LKCMedicine PhD Research Project Submission Form

Research Theme (Please indicate as appropriate)

- ☐ Dermatology & Skin Biology
- ☐ Family Medicine & Primary Care
- ☐ Health Systems & Population Health
- ☐ Infection & Immunity
- ☐ Metabolic Disorders
- ☐ Neuroscience & Mental Health
- ☐ Others (Please specify):
- ☐ Medical Education
- ☐ Wound care

Research Project Title:

Evaluating and Decreasing the Socio-Economical Burden of Wound Care in Singapore through Health Systems Innovations and Health Literacy

Project Description:

Background: Wounds present a substantial economic burden to healthcare systems globally with significant reductions in quality of life for those affected. In United Kingdom, the National Health System manages 2.2 million patients with wounds (prevalence 3.3%), with £5.3 billion spent in 2015. In the United States, Medicare manages 8.2 million patients with wounds (prevalence 2.6%) at a cost of up to USD$96.8 billion spent in 2014. In Singapore, such economic burden data and health economics analysis for wound care is limited. Early unpublished data from Tan Tock Seng Hospital from 500,000 eWounds entries and in 16,674 unique patients showed an increase from 142 in 2013 to 277 in 2017 for wound episodes per 1,000 inpatient episodes. The average length of stay was 17.7 days in 2017 (as compared to average 7.3 days for acute hospital admission), with an average gross charge per wound episode at SGD$17,558.

Aim: This project aims to firstly assess the health-related quality of life, healthcare costs and economic burden of patients suffering from wounds in Singapore. Secondly, to evaluate the cost-effectiveness and cost-utility of healthcare innovations in improving health-related quality of life, healthcare costs and economic burden of patients suffering from wounds in Singapore. Thirdly, to improve clinical outcomes and decrease disease burden through
improved patient and carer health literacy.

Methodology: Wounds will be categorized into neuro-ischaemic, venous, pressure-related and surgical wounds. Institutional and national data from primary to tertiary centres on patient characteristics, wound characteristics, healthcare resource utilisation and healthcare costs involved will be analysed.

Through health system innovations for each wound type, we will build a predictive model to evaluate the cost-effectiveness and cost-utility of healthcare innovations in wound management using Bayesian network, Markov model. Data generated will help guide policy-making, healthcare resource allocation, healthcare delivery improvement and address current patient and carer needs and education with digital tools and resources, to improve patient and carer health literacy.

**Brief summary of main Methodologies and/or Techniques to be learned during the proposed PhD (experimental or analytical):**

Epidemiological studies, Bayesian network, Markov modelling

**Keywords:** wound care, economic burden, health economics, healthcare innovation, health literacy
### Supervisor(s)

#### Primary Supervisor
- **Name of Supervisor:** Josip Car
- **Designation:** Associate Professor
- **Email:** josip.car@ntu.edu.sg

#### Co-Supervisor (*need not be determined at this time*)
- **Name of Supervisor:** Keith Harding
- **Designation:** Visiting Professor
- **Email:** hardingKG@cardiff.ac.uk

### Main Location of Research Work (Please indicate as appropriate)
- [ ] LKCMedicine Experimental Medicine Building @ Yunnan Campus
- [ ] LKCMedicine Clinical Sciences Building @ Novena Campus

Others (Please specify):

### Other Information

1. Does the proposal need IRB’s approval? □ Yes □ No
   - If “Yes”, is the IRB’s approval in place? □ Yes □ No
2. Does the project involve contact with patients? □ Yes □ No
3. Does the project involve contact with animals? □ Yes □ No
   - If “Yes”, is the NTU-Institutional Animal Care and Use Committee approval in place? □ Yes □ No
4. Is there a potential for overseas academic exchange as part of this research project? □ Yes □ No
   - If “Yes”, please specify: __________________________________________

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