z on their significant findings from the research and announced that Professor X had very high chances of getting his tenure. Puzzled, Professor X checked through the data records and realised that the data had been manipulated by Mr Z.

What should Professor X do? (Please select the best answer.)

a. Pretend that nothing has happened and request to stop being Mr Z's mentor.
b. Thank Mr Z for helping him attain his tenure and have a celebration.
c. Talk to Mr Z to find out why he had doctored the data records, and then speak with the Dean regarding the manipulated data.
d. Resign because there would be no point in continuing to serve at University of ABC as he might be viewed by others as a fraud.

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Resources

To find out more about the RCR unit, please visit: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/hspp/responsibleconductofresearch/responsibleconductofresearch

To find out more about the RCR components, please visit: https://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/hspp/responsibleconductofresearch/corecomponentsofrcr

Correct Answers for Case Studies
1. d 2. c

References
Shamoo, A.E. and Resnik, D.B (2009). Responsible Conduct of Research 2nd Edition. Oxford University Press.

Research Grant Calls and Research Manpower Development Programmes

National Medical Research Council (NMRC)

Website: www.nmrc.gov.sg

Grant	Grant Description	Funding Quantum
Clinical Trial Grant (CTG)	The Co-Development Scheme: The Co-Development scheme is a public-private partnership (PPP) model which will comprise of a local lead PI and an industry partner collaborating on a clinical trial project. PI-Initiated Scheme(Early Phase Trials): This scheme will support the conduct of investigator-initiated Phase I and II clinical trials. PI-Initiated Scheme(Late Phase Trials): Between S$500,000 and S$2 million for 3 years.	The Co-Development Scheme: An industry partner is required for this scheme. NMRC will match a maximum of S$5million for 3 years with the amount put in by industry partner. PI-Initiated Scheme(Early Phase Trials): Maximum of S$5million for 3 years PI-Initiated Scheme(Late Phase Trials): Between S$500,000 and S$2 million for 3 years.
	Application Date: The Co-Development Scheme: **This scheme is open throughout the year and there will not be a formal grant call. Applicants can submit their proposals to NMRC office at any time of the year.** **PI-Initiated Schemes:** **Will be launched in May 2014.**	
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.
	Application Date: Open throughout the year	
Transition Award (TA)	The TA is provided to assist budding, young clinicians who have just returned from formal research training, to build up their capability in research. It includes funding support for mentored research project with salary and grant funding for up to three years.	Maximum of S$375,000 per award for 3 years with additional 20% indirect costs.
Clinician Scientist Award (CSA)	The CSA aims to provide salary & funding support for selected outstanding clinician scientists, who possess a consistent record of excellence in research, to enable them to carry out internationally competitive translational and clinical research. There are 2 categories in CSA to allow flexibility in time commitment. The Investigator (INV) Category is for clinician scientists who have good track records of research work and demonstrated potential to become leaders in their field. The Senior Investigator (SI) Category is for clinician scientists who have demonstrated sustained, high levels of productivity & leadership in translational & clinical research. They are expected to mentor MBBS-PhD students & junior clinician scientists.	Investigator Category: Maximum of 3 years' salary support and grant support of up to S$675,000 for 3 years with additional 20% indirect costs. Senior Investigator Category: Maximum of 5 years' salary support and grant support of up to S$1.75 million for 3 years with additional 20% overhead costs.
	Application Date : May – June 2014	

NHG Intramural Support

Website: www.research.nhg.com.sg

Research Manpower Development Schemes	Award Description	Funding Quantum
Clinician Scientist Career Scheme (CSCS)	The short term aim of the scheme is to develop research capabilities of our clinicians to enable them to compete successfully for extramural grants in the next 2-3 years. The long term aim of the scheme is to develop these clinician scientists to be Key Opinion Leaders (KOLs) in NHG who will contribute to excellence in research innovations and improvement in patient care, delivery and outcomes.	CSCS Junior: Maximum protected time funding of 0.4FTE for up to 3 years, and maximum grant funding of S$60,000 per year for up to 3 years. CSCS Mid-Level: Maximum protected time funding of 0.4FTE for up to 3 years, and maximum grant funding of S$100,000 per year for up to 3 years. CSCS Senior: Applicant must be able to commit at least 0.5 FTE (of which maximum 0.2 FTE protected time will be funded under CSCS Senior for up to 2 years. The remaining FTE is to be funded by alternative source(s), for example a local academic institution or applicant's department/institution. No grant funding is provided.
NHG-NTU Clinician Scientist Fellowship (CSF)	The objective of the fellowship is to nurture and develop Clinician-Scientists through the provision of an integrated pathway, from clinical residency to PhD training, postdoctoral experience and subsequently appointment as a Clinician-Scientist faculty at LKCMedicine and NHG.	• Full sponsorship of tuition fees for 4 years through NTU Research Scholarship; • Full salary support for 3 years; 40% from NTU/LKCMedicine and 60% from NHG; • Academic appointment opportunities with NTU/LKCMedicine upon successful completion of fellowship; and • Possibility of weaving in HMDP training into the PhD programme.
For the above	**Application Date : Opening Date of Application: 21 January 2014** **Closing Date of Application: 28 March 2014**	

Singapore Guideline for Good Clinical Practice (SGGCP) *Online!*

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