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**Scientific Paper and Movie Competition**

**Scientific Poster Competition**

**Public Poster Competition**

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# Academic Competitions

**EAMSC 2016**  
TAIPEI TAIWAN 

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## SCIENTIFIC PAPER AND MOVIE COMPETITION – AUSTRALIA

### **Systematic review: Use of telemedicine for lifestyle intervention to improve glycemic control in diabetes**

Tan Finland<sup>1</sup>, Yeung Emily<sup>2</sup>, Zhou Amanda<sup>3</sup>, Srinivasan Vivek<sup>3</sup>, Leow Jerome<sup>3</sup>, Miura Daisuke<sup>2</sup>, Cao Khoa<sup>2</sup>, Admojo Lorenz<sup>4</sup>, Anderson Jaislie<sup>5</sup>, Yim Arthur<sup>4</sup>, Ng Rachel<sup>6</sup>, Law Joey<sup>1\*</sup>, Perera Nadia<sup>3\*</sup>

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\*Authors of correspondence: No sources of funding were obtained by the authors in completing this systematic review. Please contact the corresponding authors to obtain a copy of the review protocol.

#### **Abstract**

**Background:** Diabetes mellitus (DM) is the fastest growing chronic condition in Australia, projected to affect 3 million Australians by 2025. Optimal control of DM requires many self-care responsibilities and lifestyle modifications, including smoking cessation and changes to nutrition, alcohol consumption, and physical activity. Telemedicine has emerged as an important tool in the management of many chronic diseases including DM. Telemedicine refers to interventions that use telecommunications and computer technology as a substitute for face-to-face contact between healthcare providers and patients. While many studies have investigated the use of telemedicine in DM management, a systematic review investigating both type 1 and 2 DM using only randomized controlled trials (RCTs) has yet been performed.

**Objective:** This systematic review aims to investigate the effect of telemedicine-facilitated lifestyle modifications on glycemic control, as measured by glycosylated hemoglobin (HbA1c), in both type 1 and 2 DM.

**Methods:** Embase, PubMed, Scopus, and MEDLINE databases were systematically reviewed from 2005 to September 2015 for RCTs investigating relevant telemedicine interventions for Type 1 and 2 DM through lifestyle modification. Articles were screened by title, abstract, and full text to assess for suitability for inclusion. Demographic and HbA1c data

were extracted and the process of narrative synthesis applied to the findings. The validity of the RCTs was assessed using the Cochrane Risk of Bias Assessment tool.

**Results:** Of 78 identified articles, 19 RCTs met the inclusion criteria. Telephone, SMS messaging, telemonitoring, video programs, and videoconferencing were utilized in varying combinations, and intervention duration spanned from three months to five years. A weak but positive improvement in mean HbA1c was observed in most RCTs. Five studies demonstrated a statistically significant difference in mean HbA1c between the intervention and control group following completion of the intervention. It was also found that there was a greater decline in HbA1c with greater time exposure up to six months, with interventions lasting a year or longer being less effective. Videoconferencing was found to be the most effective type of telemedicine intervention.

**Conclusion:** This systematic review demonstrates the potential of telemedicine in improving glycemic control for DM patients. However, as few of this review's RCTs investigated the efficacy of telemedicine in long term lifestyle intervention management of DM, long term benefits or lack thereof require further investigation. Other important outcomes such as mortality and quality of life, as well as specific population subgroups, also warrant further study.

### **MoodGYM.com**

Director of authors: Marra Aghajani

Authors: Vivek Srinivasan, Gratia Nguyen, Amanda Zhou, Bal Dhital, Jaislie Anderson

### **Abstract**

Depression is the leading cause of disability for women worldwide, and the second-leading cause for men. However, research shows that 60-80% of all depression cases can be effectively treated with brief, structured forms of psychotherapy. One of the more recent forms of such therapy is cognitive behavioral therapy (CBT). It encourages patients to identify and overcome maladaptive thought processes contributing to depressive emotions and behaviors. Recently, Australian psychologists launched an innovative service called MoodGYM that provides CBT online, as opposed to the conventional face-to-face medium. The online clinic is always open, and can be accessed by people who may not be able to otherwise seek help. As such, this innovative therapy is essential for those who face a lack of access to therapists, who cannot

visit a therapist due to time or financial restrictions, or those facing other such barriers to receiving help.

Our film attempts to illustrate a future in which online CBT websites like MoodGYM are accessible worldwide. Set in the year 2035, the animation focuses on an individual's struggle with depression. Through the advent of MoodGYM, it is now possible to manage her common chronic condition outside of the clinical setting in the comfort of her own home. We portray how online CBT is available through many technological mediums, from mobile phones to computers. By the closing of the film, it is evident that MoodGYM, with further research and funding, has the potential to be a key tool in the future of mental health care.

**References:** Anderson, G, Cuijpers, P, 2008, 'Pros and cons of online cognitive-behavioural therapy', *The British Journal of Psychiatry*, vol.193, no.4, pp.270-271, viewed December 11 2015, DOI 10.1192/bjp.bp.108.054080 *MoodGYM Training Program*, n.d., viewed December 11 2015, <https://moodgym.anu.edu.au/welcome>.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC PAPER AND MOVIE COMPETITION – CHINA

### **Focusing on translational medicine application of nucleos(t)ide analog therapy: factors influencing virological response and relapse after withdrawal in chronic hepatitis B**

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<sup>8</sup> Central South University, Changsha Hunan 410000, People's Republic of China, email address: 751672456@qq.com

## Abstract

**Background:** Translational Medicine is a concept of new medicine approach which increases the efficiency of therapies from research to clinical practice. Much clinical prospective and retrospective data are currently focusing on factors influencing virological response and relapse after discontinuation in chronic hepatitis B, but the authenticity of the evidence is controversial.

**Aim:** The aim of this research was to investigate the factors influencing virological response to nucleoside analog therapy in previously untreated chronic hepatitis B patients and relapse after discontinuation.

**Methods:** Previously untreated patients with chronic hepatitis B who received nucleos(t)ide analogue monotherapy were enrolled in this study. According to HBV DNA load after 24 wk. of treatment, the patients were divided into three groups: patients with complete virologic response, those with partial virologic response, and those with primary treatment failure. Logistic regression method was used to analyze the relationship between baseline indicators and virological response. Electronic searches were conducted in PubMed, Web of Science, CNKI and Wanfang databases. Statistical analysis was performed using the software SPSS19.0, Revman5.2 and Stata 12.0. Relapse factors were reviewed with previous studies.

**Results:** HBeAg status ( $P = 0.028$ ) and AST/ALT ratio ( $P = 0.018$ ) were factors affecting partial virological response. HBeAg positivity and higher AST/ALT ratio were associated with a higher rate of partial virological response. The choice of nucleos(t)ide analogue ( $P = 0.008$ ) and sex ( $P = 0.023$ ) were factors affecting primary treatment failure; ADV was associated a higher rate of primary treatment failure than other three antiviral drugs, and male gender was also associated a higher rate of primary treatment failure. Age, consolidation time, residual HBV DNA level, serum HBsAg quantification, ALT level at baseline were possible predicting factors associated with off-treatment HBV relapse.

**Conclusion:** HBeAg positivity and higher AST/ALT ratio are associated with a higher rate of partial virological response. The choice of ADV and male gender are associated with a higher

rate of primary treatment failure. Relapse rate can be predicted with several predictors. Longer-term clinical observation evaluating the associated factors is warranted.

**Keywords:** translational medicine, nucleos(t)ide analogues, virological response, withdrawal, relapse, chronic hepatitis B.

**Title of Movie: MAN**

Haocheng

**Abstract**

**Background:** Our life have changed, and also facing huge changes in the future, especially in technology and medicine.

Through comparison between refreshing technology applied to medicine in the future and current therapeutic way, we provide a basic concept about medical care in the future. During the past, a disabled man can only use walking sticks, but in the future the artificial bone and armor is available. Cesarean used to be painful and time-consuming. But with the support of futuristic robot, it will be less than a few minutes and cause little pain, helping many women get healthy babies. Not everyone in this world can be the great Man as Stephen Hawking, who can travel anywhere with the support of his team, but what about those who lost the opportunity to see and to hear? In the future VR equipment and neuron-stimulation technology may bring the hope to disabled men. In conclusion , the most significant effect when future medicine and technology meet humanity is not how amazing our life could possibly be , but a whole new view to speculate the world , as well as ourselves.

**Objective:** The movie consists of pieces from most famous science fiction films in recent years and some original pieces shot by directors. The purpose is to illustrate the advance of technology in the future and provide a basic concept about the future medicine.



## SCIENTIFIC PAPER AND MOVIE COMPETITION – HONG KONG

### **Introduction of Noninvasive Prenatal Testing in Hong Kong: Explaining the Lack of Decrease in Invasive Prenatal Testing Utilization by High-Risk Pregnant Women**

Corey Andrew Nelson<sup>1</sup>, Gabriel Chun Hei Wong<sup>1</sup>, Agnes Pei Xi Yip<sup>1</sup>, Andrew Man Kwun Li<sup>2</sup>, Dong Mei Li<sup>2</sup>

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Corresponding Director of Author: Corey Nelson (corey.nelson@amsahk.org, (852) 9313-9848)

#### **Abstract**

**Background:** Fetal abnormalities remain a concern in Hong Kong, with approximately 0.6% births affected annually. While invasive methods were traditionally utilized, Noninvasive Prenatal Testing (NIPT) – a testing method that sequences cell-free fetal DNA in maternal blood to detect fetal abnormalities – was developed in Hong Kong to reduce the number of invasive procedures performed. However, despite its introduction to clinical practice in 2011, the number of invasive procedures in Hong Kong has not decreased as much as hoped for. The paper aims to identify factors affecting NIPT usage locally in order to explain this lack of decrease and determine target groups for intervention.

**Materials and Methods:** A retrospective study was conducted on 35,489 pregnant women who underwent first trimester screening at the Prince of Wales Hospital, Hong Kong from 2005 to 2013. Individual decisions relating to follow-up prenatal testing after initial screening were assessed for the degree of usage of NIPT versus traditional invasive methods (Chorionic Villus Sampling and amniocentesis). Factors like maternal age, gravida, smoking status, mode of conception, and chromosomal abnormalities observed in previous births were analyzed to evaluate correlations between individual characteristics and decisions to use NIPT.



**Results:** The trends in this study demonstrate a year-on-year increase in NIPT usage (2011: 13.6%; 2012: 31.4%; 2013: 41.4%,  $p < 0.001$ ), and a decrease in percentage of invasive testing performed, though invasive testing still accounts for 56.0% of all prenatal tests performed. Increased maternal age correlated with higher likelihood of NIPT use but previous pregnancies and positive smoking status at conception were correlated with decreased NIPT usage. Assisted conception, compared to spontaneous conception, significantly increased the likelihood of women choosing NIPT, and chromosomal abnormalities detected in previous births significantly increased NIPT usage.

**Conclusions:** These findings provide new directions for efforts to increase NIPT and reduce the number of invasive procedures performed in Hong Kong. Target groups were identified, including pregnant women of young maternal age, spontaneous conception, and successful previous pregnancies. Providing quality genetic counseling for those considering NIPT usage to ensure responsible and informed patient decisions is essential as well. Further qualitative studies should be carried out to identify and evaluate other patient characteristics that may affect NIPT usage amongst Hong Kong pregnant women, to observe whether certain patient characteristics could play a greater role in influencing NIPT usage.

## **The Most Knowledgeable Doctor on Earth**

Athena So, Janet Tsui, Nigel Pak, Heiman Kwok, Cynthia Lam, Jeffrey Yu

### **Abstract**

**Background:** In Hong Kong, there is an acute shortage of doctors with only 1.8 doctors for every 1000 patients. Doctors are overworked and spend little time interacting with patients, resulting in a lack of holistic care. But artificial intelligence will be able to make better use of data to improve the diagnosis of a doctor. The goal is to extend the intellectual capabilities of the doctor and provide better care to our patients. However, the automation of cognitive tasks will shift the relationship between doctors and technology. This change may lead to questions about the roles and responsibilities of human doctors in the care of patients. As such, allowing the public to understand and accept the shift created by these clinical decision support systems (CDSS) is crucial.

**Objective:** The aim is video show our vision of the future of healthcare through the impact of the CDSS in the future. With a comparison of the past, present and future of healthcare through pre-historical, current and healthcare with CDSS, we aim to highlight the possible

misconceptions or differences of the CDSS and to clarify what the CDSS encompasses and is, an assistive tool and enhancement to the doctor. This is in preparation for the public's acceptance of the CDSS. We also aim to introduce the possible points of misuse and provide a model usage of the CDSS, as well as informing them of the necessary precautions so future medical professionals present at the conference can be better prepared for the future.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC PAPER AND MOVIE COMPETITION – INDIA

### MEDICAL CARE: TODAY, TOMORROW

Directors of Authors: Shivangi Mangal, Sonali Jain, Navita Jain

#### **Abstract**

**Background:** The future is full of new possibilities. The advancement in the dynamic field of healthcare is like a rollercoaster that only goes up. We envision a future where patients are the first priority, technology is extremely advanced, medical education is revolutionized and man has become even more invincible in front of the multitudes of disorders and diseases that cripple his life today.

**Objective:** Through our short scientific clip, we try to present our current medical practice and the shortcomings in it and then contrast it with what the future may unfurl.

We feature-

1. '**Medicard**'-A universally accepted digital card made since birth that stores the history of drugs, medical assistance, invasive procedures, allergies etc. of a person and bypasses the hassle currently created by manual forms.
2. '**IntrospeX**' -A high-tech device that gives a full body MRI, CT, X-ray, electrolyte levels, all together and within seconds, a diagnostic boon during medical emergencies.
3. '**O-Labs**' -Today, while people still wait all their lives for a matching organ donor, the future of our dreams will have ubiquitous artificial organ generation in labs, not only in the first world, but also in the third world countries.

4. **'HoloCrux'** -Although it's said that 'the dead teach the living', but we foresee a future where simulation and holograms will assist the medical students of tomorrow to become more competent doctors.

We hope that the world tomorrow will be a happier and a healthier place to live in.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC PAPER AND MOVIE COMPETITION – INDONESIA

### **The Safety of using Liposomal Doxorubicin in Combination with Trastuzumab for the Treatment of HER-2 overexpressing Breast Cancer: A Systematic Review**

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#### **Abstract**

**Introduction:** Breast cancer occurs in 124.8 and causes 21.9 deaths per 100,000 women every year. HER-2 is a growth receptor, that when overexpressed can cause increased proliferation of cancer cells. Current treatments for breast cancer include Trastuzumab and Doxorubicin, both of which are known to be effective. However, the administration of trastuzumab and doxorubicin are associated with lethal cardiotoxicity, and their combination has been heavily discouraged. Liposomal drug delivery is a recent technological advance that allows a drug to be delivered to its incumbent site and reduces systemic distribution, reducing systemic side effects. The purpose of this study is to evaluate the safety of using liposomal doxorubicin in combination with trastuzumab in patients with HER-2 overexpressing breast cancer.

**Methods:** Search engines PubMed and Google Scholar were used to systematically search for prospective trials that assess the cardiac function in HER-2 overexpressing breast cancer patients undergoing treatment with a combination of liposomal doxorubicin and trastuzumab. Inclusion criteria were used to filter the abstracts and full texts in assessing the eligibility of the trials. The search was limited to trials written in English and published in the last 10 years.

Changes in left ventricle ejection fraction (LVEF) were extracted from each study to assess cardiotoxicity in patients.

### **Results:**

Four clinical trials were selected based on inclusion criteria. LVEF values were measured using either Multi Gated Acquisition (MUGA) scan or echocardiography. In the studies by Cortes, et al. (2009) and Chia, et al. (2006), the decrease of LVEF from baseline to post-treatment was 3% (from 63% to 60%). Martin, et al. (2011) reported a decrease of 3.6 % (from 63.5% to 59.9%), and Stickeler, et al. (2009), of 3.4 % (from 66.1% to 62.7%). These values were compared to a trial conducted by Slamon, et al. (2001) which used non liposomal doxorubicin in combination with trastuzumab.

### **Discussion:**

The fall in median LVEF values from baseline to post-treatment was negligible and asymptomatic in all four studies. The treatment gave good response in all four trials. All studies showed reduced cardiotoxicity as compared to a previous study by Slamon, et al. (2001), which had 27% of its patients experiencing life threatening cardiotoxicity. This review gives hope for future research in the application of liposomal technology in other chemotherapeutic drugs.

### **Conclusion:**

Liposomal doxorubicin with trastuzumab is an effective treatment for HER-2 positive breast cancer patients with reduced cardiotoxicity that are consistent with reduced systemic distribution.

## **The Future of Health Care Brawijaya**

Nafisa Naaz Nisha, Priscilla Christina Natan

### **Abstract**

**Background:** Today, it is widely understood that the health care system suffers from low quality and high medical error rates. Measures of the quality of care as a return on expenses and the incidence medical errors depict a severely underperforming system despite the expansion of medical knowledge and the use of increasingly sophisticated technology. As an example in Indonesia, we always have to wait for a long time to get a medical service such as blood test or just check-in up to the doctor.

Our healthcare system has to dramatically improved by establishing a high-efficiency system performing large- scale repetitive tasks such as screening tests, inoculations, and generic health care. We suggest that an important step toward relieving this medical problem is to create our own personal health care device. This device will be able to check your vital sign using its accessories that coming together with it. And it can be used to test your uric acid, cholesterol, and blood sugar rate. This device also directly connected to the doctor, so the doctor can maintaining the health status of the patient. And if the patient have abnormalities, the doctor can suggest them what they should do and whether they need to come to the doctor or not.

Since the current use of technology right now is spreading everywhere, we believe that people nowadays will not having much difficulties in operating it. And since the device has multifunction, easy to use, mobile, and doesn't cost a lot, we sure that it will adversely affect the ability of people in urban area to improves their quality of life and to provide either individual or prevention/population services.

**Objective:** The targets that we want to archive is for people in urban area. Because from what we see right now, a lot of people are busy working and doesn't have enough time to take care about their parents all day long. And usually in a lot of cases, the old people are weak and doesn't have energy to go to the laboratory or hospital just to maintaining their health status and control to the doctor. And this medical technologies benefit the lives of people in many ways. Through the use of such technologies, people can live healthier, more productive and independent lives. Many individuals who previously may have been chronically ill, disabled, or suffering chronic pain can now look forward to leading normal or close-to- normal lives. Improving quality of life is one of the main benefits of integrating new innovations into medicine. Medical technologies like checking vital signs, better monitoring systems, and more comfortable scanning equipment are allowing patients to spend less time in recovery and more time enjoying a healthy life.



## SCIENTIFIC PAPER AND MOVIE COMPETITION – JAPAN

### **Lack of Knowledge and Anxiety for Safety: Japanese People's Concern About induced Pluripotent Stem Cells and Our Responsibility as Medical Personnel in the Future**

Keisuke Naito<sup>1</sup>, Hanako Miyahara<sup>1</sup>, Shio Yamano<sup>1</sup>, Akiko Tanaka<sup>2</sup>, Maaya Yamada<sup>3</sup>, Haruka Yamamoto<sup>4</sup>, Natsuki Hashiba<sup>4</sup>

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#### **Abstract**

**Background:** In 2014, the world's first clinical trial transplanting induced pluripotent stem (iPS) cells-derived tissue into wet age-related macular degeneration (AMD) patient was conducted in Japan. Since its establishment in 2007 by Dr. Yamanaka, iPS cells has drawn many people's attention as well as expectation especially of patients and it's stirred lots of movements including basic research, clinical application, establishment of iPS cell bank and legislation. However, there're still many hurdles to overcome so that iPS cells can be used in a hospital. The problems include the issues of high cost, time, safety, arranging the environment, the evaluation based on regulatory science, and ethics.

The purpose of this research is to recognize what are issues on debate and how domestic people feel about those, and to discuss what is needed as a nation, as a medical advisor, and as a human being to cope with these current issues.

**Key findings:** Following things are what we found. First, general people seemed not to know how iPS cells are used other than organ regeneration, and have some misunderstandings as well as too much expectation about iPS cells. Second, people including medical students and personnel expressed anxiety against clinical application of iPS cells. Third, there were bioethical issues not being widely known enough and discussed.

**Methodology used:** We conducted this research by reviewing literatures, interviewing some experts of iPS cells research and sending an online questionnaire to Japanese people from

various backgrounds. Then we performed statistical analysis of the results of the questionnaire.

**Scope of research and areas for future research:** Our questionnaire could reveal some parts of the knowledge and thoughts people in Japan have. However, there are still room for further study to discover those at a more precise and deeper level. In addition, we could follow change in Japanese population by keeping survey every few years.

### **Everyone Can GO Everywhere -Domo Arigato, Mr. Roboto-**

Yuki Okuno<sup>1</sup>, Azusa Sako<sup>1</sup>, Anna Kawano<sup>1</sup>, Yumi Inaba<sup>2</sup>, Mami Hakoda<sup>3</sup>, Kengo Kawai<sup>4</sup>

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#### **Abstract**

**Background:** Many people can't walk because of various diseases such as amyotrophic lateral sclerosis, spinal muscular atrophy, and muscular dystrophy. Furthermore, the number of elderly people who need care has been increasing and it's becoming tough for caregivers because Japan has lower birthrate and aging population. Many patients give up walking by their own legs. They need improvement in function of body and physiology. Caregivers need reduction of workloads. One robot may solve those problems. That is HAL (Hybrid Assistive Limb).

HAL is a robot that connects "human" and "machine". Signals sent from the brain to muscles leak on the skin surface. HAL reads those signals and recognizes what sorts of motions the wearer intends. When HAL has appropriately assisted the motions of "walking", the feeling "I can walk!" is fed back to the brain. Thus, HAL is the only robot that can teach the brain how to move limbs. In this way, patients will have dreams and hopes by using it.

In 2014, Japanese proposition was adopted as a safety standard of support robot by international organization for standardization (ISO).

We expect this safe technology will spread all over the world and enable everyone to walk in the future.

**Objective:** We will inform everyone that we can realize the bright future with Japanese technological innovations, such as HAL.



## SCIENTIFIC PAPER AND MOVIE COMPETITION – SOUTH KOREA

### **Telemedicine: A Step-up for Future Medical Care**

Lee Soo Lim<sup>1</sup>, Kim Ha Rim<sup>2</sup>, Park Jin Sol<sup>3</sup>, Shin Jae Bin<sup>4</sup>, Kim Han Sea<sup>5</sup>, Lee Seung Eun<sup>6</sup>, Seo Ji Won<sup>7</sup>, Lee Ho Jae<sup>5</sup>

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#### **Abstract**

**Background and Introduction including research purpose:** The change in demographics is bringing out new problems such as increased diseases burden and subsequent increase of medical expenses. However, the increased demand for medical care seems to be partly met in that there exists huge gap in medical accessibility.

**Key findings:** In our study, results proved the existence of gap between the capital and other part of Korea in the number of hospital, doctors and EQ-5D. To solve the inequality problem, telemedicine was suggested. Telemedicine will be effective in Korea in that Korea possesses infrastructure for telemedicine and is acceptable for new technologies. Telemedicine is also expected to solve the inequality issue in terms of medical services and costs. Telemedicine is proven to work on chronic diseases, which is also expected to lower the burden of chronic disease in Korea.

**Methodology used:** To analyze the situation, we have categorized Korea into 16 provinces, including 228 districts in total. 2014 Statistics of the Ministry of Health Welfare of Korea was used. As criteria to digitize medical condition of each district, number of hospitals and clinics per 10,000 inhabitants, doctors per 1,000 inhabitants and EQ-5D to measure general satisfaction of health outcome were used. T-test was performed in each criterion by SPSS.

**Research scope and future research recommendations:** For the adoption of telemedicine, favorable legal environment should first be constructed. After adoption, telemedicine should expand its influence from disease care to general health care.



## **Present from Korea**

Eunbi Jang, Jung Jiyeon, Seonjin Choi, Shin Yoori, Lim Heeye, Heayun Yoon, Seoyoung Choi

### **Abstract**

At a wild party, a man knocks back his drink and stands up. Suddenly, he stumbles and collapses, clutching his chest, face twisted with pain. (Patient's POV) They are panicking, shouting and while the distant ambulance was passing-by. The man blacks-out. The man wakes up at a hospital. A doctor tests him, and tells him that his liver function test results came up abnormal, so much that he needs liver implant. The doctor tells him that South Korea has the best experience and technology for this kind of surgery and suggests remote robotic surgery. The patient agrees. The doctor and the patient sit at a conference table and put on special glasses. And the Korean surgeon responsible for the remote surgery appears in their vision as if he is really sitting at the table with them. She introduced herself and they discuss the patient's test results and the specifics for the surgery. At the day of the operation, the screen is split into two. One side shows the robotic arms performing the actual surgery on the patient, the other shows the Korean doctor directing the robot arms.

The patient wakes up from anesthetics, and the surgery is pronounced to have been successful. The patient expresses his thanks and is discharged. Though procedure of treatment may evolve, the act of such treatment is solely up to man' appears on screen. The man is drinking again. The local doctor is passing by and sees him. She berates him for not taking care of himself.



2016 EAMSC in Taipei, Taiwan

## **SCIENTIFIC PAPER AND MOVIE COMPETITION – MALAYSIA**

### **The Savior: Technology**

Lim Qiu Yip, Cheong Yik Yin

#### **Objectives:**

1. To raise the awareness of organ trafficking.
2. To understand that technology increase quality of life.

3. To understand the current situation of demand and supply of organs for transplantation.

**Background:** Organ trafficking has become a serious problem globally, due to shortage of organ donor and compatible organ available. These organs from the black market, however, are acquired through immoral and inhumane ways. In this video, we hope encourage more people to sign up as an organ donor, at the same time let the community realize how technology in the future manage to provide organ needy patients their organs, thus restore humanity, in a sense that there will be no more kidnapping for organ trafficking.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC PAPER AND MOVIE COMPETITION – MONGOLIA

### **Effects of cold stress on female rats: Perspective of future medical care in Mongolia**

Experimental study

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### **Abstract**

**Introduction:** Medical innovations can seem so futuristic that some would call them miracles. From paralyzed patients controlling robotic arms to researchers who grow new body parts, the medical world is fast changing. In the future, greater miracles will be discovered but these advanced technologies can't affect our cold weather (-40°C) situation anyway. In this cold climate we analyzed the affects it may have on females and the reproductive system. The

study demonstrated cold temperatures causes stress and has a negative effect on the reproductive system, if in the future it is confirmed by further studies this will change how medical care may be given to prevent exposure to cold. Purpose is to investigate cold stress effect on female rat.

**Key findings:** Cold stress, female, rat, reproductive system, hormones

**Methodology:** This is an animal-based experimental study.

**Scope of research and areas for future research:** Cold temperature causes stress, this has an effect on weight, hormonal changes, miscarriage, premature birth, polycystic ovarian syndrome, malignancy, period irregularity leading to infertility also fetal growth suppression which is seen in this study. Our country has a similar climate, therefore our future medical care should be directed towards preventing the mentioned diseases. In the future, maybe we can determine cancer marker in rats depending on cold. Therefore future cold stress study has to deeply concentrate on histopathophysiology.

## **The Reflection**

Film Authors: Anudari.S, Badamsuren.B, Nomin-Erdene.D, Battulga.G, Boldbaatar.Kh

Regional Chairperson: Anujin Batbold

Executive Board Director: Anudari Serjmyadag

## **Abstract**

**Objective:** What if Doctor-Patient communication changes due to technological development.

Background: Kevin is an enthusiastic doctor who sees patients on daily basis. His work method includes talking closely to the patient to really understand their situation and deals with the problem with care and love. But one day, an inevitable change knocks on Kevin's door. The hospital where Kevin works is transferring all of the patient data to an online network. Although this step in technology has many great advantages such as speeding up the process of information collection and organization, there are important disadvantages to be dealt with. A key disadvantage is that it excludes the relationship between doctor and patient. Doctor-patient has always been the most fundamental parts of Medicine, if not the origin of Medicine itself. So when Kevin goes home and sleeps with the new changes on his mind, his consciousness warms about the potential loss of interaction between patient and doctor in the dream. When Kevin wakes up, he understands and values this aspect and strives to keep it in his career.

Through the use of such medical technologies, people can live healthier, more productive and independent lives. But we always need to think that any improvements and developments are leading to what kind of outcomes. If we lose an important connection doctor-patient then our patient can be the fully healthy by physical and mental? Therefore, we need to make the point that relying too much on technology is harmful if doctors and medical administrations don't care about side effects of overheating development.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC PAPER AND MOVIE COMPETITION – SINGAPORE

### Evaluating a rapid prototyping approach towards deploying the Singapore

### Cancer Network (SCAN) guidelines as an online and mobile platform

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**Keywords:** Oncology, Clinical Practice Guidelines, Mobile healthcare, Website

#### **Abstract**

**Background:** Healthcare systems globally are experiencing greater demand for resources, especially with aging populations. Singapore is no exception. A more educated population challenges the asymmetry of knowledge between patients and healthcare professionals. Finally, harmonization of healthcare standards upon best practices represents a key goal.

**Study purpose:** This study aims to address both information asymmetry and harmonization of therapeutics locally in the field of cancer. Drawing upon the recently-published national Singapore Cancer Network (SCAN) guidelines, this study aims to (1) develop a platform

delivering clinical practice guideline information for both healthcare professionals and patients, (2) continually modify the platform using rapid prototyping, and (3) iteratively evaluate platforms as a means of increasing accessibility to cancer guidance, using focus group feedback.

**Methodology:** Relevant guideline information was converted into appropriate formats for patients and professionals. A website integrating these was deployed for desktop and mobile access and is available at <http://oncology.sg>. A rapid prototyping approach was utilized, with deployment of a minimum viable product followed by utilization of a multilayer focus group system to repeatedly modify the website based on analyzed data from surveyed oncologists. A Likert-type survey for focus groups was designed to gauge oncologists' sentiments towards website usability, content and their overall experience using the website. Poorly-performing Likert items were considered in the modification of the website. Wilcoxon Rank-Sum testing was applied to determine response differences between the 2 unmatched focus groups and therefore the impact of the modifications. Ongoing rapid prototyping is undertaken with the goal of eventual release in end December 2015.

**Results:** Focus Group 1 reported largely satisfactory website experience, with the majority falling within the "Agree" arm for 31/40 Likert items. As the majority (66.67%) disagreed with the statement "I am able to find specific information I need quickly", modifications were made such that the main page displayed hyperlinks to subdivided sections instead of full guidelines. Wilcoxon Rank-Sum testing post-modification showed statistically significant improvement in not only the above statement but also perceived organization of information and overall satisfaction. At the current prototype (version 0.2), 54.55% of surveyed oncologists indicated likelihood to use the website frequently. 54.55% indicated that they would recommend the website to patients, representing the need to continue improvement.

**Conclusion:** Having developed a successful rapid prototyping workflow, integration of SCAN into a website can reduce information asymmetry and harmonize patient management. Such evaluation will expand to patient and caregiver cohorts to test the platform's utility to laymen without medical knowledge.

## **2050: Returning Humanity to Medicine**

Koo Jing Yuan, Ischelle (Ms.), Tan Xin Ning, Ade (Ms.)

**Objective:** To envision, from a patient's perspective, the experience of medical care in 2050 based on the trajectory of medical advancement, and to utilize 21st Century technology to return humanity to the practice of medicine.

**Background:** From 3D printing and humanoid robots to artificial intelligence (AI) and telemedicine, medical technology has undoubtedly brought about positive, revolutionary changes in the global healthcare scene. By 2050, we envision a heavy dependence on such efficient and effective breakthroughs. These discoveries, though significant, may inevitably result in the gradual humanization of the practice of medicine.

**Abstract:** Our video portrays a parallel between the healthcare system today and that in 2050, contrasting healthcare efficiency. We highlight, from patients' perspective, the benefits various medical technology bring, including telemedicine, genomically personalized medicine, body sensors, 3D organ printing, AI in medical decision-making and longevity through cryonics.

Technology undeniably has amazing potential, but with heavy dependence, doctors of tomorrow are trained to become medical technicians instead of physicians, often interpreting devices but forgetting to relate to the actual human body. Medicine is both an art and a science, and the art of it lies in listening, relating, and experiencing their pain, fears and desires. This facilitates understanding, diagnosis and decisions, and only after, does interpreting data become useful. Distancing the doctor-patient relationship via technology removes this connection.

Whilst technology could potentially alienate, we envision technology in the twenty-first century to bring humanity back to medicine. The humanitarian will to alleviate suffering and protect human dignity is the goal, and the solution. Our video concludes with a 2050 vision of retaining the human touch whilst incorporating the use of technology; using technology only as a means rather than our solution. Technology is neither the problem of dehumanization, nor the solution to our goal. We, humans, are the problem. But with our rich imagination and diverse humanity, we can also be the solution. Our video demonstrates, why and how in the face of material progress, we must remain the masters, and not the slaves of 2050 healthcare.



## SCIENTIFIC PAPER AND MOVIE COMPETITION – TAIWAN

### **Revolution Medicine-Smartphones Break Down the Barrier of Space and Time to Reach Those in Needs**

Huang Yi-Hsuan, Chin Kang-Wan

#### **Abstract**

**Background:** The unbalanced distribution of health workers in countries is a worldwide problem. Although Taiwan's government has developed telemedicine care system for some remote areas to improve the issue of health personnel shortage, many rural residents cannot have adequate healthcare due to high expense of operating the telemedicine care system. On the other hand, the growing aging population is a phenomenon in Taiwan. Our government will face the challenge of the higher and higher healthcare expenses.

**Objective:** In this research, we are going to find an alternative solution for medical care for the issues of health personnel shortage in remote areas and the healthcare for the elderly in Taiwan.

**Methods:** Literature about smartphones in medical care were conducted by searching databases including PubMed and Scholar Google. Based on the review, those innovative smartphone attachment devices and apps which mentioned in the literatures were searched by Google to investigate if they are available in the market. Furthermore, smartphone-based healthcare technologies were classified according to their functions. Finally, an interview with Dr. Wu, a Taiwanese otolaryngologist who created an innovative smartphone-based Otorhinoendoscope, was performed to present a vivid picture about the future of medical care in Taiwan.

**Results:** It is amazing that the advanced electronic technology has made smartphones into powerful tools for medical care. The smartphone offers a platform where doctors can obtain the medical data, images of patients and therapeutic advice to make quick and accurate diagnosis. Besides, it monitors the elderly and patients with chronic diseases to help them live independently and get acute care more efficiently.



**Conclusion:** Our study suggests strongly that the smartphone enables to fill gaps in access to healthcare solutions for rural residents, the elderly and patients with chronic diseases. We believe that the smartphone will play a vital role in the practice of medical care in the near future.

## **Distance**

Lin Wei-Chen, Ting Po-Tzun

### **Abstract**

**Background:** Look around and you will find everyone in our everyday life using all kinds of electronic devices. We became more and more attached to technology because electronic devices and internet also, help us manage our daily tasks more conveniently. It is no news that modern technology has changed medicine and makes doctors' work easier and diagnosis more accurate. But try and think about what doctors' work will be like in 20 years. Will technology and internet be doctors' best helper? Or eventually doctors will be substituted by computers and applications? That is where our inspiration came from. We imagine a doctor in 20 years, and try to picture the difficulties he will face with the storm of future technology turning his world upside down.

**Objective:** What does it mean to be a doctor? What is the core value of being a doctor? What characteristics make a doctor so unique and important from time to time? These are the questions we want audience to think about when and after watching our movie. We wonder what about the meaning of being doctors if one day computers can substitute us. Throughout our three- minute film, we repeatedly tried to find what makes a doctor so great. Is it his or hers skills? Is it the medical equipment he or she has? Or is there other more significant features?



## SCIENTIFIC PAPER AND MOVIE COMPETITION – THAILAND

### **Medical information sharing by instant messaging: opinions and behaviors**

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#### **Abstract**

**Backgrounds:** In Thailand, Instant messaging (IM) has recently become very popular for sending medical information. It has been used much often than more secured teleconsultation due to its easily accessible. However, there is limited study to explore behavior in medical information sharing among physicians in Thailand. Moreover, there is no study to compare opinion regarding appropriateness of those behaviors between physicians against patients' opinion.

**Objectives:** To explore discrepancies in opinion, between physicians and patients, toward appropriateness of sending medical information via IM.

**Methods:** Questionnaire was composed of 12 clinical situations which were grouped according to GMC and HIPAA guideline into 3 levels of risk for breaching of confidentiality (high, intermediate, low). Ninety-seven patients and eighty-three physicians from a tertiary university hospital in Bangkok were asked to rate their opinion for appropriateness of sending a range of patients' information. Behaviors in using IM for medical-related issues were inquired among physicians. Descriptive statistic methods and Chi-square test were applied using SPSS software.

**Results:** Among studied physicians, 95.5% admitted using IM application for consultation, 92.4% were using LINE and 65.5% sent medical information to a group chat. With respect to appropriateness of sending information, patients showed less concern compared to physicians for high risk information ( $p \leq 0.05$ ). In contrast, patients expressed more concern in low risk information compared to physicians ( $p \leq 0.05$ ). Level of awareness among physicians was correlated with risk level.

**Conclusions:** Using IM for sharing medical information is very prevalence among new generation physicians. A significant proportion of physicians send information with high risk

of confidentiality breach via IM. Substantial amount of patients express some concern over sending low risk information. Attention should be drawn among physician to be more sensitive to this issue while guidelines and recommendations are truly in need.

**Key words:** Instant messaging, opinion, breach of confidentiality, patient, medical information sharing.

## **Humanistic doctor**

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## **Abstract**

**Background & Objective:** Since the population is expanding every year, the demand for medical development is rising. We hypothesized that medical care will develop to the point that every disease can be cured using medicine and that other aspects of medical care will be overlooked. Most physicians tend to rely on the technological and scientific aspects of medical care to improve quality of care and achieve efficiency. For example, rather than talking to the depressed patients, they would just prescribe strong antidepressants and send the patients away. In other words, patients will be treated as if they were machines with replaceable body parts. However, since the source of problem are likely to be overlooked, patient's sickness are likely to recur, and the deadly cycle will start all over. Consequently, the recurring illness and accumulating drug side-effects are likely to worsen the patient's condition leading to a crisis.

As the result, we believe that more focus should be put on holistic medicine. Holistic medicine considers the whole person including body, mind, spirit and emotions in a treatment. A doctor has to establish open communication with the patients and make sure that it is understandable. Also, mutual respect is significant in terms of honesty, trust and meaningful relationships. And the patient-centered care is another requirement for building the patients' dignity. To meet the humanities, the holistic care is the answer for facilitating the health care system while technologies and medical sciences are being developed.



## SCIENTIFIC PAPER AND MOVIE COMPETITION – PHILIPPINES

### **Welcome to the year 2035!**

Joanna Felicita Adul, Dustin Kaiser Bompat, Justin Legaspi, Aseel Mohamad, Charles Vanhill Raksham, and Mariem Shem Zabaldica

#### **Abstract**

“Welcome to the year 2035” is about the lifetime struggle to improve the healthcare system, and how the past 20 years have been the most gruesome yet rewarding for the Philippines. In this amount of time, our country has found a way to achieve its promised sustainable development goals and has begun to lead our region in technological advancement of the healthcare system without removing the patient-doctor interface. Instead, this innovation has improved the way doctors and patients interact by allowing physicians a better means to educate their patients on certain illnesses and thereby improving patient compliance. This development has also allowed us to improve not only our educational system, but also our approach to the management of patients’ diseases. As such, we have found better ways to diagnose and prognosticate more common ailments, particularly those which have been a universal burden since time immemorial. The healthcare system has grown to allow both private and public sectors to unite in the long-standing fight to provide healthcare for all; at times, with the help of our international affiliates. Professional, progressive and with great promise, certainly, we have come a long way. There’s a long way to go and much more to improve in the years to come. We want to show that even if we become technologically advanced, the traditional practice of medicine which involves genuine observational skills and years of education will still be necessary in the years to come as these ideas are what direct the use of technology



## SCIENTIFIC POSTER COMPETITION – AUSTRALIA

### **Effectiveness of mobile phone-based interventions in promoting sun-protective behaviors - a systematic review.**

Park Seong Jun (Esther)<sup>1</sup>, Wang Andrew<sup>2</sup>, Nguyen Gratia<sup>2</sup>, Qin Rebecca<sup>3</sup>, Ong Elaine<sup>4</sup>, Loh Jillien<sup>4</sup>, Narula Chiranjeev<sup>3</sup>, Elzerie De Jager<sup>5</sup>, Jamieson Nathan<sup>6</sup>, Perera Nadia<sup>6</sup>

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#### **Abstract**

**Background:** The ubiquitous use of mobile devices today has prompted the exploration of telemedicine as a practical tool for health promotion. Skin cancers are a highly significant public health burden in Australia and engaging in sun-protective behaviors significantly reduces the risk of skin cancers. There may be a role for mobile phone-based public health campaigns encouraging behavioural changes.

**Aims & Objectives:** We aimed to assess the efficacy of mobile phone-based interventions as a health promotion tool for sun-protective behaviors.

**Methodology:** A systematic review was conducted on randomized controlled trials (RCTs) involving mobile phone-based interventions that encouraged sun-protective behaviors. The Cochrane, MEDLINE, EMBASE, PubMed, Scopus, and CINAHL databases were searched for RCTs in English available from January 2005 to October 2015. Reference lists of relevant articles were also assessed. Two reviewers independently extracted relevant data using a standardized form and assessed the methodological quality of each study using the Cochrane Risk of Bias tool.

**Key findings:** Six trials met the inclusion criteria. Three featured text messaging, one telephone counselling, and two mobile application interventions. Five of these studies found a statistically significant improvement in sun-protective behaviors in their intervention arms compared to controls. Most had low selection, reporting and attrition biases, but an unclear or high performance and detection biases due to inherent challenges in blinding participants.

**Research scope and recommendations for future research:** Despite the limited number of studies and the lack of homogeneity between them, our results suggest that mobile-based interventions show promise as effective health promotion tools for improving sun-protective behaviors. Further studies examining their role are warranted.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – CHINA

### **Bilirubin: A Possible Biomarker for Lung Cancer Screening for Smokers**

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#### **Abstract**

Lung cancer is currently a predominant cause of the cancer-related mortality worldwide while smoking is a major epidemiological cause of it, and the situation is especially severe in China. Therefore, it is urgent to find a simple and economic biomarker for lung cancer screening especially for smokers. Bilirubin, as the endogenous antioxidant and anti-inflammatory molecule, reflects the risk of respiratory diseases, including lung cancer. A few studies have demonstrated that there is a negative correlation between serum bilirubin levels and the risk of lung cancer. Hence, in this work, we want to assess its ability in identifying smokers with particularly high risk of lung cancer.

We collected relevant data from the newest researches globally, including case-control studies and cohort studies. In our review, it is shown that smoking has a profound cumulative influence on the relationship between bilirubin levels and lung cancer, which means heavy smokers with low bilirubin levels are much more likely to develop lung cancer.

Currently, the incentives to adopt prevention behaviors for current smokers are low due to a lack of awareness of disease risk concerned with smoking. Fortunately, serum bilirubin levels intuitively helps predict the risk of developing lung cancer and establishes the necessity of

prevention behaviors for smokers, thus providing stronger motivation for target groups to cease unhealthy lifestyle with an alteration in risk conception.

Hopefully this review can serve as a guide for further researches about detailed mechanism to maximize the clinical utility of bilirubin in the future.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – HONG KONG

### **Effects of Novel Telemedicine Application “TeleStroke” on Administration of tPA in Acute Stroke Patients**

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Corresponding Regional Chairperson: Joyce Kwong

Corresponding Director of Author: Corey Nelson

Asian Medical Students' Association Hong Kong

#### **Abstract**

Stroke is among the leading causes of death in Hong Kong, measuring 4th highest in 2014. While stroke presents a major health burden, survival rates can be significantly enhanced if tissue Plasminogen Activator (tPA) is administered within an hour of hospital admission. In reality, however, treatment is often delayed due to the unavailability of qualified on-site consultants during non-working hours (NWH) to make a proper evaluation within the crucial intervention time. With the development of telemedicine over the past decade, technology on commonly used tablets is now available, enabling doctors to remotely examine patient conditions. To address the time-sensitive nature of stroke evaluation and treatment, the Prince of Wales Hospital (PWH) Neurology Department developed an innovative mobile application – “TeleStroke” – that allows consultants to provide instantaneous evaluation and advice during NWH. The current study seeks to determine the effect of the introduction of “TeleStroke” on administration of time-sensitive treatments, such as tPA, to evaluate the extent of impact of this technology. We found that there was a significant increase in the successful administration of

tPA from the beginning of “TeleStroke” administration in 2012 to 2015, and also an increase in the use of “TeleStroke” during NWH. However, there remains a number of cases where “TeleStroke” was not used during NWH, and thus is an area for possible improvement. Given the overall success of “TeleStroke”, further exploration should be done on whether this same model can be applied to other time-sensitive diseases.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – INDONESIA

### **Efficacy of Marrow-derived Mesenchymal Stem Cell-based Therapy Compared with Conservative Treatment Post Ischemic Stroke: A Systematic Review**

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#### **Abstract**

**Introduction:** The stem cell approach may be key to the future medical science and conditions that have no solution before, including post-ischemic stroke rehabilitation treatment, a prevalent condition in Indonesia. The authors aim to analyze the available clinical trials to date and examine the efficacy of marrow-derived mesenchymal stem cell compared to conservative treatment post ischemic stroke.

**Key Findings:** The mean of combined Modified Barthel Index in 6 month follow up increased from 34.44 to 69.41 with stem cell therapy, as opposed to an increase from 30.33 to 52.96 with conservative treatment. The Hasselblad-Hedges odds ratio of the three studies are 9669.192, 3.615, and 11.5133, with standardized mean difference confidence intervals of 3.754 - 6.386, -0.007 – 1.427 and 0.812 - 1.888 respectively. We calculated that out of the three studies, two studies show statistically significant benefit gained from MSC therapy. One study showed radiologic indication of increased neural plasticity. We conclude that although current clinical trials show promise in stem cell therapy, larger and more thorough research is needed.



**Methods:** We systematically reviewed 3 clinical trials conducted in 2005-2013, with 68 total subjects with 51 patients in conservative treatment group and 17 patients in stem cell therapy group, using Modified Barthel Index as main outcome measure.

**Scope of research and areas for future research:** Our study is a systematic review of the efficacy of MSCs over conventional treatment. We suggest future research on implementation, feasibility, and further clinical trials.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – SOUTH KOREA

### **Introduction of non-invasive thyroid cancer diagnosis using miRNA analysis for Korean thyroid cancer diagnosis guideline**

Minho Lee<sup>1</sup>, Sangjoon Suh<sup>2</sup>, Eunjoo Lee<sup>3</sup>, Sooyeon On<sup>3</sup>, Yerim Kim<sup>4</sup>, Minjeong Kim<sup>4</sup>, Jeong-eun Kim<sup>4</sup>, Minho Yang<sup>5</sup>, Taewook Kim<sup>6</sup>

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#### **Abstract**

**Background and Introduction including research purpose:** In Korea, there are dramatic increasing events in thyroid cancer. At first, many experts have focused on the personal problems such as the low quality of life. However, this also causes many social problems such as the deficit in the Korean national health insurance. Therefore, Korean government has designed the new health care program named as “Regular Check-up Program” in order to increase the rate of early detection of thyroid cancer to solve the problems related to individual patient and Korean society. Up to now, many physicians prefer to use the invasive techniques such as the radioisotope scan or fine needle aspirations to decide its malignancy when a nodule is detected by ultrasonography scan, but this can cause a patient to feel uncomfortable. This study suggests the guideline using a non-invasive diagnosis tool: microRNA technique, which is faster technology to diagnose malignancy of a nodule.

**Key findings:** In Korea, almost 90% of thyroid cancer is diagnosed as the type of papillary thyroid cancer. The molecular mechanism of thyroid cancer is not clearly understood. Even though there are many molecular studies used for thyroid cancer diagnosis, microRNA technique is used for this research. Papillary thyroid cancer is accompanied by microRNA 222 that is relatively increased in papillary thyroid cancer patients' peripheral blood. By detecting increase of microRNA 222 in blood stream, physicians can diagnosis papillary thyroid cancer.

**Methodology used:** The meta-analysis study is used for this research by using the keywords; thyroid cancer, diagnostic tools, microRNA analysis, Korean thyroid cancer diagnosis based on the National health survey database.

**Research scope and future research recommendations:** New guideline for thyroid cancer diagnosis using microRNA in peripheral blood is suggested by this study. The patients need to be categorized based on our new guideline. After analyzing the data of patients, the expected economic and social problems are going to be discussed.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – MALAYSIA

### NANOSPONGES AND ITS THERAPEUTIC APPLICATION IN HEALTHCARE

Brenda Lim Thean I<sup>1</sup>, Aravindh Ramalingam<sup>1</sup>, Jonathan Chua<sup>1</sup>, Chong Jia Hui<sup>1</sup>

<sup>1</sup> International Medical University (IMU), Malaysia.

#### **Abstract**

This poster is a literature review based on nano-sized sponge particles known as Nanosponges. As the name suggests, these are extremely small sponge-like molecular particles, which are capable of absorbing toxins released by bacteria and viruses in our body systems. It is an application of nanotechnology in the field of medicine that aids in drug delivery and toxicity removal from our body in an effective and specific manner. Whilst nanotechnology is the area in which our study is based on, finding a therapeutic value in nanotechnology advancement and

its relation to healthcare stood as a hindrance in our approach to better healthcare. Nanotechnology, thus nanomedicine is a slow but booming research area where the latest applications, such as nanobots and nanosponges, have gone only through laboratory trials. Because of its complexity, the full benefits of nanotechnology are yet to be achieved. There are already many existing applications of nanomedicine in terms of industrial uses but few are applicable in healthcare today, such as nano-silver, nanosomes and several other products used in the cosmetic industry. One such potential future application is Nanosponge. The purpose of this study is to understand the uses and manipulation of nanosponges in the healthcare industry in striving for a disease free future.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – MONGOLIA

### **Cystatin C for early diagnostic marker of diabetic nephropathy: Case control study**

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#### **Abstract**

**Introduction:** Medical care in the future, which refers to decreasing incidence and prolonging human age by perfect treatment, prevention, and early detection of diseases.

The global incidence of type 2 diabetes continues to rise due to the increase in obesity and the aging population. In 2000 the prevalence of diabetes was estimated to be 171 million (2.8%) worldwide. It is projected that by 2030, 366 million (4.4%) people worldwide will have diabetes [1, 2]. Because of increasing of diabetes, diabetic nephropathy (DN) is being higher, which is the leading cause of end stage renal disease in the world. Diabetic nephropathy is a

major cause of morbidity and mortality among adults with diabetes mellitus. Clinical management and therapeutic intervention from early stage of DN is a major importance to prevent progression to end stage renal disease.

**Aim:** To determine cystatin c could be used as an early detection of diabetic nephropathy

**Methods:** In the present case control study, we evaluated the level of serum cystatin c and creatinine in 120 people. People are categorized into 4 group.

**Results:** Our study revealed increased level of serum cystatin c in diabetic patients. Serum cystatin c negatively correlated with GFR. Also, it was found that serum cystatin c increased in parallel with the severity of renal disease, poor glycemic control and duration of diabetes.

**Conclusion:** Serum cystatin c measurement might become a useful and accurate noninvasive tool for early detection of diabetic nephropathy.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – TAIWAN

### **The Future of Telemonitoring for Taiwan's Elderly Population: Presenting**

#### **Biopatch as an Example**

Wang Yu-Hsiang, Hsieh Hsuan, Chen Pin-Jui, Chang Shang-Ting

#### **Abstract**

Taiwan is a rapidly aging country with chronic diseases prevailing among elderly people. Planning for a long-term care system is underway. Within the design of this system, techniques involving telemonitoring need to be integrated in order to not only continually monitor patients' health statuses but also reduce hospitalization, lowering the burden on healthcare resources. Our aim is to promote the concept of using smart wearable devices (SWD) for long-term care system and the importance of transforming the healthcare system to focus on prevention instead of therapeutic care.

In this project, we discuss the challenges Taiwan faces in building a better healthcare system and Taiwan's opportunities for developing telemonitoring on a large scale. We introduce a smart wearable device called "Biopatch" as an example to demonstrate the potential and feasibility of telemonitoring techniques. We evaluated the device's functionality, convenience, and mobility via trial testing on two members of the project team.

Given the observations made from trial use, we discuss the advantages of integrating SWD into long-term care system and possible works in the future. Such advancements include the developing of implantable devices, the importance to include patients' subjective statements into telemonitoring, and the integration of continuous telemonitoring of a variety of chronic diseases.

In conclusion, we deem that Taiwan needs to utilize wearable device in the long-term care system to not only lower the financial burden contributing by the aging population but also enhance patients' quality of life.



2016 EAMSC in Taipei, Taiwan

## SCIENTIFIC POSTER COMPETITION – THAILAND

### **Utilization of Health-related mobile phone application using in Thai populations.**

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Phongphisut

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#### **Abstract**

**Introduction:** Health-related applications in this research are programs designed to run on smartphones, allowing users to keep track of their health profile and to gain access to medical resources directly.

According to recent studies, these applications are promising in personal health improvement. However, the data regarding the usage of health-related applications in Thailand are still limited. The results from this study will provide information of the popularity of health-related mobile applications and associated factors.

**Objective:** To determine the prevalence and associated factors of health-related mobile phone application using in Thailand

**Materials and Methods:** A cross-sectional survey was conducted from October to December 2015. Data were collected by standardized electronic questionnaire. Multivariate logistic regression analysis was used to investigate the factors associated with prevalence of health-related application using.

**Results:** The total of 401 participants enrolled into this study, of those 145(36.2%) were male and 256(63.8%) were female.

The prevalence of medical mobile application usage in studied population was 33.42%.

Regarding to the analysis, the most significantly associated factor is application recognizing. Only 131(39.46%) of 332 (82.79%) participants recognizing the applications actually used them. The adjusted OR was 13.40, P-value<0.001, 95% CI 4.07 – 44.17.

**Conclusion:** Accessibility to smartphones is increasing; however, health-related application is still not widely used. Therefore, our research is recommended that it should be promoted in Thai populations and mainly focused on applying to daily life.

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## **PUBLIC POSTER COMPETITION – AUSTRALIA**

### **A Glimpse into the Future**

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Authors: Rebecca Qin, Lorenz Admojo, Khoa Cao, Rachel Ng, Elaine Ong, Jillien Loh

#### **Abstract**

Innovations in technology have facilitated the development of promising new prosthetic devices that have the potential to greatly improve the quality of life of blind individuals. Australia is home to two prominent groups leading the way in testing and implementing the bionic eye, with both approaching the challenge with differing methods and designs.

The secondary stages of human clinical trials in Australia are now well underway. However, as these trials continue, we can expect to be confronted with new challenges that require careful consideration and contemplation. Who are the appropriate candidates for implantation? How do we rehabilitate the patients? What are the potential risks of implanting the device? How much will this cost?

By instituting suitable patient selection criteria and developing extensive methodologies aimed at determining “best candidates” for long-term implantation, we can ensure that the most appropriate patients are selected for the procedure.

Maintaining evaluation of the long-term performance and effectiveness of the technology, alongside continual research into additional improvements and modifications will guarantee that we achieve optimal outcomes and eventually establish these devices as viable therapeutic options.

Our health campaign is designed to illustrate the gradual loss of vision that patients with Retinitis pigmentosa experience. Retinitis pigmentosa is a major cause of inherited blindness, affecting 1.5 million people worldwide. The disease eventually leads to tunnel vision and possibly complete blindness. However, with the advent of the bionic eye, the quality of life for patients could be significantly improved.

Current designs that have been approved for clinical and commercial use overseas have been priced at a costly \$115 000. However, the financial cost of profound vision loss has been determined and is substantial; it has been approximated at costing an upwards of \$2.5 billion annually in Australia alone.

In order to overcome these inevitable challenges and achieve the goal of restoring sight, we need extensive collaboration amongst those in the scientific and medical fields.

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2016 EAMSC in Taipei, Taiwan

## PUBLIC POSTER COMPETITION – CHINA

### Where to find my second liver?

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### Abstract

**Background:** Liver is crucial for metabolism. Recent years, however, China has seen increasing incidence of liver failure, which threatens lives. It is acknowledged that the most advisable therapy of liver failure is liver transplantation but it still faces the problems of immunological rejection and severe source shortage in China. Fortunately, newer technologies applied to liver transplantation bring hope to patients in desperate waiting.



**Objective:** By the attractive poster, we want to enhance public understanding of transplantable liver source in the future and raise awareness of future medicine. The poster introduces three possible sources of implantable liver in the future by showing a story: a hepatopath is seeking for his new liver in a maze which indicates an arduous journey with both challenges and possibility. The first station is organ donation. Though it is the most common source of liver, fewer Chinese are willing to donate their organs because of traditional mindset. An image of angel occurs in the poster in order to promote public acceptance of organ donation and encourage people to become organ donors.

The second is 3D bio-printing. With 3D printing, researchers have succeeded in simulating surgeries, testing the effectiveness of drugs and reconstructing bones. Taking its advantages of personalization, flexibility and high resolution into consideration, 3D bio-printing has great potential in fabricating functional liver, which will be shown through a liver being print in our poster.

The third is about regenerative medicine. IPS cell, the sort of cell with totipotence induced from patients' somatic cells, can be used to clone another transplantable liver without rejection in vitro. Our poster illustrates iPS cell's concept and application by picturing general procedure. Besides, other possible liver source will also appear in the poster.



2016 EAMSC in Taipei, Taiwan

## **PUBLIC POSTER COMPETITION – HONG KONG**

### **Clinical Decision Support System**

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## Abstract

**Background:** Medical knowledge is expanding exponentially. The human mind will soon be (and to a certain extent, already is) overwhelmed by this tsunami of information and data. But an artificial intelligence, driven by ever-improving computing power, will be able to ride this wave and make better use of this plentiful resource. Currently, attempts of out-thinking the doctor's brain come in the form of systems such as IBM Watson, a cognitive computing system which analyzes a database of evidence and formulates treatment options for individual cancer patients. The goal is to extend the intellectual capabilities of the doctor and provide better care. Such technology to assist healthcare practitioners are a welcome sight in the aging population of Hong Kong where the dependents-to- worker ratio is set to double in 30 years. However, the automation of cognitive tasks will shift the relationship between doctors and the technology they had once fully controlled. This change happening behind the scenes may lead to questions about the roles and responsibilities of human doctors in the care of patients. As such, allowing the public to understand and accept the shift created by these clinical decision support systems (CDSS) is crucial.

**Objective:** The aim is to clarify the change in the division of labor between man and machine. Although Clinical Decision Support Systems (CDSS) may replace some (or much) of the cognitive load of healthcare decision-making through its superior computing power, it lacks the emotional, social, spiritual intelligence to communicate with the human patients. The poster's imagery of a doctor standing on top of a platform of binary digits signifies the CDSS being in a supportive yet significant role, and the doctor being the colorful main character being lifted to the top.



## PUBLIC POSTER COMPETITION – INDIA

### ELECTRONIC ASPIRIN

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#### **Abstract**

Where medicine is all about diagnosing, treating and preventing sickness, technology is the practical application of knowledge and skills to find solutions. Undoubtedly we can predict the future of medicine to be very bright, fascinating and hi-tech.

In health care industry, there have come intensive technology inventions that will uniquely help to improve the services rendered to the patients. The advancement in the Health care technology industry will not only just helps in the repair of physical disadvantages but also helps in creation of superhuman powers. One such pillar of health reforming technology based invention is Electronic Aspirin.

The Electronic Aspirin is a patient-powered creative tool that has been made with the help of latest technological aid. Those people who suffer with pro-longed headaches and migraines can get relaxed out of its inconvenience and consequences very easily with this milestone technology creation. The basic mechanism of action of this technology is to stimulate the SPG nerves and block the pain-causing neurotransmitters thereby improving the quality of life of ailing patients to a large extent. After getting approval of treating migraine and cluster headaches in Europe, approval for testing in the U.S. is currently awaited.

The poster proposed to be made on “**MEDICAL CARE IN FUTURE- When medicine and technology meet humanity**” will surely be well depicted by emphasizing on the new medical care technology namely- electronic aspirin. Aim of the poster is to introduce **ELECTRONIC ASPIRIN** to the public. Portraying the present and the probable future status of this technology and putting light on its various positive and negative aspects will not only help promote but also raise awareness about this new medical asset. Creativity and novelty of the poster would finally deal with the objective of enhancing the acceptance of newer technologies by the public.



2016 EAMSC in Taipei, Taiwan

## **PUBLIC POSTER COMPETITION – INDONESIA**

### **The Future Is Mobile**

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### **Abstract**

When people talk about the future of healthcare, most people will immediately picture super robots posing as surgical machines or advanced diagnostic tools that only exist in big hospitals. But to us who live in developing countries, our biggest dream is to have healthcare that can be accessed by anyone even in the most rural areas. What we fail to notice is that the answer is already here. The smartphone! Most people consider their smartphone as the most important piece of technology that they own. It can be seen through the number of smartphone users that keep on skyrocketing. Viewing the statistics, 1.91 billion people worldwide, including 55.4 million of Indonesia's population, are smartphone users. This shows that the smartphone has shifted from being a luxury item, to becoming a basic need and even a form of addiction for some people that compulsively check their phone every once a while. This form of addiction sends a negative message to the society that your smartphone is something that must be avoided, when the whole idea is not about the choice between using it or not, rather the choice to use it right. The way to use it right is by imbuing it with a positive matter like a healthcare application. There are approximately 97.000 mobile health applications that can help you reduce your risk of developing any non-communicable disease by 80% and also help you fight through one. These applications can do the simplest actions like movement and activity tracking, to the more sophisticated actions like blood pressure and glucose monitoring, and non-communicable disease management. In conclusion, we would like to promote the smartphone as the best solution for health issues, as it brings healthcare directly to us and it leads us to our goal, healthcare for all.

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2016 EAMSC in Taipei, Taiwan

## PUBLIC POSTER COMPETITION – JAPAN

### Can iPSC Banks become a pluripotent system?

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### Abstract

**Background:** In 2006, Shinya Yamanaka discovered that mature cells could be reprogrammed as immature cells. This discovery of induced pluripotent stem cells (iPSC) will contribute to transplantation and regenerative medicine. One good example of their potential is the iPSC bank. This bank stores iPSCs from donors in advance. Certainly, it is ideal to use iPSCs from a person when they themselves require transplantation, but creating a specific cell line for a patient is unrealistic. It is a time-consuming and expensive process to maintain the purity and sterility. However, iPSC banks will enable recipients to receive the treatment of transplantation because iPSC lines will be available for donors in advance. Thus, an iPSC bank must be a cost- and time-effective solution.

**Objective:** It will be helpful to create iPSC banks because they will be greatly beneficial to transplantation medicine. Whether cells from donors can be used for recipients can be checked closely in advance. The iPSC lines will be prepared for recipients who would like to receive the treatment of transplantation. However, some hurdles remain to be overcome before iPSC banks can be ready for practical use. For example, the main hurdle is the rejection in transplantation because of the incompatibility of Human Leukocyte Antigens (HLAs). Moreover, we have to find a way to assemble as many cells from donors as possible so that iPSC lines are available for so many recipients as possible. Furthermore, we have ethical problems including informed consent of donors and guidelines which prevent people's genetic information from being leaked. In order to realize an iPSC bank, we have to tackle these challenges. Therefore, we would like to propose measures against these problems and to announce what is being undertaken in Japan for iPSC banks to become of practical use.



2016 EAMSC in Taipei, Taiwan

## **PUBLIC POSTER COMPETITION – SOUTH KOREA**

### **UP CLOSE AND PERSONAL: YOUR BODY**

South Korea Duseong Kim, Eun Kim, Junik Kim, Kyeongil Min, Janghee Seo, Soyeon Im, Dongki Kim

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#### **Abstract**

While seeking for technology related to future medicine, we were fascinated by a modern technology, 'Body-On-a-Chip'. Body-On-a-Chip is a technology which mimics the functions of human organs and simulates the mechanics of those organs through a small chip. The actual physiology of organ systems can be seen through picking a few cells from the organ and placing them in an environment that is similar to their original environment.

This technology aims at the development of new pharmaceuticals. Current new drug production goes through phase 1, 2, and 3 clinical trials that entail a huge amount of investment. However, if Body-On-a-Chip technology is perfected, new drugs can be produced at relatively low costs.

Moreover, there will no longer be meaningless deaths of clinically tested animals. Through the use of induced pluripotent stem cells, medication for patients suffering rare diseases can be developed. Besides the development of new medicine, we can also visualize the organ's physiology. Moreover, by linking the chips together, the whole human body physiology can be constructed.

Since we believed that this technology will have significant effects on future medicine, we selected Body-On-a-Chip as the topic of our poster. Our primary purpose is to introduce the concept of Body-On-a-Chip, and we intend to warn people about the side effects of this technology as well. The title, "Up Close and Personal: Your Body" highlights the essence of the technology, physiological simulation of organs, and the merits that easily visualize the human physiological system. At the same time, this title also reflects the risks of privacy invasion by technology.



2016 EAMSC in Taipei, Taiwan

## **PUBLIC POSTER COMPETITION – MALAYSIA**

### **HIV – Have It Verified**

Steven Lim Sung Wei, Amirah Ismail.

#### **Abstract**

**Background:** HIV, these 3 letters has always been perceived badly among Malaysian. The first HIV case in Malaysia dated back in 1986 and since then, the incidence and prevalence has been increasing over the years. In 2010, there were 3652 new cases reported by Ministry of Health and among them 40% were transmitted through heterosexual intercourse, a drastic rise from 27% in 2009 (Unicef.org, 2015). In 2013, heterosexual transmission is the major transmission of HIV consisting of 51% of the cases.

#### **Objectives:**

1. To enhance public acceptance toward the medical screening.
2. To reduce or completely eliminate the stigma and ignorance created in the community.
3. To raise awareness of the transmission of the disease.
4. To promote awareness that everyone is at risk of being a victim.

**About HIV Screening Kit in Malaysia:** HIV Screening Kit in Malaysia is available in two forms, where screening comes through either using oral fluid or blood. Both screening kits are available in pharmacy stores, support group such as PT foundation as well as purchasable via online. If they were screened positive, it is highly advisable for them to see a medical doctor. If negative, it is still advisable for them to screen again after a couple of weeks to avoid false negative.

**Solution:** Our main solution to promote HIV screening is through education. We would insert information into the curriculum and have mini-examination questions about it to the youngsters. Besides, we would also spread the information via the media to target the adults and elderly as well.

**Difficulties:** The two main difficulties in promoting HIV screening is the ignorance as well as the strong stigma present in the community. Due to the changes in the majority of HIV transmission, most of the stigma that were true in the past are invalid now and hence should be eliminated.

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2016 EAMSC in Taipei, Taiwan

## PUBLIC POSTER COMPETITION – MONGOLIA

### The Future of Medical Technology

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## **Abstract**

**Objective:** The aim of our poster is to show the changes and developments of technology can bring us the incredible progress in the medical sciences' future. **Background:** The hand, which is holding the human, in the background represents the relationship between the doctor and his patient. The hand stands for the doctor's hand and the human indicates the patient's health. This clearly shows how one wrong move of the doctor can cause the human, or in other words, the patient to collapse. Alike a good foundation of a building is capable of withstanding any earthquake, the stable and reliable approach of the doctor towards his patient contributes to his client's capability to recover from his illness and continue to live a long and healthy life full of hope and assurance. And also the use of advanced technologies in the medical sector have enabled the specified study of atoms and molecules and leading to an abundant of newly found discoveries which bring the industry to a whole new level. Although it is unclear how advanced the medical industry will be in the future, it is certain that technology is becoming more and more progressive and the operations of the doctor are developing to be increasingly automatic and slowly turning into the hands of robots. All these progressions are not only scientific but can also bring about major changes in medical practices. For instance, scientists have determined that the development of quantum computers enable the production of a new form of proteins, which provide the basis for human life. Therefore, we predict that technological development has the capacity to cause a major evolution in medical sciences, which may lead to the lengthening of average life expectancies and the possibility of eternal human life. This conception of us is also evident in the poster as the parts of the human face and the image between them represent the combination of human life and technology.



2016 EAMSC in Taipei, Taiwan

## **PUBLIC POSTER COMPETITION – NEW ZEALAND**

### **The New You**

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## Abstract

**Background / Objective:** New Zealand has among the lowest organ donation rates in the developed world, with only 10 organ donors per million people in 2014 (Organ Donation New Zealand, 2015). This shortage of organ donations equates to over 700 people (Kirk, 2015) currently waiting to receive a transplant. Many of them will continue to suffer from their conditions, and unfortunately, a number of them will die before an organ becomes available. **Organ printing** offers hope that this demand for donated organs and its subsequent consequences might one day be relieved.

The artificial production of human organs have the potential to significantly improve medical treatments for a wide range of conditions. However, the simple idea underlying this emerging technology masks the complexity of the process involved, hence, postponing research breakthroughs in this field. There are ethical, cultural and religious issues surrounding artificial biology as well. In addition, there is concern over who should receive these organs and how accessible these organs should or can be.

These potential issues delay the inevitable realization of organ printing. Thus, our poster aims to encourage the acceptance of organ printing by the general public. We have adopted into our poster the concept of origami folding techniques to signify the overriding principle of organ printing, which essentially is to translate a 2-dimensional scaffold into a 3-dimensional functional organ.

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## PUBLIC POSTER COMPETITION – SINGAPORE

### **Molecular Breast Imaging: Protecting the Vulnerable**

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#### **Abstract**

**Background:** Molecular Breast Imaging (MBI) has been developed for some time, however it has failed to gain traction in Singapore. As with most of the developed nations, the go-to test for breast cancer early detection remains to be mammograms.

We have yet to fully acknowledge the differences between breasts, especially in terms of density. This ranges from completely fat to completely dense tissue. Mammograms repeatedly fail to detect early signs of malignant growth in women with dense breast tissues. Coincidentally and unfortunately, these women with familial hereditary breast cancer have an increased risk of developing breast cancer at early age.

The failure to adopt MBI as the gold standard for females with dense breast tissue is appalling, and we are failing spectacularly in secondary prevention of breast cancer through early detection for this group of women. This is in spite of overwhelming evidence that MBI has greater sensitivity(90% vs 67.8%) and specificity(82% vs 75%) in detecting small lesions (<10mm) in females with dense breast tissue. A large clinical trial conducted on women with mammographically dense breast tissue showed that MBI detected 2-to 3-times more cancers than mammogram.

In Singapore, breast cancer is the top cancer in women. We believe that MBI is the next step towards a more holistic healthcare system, not only Singapore, but for women worldwide.

**Objective:** Without a doubt, MBI must be implemented. However, the medical community is notorious for adopting new techniques as compared to other professions. We propose an integration of MBI into the repertoire of screening methods already present in Singapore, as well as clinical screening pathways in tertiary institutions. Instead of replacing mammograms, MBI will be offered as an adjunct screening choice for high-risk populations.



## PUBLIC POSTER COMPETITION – TAIWAN

### **Alert! Dengue. Vaccines are coming**

Chun-Han Lo

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#### **Abstract**

**Background:** The outbreak of dengue this year following the beginning of summer came as a shock to the residents of Tainan. The city has the largest number of cases, accounting for over 85% of the nation's sum. Authorities were overwhelmed with infection control and people were living in fear.

Every once in a few years, dengue makes an attempt for a comeback, it is hard to predict when the next outbreak is going to strike. Healthcare workers feel the lack of efficient preventive methods to avoid a devastating endemic like this year's. However, due to the growing incidence of dengue around the world and the successful control of infectious diseases via vaccines, the development of dengue vaccine is now a key focus in the research of dengue. Thanks to the advancement in laboratory technology, dengue vaccines have been under development by many manufacturers. Approximately 6 vaccine candidates are under evaluation in clinical trial. The vaccine candidate at the most advanced clinical development stage has now been evaluated as a 3-dose series on a 0/6/12 month schedule in Phase III clinical studies and has been submitted for registration in several endemic countries<sup>1</sup>.

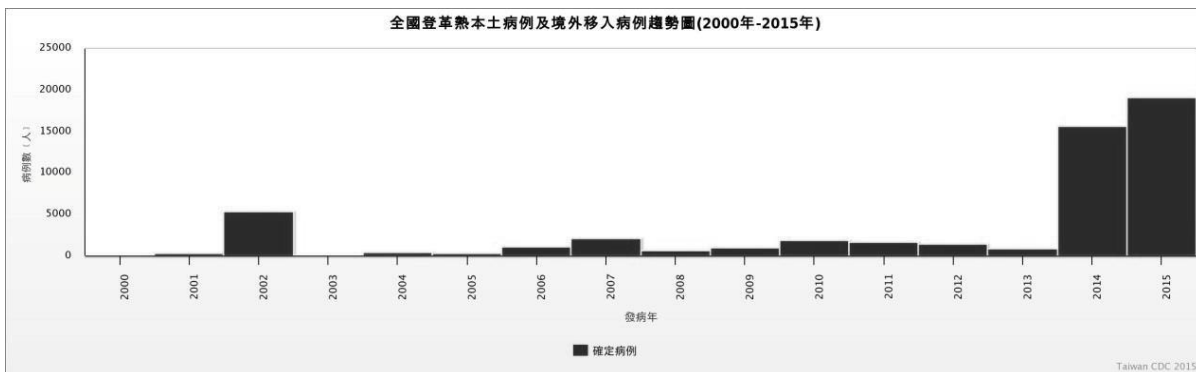


Figure 1. Nationwide confirmed indigenous and foreign cases of dengue fever

**Objective:** As a sixth year medical student with the privilege to rotate at Chi Mei Medical Center, I was given the opportunity to witness first-hand the devastating picture of the endemic. Located in the eye of the storm, Chi Mei Medical Center topped every other medical institution in Taiwan as “the hospital with the most dengue cases”. Given the growing incidence of dengue around the world in recent decades, a safe, effective dengue vaccine would represent a major advance in the control of the disease. It could also be an important tool for reaching the WHO goal of reducing dengue morbidity by at least 25% and mortality by at least 50% by 2020<sup>2</sup>.

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2016 EAMSC in Taipei, Taiwan

## PUBLIC POSTER COMPETITION – THAILAND

### **“Thai Herbs” – Their Role in the Future of Thai Medical Care**

Watcharakorn Chuthong, Jinna Kittipute, Jongsarit Premcharoen, Siraporn

Siritrakoonkiat, Surachat Jaroenwareekul

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## Abstract

This poster suggests that in the future, Thai herbal medicines will have a more significant, alternative role in the Thai health care system. Thailand imports many new medications. However, those not included on the Thailand National List of Essential Medicines are inaccessible to many Thai people because of their cost. The poster shows how Thai herbal medicines can serve as alternatives to expensive imported medicines; it identifies examples of Thai herbal medicines and the imported drugs they can substitute for. The examples show that the use of Thai herbal medicines can reduce treatment costs and that some are comparatively more effective than the imported medicines they can substitute for. Thai herbal medicines will play a significant part in the future of Thai medical care because they offer accessible, alternative treatments with improved treatment outcomes.



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