HONG KONG
JOURNAL OF
EMERGENCY MEDICINE

A peer-reviewed open access Journal that considers articles examining all aspects of clinical practice and emergency medicine research in the hospital and prehospital settings, and invites research articles, review articles, case reports, and educational information.

Call for Papers Now
Submit your research to Hong Kong Journal of Emergency Medicine and enjoy no Article Processing Charge

Published by: SAGE
Highly advanced Cardiolife TEC-8300 series defibrillators are portable biphasic defibrillators designed with cutting-edge technology. They offer seamless monitoring of vital parameters with critical life-support functions for intensive care before and after reaching clinical care.

Cardiolife AED-3100 also allows the shock energy to be turned down for child patients while using the same pads. Analysis of the heart rhythm and charging during CPR enables faster defibrillation delivery. AEDs need to be managed and checked on a regular basis; with the implementation of an effective maintenance program, this can be done remotely in order to save time and effort.

Life Scope PT is a high perception smart transport monitor from Nihon Kohden, global manufacturer of innovative products and advanced technologies. It provides complete modular flexibility with the Smart Cable™ System that immediately detects type of parameter and starts measuring accordingly when connected to a MULTI connector.
<table>
<thead>
<tr>
<th>Welcome Message</th>
<th>P. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congratulatory Message</td>
<td>P. 3</td>
</tr>
<tr>
<td>Organizer, Supporting Organizations and Organizing Committee</td>
<td>P. 4</td>
</tr>
<tr>
<td>Symposium Information</td>
<td>P. 5 - 6</td>
</tr>
<tr>
<td>Official Programme</td>
<td>P. 7</td>
</tr>
<tr>
<td>Programme at a Glance</td>
<td>P. 8</td>
</tr>
<tr>
<td>Scientific Programme</td>
<td>P. 9 - 10</td>
</tr>
<tr>
<td>Plenary Speakers</td>
<td>P. 11</td>
</tr>
<tr>
<td>Speakers</td>
<td>P. 12</td>
</tr>
<tr>
<td>Chairpersons and Judges</td>
<td>P. 13</td>
</tr>
<tr>
<td>Poster Presentations</td>
<td>P. 14</td>
</tr>
<tr>
<td>Academic Accreditation</td>
<td>P. 15</td>
</tr>
<tr>
<td>Exhibition</td>
<td>P. 16</td>
</tr>
<tr>
<td>Abstracts</td>
<td>P. 17 - 45</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>P. 46</td>
</tr>
</tbody>
</table>
It is our honour and privilege to welcome you to the Scientific Symposium on Emergency Medicine (SSEM) 2017. The Symposium is organized by Hong Kong College of Emergency Medicine, supported by Hong Kong Society for Emergency Medicine and Surgery, Hong Kong College of Emergency Nursing and Hong Kong Emergency Nurses Association.

The theme of the Symposium this year is “Geriatric Emergency Care: Embracing the Challenges”. With ageing population in Hong Kong, we aim to provide a platform for medical experts to exchange views, share experience and gain new insights which can effectively improve the care of the geriatric population and nurture a caring culture to this special group of patients. We hope that all participants will take advantages and gain a lot from the informative scientific sessions, and patients will definitely benefit from the fruitful discussions.

No event can succeed without the dedication of many. We would like to express our sincere gratitude to our overseas and local speakers, chairpersons and organizing committee for their support and collective efforts. Special thanks should also be extended to our sponsors in making the Symposium a success.

Last but not the least, we wish you all a wonderful and rewarding experience, and to the overseas and mainland delegates, an enjoyable stay in Hong Kong. We look forward to greeting you in person at the conference venue.

Dr Hiu-fai Ho
President, Hong Kong College of Emergency Medicine

Dr Ludwig CH Tsoi
President, Hong Kong Society for Emergency Medicine and Surgery

Ms Serena P Li
President, Hong Kong College of Emergency Nursing

Mr Chun-pong Leung
President, Hong Kong Emergency Nurses Association

Dr Kin-kwan Lam
Chairman, Organizing Committee of the Scientific Symposium on Emergency Medicine 2017
ORGANIZER
Hong Kong College of Emergency Medicine

SUPPORTING ORGANIZATIONS
Hong Kong Society for Emergency Medicine and Surgery
Hong Kong Emergency Nurses Association
Hong Kong College of Emergency Nursing

ORGANIZING COMMITTEE

Advisors:
Dr Hiu-fai Ho
Dr Ludwig CH Tsoi
Ms Serena P Li
Mr Chun-pong Leung
Dr Axel YC Siu
Dr Yiu-cheung Chan

Chairperson:
Dr Kin-kwan Lam

Vice-chairperson:
Dr Tony TN Chan

Scientific Co-chairpersons:
Dr Kevin KC Hung
Dr Rex PK Lam

Finance & Fundraising Co-chairpersons:
Dr Peter PY Chee
Ms Peggy WM Lee

Publication Co-chairpersons:
Dr Larry LY Lee
Dr Kin-ming Poon

Logistic Co-chairpersons:
Dr Hing-man Ma
Dr Polk CK Wan
Dr Chi-wai Chau

IT Support Co-chairperson:
Dr Edward CT Lui

Member:
Dr Ben KA Wan

SYMPOSIUM INFORMATION

Date and Time: 20 October 2017 09:00 to 18:00
Theme: Geriatric Emergency Care: Embracing the Challenges
Language: English
Venue: Hong Kong Academy of Medicine Jockey Club Building,
99 Wong Chuk Hang Road, Aberdeen, Hong Kong

Secretariat: Ms Toki Chan / Ms Jessie Chow / Ms Monique Sin
Tel: (852) 2871 8808 / (852) 2871 8897 / (852) 2871 8894
Fax: (852) 28718898
Email: ssem@hkamonline.hk
Website: http://www.ssem.hk
**Symposium Information**

**Name Badges**
Coloured badges will be used during the symposium. For identification purpose and admission to the session venues, participants are requested to wear their badges at all time during the symposium. Badges will be available upon registration.

**Certificate of Attendance**
A Certificate of Attendance is issued at the time of registration to pre-registered delegates. Certificate of Attendance for on-site registration will be available 1-hour after registration.

**CME, CNE and CPD Registration**
CME, CNE and CPD registration counter is open throughout the conference.

**Beeping Devices**
Please switch off mobile phone and beeping devices (or use the vibrant mode) during the lectures and presentations.

**Coffee Breaks, Lunch and Dinner**
Complimentary coffee breaks are served at Exhibition Hall, G/F. Lunch and dinner will be served at Run Run Shaw Hall, 1/F.

**Disclaimer**
Whilst every attempt will be made to ensure that all aspects of the event mentioned in this announcement will take place as scheduled, the Organizing Committee reserves the right to make last minute changes should the need arise.

**Liability**
The Organizing Committee is not responsible for personal accidents or damages to registered participants. All participants are responsible for their own medical, accident and other necessary insurances.

**Official Programme**

**Opening Ceremony**
Guest of Honour: Prof. Sophia SC Chan, JP, Secretary for Food and Health, Hong Kong Special Administrative Region
Time: 09:00 to 09:30
Venue: G/F, Pao Yue Kong Auditorium

**Closing Ceremony**
Time: 17:45 to 18:00
Venue: G/F, Pao Yue Kong Auditorium

**Hospital Visit**
Time: 18:15 to 19:15
Venue: Gleneagles Hong Kong Hospital

**Conferment Ceremony**
Time: 18:30 to 19:30
Venue: 1/F, Run Run Shaw Hall

**Conference Dinner**
Time: 19:30 to 22:00
Venue: 1/F, Run Run Shaw Hall
09:00-09:30 Opening Ceremony

09:30-10:30 Plenary

10:30-11:15 Plenary

11:15-11:45 Coffee Break

11:45-13:15 A1 Injury and Fall

13:15-14:15 Sponsored Lunch Symposium

14:15-15:00 Plenary

15:00-15:45 Plenary

15:45-16:15 Coffee Break

16:15-17:45 B1 Emergency Nursing - Care for Geriatrics

17:45-18:00 Closing Ceremony

19:30-22:00 Conference Dinner

09:00-09:30 Opening Ceremony

09:30-10:30 Plenary

10:30-11:15 Plenary

11:15-11:45 Coffee Break

11:45-13:15 A1 Injury and Fall

13:15-14:15 Lunch Symposium Sponsored by Rocha Diagnostics (Hong Kong) Ltd.

14:15-15:00 Plenary

15:00-15:45 Plenary

15:45-16:15 Coffee Break

16:15-17:45 B1 Emergency Nursing - Care for Geriatrics

17:45-18:00 Closing Ceremony

19:30-22:00 Conference Dinner
16:15-17:45 B1 Emergency Nursing - Care for Geriatrics
Pao Yue Kong Auditorium (G/F)
Chairpersons: Mr William YW Chan & Ms Ava SW Leung

B1.1 Frailty at the Front Door - Outcomes of a Winter Surge Collaborative Service Measure
Ms Sabrina SK Ho

B1.2 Managing Fall in the Elderly - Starting from a Fall Prevention Project in the Emergency Department
Mr Kai-chiu Chan

B1.3 Investigation of Risk Factors of Geriatric Patients with Significant Brain Injury from Ground Level Fall: A Retrospective Cohort Study in a Local Accident and Emergency Setting
Ms Ho-fai Chan, Ms Mei-kwan Li & Mr Wing-hong So

16:15-17:45 B2 Geriatric Medical Emergencies
Lim Por Yen Lecture Theatre (G/F)
Chairpersons: Dr Kin-kwan Lam & Dr Rex PK Lam

B2.1 Preparing the Emergency Department for an Ageing Population in Hong Kong
Dr Man-ho Ng

B2.2 Geriatric at Hospital Front Door - Leading Change and Adding Value to Admission Avoidance at Emergency Department
Dr Wency WS Ho

B2.3 Management of Acute Agitation
Dr Esther WY Chan

B2.4 Frail Elderly Care Model in Emergency Medicine Ward, Queen Elizabeth Hospital
Dr Gordon CK Wong

16:15-17:45 B3 Free Paper Presentation Session
Function Room 1 (2/F)
Chairpersons: Dr Yiu-cheung Chan & Dr Abraham KC Wai

B3.1 Occupational Therapy Falls Prevention Programme for Elderly Patients Discharged Home from Emergency Ward Using the Person-Environment-Occupation Model
Ms Vicki WH Leung

B3.2 Predicting Pneumonia in Paediatric Acute Febrile Respiratory Illness
Dr Fiona YY Chan

B3.3 Frailty at Front Door: A Winter Surge Collaborative Service Measure
Dr Yau-ming Chau

B3.4 First Extracorporeal Cardiopulmonary Resuscitation (ECPR) Programme for Refractory Cardiac Arrest in Hong Kong: Collaboration of AED, ICU and CCU
Dr Pui-cheung Lam

B3.5 Elderly Out-of-hospital Cardiac Arrest – A Population-wide Analysis of Prehospital Registry Data
Dr Siu-chung Leung

B3.6 Prediction of Pneumonia in Acute Febrile Respiratory Illness
Dr Choi-fung Tse

B3.7 Accidental Ingestion of Desiccants and Oxygen Absorber
Dr Ion-wa Wong

17:45-18:00 Closing Ceremony
Pao Yue Kong Auditorium (G/F)

19:30-22:00 Conference Dinner
Run Run Shaw Hall (1/F)

PLENARY SPEAKERS

HOW TO IMPROVE OLDER PEOPLE CARE IN THE EMERGENCY DEPARTMENT
DR JAY BANERJEE
Consultant in Emergency Medicine
University Hospitals of Leicester NHS Trust, Department of Emergency LRI, United Kingdom

NEW MODELS OF CARE FOR AN AGING WORLD: THE GERIATRIC EMERGENCY DEPARTMENT
DR DON MELADY
Emergency Physician of Geriatric Lead
Schwartz/Reisman Emergency Centre, Mount Sinai Hospital, Canada

GERIATRIC EMERGENCY MEDICINE – THE SINGAPORE JOURNEY
A/PROF EILLYNE SEOW
Senior Consultant
Acute and Emergency Care, Khoo Teck Puat Hospital, Singapore

A NEED OF NEW CARE MODEL – INTEGRATING SERVICES BETWEEN EMERGENCY AND GERIATRIC
PROF ENG-KIONG YEOH
Director
The Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong
(Listing according to alphabetical order)

**SPEAKERS**

Dr Esther WY Chan  
Associate Professor, Department of Pharmacology and Pharmacy,  
The University of Hong Kong

Ms Ho-fai Chan  
Registered Nurse, Accident and Emergency Department, Queen Mary Hospital

Mr Kai-chiu Chan  
Advanced Practice Nurse, Accident and Emergency Department, United Christian Hospital

Dr Yiu-cheung Chan  
Consultant, Accident and Emergency Department, United Christian Hospital

Ms Mary ML Chu  
Department Manager, Department of Occupational Therapy, Queen Mary Hospital

Miss Antoinette Edwards  
Executive Director, The Trauma Audit and Research Network, Faculty of Biology,  
Medicine and Health, University of Manchester, United Kingdom

Dr Hiu-fai Ho  
Consultant, Accident and Emergency Department, Queen Elizabeth Hospital

Ms Sabrina SK Ho  
Nurse Consultant (Gerontology), Geriatrics, Ruttonjee and Tang Shiu Kin Hospital

Dr Wency WS Ho  
Associate Consultant, Department of Medicine and Therapeutics, Prince of Wales Hospital

Prof Timothy CK Kwok  
Professor, Department of Medicine and Therapeutics and School of Public Health;  
Director, Jockey Club Centre of Positive Ageing, The Chinese University of Hong Kong

Prof Fiona Lecky  
Clinical Professor, Emergency Medicine, University of Sheffield, United Kingdom

Ms Mei-kwan Li  
Registered Nurse, Accident and Emergency Department, Gleneagles Hong Kong Hospital

Dr Raymond SK Lo  
Chief of Service and Consultant, Hospice in Palliative Care, Shatin Hospital and  
Bradbury Hospice

Dr Man-ho Ng  
Director of Emergency Medicine, Tsuen Wan Adventist Hospital

Prof Mark Richards  
Director, Cardiovascular Research Institute (CVRI);  
Professor, Department of Medicine, National University of Singapore (NUS)

Mr Wing-hong So  
Registered Nurse, Accident and Emergency Department, Queen Mary Hospital

Dr Gordon CK Wong  
Chief of Service, Accident and Emergency Department, Queen Elizabeth Hospital

**CHAIRPERSONS & JUDGES**

Dr Jay Banerjee  
Consultant in Emergency Medicine, University Hospitals of Leicester NHS Trust,  
Department of Emergency LRI, United Kingdom

Dr Tony TN Chan  
Associate Consultant, Accident and Emergency Department, Kwong Wah Hospital

Mr William YW Chan  
Advanced Practice Nurse, Nurse Specialist, Accident and Emergency Department,  
Tuen Mun Hospital

Dr Yiu-cheung Chan  
Consultant, Accident and Emergency Department, United Christian Hospital

Dr Peter PY Chee  
Deputy Hospital Chief Executive and Associate Consultant i/c, St. John Hospital

Dr Hiu-fai Ho  
Consultant, Accident and Emergency Department, Queen Elizabeth Hospital

Dr Kevin KC Hung  
Assistant Professor, Accident and Emergency Medicine Academic Unit,  
The Chinese University of Hong Kong

Dr Rex PK Lam  
Clinical Assistant Professor, Emergency Medicine Unit, The University of Hong Kong

Dr Kin-kwan Lam  
Senior Medical Officer, Accident and Emergency Department, United Christian Hospital

Ms Ava SW Leung  
Ward Manager, Accident and Emergency Department, Kwong Wah Hospital

A/Prof Eillyne Seow  
Senior Consultant, Acute and Emergency Care, Khoo Teck Puat Hospital, Singapore

Dr Axel YC Siu  
Consultant, Accident and Emergency Department, Ruttonjee Hospital

Dr Ludwig CH Tsui  
Deputy Service Director, Quality and Service Department, Hong Kong West Cluster;  
Senior Medical Officer, Accident and Emergency Department, Queen Mary Hospital

Dr Abraham KC Wai  
Clinical Assistant Professor, Li Ka Shing Faculty of Medicine, The University of Hong Kong
### POSTER PRESENTATIONS

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Abstract Title</th>
<th>Presenting Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster 1</td>
<td>2D Barcode Wristband for Unique Patient Identification in Accident and Emergency Department of Pok Oi Hospital</td>
<td>Dr Kin-ming Poon</td>
</tr>
<tr>
<td>Poster 2</td>
<td>Accidental Geriatric Poisoning in Hong Kong</td>
<td>Dr Chi-keung Chan</td>
</tr>
<tr>
<td>Poster 3</td>
<td>Clinical Audit on the Use of Adrenaline in Resuscitation to Non Traumatic, Out-of-hospital Cardiac Arrest Adult Patients in NTWC Emergency Departments</td>
<td>Dr Kin-ming Poon</td>
</tr>
<tr>
<td>Poster 4</td>
<td>Community Resuscitation Course Enhance Self-Efficacy for Secondary School Students in Hong Kong</td>
<td>Mr Wilfred SK Ling</td>
</tr>
<tr>
<td>Poster 5</td>
<td>Distribution, Accessibility and Coverage of Automated External Defibrillators in Public Locations in Hong Kong</td>
<td>Dr Ling-pong Leung</td>
</tr>
<tr>
<td>Poster 6</td>
<td>Door-to-balloon Time for ST-elevation Acute Myocardial Infarction in Hong Kong: A Case Report</td>
<td>Mr Wilfred SK Ling</td>
</tr>
<tr>
<td>Poster 7</td>
<td>Enhance Service of Emergency Nurse Practitioner in Accident and Emergency Department of Yan Chai Hospital</td>
<td>Ms Fei-choi Lung</td>
</tr>
<tr>
<td>Poster 8</td>
<td>Enhancement of Logistic Flow for Ambulance Cases in Triage Cubicles to Meet the Triage Pledge and Augment Patient Safety in A&amp;E/TSWH</td>
<td>Mr Wilfred SK Ling</td>
</tr>
<tr>
<td>Poster 9</td>
<td>Enhancement of Wound Care in Accident and Emergency Accident by Implementation of Fast Track Wound Clinic</td>
<td>Mr Tai-loi Yau</td>
</tr>
<tr>
<td>Poster 10</td>
<td>Experience of Frailty Care Model in a Local Emergency Department in Hong Kong</td>
<td>Dr Patrick SC Leung</td>
</tr>
<tr>
<td>Poster 11</td>
<td>Hepatotoxicity after Receiving Therapeutic Dose of Paracetamol in Geriatric Patients</td>
<td>Dr Man-ting Lau</td>
</tr>
<tr>
<td>Poster 12</td>
<td>Intentional Poisoning in Geriatric Patients in Hong Kong</td>
<td>Dr Kai-kee Lau</td>
</tr>
<tr>
<td>Poster 13</td>
<td>Is the Modified Early Warning Score (MEWS) a Useful Tool to Facilitate Triage Decision in an Accident and Emergency Department?</td>
<td>Ms Kit-ying Poon</td>
</tr>
</tbody>
</table>

### ACADEMIC ACCREDITATION

Delegates will be accredited Continuing Medical Education (CME), Continuing Nursing Education (CNE) and Continuing Professional Development (CPD) points from related academic institutes.

<table>
<thead>
<tr>
<th>College/Programme</th>
<th>CME Points Awarded</th>
<th>Category</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong College of Anaesthesiologists</td>
<td>7.5</td>
<td>Non-Ana Passive</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Community Medicine</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Dental Surgeons of Hong Kong</td>
<td>7.5</td>
<td>Cat. B</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Emergency Medicine</td>
<td>6</td>
<td>PP</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Family Physicians</td>
<td>5</td>
<td>Cat. 5.2</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Obstetricians and Gynaecologists</td>
<td>Pending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Ophthalmologists of Hong Kong</td>
<td>3.5</td>
<td>Passive</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Orthopaedic Surgeons</td>
<td>Pending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Otorhinolaryngologists</td>
<td>Pending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Paediatricians</td>
<td>6</td>
<td>Cat. A</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Pathologists</td>
<td>4</td>
<td>PP</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Physicians</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Psychiatrists</td>
<td>6</td>
<td>PP/OP</td>
<td></td>
</tr>
<tr>
<td>Hong Kong College of Radiologists</td>
<td>7</td>
<td>Cat. B</td>
<td></td>
</tr>
<tr>
<td>College of Surgeons of Hong Kong</td>
<td>6</td>
<td>Passive</td>
<td></td>
</tr>
<tr>
<td>MCHK CME Programme</td>
<td>5</td>
<td>Passive Accredited by HKAM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>College/Programme</th>
<th>CNE Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong Emergency Nurses Association</td>
<td>6.75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>College/Programme</th>
<th>CPD Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Therapists Board</td>
<td>3</td>
</tr>
</tbody>
</table>
EXHIBITION

Exhibition Hall (Ground Floor)

1. Masimo Hong Kong Ltd.
2. McBarron Book Co. Ltd.
3. Boehringer Ingelheim (HK) Ltd.
4. Philips Electronics Hong Kong Ltd.
5. Pacific Medical Systems Ltd.
6. Medtronic Hong Kong Medical Ltd.
7. Roche Diagnostics (Hong Kong) Ltd.
8. Goodwin Health Care Ltd.
9. Zoll Medical Corporation

ABSTRACTS

Plenary - New Models of Care for an Aging World: The Geriatric Emergency Department

Dr. Don Melady
Emergency Physician of Geriatric Lead, Schwartz/Reisman Emergency Centre, Mount Sinai Hospital, Canada

Dr. Melady will review the international evolution of Emergency Medicine in the past 50 years from a single-focus, resuscitation-oriented specialty to one that prioritizes acute care of our fastest growing population — complex, frail older adults. He’ll discuss opportunities for change and improvement that are being explored internationally — from free-standing Geriatric EDs (US) to frailty units (UK) to the concept of a “senior-friendly” general ED. From his international experience, he will address the spheres for improvement that may be relevant in Hong Kong: staffing and administration; clinician education; policy and procedures; equipment and supplies; the physical environment; and quality improvement (metrics and outcomes). He’ll discuss barriers to change and drivers of change.

Plenary - A Need of New Care Model: Integrating Services Between Emergency and Geriatric Medicine

Prof Eng-kiong Yeoh
Director, The Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong

Emergency medicine involves care for patients with acute illnesses or injuries requiring immediate medical attention. However, nowadays many accidental and emergency (A&E) attendants in Hong Kong are frail elderly with multiple chronic diseases who are better served by an effective network of primary and community care. The phenomenon might be explained by the focus of our health system on acute episodic care rather than continuity of care for chronic diseases and inadequate coordination between health and social care. From a system perspective, reengineering of the existing fragmented provision of health care to an integrated model is crucial for improving the quality of care of older people.

A study of the quality of care for the elderly was commissioned by the Health and Medical Research Fund. A mixed quantitative and qualitative study design which included literature review, interviews, a survey and secondary data analyses was applied to identify interventions for an integrated model of care for the elderly. Findings were triangulated to provide evidence to design components of the care model in the local context. From international evidence, eight key components of integrated care were identified, including needs assessment for care and discharge planning, multidisciplinary services and case management. Stakeholder interviews from health providers indicated one of their challenges was how to resolve patients’ social problems. Patients also faced a long waiting time for public healthcare services and 39.1% of participants in a survey indicated they would choose to go to A&E in the evening or weekends and during holidays with 24.9% saying it was difficult or very difficult to seek medical care. Secondary data analyses revealed 36.5% of annual hospitalization were for ambulatory care sensitive conditions (ACSCs) for which hospitalization could be avoided if there was better ambulatory care. The top ACSC admissions were for pneumonia, chronic heart failure, COPD, pyelonephritis/urinary tract infection, dizziness and giddiness, and chest pain.

The findings of our study indicate an integrated care model will be able to avert unnecessary hospital admissions for frail elderly and those requiring frequent hospitalization. Critical component of the model are the application of a frailty assessment tool to identify the health and psycho-social needs of the elderly and the coordination of health and social services to allow elderly receive care in their own home environment. Structural collaboration among emergency specialists, geriatricians and community nurses also needs to be established. In addition care planning and community cross-referral between health and social care needs to be coordinated.
ABSTRACTS

A1.1 - MAJOR INJURY IN OLDER PEOPLE AND THEIR LONGER TERM OUTCOMES

Miss Antoinette Edwards¹, Prof Fiona Lecky²
1. Executive Director, The Trauma Audit and Research Network, Faculty of Biology, Medicine and Health, University of Manchester, United Kingdom
2. Clinical Professor, Emergency Medicine, University of Sheffield, United Kingdom

Across the developed world major trauma remains the commonest cause of death and disability in children and young adults, however recent research from the Trauma Audit and Research Network (TARN) has highlighted a changing demographic.

The median age of a major trauma victim in the UK is now 55 years with one third of all serious injury victims (Injury Severity Score > 15) aged over 65.

During our presentation, we will exhibit data from the recent TARN report (Serious Injuries in older people) to demonstrate how major trauma is now becoming two diseases; age impacts upon presenting features, outcomes and the care patients receive – for better or worse. We think the data we will present are relevant to the development of all similar trauma care systems.

A1.2 - FRACTURE PREVENTION - IMPLICATION OF A FALL

Prof Timothy CY Kwok
Professor, Department of Medicine and Therapeutics and School of Public Health; Director, Jockey Club Centre of Positive Ageing, The Chinese University of Hong Kong

Falls is a common health problem which leads to dependency, fractures and institutionalization in older people. A fall in an older person predicts another fall in the following two years. A single or multiple falls predict osteoporotic fractures in older men, but not in older women. Only ten percent of fallers present themselves to hospital. The few who do are probably sicker or more socially deprived. Apart from the search for injury or fracture, the assessment at Accident & Emergency department should focus on intrinsic factors of falls. For the patients who are deemed safe to return home, comprehensive geriatric assessment would help to identify predisposing factors of falls, so that preventive actions can be undertaken. Geriatric day hospital can fulfill this role for those with more complex problems. For the more independent fallers, the Hong Kong Jockey Club Centre for osteoporosis care and control (JOCOC) has developed a nurse led geriatric assessment and counselling service. For those with balance problems, we have developed a “LIFE” home visit programme whereby older fallers are taught and encouraged to incorporate balance exercises in their daily routines. Older fallers often have co-existing osteoporosis, and osteoporosis drugs are effective in preventing fractures in this high risk group. Screening by DXA is therefore highly recommended in older fallers.
A1.3 - AN OCCUPATIONAL THERAPY HOME VISIT CAN REDUCE SUBSEQUENT FALLS FOR OLDER ADULTS WHO ATTENDED EMERGENCY DEPARTMENT FOR A FALL - HONG KONG EXPERIENCE

Ms Mary ML Chu, KKH Fung, HK Tong, CHA Lit, WCS Cheng, TH Rainer, LYF Au, NKK Fong, CM Wong
1. Department of Occupational Therapy, 2. Accident and Emergency Department, Queen Mary Hospital
3. Accident and Emergency Department, 4. Department of Occupational Therapy, Princess Margaret Hospital
5. Accident and Emergency Department, 6. Department of Occupational Therapy, Prince of Wales Hospital
7. Department of Rehabilitation Sciences, Hong Kong Polytechnic University
8. Department of Community Medicine, The University of Hong Kong

Study objective:
To study the treatment effects of an Occupational Therapy (OT) falls reduction home visit programme conducted for older adults who seek treatment from Accident and Emergency Department (AED) after a fall.

Materials and methods:
This is a multi-centre randomized controlled trial carried out in three acute hospitals in Hong Kong. Community-dwelling older adults aged 65 or above consulted emergency service after a fall were recruited into the study after obtaining their consent. Baseline assessment was performed and patients without cognitive impairment were randomly allocated into an intervention group (IG) or control group (CG) by a blinded researcher using block randomization. For those allocated to the intervention group, they received a home visit by an occupational therapist within two weeks targeting on falls reduction. For those allocated into the control group, they received a well-wishing visit from a research assistant who were not trained in fall prevention. Bi-weekly telephone follow-ups for twelve months were made by blinded assessors to enquire and record on frequency of falls. Other blinded assessors would follow up on their functional, depression and activity status at four, eight and twelve months post discharge from AED. Falls record on hospital admissions were retrieved from Clinical Management System for the twelve month follow up period.

Results:
311 older adults were screened for eligibility and 204 cases satisfying the inclusion criteria were recruited and randomly assigned with 101 participants allocated to IG and 103 to CG. Finally, successful visits were made for 79 participants in IG and 88 participants in CG. There were significant differences in the number of fallers (P<0.03) and the number of falls (P=0.02) between the two groups over 6 months and in survival analysis at 6 months (log-rank test 5.052, P=0.028), but not at 9 or 12 months.

Conclusion:
An OT home visit after a fall can reduce future falls for older adults who attended emergency department for a fall injury. Further research on whether a booster home visit by an OT at six months may help reduce the risk of further falls for another six months.

(A This study was supported by a project grant from the Health and Medical Research Fund, Food and Health Bureau, Government of the Hong Kong Special Administrative Region, People’s Republic of China.)

A1.4 - GERIATRIC POISONING

Dr Yiu-cheung Chan
Associate Consultant, Hong Kong Poison Information Centre, United Christian Hospital

Hong Kong Poison Information Centre (HKPIC) recorded nearly 20,000 poisoning cases in Hong Kong from 2012-2016; about 11% of them are geriatric cases (age 65 or above). Geriatric poisoning resulted in a higher percentage of mortality (2.9% Vs 0.9%) and major outcome (5.5% Vs 4.4%).

For the reason of poison exposure, adverse drug/herb reaction or poisoning due to therapeutic error contributed a higher proportion in geriatric population than that in the total cohort. Besides, geriatric population had lower percentage of intentional/suicidal poisoning or poison exposure due to abuse.

Concerning geriatric poisoning death, majority was caused by intentional overdose with pesticides, cardiovascular medications such as calcium channel blockers, and psychiatric drugs. Besides, household products exposure, either intentional or unintentional, also resulted in poisoning mortality in geriatric population.

Interesting cases/cases series involving adverse drug/herb reactions, hand warmer, and pharmaceutical patches are used to illustrate the specific toxicology concern in geriatric population. Practical tips for managing geriatric poisoning in Accident & Emergency Department will also be discussed in the presentation.

A2.1 - END OF LIFE DISCUSSION IN THE EMERGENCY DEPARTMENT - THE UNITED KINGDOM EXPERIENCE

Dr Jay Banerjee
Consultant in Emergency Medicine, University Hospitals of Leicester NHS Trust, Department of Emergency LRI, United Kingdom

Frail older people in the ED are increasingly attending with terminal illness. This is despite community based DNACPR and advance care plans. There is a lot more that can be done to improve the experience around dying - a diagnosis rarely entertained, it seems, in the ED. A review of people>85 years dying within 48 hours of an ED admission will be presented as part of this sharing of experiences.

A2.2 - QUEEN ELIZABETH HOSPITAL END-OF-LIFE MODEL IN EMERGENCY DEPARTMENT

Dr Hiu-fai Ho
Consultant, Accident and Emergency Department, Queen Elizabeth Hospital

With ageing population, increase in prevalence of malignancy and end organ failure after treatment failure, healthcare professionals in Emergency Departments will see more and more patients turn up at their end-of-life stage. Although many of these patients and their relatives are prepared for the day to come, owing to various legal, cultural and social reasons, they have to come to hospital to finish this last ‘formality’ which is both psychologically painful and disturbing. While they have no choice but select our service, are emergency physicians and nurses prepared - psychologically, emotionaly and cognitively? As emergency physician and nurse, we are trained to save life. Do we recognize that sometimes the best treatment is to do something by doing nothing – a challenging paradigm shift for our specialty?
Modern concept of care process tells us that palliative care should be considered at the very early stage of any chronic disease presentation. With time, curative therapy will be exhausted and more palliative management comes in. In USA, 380,000 patients died in ED annually in year 2000. In order to improve care of the dying in the last hours / days of life, knowledge of ED staff needs to be improved. Domains of end-of-life (EOL) care include physical, psychological, spiritual and social. Key elements in implementing EOL care at ED include appropriate design of physical facilities, satisfactory education of staff on symptoms control and, lastly but most importantly, nurturing a caring culture of ED staff to this special group of patients.

### A2.3 - EVIDENCE-BASED PALLIATIVE AND END OF LIFE DISCUSSION: FROM KNOWLEDGE TO PRACTICE

Dr Raymond SK Lo  
Chief of Service and Consultant, Hospice in Palliative Care, Shatin Hospital & Bradbury Hospice

Communication is an integral component in all branches of medicine, and essential in quality services delivery to ensure optimal patient experience and satisfaction. Good communication is itself therapeutic, while a suboptimal or lack of quality will lead only to misunderstanding and undesirable outcomes with complaints. In the sensitive and emotionally charged scenarios at the end of life, person and family-centred support with empathic conversation is of paramount importance.

In the A&E setting, discussions on treatment decisions and consensus at end of life abound. The themes are not confined just in palliative care patients or patients with advanced incurable diseases, but with any patient facing a serious illness. The adoption of hospice concept and palliative approach has helped greatly in end-of-life scenarios in emergency setting. With a fast advancing ageing population with advanced diseases, further sharing and dissemination of palliative skills is mandatory.

There are recent advances in the approach, structure and context of serious illness conversation, guiding clinicians in improving the quality of communication. When situations arise, care for the seriously ill in facing death and dying is the responsibility of every health care professional. Research has generated much valuable evidence lately, in the application and benefit of quality communication with better outcomes. Further details will be shared in the presentation.

### B1.1 - FRAILTY AT THE FRONT DOOR - OUTCOMES OF A WINTER SURGE COLLABORATIVE SERVICE MEASURE

Ms Sabrina SK Ho,1 MC Wan,2 YM Chau,2 LKDT Tse,2,12 MY Mak,2 KL Lin,1 CK Wong,1 SK Chan,1 S Chan,1 HL Kong,1 KA Wan,1 PKF Mak,1 WTC Yu,1 PG Kan,1 PLC Kng,1 YTF Mak,1 H Lam,1 Y Lee,1  
1. Department of Geriatrics, 2. Accident and Emergency Department, Ruttonjee and Tang Shiu Kin Hospital
3. Community Health Service, Hong Kong East Cluster, Hospital Authority

**Background:**

Elderly admissions during winter surge heavily burdens hospital services. Overseas reports of ‘front door’ AED gatekeeping is promising in reducing avoidable admissions safely by early frailty detection, yet evidence for effective local service models is scarce. Hence, preliminary outcomes of a tripartite collaborative service model (AED, community & geriatric teams) for selected AED elderly patients at RTSKH are described here.

### B1.2 - MANAGING FALL IN THE ELDERLY - STARTING FROM A FALL PREVENTION PROJECT IN THE EMERGENCY DEPARTMENT

Mr Kai-chiu Chan  
Advanced Practice Nurse, Accident and Emergency Department, United Christian Hospital

Falling is not only a common problem in the geriatric population, but also a common cause of emergency department (ED) visits of the elderly. Patient fall may result in morbidity, mortality, and adverse psychological impact for patients as well as their carer. Fall management in ED includes the management of fall related injuries, the identification of the cause of fall, and more importantly, prevention of future fall incidence.

Managing patient falls in the hospital is a primary nursing role. Fall prevention in the emergency department is challenging owing to many reasons. For example, short nurse-patient contact time, lack of sensitive fall risk assessment tools, access block, busy and crowded environment, etc. Because of the increasing fall rates, a fall prevention project is started in the Accident and Emergency Department of the United Christian Hospital in 2017. Multiple interventions are used to enhance nurses’ awareness as well as their understanding in the intrinsic and extrinsic factors for fall incidents.

Though the fall prevention project is still in progress, it has already stopped the increasing trend in fall rates. Fall prevention in ED should be a continuous improvement process. In the future, more collaboration in fall prevention with different departments will be done. With better awareness in fall management in ED, we equip our emergency nurses in better assessment and discharge education for our elderly with fall injuries in long term.
B1.3 - INVESTIGATION OF RISK FACTORS OF GERIATRIC PATIENTS WITH SIGNIFICANT BRAIN INJURY FROM GROUND LEVEL FALL: A RETROSPECTIVE COHORT STUDY IN A LOCAL ACCIDENT AND EMERGENCY SETTING

Ms Ho-fai Chan, Ms Mei-kwan Li, Mr Wing-hong So
Registered Nurses, Accident and Emergency Department, Queen Mary Hospital

Aim: The aim of this research is to identify risk factors for significant brain injury in geriatric patients resulting from ground level falls. Data was obtained from an Accident and Emergency Department (A&E) in Queen Mary Hospital (QMH), Hong Kong.

Study design: This was a retrospective study with data collected from the Clinical Data Analysis and Reporting System (CDARS) of QMH from 1st January, 2013 to 31st December, 2015. A total of 1101 cases were identified.

Results: There were 76% of the recruited patients with a normal computed tomography (CT) scan. However, the remaining 24% had CT scans indicative of brain injury. Severe head injuries were scored 3-8 on the Glasgow Coma Scale (GCS) and moderate head injuries were scored 9-12. Respectively, these were 20 times (p=0.005) and 5 times (p=0.002) more likely to have positive CT findings than patients with a GCS score from 13-15. Patients with loss of consciousness (LOC) were 2 times more likely to have a positive CT result than those without LOC (p=0.001). Although warfarin use is a well-established risk factor for intracranial hemorrhage after head injury, in our dataset the result was not statistically significant. However, the use of new oral anti-coagulants (NOAC) was associated with positive CT findings with patients taking NOAC 2.3 times more likely to have positive CT findings compared with those with no anti-coagulant use (p=0.033).

B2.1 - PREPARING THE EMERGENCY DEPARTMENT FOR AN AGEING POPULATION IN HONG KONG

Dr Man-ho Ng
Director of Emergency Medicine, Tsuen Wan Adventist Hospital

Background: There has been a great demand for emergency care of Geriatric patients in Hong Kong. The following is the Geriatric A&E attendances and readmissions.

Number of A&E 1st attendance by age group

<table>
<thead>
<tr>
<th>Attendance Month</th>
<th>Below 65</th>
<th>65+</th>
<th>Overall</th>
<th>% of 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-01</td>
<td>7543</td>
<td>3974</td>
<td>11517</td>
<td>34%</td>
</tr>
<tr>
<td>2017-02</td>
<td>7199</td>
<td>3854</td>
<td>11056</td>
<td>35%</td>
</tr>
<tr>
<td>2017-03</td>
<td>8225</td>
<td>4249</td>
<td>12474</td>
<td>34%</td>
</tr>
<tr>
<td>2017-04</td>
<td>8281</td>
<td>4019</td>
<td>12302</td>
<td>33%</td>
</tr>
</tbody>
</table>

Approximately 58% of Geriatric A&E patients got admitted. Approximately 350,000 Geriatric patients attended A&E and 218,000 were admitted each year through A&E in Hong Kong.

As a result, Medical wards were more than full, usually over 110% occupancy rate. Admission had been delayed resulting in admission block; admission to wards from A&E within 12 hours had been as our hospital target. Admitted Geriatric patient had high risk of developing Delirium, hospital acquired infection and fall. The high admission rate could be due to aging population with prevalence of multiple medical problems, lack of structured Geriatric training for Emergency Physician, lack of coordinated treatment protocol, and inability for Emergency Physician to activate community support service.

Pilot projects to find the solution:

For many years, various collaborative models were set up in Hong Kong between Geriatric and A&E team, aiming at reducing hospital admission and better care for Geriatric A&E patients. Pilot projects were set at PWH A&E in last 3 years, by bringing the Geriatric team to frontline A&E service.

1. Rapid geriatric assessment at front door (GFD) for all Cat 3 and 4 waiting medical admission patients.
2. Community Rapid Response Community Team Service (CRRT) for patients discharged from A&E. Inclusions were those Cat 3 and 4 waiting to be admitted medical patients. In 2014 to 16, referrals to Geriatrician were initiated by Senior Emergency physicians. In 2016 to 17, initial screening was done by Geriatric specialty nurse then Geriatrician would attend the selected patients.

Results: In last 3 years, a total of 708 patients were attended by Geriatrician and 435 patients were not admitted to acute Medical ward.

Geriatrics at Hospital Front Door provides effective alternative treatment options to elderly at AED with 61% selected patients can be diverted by Geriatrician, with 8.7% 28-day readmission rates.

Possible ways ahead:

1. Sustainability
   We need Geriatrician and Emergency Physician’s commitment and planning, administration’s appreciation and support on the cost effectiveness.

2. Closer collaboration with formation of combined Emergency Geriatric Assessment team at A&E, with Geriatrician, Geriatric Resident, and nurses, Emergency Medicine Resident and Nurses, Pharmacist, social worker, Physiotherapist and Occupational Therapist.

3. Education: Geriatric training to EM Residents and EM training to Geriatric Residents

4. Research for validation of local frailty and dementia assessment, locally applicable treatment policies.

5. Extension of the service to patients with minor trauma, fractures, with the view of injury prevention, fall prevention and speedy recovery, patients with polypharmacy, dementia screening, Delirium and Psychogeriatric problems

There should be a system change, new model of care at A&E for our aging population.

For individual Emergency doctor, more in-depth training in frailty and dementia assessment, atypical presentation, treatment targets for common medical conditions, such as Hypertension, Diabetes, Lipids, fall and polypharmacy prevention would be desirable to be in line with system change.

B2.2 - GERIATRIC AT HOSPITAL FRONT DOOR - LEADING CHANGE AND ADDING VALUE TO ADMISSION AVOIDANCE AT EMERGENCY DEPARTMENT

Dr Wency WS Ho
Associate Consultant, Department of Medicine and Therapeutics, Prince of Wales Hospital

Aging population in Hong Kong becomes a significant burden to our public healthcare system. Many elderly patients suffer from comorbidities that quite often lead to repeated hospitalizations. Besides due to medical problems, many of them are frail who also suffer from functional decline, cognitive impairment together with limited social support which often leads to “medicalization” resulting in admissions which sometimes may be avoidable.

There is a trend of an increasing number of older people utilize Emergency Department (ED) service. In Prince of Wales Hospital the daily ED attendance is about 400 per day. One third of them are elderly and about half of them will be admitted to our medical units daily. Overwhelming admission and bed occupancy in medical unit will result in an unsatisfied hospital environment leading to common complications in elderly e.g. hospital acquired infections, delirium etc. Moreover only limited community support is provided to elderly patients discharge from ED which may result in re-attendances and readmissions.
Since 2014, a new collaborative service was set up among geriatric team and emergency department together with community outreach support team in Prince of Wales Hospital during winter surge season that aim to reduce avoidable admissions. Key objectives aim to provide geriatric on-site rapid assessment and consultation to manage elderly right at front door who are waiting to reduce avoidable admissions. The service also connects closely to rapid response community service to patient discharge from ED. Outcomes of the service model over the last three years are encouraging and collaboration between geriatric team and emergency department is getting stronger each year.

We believe hospital admission is not the only management option to many elderly patients. There is a need to develop an integrated collaborative patient centered care model at hospital front door to manage high risk complex elderly which help to reduce unnecessary admissions. Another goal is to provide a more elder friendly environment and cultivate the concept of geriatric care to achieve our goal -Right patient receiving the right care at right time and place.

### B2.3 - MANAGEMENT OF ACUTE AGITATION

Dr Esther WY Chan
Associate Professor, Department of Pharmacology and Pharmacy, The University of Hong Kong

Acute agitation is a behavioural emergency that could arise from many illnesses presenting to the emergency department (ED). Prompt management is critical to prevent harm. Evidence-based management of acute agitation in emergency settings will be discussed based on clinical practice guidelines and the literature for undifferentiated adults, as well as the implications for elderly patients. Specifically, clinical guidelines on the management of acute agitation provide recommendations on the use of physical restraint and the requirement to consider concurrent pharmacological agents for sedation, the choice of agents and the route of drug administration.

Study results from several clinically relevant studies will be highlighted. Of these studies, one study (2015) comparing the choice of initial agent in Hong Kong and Australasia showed that haloperidol and midazolam are the most frequently used sedating drugs as monotherapy in Hong Kong. Olanzapine was found to be more frequently used in Australia compared to Hong Kong, as was the use of combination therapy.

The results of two randomised clinical trials (RCTs) completed in the Australian emergency setting will be discussed. The Code Grey Study (2013), a multicentre RCT examining IV olanzapine and droperidol as combination therapy versus midazolam alone for managing agitation in ED showed that olanzapine was safe and effective. Results from the recent SOOTHE study (2016), a multicenter RCT also comparing combination therapy with monotherapy showed greater sedating effects in the IV midazolam-droperidol group compared with IV droperidol alone and IV olanzapine alone groups. Preliminary data and descriptive results from five study sites of the Hospital Authority from a multicentre RCT in Hong Kong comparing IM olanzapine vs. haloperidol vs. midazolam will be presented. The objectives and design of a new multicentre RCT comparing oro-dispersible olanzapine (wafer) vs. haloperidol or diazepam will also be presented. Patient consent issues and staff engagement are important aspects and challenges of clinical research on the management of acute agitation.

### B2.4 - FRAIL ELDERLY CARE MODEL IN EMERGENCY MEDICINE WARD, QUEEN ELIZABETH HOSPITAL

Dr Gordon CK Wong
Chief of Service, Accident and Emergency Department, Queen Elizabeth Hospital

The population in Hong Kong has reached more than 7.3 million in 2016, and is expected to rise to 8.2 million in 2043. During the same period, the elderly population (aged over 65) rose from 16% in 2016 to 23% in 2024, and then 33% in 2044. Over the decade, Wong Tai Sin district has the highest proportion of elderly population while Yau Tsim Mong as well as Kowloon City District experienced the largest population growth.

It is no wonder that Queen Elizabeth Hospital Accident & Emergency Department (AED) suffers from increasingly serious service impact – highest triage categories 1 to 3 attendance, highest ambulance-in patients, and most importantly highest elderly attendance by those aged 65 and above. In order to strive to uphold the quality of care to our patients, new service and care model have been devised - Emergency Medicine Ward (EMW) is one major endeavor among the AEDs in Hong Kong. Over the years, EMW had proven to be a suitable platform for protocol-driven care plan, as well as a hub for multi-disciplinary service and cross-specialty collaboration to expedite patient management.

Frail Elderly Care Model is not new to healthcare system in other parts of the world. The opening of our second EMW by the end of year 2015 has lent opportunity for trial of this service model – Frail Elderly Service. This model incorporates multi-disciplinary team management by emergency physicians and nurse, geriatric-trained nurses, and allied health professionals. The Frailty Team will target to the medical problems as well as the psycho-social needs of the elderly, who may be suffering from psychosomatic complaints, mobility imbalance and frequent fall, caring problems etc. The comprehensive team approach will expedite the in-hospital management with shortened length of stay (LOS), decongest the hospital, facilitate safe discharge to prevent decondition due to prolong hospital stay. The recent limited experience of recruiting a geriatrician to the Team has further strengthened the Team’s professional expertise, and facilitated subsequent patient management in the most appropriate level of care in the system.

### B3.1 - OCCUPATIONAL THERAPY FALLS PREVENTION PROGRAMME FOR ELDERLY PATIENTS DISCHARGED HOME FROM EMERGENCY WARD USING THE PERSON-ENVIRONMENT-OCCUPATION MODEL

Ms Vicki WH Leung,1 Ms Mary ML Chu,1 CMS Lee,1 KM Ling,1 YK To,1 WT Toh,1 YL Yung,1 JTC Chan,1 KY Lo,2 SH Tsui2
1. Occupational Therapy Department, 2. Accident and Emergency Department, Queen Mary Hospital

**Objective:**
To study fall risks in elderly patients discharged home from Emergency Medicine(EM) ward using the Person-Environment-Occupation (PEO) Model.

**Methodology:**
Patients admitted to EM ward in Queen Mary Hospital were evaluated on their falls risks by nurses using the Falls Morse Scale. Those with falls risks were identified and further screened by occupational therapist (OT) if they satisfied the inclusion criteria of the elderly falls prevention OT programme. Inclusion criteria included patients at or above 65 years old, residing at home, with fall history within one year and not referred for other community elderly service. OT provided falls prevention education and also offered a home visit to assess for falls risks for recruited patients. A visit to patient’s
ABSTRACTS

**B3.2 - PREDICTING PNEUMONIA IN PAEDIATRIC ACUTE FEBRILE RESPIRATORY ILLNESS**

**Dr Fiona YY Chan, CF Tse, KM Poon, CT Lui**
Department of Accident and Emergency, Tuen Mun Hospital

**Background:** It is a regular challenge for emergency and primary care physicians to identify pneumonia in patients with acute febrile respiratory symptoms, particularly in those stable patients without signs of respiratory distress. Decision to order chest roentgenogram was exclusively based on clinical gestalt, with highly variable practice and accuracy.

**Method:** This is a multicentre prospective study in 3 emergency departments. Children less than 6 years old with acute onset of fever and respiratory symptoms were recruited. Neonates, patients in clinical respiratory distress, requiring oxygen supplement, immunocompromised, or had chronic lung disease were excluded. Pneumonia was defined as a composite outcome of (1) new onset pneumonia in chest radiograph (CXR), or re-admittance to any emergency department within 7 days and diagnosed pneumonia. Two independent assessors with agreement on CXR findings was defined as positive outcome. Split sample method was adopted for derivation and validation of a clinical prediction rule, the Paediatric Acute Febrile Respiratory Illness rule (PAFRI Rule). The predictive model was derived by logistic regression. A clinical decision score was derived with weighing based on the adjusted odds ratio. The Paediatric AFRI Rule was validated and compared with the Bilkis Decision Rule and Bilkis Simpler Rule with ROC curve.

**Results:** Out of the 967 children evaluated, 530 of them had taken CXR, with 90 having positive outcome. The Cohen’s Kappa was 0.937 for the agreement between the two assessors for the roentgenogram. PAFRI Rule was derived with logistic regression with 5 weighted predictors to form a scoring system: Duration of fever ≤3 days (0 score), 3-4 days (2 scores), 5-6 days (4 scores), ≥7 days (5 scores), chills (2 scores), nasal symptoms (2 scores), abnormal chest exam (3 scores), SpO2 <96% or tachypnoea (3 scores). With the validation group, the area under Receiver Operating Characteristic curve of the Paediatric AFRI Rule, the Bilkis Decision Rule and Bilkis Simpler Rule were 0.733, 0.600 and 0.579 respectively. The PAFRI Rule is statistically significantly better than the Bilkis Decision Rule and Bilkis Simpler Rule. PAFRI ≥ 2 gives a sensitivity of 91.7% and negative predictive value of 97.7%, whereas PAFRI ≥ 4 can achieve up to specificity of 90%.

**Conclusion:** The PAFRI rule can be used to a reference tool for guiding need for referral or taking roentgenogram for paediatric patients, while adopting a higher cut off (≥ 4) may be considered for triaging the patients for higher priority with high specificity.

**B3.3 - FRAILTY AT FRONT DOOR. A WINTER SURGE COLLABORATIVE SERVICE MEASURE**

**Dr You-ming Chau, 1 KA Wan, 1 MC Wan, 2 PG Kan 1**
1. Accident and Emergency Department, 2. Geriatric Department, Ruttonjee and Tang Shiu Kin Hospital

**Background:** As Hong Kong population ages and life expectancy increases, by 2021, more than 25% of Hong Kong residents are expected to be 65 years or older. The elderly admission and burden on hospital services will increase especially during the winter surge period. Geriatric patients typically manifest a complex mix of chronic diseases and underlying psychosocial problems. To deliver a holistic medical model for geriatric patients with multiple comorbidities and strengthen the front door gate keeping for in-patient services, a new care model with early tripartite collaboration between the geriatricians, community caretakers and emergency physicians is developed to provide alternate care pathway for selected geriatric patients. We have conducted a pilot study of the new model- “Frailty at Front Door”.

**Objective:** To provide a joint medical care between the geriatric and emergency medicine specialists with early mobilization of community services for the frail elderly to decrease the admission and readmittance to the emergency department.

**Methods:** Patients more than 65 years old, who were triaged as urgent or semi urgent were assessed by the emergency physicians. If the patients had borderline indications for medical admission and may potentially be managed in alternative pathway, they were enrolled in the programme. The Geriatric team would complete the comprehensive geriatric assessment with Edmond frailty score and clinical frailty scale in the emergency department (Graph 1 integrated management workflow). A conjoint care plan was worked out with emergency physicians to facilitate direct discharge from emergency department, with the support of comprehensive, enhanced community care (Graph 2). Phone follow up was arranged to monitor the patients’ clinical conditions for one month. Satisfaction survey was also conducted.

**Results:** There were totally 40 patients with median age 83 years old (interquartile range 73-86) recruited over the 11-week period. Patient characteristics are shown in Table 1 and Graph 3. Among the 40 patients, about 68% were considered as at least vulnerable to severe frail in clinical frailty scale assessment. 33 patients (83%) were discharged directly from emergency department. 85% of these patients had no readmittance to emergency department in 28 days (Graph 4).

**Conclusions:** The early involvement of geriatric and community care teams within emergency department can decrease the admission to 80% and avoid readmittance rate up to 85% within the first 28 days. The programme also shown possibilities of providing the emergency department with more management options and strengthen collaboration with hospital and community health teams.

**Graph 1: integrated management workflow**
B3.4 - FIRST EXTRACORPOREAL CARDIOPULMONARY RESUSCITATION (ECPR) PROGRAMME FOR REFRACTORY CARDIAC ARREST IN HONG KONG: COLLABORATION OF AED, ICU AND CCU

Dr Pui-cheung Lam,1 CW Ngai,2 PY Ng,2 WC Sin2
1. Accident and Emergency Department, 2. Department of Adult Intensive Care, Queen Mary Hospital

Introduction: Patients presenting with cardiac arrest have high mortality despite conventional cardiopulmonary resuscitation (CPR). The survival rates of out-of-hospital cardiac arrest (OHCA) and in-hospital cardiac arrest (IHCA) are only about 1.25% and 5% respectively. Moreover, survivors often have severe neurological deficits. The latest American Heart Association guidelines in 2015 suggested consideration of Extracorporeal CPR (ECPR) as an alternative treatment to conventional CPR in selected patients. We analyzed the early results of an ECPR programme in Queen Mary Hospital.

Methods: This is a single centre, retrospective analysis conducted in Queen Mary Hospital. OHCA and IHCA patients with refractory pulselessness were managed with CPR and percutaneous cannulation of femoral artery and vein for veno-arterial ECMO. Patients with suspected myocardial infarction then received coronary angiogram in the cardiac catheterization laboratory. The primary outcome was 30-day survival. The secondary outcome was hospital discharge with good neurological outcome (Cerebral Performance Categories 1 or 2), predictors of 30-day-survival.

Results: A total of 32 patients received ECPR (16 OHCA and 16 IHCA) from March 2015 to December 2016. The median age was 52.5 (IQR 38.5-62) years. 25 patients were male sex (78.1%). 17 patients (53%) were diagnosed with acute myocardial infarction, 4 patients (12.5%) with myocarditis, and other diagnoses included aortic aneurysm, pulmonary embolism, drug overdose, and cardiomyopathy. Emergency coronary angiogram was performed in 19 patients (59%) and primary percutaneous coronary intervention (PCI) was performed in 13 patients (41%).

The 30-day survival for the entire study was 34.4% (11 patients), and 28.1% (9 patients) was discharged from hospital with a good neurological outcome. There were no differences in baseline characteristics such as age, sex, and comorbidity between survivors and non-survivors. The rate of immediate CPR upon arrest was significantly higher in survivors (9 out of 9, 100%) than in non-survivors (11 out of 23, 47.8%) (p=0.012).

Conclusion: We achieved a 30-day survival rate comparable to international centers of 34.4%. Patients who received immediate CPR had better outcomes. Further studies are necessary to establish more well-defined inclusion criteria for ECPR in order to better utilize healthcare resources.

B3.5 - ELDERLY OUT-OF-HOSPITAL CARDIAC ARREST - A POPULATION-WIDE ANALYSIS OF PREHOSPITAL REGISTRY DATA

Dr Siu-chung Leung,1 R Leung,1 KL Fan,1 LP Leung1
1. Accident and Emergency Department, Queen Mary Hospital
2. Emergency Medicine Unit, Li Ka Shing Faculty of Medicine, The University of Hong Kong
3. Accident and Emergency Department, The University of Hong Kong – Shenzhen Hospital, China

Introduction: With the highest life expectancy and one of the most aged population in the world, healthcare system in Hong Kong is now managing more elderly patients in out-of-hospital cardiac arrest (OHCA). This study aims to describe the epidemiology, outcomes, and predictors of survival from OHCA in geriatric population using territory-wide prehospital data.
Methods: This retrospective cross-sectional study analysed consecutive OHCA patients aged 65 years or above, who were transferred by emergency ambulance service from 1st August 2012 to 31st July 2013. The primary outcome was 30-day survival. The secondary outcome was neurological recovery. Patients’ demographic data, site of arrest, presence of witness, initial cardiac rhythm, availability of bystander cardiopulmonary resuscitation (CPR) and defibrillation, resuscitation in emergency department, and prehospital time variables were described. Associations among independent variables and study outcomes were evaluated with univariate logistic regression. Survivors and non-survivors were compared using Mann-Whitney U and Chi-squared tests for continuous and categorical variables, respectively.

Results: 3919 included elderly cases contributed to 76% of OHCA cases in all age groups during the study period. It corresponded to 416 arrests per 100,000 person-years, which outnumbered the overall population (72 arrests per 100,000 person-years). Most occurred in residential homes (50.3%), followed by nursing homes (38.4%). In-hospital resuscitation was not initiated in 64.4% cases. The 30-day survival rate was 1.5%. 0.8% achieved favourable neurological status on discharge, as defined by Cerebral Performance Category Scores of 1 or 2.

The odds of 30-day survival dropped 11% with each year of age increase. Nursing home residents were less likely to survive (0.39%). Survival deteriorated with delays of activation of emergency medical service, ambulance arrival, and first defibrillation.

If cardiac arrests were witnessed aboard ambulances, the survival odds were 10 times higher. Patients who received bystander CPR by police, and treatment with public access defibrillation (PAD) before ambulance arrival, outlived who did not by 13 times and 12 times, respectively. Initial ventricular fibrillation and pulseless ventricular tachycardia had better prognosis (Adjusted OR = 8.87, CI = 4.81 – 16.03, p < 0.001).

Conclusion: The incidence of elderly OHCA was high and survival remained low. Chain of survival needs to be reinforced. Structured training for police officers, nursing home staff, home carers, and the public at large should be promulgated to shorten delays to CPR, defibrillation and ambulance service.

B3.6 - PREDICTION OF PNEUMONIA IN ACUTE FEBRILE RESPIRATORY ILLNESS

Dr Choi-Yung Tse, FFY Chan, KM Poon, CT Lui
Department of Accident and Emergency, Princess Margaret Hospital

Background: It is a common challenge for emergency physicians to distinguish pneumonia from upper respiratory infections in patients with acute febrile respiratory symptoms. Risk straining prediction rule would assist the ordering of chest roentgenogram by emergency physicians.

Method: This is a prospective multicenter study. 537 adults aged at least 18 who were recruited. Those requiring resuscitation or were hypoxaemic were excluded. Pneumonia was defined as a composite outcome of new onset infiltrates in chest X-ray (CXR), or re-attendance within 7 days and diagnosed pneumonia. Two independent assessors with agreement were defined as the positive outcome. The demographics, symptoms, vital signs and clinical signs of the pneumonia and normal group were compared. A predictive model, the Acute Febrile Respiratory Illness (AFRI) rule was derived by logistic regression. The AFRI rule was internally validated with bootstrap resampling and was compared to the Diehr and Heckerling rule.

Results: In the 363 patients who had undergone CXR, 100 had CXR confirmed pneumonia. The Cohen’s Kappa was 0.936 for the agreement between the two assessors for the roentgenogram. AFRI rule was derived with logistic regression with 7 weighed predictors summarized up to AFRI score: age ≥ 65 (1 score), peak temperature within 24 hours ≥ 40°C (2 score), fever duration ≥ 3 days (2 score), sore throat (-2 score), abnormal breath sounds (1 score), history of pneumonia (1 score) and SpO2 ≤ 96% (1 score). With the bootstrap resampling, the AFRI rule was demonstrated to be more accurate than the Diehr and Heckerling rule (area under ROC curve 0.816, 0.721 and 0.566 respectively, p < 0.001). At cutoff of AFRI ≥ 0, the rule had 95% sensitivity, while negative predictive value was 97.2%. CXR may be avoided for patients having a score of < 0. At cutoff of AFRI ≥ 3, specificity of AFRI rule was 90.2% and positive predictive value was 47.8%. Triage initiated CXR may be considered at AFRI score ≥ 3 to pick up pneumonia.

Conclusion: AFRI score at two cut off could facilitate emergency physicians to reduce unnecessary CXR and the early pick up of pneumonia by triage initiated CXR. Further external validation would be required.

B3.7 - ACCIDENTAL INGESTION OF DESICCANTS AND OXYGEN ABSORBER

Dr Ion-wa Wong,1 CH Ng,2 CK Chan2
1. Department of Accident and Emergency, 2. Hong Kong Poison Information Centre, United Christian Hospital

Objectives: To (1) characterize the clinical features of desiccants and oxygen absorber ingestion, (2) identify predictors for development of clinical features after ingestion. Design: Retrospective observational study. Setting: Patients with desiccants and oxygen absorber ingestion from July 2008 to March 2017, derived from the database of Hong Kong Poison Information Centre.

Results: In all, 274 patient records were identified, of which 19 were excluded based on pre-defined criteria and 255 were analysed. The most common symptoms were related to the local irritative effects on the digestive tract, such as oropharyngeal irritation, vomiting and abdominal pain. Univariate analysis showed that age, ingestion of calcium oxide or unknown type of desiccant are associated with development of symptoms.

Conclusion: The type of desiccant ingested is the most important predictor for the development or absence of symptoms after ingestion.

POSTER 1 - 2D BARCODE WRISTBAND FOR UNIQUE PATIENT IDENTIFICATION IN ACCIDENT AND EMERGENCY DEPARTMENT OF POK OI HOSPITAL

Dr Kin-ming Poon, FT Chung, SYL Wai, MYL So, BWM Wong, HYY Leung, KL Ong
Accident and Emergency Department, Pok Oi Hospital

Introduction: Patient mis-identification is often encountered in the Accident and Emergency Department (AED) due to its over-crowded environment, high patients’ turn-over rate and lots of life-saving emergency procedures. We treasure correct patient identification as it is one of the most fundamental ways in fostering patient safety and the quality of care. Pok Oi Hospital (POH) is the third Accident & Emergency Department in Hong Kong to implement the 2D barcode patient wristband system.

Objectives: To enhance correct patient identification on specimen collection by implementing 2D barcode wristband to all patients who attended the Accident & Emergency Department in POH.
**ABSTRACTS**

Programme:
Since 16th December 2016, all POH AED patients would wear a 2D barcode wristband upon triage. The triage nurse is responsible for checking patient’s identity using core identifiers (i.e. the name and the identity card number) before applying the wristband to patients. It facilitates various procedures including blood taking and specimen collection. It helps to reduce the incidence of patient mis-identification because the specimen label would not be generated if there is mis-match between patient’s wristband and specimen job sheet as being identified by the 2D barcode scanner. In order to facilitate implementation of 2D barcode wristband programme, various educational materials, including the teaching video, are provided to our colleagues to familiarize the correct procedure of applying the wristband to patients and generating the specimen labels.

Results:
There is no problem of applying the wristband to patients upon triage or collecting patients’ specimen. There is so far zero incidence of patient mis-identification of blood or other specimen collection in our emergency department.

Conclusion:
The implementation of 2D barcode wristband to all patients attending POH AED was carried out smoothly in our department and it helps to enhance correct patient identification in our department.

Recommendation:
In future, the application of 2D barcode wristband system could be expanded to other aspects, for example prescribing drugs sheet, referral letter or sick leave certificates upon patient disposal. It may be incorporated into the electronic medication system of drug administration to patient in Emergency Department.

**POSTER 2 - ACCIDENTAL GERIATRIC POISONING IN HONG KONG**

**Dr Chi-keung Chan, ML Tse**
Hong Kong Poison Information Centre, United Christian Hospital

**Objective:** (1) To identify the commonest agents involved in accidental geriatric poisoning in Hong Kong; (2) To compare the corresponding figures in younger adults.

**Design:** Retrospective observation study.

**Setting:** Geriatric patients with age 70 or above, recorded as accidental poisoning cases in Hong Kong Poison Information Centre between 1st January 2016 to 31st December 2016, were included in the study group. Adult patients with age 18 to 69 presented in the same time period as accidental poisoning were included in the control group.

**Results:** 160 and 1049 patients were identified in the study group and control group respectively. The commonest agents involved in accidental geriatric poisoning are animal bite and sting (29 cases, 18.1%), household products (18 cases, 11.2%), Chinese herbal medicine (10 cases, 6.3%), cardiovascular drugs (16 cases, 10%), diabetes drugs (10 cases, 6.3%), pain killer (10 cases, 6.3%), proprietary Chinese medicine (10 cases, 6.3%). Compare with the younger adults, there are statistically significant differences with more geriatric patients involved in pharmaceutical poisonings; and less geriatric patients involved in wilderness poisoning:

<table>
<thead>
<tr>
<th>Agent</th>
<th>Number of case in geriatric patients</th>
<th>Number of cases in younger adult patients</th>
<th>P value (Chi Square test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal bite &amp; sting</td>
<td>29 (18.1%)</td>
<td>364 (40.3%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Household products</td>
<td>18 (11.2%)</td>
<td>85 (8.1%)</td>
<td>0.240</td>
</tr>
<tr>
<td>Chinese herbal medicine</td>
<td>18 (11.2%)</td>
<td>98 (9.3%)</td>
<td>0.536</td>
</tr>
<tr>
<td>Cardiovascular drugs</td>
<td>16 (10%)</td>
<td>6 (0.6%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Diabetes drug poisoning</td>
<td>10 (6.3%)</td>
<td>10 (1%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Analgesic poisoning</td>
<td>10 (6.3%)</td>
<td>24 (2.3%)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Conclusion:** The epidemiology of accidental geriatric poisoning in Hong Kong is different from the younger adult counterpart.

**POSTER 3 - CLINICAL AUDIT ON THE USE OF ADRENALINE IN RESUSCITATION TO NON TRAUMATIC OUT-OF-HOSPITAL CARDIAC ARREST ADULT PATIENTS IN NTWC EMERGENCY DEPARTMENTS**

**Dr Kin-ming Poon, KF Sun, CT Lui, KL Tsui**
Department of Accident and Emergency, New Territories West Cluster, Hospital Authority

**Background:**
Out-of-hospital cardiac arrest (OHCA) is a substantial public health issue worldwide. The survival to discharge (STD) rate remains low, ranged from 0.05 % to 1.54% in local studies. There are a substantial proportion of medically futile patients who were not going to be benefited from prolonged resuscitation.

Recent large observational studies have shown that the use of adrenaline in OHCA is associated with improved return of spontaneous circulation (ROSC) but not survival to hospital discharge. There was no clear advantage of standard dose adrenaline, high dose adrenaline or number of doses of adrenaline in survival to discharge or neurological outcomes after OHCA. A consensus practice of using up to 3 doses of 1mg adrenaline intravenous for resuscitation of non-traumatic OHCA adult patients was adopted in Hong Kong.

**Objectives:**
To audit on the use of adrenaline in resuscitation to non-traumatic adult patients with out-of-hospital cardiac arrest according to the consensus practice.

**Methodology:**
It was a retrospective study performed in 2 public hospitals in our cluster. The data was obtained from the hospital cardiac arrest registry (CAR) that included consecutive patients who experienced cardiac arrest. The target population included adult patients (aged 18 or above) with OHCA from 1st Oct 2015 to 30th Sept 2016. Those patients with post mortem changes or death after arrival were excluded. Other exclusion criteria were those trauma patients or those with shockable rhythms.

**Results:**
A total of 684 patients were recruited in the audit. The compliance rate of following the consensus practice of using at most 3 doses of adrenaline was 55.0%. 181 out of 684 patients (26.5%) were found to be medically futile yet received prolonged resuscitation of using more than 3 doses of adrenaline.

The difference of survival to discharge between consensus practice group and the control group (using more than 3 doses of adrenaline in resuscitation) was not statistically significant. (P value 0.631)

**Conclusion:**
The compliance of following the consensus practice of using at most 3 doses of adrenaline in resuscitation of patients with OHCA was suboptimal. We were providing prolonged resuscitation to a substantial proportion of medically futile patients.
**ABSTRACTS**

**POSTER 4 - COMMUNITY RESUSCITATION COURSE ENHANCE SELF-EFFICACY FOR SECONDARY SCHOOL STUDENTS IN HONG KONG**

Mr Wilfred SK Ling, 1 H Chan, 1 YF Chan, 1 WL Chan, 1 H Tang, 1 TC Lau 2
1. Accident and Emergency Department, 2. Hospital Foreman, Tin Shui Wai Hospital, Hong Kong

**Introduction and objective:** Out of hospital cardiac arrest (OHCA) cases are significant global public health issues with poor survival outcome. Low bystander CPR issue is one of the recipes for the high mortality rate for OHCA. Low self-efficacy for CPR is one of the common barriers on performing CPR as shown in recent researches. Researches over the globe have been shown there are advantages for providing early training to school students.

**Material and method:** The study is a before-and-after interventional study with data taking place in June, 2017. After one day resuscitation workshop, 43 students are required to fill in an anonymous 10-item questionnaire before the commencement and at the end of the programme. The questionnaires for both pre and post tests are identical.

**Results:** The test score was improved (5.58 vs 8.44 t = 13.173 p=0) as well as the confidence score (2.07 vs 2.65 t = 3.792 p=0) in a 4 point Likert scale.

**Conclusion:** There is a strong evidence that not only the knowledge but also confidence level will increase after the visiting activity, CPR and AED introduction to secondary students. More resuscitation programme shall be engaged and encouraged to the community.

The results were investigated by paired-t tests. Statistical analyses were carried out by IBM SPSS Statistics for Windows, Version 22.0. Armonk NY. A p-value of less than 0.05 was regarded as statistically significant.

**Test score (Full mark – 9 points)**

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Mean</th>
<th>Number</th>
<th>Standard deviation</th>
<th>Standard error mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>5.58</td>
<td>43</td>
<td>1.139</td>
<td>0.174</td>
</tr>
<tr>
<td>Post-test</td>
<td>8.44</td>
<td>43</td>
<td>0.734</td>
<td>0.112</td>
</tr>
</tbody>
</table>

Paired sample test

\[ t = 13.173 \ p=0 \]

There is a strong evidence (t=13.173, p=0) that the teaching intervention improves the scores. In the data set, it improves on average 2.86 points.

**Confidence score (4 points Likert scale)**

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Mean</th>
<th>Number</th>
<th>Standard deviation</th>
<th>Standard error mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>2.0698</td>
<td>43</td>
<td>0.86604</td>
<td>0.10462</td>
</tr>
<tr>
<td>Post-test</td>
<td>2.6512</td>
<td>43</td>
<td>0.73664</td>
<td>0.11234</td>
</tr>
</tbody>
</table>

Paired sample test

\[ t = 3.792 \ p=0 \]

This study also shows a significant (t=3.792, p=0) that the confidence level increases on ratio 0.58 on a 4 points Likert scale after the course.

**POSTER 5 - DISTRIBUTION, ACCESSIBILITY AND COVERAGE OF AUTOMATED EXTERNAL DEFRIBRILLATORS IN PUBLIC LOCATIONS IN HONG KONG**

Dr Ling-pong Leung 1, M Fan, 2 KL Fan 2
1. Emergency Medicine Unit, Li Ka Shing Faculty of Medicine, The University of Hong Kong
2. Accident and Emergency Department, The University of Hong Kong – Shenzhen Hospital, China

**Introduction:**

The survival rate of out-of-hospital cardiac arrest (OHCA) in Hong Kong (HK) is low. Use of automated external defibrillators (AED) can shorten the time to defibrillation and may improve survival. However, there is limited data on use of AED for OHCA in Hong Kong. This study aimed primarily at describing the distribution and accessibility of AEDs in HK and secondarily at the coverage rate of AED for OHCA using historical data.

**Methods:**

This was an observational descriptive study. Data for the AEDs were from the local AED distributors, the Heart-safe school project, government departments, NGOs and door-to-door search from 1/7/2015 to 31/12/2016. Data for OHCA were from a database maintained by the emergency medical services (EMS) during 1/8/2012 – 31/7/2013. Geographical locations of AEDs and OHCA were converted into Universal Transverse Mercator format. The Python 2.7 and R 3.2.5 were used to execute the GIS analysis and visualization. The distance between cardiac arrest and the closest AED was calculated. The proportion of historical OHCA occurring within 100m of an AED was calculated as coverage rate. Kruskal-Wallis test, Fisher exact chi square test, and t-test were used where appropriate.

**Results:**

In the study period, 1637 AEDs were located. The number of AEDs per 10,000 population and per km2 were 2.23 and 1.48. 49.4% (n=809) of the AEDs were placed in schools or educational institutions. 29.3% (n=479) were installed in recreational facilities supervised by the Government. Only 10.8% of these AEDs were accessible to the public without time restriction. Furthermore, only one third could be used by the public without the need for permission from personnel on site. From the historical OHCA database, there were 5154 cases. 1.3% had bystander defibrillation. 30-day survival rate was 17.5% and it was much better than the 2.3% as a whole. The time to defibrillation when an AED was used by a bystander was shorter than by the EMS (6.8 min versus 15.2 min, p < 0.001). The coverage rate of an AED within 100m of cardiac arrest was 15.3%. The coverage rate in different districts of HK varied widely and it did not correlate with the survival rate in each district.

**Conclusion:**

Most AED in HK were placed in schools. Accessibility to the public is far from satisfactory. OHCA with bystander defibrillation had higher survival rate. AED coverage rate was low. More need to be done besides raising the coverage rate.

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Number</th>
<th>Standard deviation</th>
<th>Standard error mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>2.0698</td>
<td>43</td>
<td>0.86604</td>
</tr>
<tr>
<td>Post-test</td>
<td>2.6512</td>
<td>43</td>
<td>0.73664</td>
</tr>
</tbody>
</table>

Paired sample test

\[ t = 3.792 \ p=0 \]
ABSTRACTS

**POSTER 6 - DOOR-TO-BALLOON TIME FOR ST-ELEVATION ACUTE MYOCARDIAL INFARCTION IN HONG KONG: A CASE REPORT**

Mr Wilfred SK Ling, HTang
Accident and Emergency Department, Tin Shui Wai Hospital

**Introduction:**
STEMI is one of the most challenging cases in the emergency room (ER). Patient suffering from STEMI shall receive definite treatment, percutaneous coronary intervention (PCI), within the shortest period of time in order to minimise the total ischaemic time for cardiac muscle. Study have been shown that the optimal time between the patient arrive the ER and to device time shall be less than 90 minutes (1), that is the ‘door-to-balloon time’. Study from the US also shows that door-to-balloon time closely associated with better in-hospital outcomes (2).

In this poster, we will report the first case of STEMI in TSWH in terms of logistic and treatment in multidisciplinary approach. Thus, to discuss the rooms for improvements for the future.

**Case report:**
A 63-year old man with past health history hyper-lipidemia attended the ER by ambulance service at 1559 complaining chest pain since 0700, he had no dizziness, no vomiting and no pain radiation on arrival in the ER.

At 1707, the patient arrived the catheter laboratory. PCI was performed with finding of pLAD critical lesion. The balloon time was 1729. The total door-to-balloon time was 90 mins.

The patient was hospitalised under critical cardiac unit care and discharged without complication after 5 days with follow ups.

**Discussion:**
In this case, the door-to-needle target time was achieved with 90 minutes. There are a few challenge points to note in this STEMI case, Firstly, the communication between the TSWH ER and PCI catheter laboratory in Tuen Mun Hospital (TMH) is quite difficult. As this is the first STEMI case in TSWH ER, the TSWH telephone operator is not quite sure which the party to be called. Moreover, as TSWH is quite new to the TMH CCU, more information are required from the receiving parties in order to confirm the intervention.

Secondly, time are spent on deciding who is responsible for escorting the patient. Manpower is tight as the time to confirm the intervention.

Conclusion:
Our team aims to use all our endeavours to minimise the door-to-balloon time without sacrificing safety for our patients.

With the collaborations with different health care disciplines including emergency physicians, nurses, cardiologists, radiological technologist and emergency medical service, it is possible to minimise the door-to-balloon time together with safety for all patients.

1559 Registration in ER/TSWH
1601 Categorised 3 *Urgent* by triage nurse
1606 ECG performed and showed ST-elevation on V2 and V3
1608 Patient was upgraded to Category 2 (Emergency) and sent to resuscitation
1609 Consult TMH CCU for PCI
1635 Case doctor decide to transfer patients to TMH for PCI
1653 Patient was discharged from TSWH. Transferred to TMH
1707 Patient arrived TMH cardiac catheter lab
1729 Balloon time

ABSTRACTS

**POSTER 7 - ENHANCE SERVICE OF EMERGENCY NURSE PRACTITIONER IN ACCIDENT AND EMERGENCY DEPARTMENT OF YAN CHAI HOSPITAL**

Ms Fei-choi Lung, TK Yeung, DKY Chau
Accident and Emergency Department, Yan Chai Hospital

**Introduction:**
Emergency Nurse Practitioners (ENPs) have provided service in the Accident and Emergency Department of Yan Chai Hospital (YCH) since 2013. They primarily treat a wide range of minor injuries and illnesses. They assess, diagnose, investigate and treat patients under medical supervision in order to deliver the service.

**Scope of ENP service:**
ENPs will perform assessment independently and hence discuss their clinical examination findings as well as treatment plan with designated senior medical officers for the following patients: wounds (e.g. abrasion and laceration), burns and scalds, human or animal bites, insect bites or stings, soft tissue infections, minor injuries and illnesses of upper limbs (e.g. hands, wrists, arms, elbows, and shoulders), minor injuries and illnesses of lower limbs (e.g. foot, ankles, knees and hips), and ENT conditions.

**Objectives:**
1. To shorten the waiting time for consultation;
2. To shorten patients’ length of stay; and
3. To improve patient’s satisfaction level.

**Results:**
Total 1,901 cases have been consulted by ENPs from February 2013 to June 2017.
From February 2013 to December, 2014, 545 cases were consulted and the average shortening of waiting time and length of stay are 41.3 minutes and 47.3 minutes respectively. In 2015, 501 cases were consulted and the average shortening of waiting time and length of stay are 65.5 minutes and 73.5 minutes respectively. In 2016, 655 cases were consulted and the average shortening of waiting time and length of stay are 48.3 minutes and 66.5 minutes respectively. From January to June, 2017, 200 cases were consulted and the average shortening of waiting time and length of stay are 45.5 minutes and 71.4 minutes respectively.

**Overall patients satisfaction result:**
From May 2014 to September 2016, patient satisfaction surveys were conducted and a total of 114 questionnaires were collected. Overall results were satisfaction.
**POSTER 8 - ENHANCEMENT OF LOGISTIC FLOW FOR AMBULANCE CASES IN TRIAGE CUBICLES TO MEET THE TRIAGE PLEDGE AND AUGMENT PATIENT SAFETY IN A&E/TSWH**

Mr Wilfred SK Ling, KM Chan, YF Chan, CY Chan, WL Chan, H Tang  
Accident and Emergency Department, Tin Shui Wai Hospital

**Introduction:**  
Triage patients are the first step of the A&E workflow and are vital for determining the waiting time of each patient. The A&E/TSWH have a total attendance of over 170 every day (8 hours service), approximately 30 cases arrived by using ambulance service daily. There are three entrances for patients to visit the A&E/TSWH. The main entrance and side entrance from the hospital lobby are near to the registration counter and the main triage station; they allow ‘walk in’ cases to attend the A&E. Nurses might miss out cases that are transferred to A&E from ambulance crew and lead to delayed triage process, consultation and treatment for urgent cases. Ultimately, it may affect the patient safety in receiving timely treatment and meeting the standard triage pledge time.

**Objectives:**  
1.) To enhance the logistic flow of patients from ambulances to triage areas in A&E/TSWH.  
2.) To augment patient safety by timely triage and treatment.  
To meet the standard triage service time pledge for every case.

**Methods:**  
The call bell was set up and the new triage workflow was announced and shared among colleagues. Feedbacks were also collected after the establishment of the workflow.

**Result:**  
Patients are diverted to different locations according to their complaints and history,  
Negative pressure room for patients with suspected airborne infectious illnesses - Patient with suspected or confirmed infectious diseases can be isolated in the negative pressure room to reduce the time of contact from the public zone, thus reduce the chance of spreading among patients and staff.  
Resuscitation rooms for critical cases – critical cases will be directed to the resuscitation rooms for treatments and investigations. The waiting time for triaging will be well shortened.  
‘Padded’ rooms for disturbed patients – disturbed or psychological high risks patients are directed to ‘padded’ rooms for further assessment. This can not only protect patients’ privacy but also enhance patients’ safety. The risks of disturbing other patients are reduced as well.  
Trolley triage station or main triage station for relative stable cases – This can ease the manpower of the A&E and be allocated to different locations after triaging.

**Conclusion:**  
The implementation of the call bell enhanced the logistic flow communication between nurses and ambulance crew. Thus, augmented the patient safety and committed the service pledge in A&E/TSWH. To keep the enhancement works sustainable, continuous review, top management support and effective leadership are of paramount importance to success.

---

**POSTER 9 - ENHANCEMENT OF WOUND CARE IN ACCIDENT AND EMERGENCY ACCIDENT BY IMPLEMENTATION OF FAST TRACK WOUND CLINIC**

Mr Tai-loi Yau, CS Chung, HK Ngan, P Mo, YK Ho, YY Yuen, MY Wong, YK Chan  
Accident and Emergency Department, Yan Chai Hospital

**Introduction:**  
In the scope of services, the management and care of acute traumatic wounds are entitled total workload of Accident and Emergency Department (A&E). The optimal wound care for initial wound closure is within 6 to 10 hours of injury. During the peak demand from seasonal or diurnal variation in A&E, the time of managing of acute wound may exceed the optimal time. With the introduction of Fast Track Wound Clinic in A&E, semi-urgent, single system with uncomplicated wound conditions can be managed in timely manner. The purpose of Fast Track Wound Clinic is to create a second flow of patients in parallel to the regular flow, for semi-urgency patient without adverse consequences for critical, emergency and urgent patients.

The Fast Track Clinic was commenced since 27 March 2017.

**Objectives:**  
• To attain functional closure and laceration repair within 6 to 10 hours after injury  
• To decrease risk of infection, minimize the scar formation and improve healing  
• To reduce patients’ anxiety and pain level  
• To reduce the waiting time, treatment time and Length of Stay (LOS)

**Inclusion Criteria:**  
• Semi-urgent, single system with uncomplicated wound conditions  
• Onset of acute wound injury within 8 hours  
• Require early surgical intervention such as suturing, application of steri-strip and tissue glue  
• Burn and scald wound except sunburn or erythematous only

**Outcomes:**  
A retrospective review was conducted.  
• 751 A&E attendants were recruited to Fast Track Wound Clinic from 27 March 2017 to June 2017.  
• The average of length of waiting time of Fast Track Wound Clinic was 40.25 minutes while other semi-urgent category was 109.91 minutes since 27 March 2017 to June 2017. The average of waiting time was shorten 69.7 minutes.  
• The comparison of average of LOS before and after implementation of Fast Track Wound Clinic between May to June 2016 and 2017 were 223 minutes and 150.64 minutes respectively. The average of LOS in A&E was reduced 72.4 minutes.
**Poster 10 - Experience of Frailty Care Model in a Local Emergency Department in Hong Kong**

Dr Patrick SC Leung, HF Ho, GCK Wong

**Introduction:** With aging population in Hong Kong, attendance of geriatric patients to public hospitals is increasing. Emergency department, as the gatekeeper of the hospital, and in-patient wards are overwhelmed. In order to provide timely and quality care to the low acuity group of geriatric patients who need hospitalization, a new model, named frailty unit, was set up in our emergency medicine ward (EMW).

**Method:** The frailty unit was opened in EMW of Queen Elizabeth hospital on 14 December 2015. Those patients who meet the inclusion criteria will be admitted; Age>60 with any of the followings 1) acute deconditioning due to acute medical illness. 2) Increasing fall with balance deficiency. 3) Post discharge community service required due to medical illness and inadequate social support. Exclusion criteria are 1) unstable vital signs. 2) Medical emergencies such as stroke or acute coronary syndrome. 3) Social needs or placement problem alone.

All patients admitted to the frailty unit will go through a designated 3-day clinical treatment pathway. On the day of admission, the doctor will formulate a management plan and the nurse will perform a comprehensive assessment with the patient assessment form. Our physiotherapist and occupational therapist will provide assessment on physical and mental status. They will advise appropriateness of ambulatory care at home or other institutions upon discharge. The community nurse and the case manager will be engaged for discharge arrangement and follow up plan. Bed manager will be responsible for arrangement of rehabilitation bed. The patient’s condition will be optimized and reviewed in the frailty round in consecutive days. Those who improved will be discharged home while those who need further management will be transferred to convalescent hospital for rehabilitation.

**Result:** From 14 December 2015 to 28 February 2017, 461 patients were admitted to the frailty unit. Female to male ratio is 1.4:1. The top 5 diagnoses of admission is fall, dizziness, low back pain, deconditioning and lower limb weakness. 300 patients were transferred to convalescent hospital for rehabilitation.

**Conclusion:** The frailty care model at emergency department is feasible. It can help to expedite care and discharge of low acuity geriatric patients who need hospitalization and relieve congestion of hospital while providing quality care.

---

**Poster 11 - Hepatotoxicity After Receiving Therapeutic Dose of Paracetamol in Geriatric Patients**

Dr Man-ting Lau, CK Chan, ML Tse

**Hong Kong Poison Information Centre, United Christian Hospital**

**Introduction:** Paracetamol is a commonly used analgesic for mild to moderate pain in geriatric patients. It has a well-established safety profile and can be used in patients with multiple co-morbidities. Accidental poisoning and adverse drug reactions are seldom reported in normal healthy adults. Here we describe 3 cases of geriatric patients with liver injury after administration of maximum recommended daily dose of paracetamol for adults.

**Case presentation:** These 3 patients aged 77 to 96 years old were administered paracetamol 1gram four times per day for duration of 5-6 days during in-patient stay. Two patients received paracetamol for painful hip problems, while one patient received paracetamol for post-operative pain. They all have normal baseline liver functions on admission. They were subsequently found to develop deranged liver function, and elevated serum paracetamol concentrations suggestive of delayed clearance. Chronic supertherapeutic paracetamol poisoning were diagnosed, and all patients were treated with intravenous N-acetylcysteine. Two of them recovered. One developed asystolic cardiac arrest of unknown cause, with successful resuscitation. The patients were all overweight with body weight ranges from 31 to 41 kg. The reported paracetamol doses were 129mg/kg/day, 100mg/kg/day, and 98mg/kg/day.

**Discussion:** This case series demonstrated that the recommended ceiling dose of paracetamol can be toxic to susceptible geriatric patients. Risk factors identified included low body weight, malnutrition, pre-existing comorbidities, institutional care and regular paracetamol intake for more than a few days. Other possible risk factors should include use of cytochrome P450 inducers and pre-existing liver disease. As there are a big number of geriatric patients taking regular paracetamol and low grade liver injuries can only be detected clinically with liver function testing, this case series likely reflected only the very tip of a big iceberg. Practically, one reasonable approach is to extrapolate the experience in pediatrics that limits the ceiling dose of paracetamol to <4g/day or <90mg/kg/day, whichever is lower. In the long term, research should be conducted to establish a safer dosing regimen for the geriatric population. Pharmacokinetic studies should be conducted particularly among the at-risk sub-groups. The relevance of the toxic dose and toxic blood concentrations of paracetamol established largely from younger adults should also be prudently re-examined in the geriatric population.

---

**Poster 12 - Intentional Poisoning in Geriatric Patients in Hong Kong**

Dr Kai-kee Lau

**Hong Kong Poison Information Centre, United Christian Hospital**

**Objectives:** To identify the commonest poisons among geriatric patients in intentional poisoning situations and compare the epidemiological pattern of poisons with that of younger adults.

**Design:** Retrospective observational study.

**Study method:** Electronic records from the Hong Kong Poison Information Centre database were searched. Geriatric patients aged 70 and above with intentional poisoning from 1 January 2016 to 31 December 2016 were included in the study group. Adults aged 18 to 69 with intentional poisoning within the same study period were included in the control group.

**Results:** The study group of 123 geriatric patients and the control group of 1028 younger adults were selected in this study. The commonest agents involved in intentional poisoning in geriatric patients were sedatives & hypnotics (52.5%), analgesics (18.7%), cardiovascular drugs (17.9%), household products (16.3%), pesticides (12.2%), and psychiatric drugs (12.2%), alcohol (8.1%) and abusive opioids (5.7%). In comparison with the younger adults, intentional poisoning in geriatric patients had statistically significant difference in the categories of cardiovascular drugs, household products, pesticides and alcohol.

**Discussion:** The epidemiology of intentional poisoning in geriatric patients was different from that of the younger adults in Hong Kong.
**POSTER 13 - IS THE MODIFIED EARLY WARNING SCORE (MEWS) A USEFUL TOOL TO FACILITATE TRIAGE DECISION IN AN ACCIDENT AND EMERGENCY DEPARTMENT?**

Ms Kit-ying Poon, JHH Yeung, WYW Chan
1. Accident and Emergency Medicine Academic Unit, The Chinese University of Hong Kong
2. Accident and Emergency Department, Tuen Mun Hospital
3. Accident and Emergency Department, Prince of Wales Hospital
4. Hong Kong Government Flying Service

**Introduction:** There is no study to prove the utility of modified Early Warning Score (MEWS) as a predictive triage instrument in Hong Kong Accident and Emergency Department (AED). The study objective is to find the relationship between MEWS and 5-level triage category and the outcome of the changed category level by MEWS. It investigates the MEWS is a useful tool to facilitate nurses to make triage decision in limited resource environment setting.

**Methods:** An observational study adopted a retrospective design that conducted in a public AED in Hong Kong between mid of February to March. During this period, the triage nurses categorized the patient as usual according to their clinical judgment with patients’ chief complain and vital sign measured based on Hong Kong Accident and Emergency Triage Guideline (HKATEG). In the same day after the end of shift duty, the investigator collected the data from AED card and ambulance record to calculate the MEWS. It categorized the patients and based on total MEWS. The primary outcome was the 5-level triage category by triage nurses and MEWS. Then, it compared the changed category cases and their outcome.

**Results:** Total 500 patients were included (52.4% male, 47.6% female). The mean age was 60.33±20.45. There was 31.2% missing recorded respiratory rate (RR) in AED card, their RR referred from ambulance record only. Majority of patient suffered from respiratory (20%), gastrointestinal (15.8%) and cardiac problem (12.6%). Most of them admitted to hospital (77.8%) and discharged (19.6%). Only 1.4% and 1.2% were admission to intensive care unit (ICU) as well as death in AED separately. Commonly, their disposals were associated with MEWS and category level. The MEWS with category level triage or the category level by nurses’ clinical judgment or calculated by MEWS were strong relationship. The correlation coefficients were -0.84 and 0.849. There was 78.2% no change category level after calculated by MEWS. However, 9.6 % and 12.2 % cases needed to be up-graded and downgraded. In upgraded cases, there were two cases admitted to ICU. Other cases were hospital admissions (94.7%) who were complaint of respiratory problem mainly (22.9%). In downgrade cases, 9.8 % discharged, 8.3% admitted to gynecological ward and one case to mental hospital.

**Conclusion:** Respiratory problem was the main chief complaints of the patients. RR was a crucial parameter to identify patient deterioration. It should promote RR measured in triage station for making more accurate triage decision. MEWS have strong relationship with the category level. It could assist nurses in making triage decision but MEWS could not replace nurses to categorized patient. MEWS only could act as an assist tools for nurses triage in more data reference and baseline to predict the patients outcome. MEWS was not suitable in all cases such as pregnancy woman and mental cases. MEWS was a simple scoring system facilitates nurses in making triage decision.

---

**SPONSORED LUNCH SYMPOSIUM - THE EVOLVING ROLE OF BIOMARKER IN HEART FAILURE DIAGNOSIS HOW NTProBNP TEST CONtributes?**

Prof Mark Richards
Director, Cardiovascular Research Institute (CVRI);
Professor, Department of Medicine, National University of Singapore (NUS)

Acute Heart Failure (HF) is a life-threatening condition that requires immediate medical attention. Nevertheless, signs and symptoms of HF are often non-specific, in particular among the obese, elderly and patients with chronic lung disease. This can lead to diagnostic uncertainty and result in additional diagnostic and therapeutic efforts, as well as increasing cost and longer Emergency Department (ED) duration.

Accurate and rapid diagnosis for acute HF is important. Adding Natriuretic Peptide (NP) testing (e.g. NT-proBNP test) to standard clinical assessment can help providing an objective result. Its role has already been demonstrated in various studies worldwide. Major HF guidelines (e.g. ACC/AHA, ESC etc.) also recommend its use in diagnosing and predicting the risk of dyspneic patients under the acute setting. In the recently updated 2016 ESC HF Guideline, a cut-off value of 300pg/ml is specified in stratifying the likelihood of acute HF.

By incorporating NT-proBNP into the diagnostic pathway, a more effective allocation of imaging resources can be achieved. In terms of prognosis, NT-proBNP also carries considerable information in identifying patients of low-risk who may not need hospitalization, or are not at risk for short-term mortality. Overall, in dyspneic patients presenting to the ED, NT-proBNP measurement can improve resource utilization, decrease length of stay and improve clinical outcomes.

**Reference:**
Taking Noninvasive Monitoring to New Sites and Applications

For over 25 years, Masimo has been an innovator of noninvasive patient monitoring technologies, striving to improve patient outcomes and reduce the cost of care. Masimo offers leading technology to care providers across the continuum of care — including mobile settings, Emergency Medical Services (EMS), and other post acute care areas.1

© 2017 Masimo. All rights reserved.

For more information, visit www.masimo.co.uk

For professional use. See instructions for use for full prescribing information, including indications, contraindications, warnings, and precautions.

1 Not all Masimo products are intended for use in all care areas.

PLCO-001203/PLMM-10594A-0818 PLLT-10356A

The organizing committee would like to extend their heartfelt thanks to the following companies for their ever failing support and contribution towards the Scientific Symposium on Emergency Medicine.
DON’T GUESS WHEN PERFORMING PEDIATRIC CPR

Since three out of four pediatric arrests involve a non-shockable rhythm, CPR is essential to save a life. But studies show that only 8% of compressions in children are deep enough. A staggering 92% of compressions are too shallow—less than one-third the recommended depth—guessing is not a good option when it comes to CPR.

The ZOLL R Series® defibrillator with OneStep™ Pediatric CPR Electrodes eliminates the guesswork.

When you can accurately determine CPR compression depth and rate, measure CPR idle time, and accurately gauge CPR periods to deliver optimal ventilation, you have the guidance you need to provide high-quality CPR.

Learn more about pediatric resuscitation and the importance of high-quality CPR at the ZOLL SSEM 2017 booth.


© 2014 ZOLL Medical Corporation, Chelmsford, MA, USA. OneStep, R Series, and ZOLL are trademarks or registered trademarks of ZOLL in the U.S. and/or other countries. ME3F 104-016
**Smart Infection Diagnosis**

**B·R·A·H·M·S PCT**

- Immediate clinical decisions 24/7
- Test results in 20 minutes

**Ease of Handling**

<table>
<thead>
<tr>
<th>Sample type</th>
<th>EDTA whole blood and plasma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to result</td>
<td>20 min</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0.08–10.0 μg/L</td>
</tr>
<tr>
<td>Detection limit</td>
<td>0.08 μg/L</td>
</tr>
<tr>
<td>Limit of quantification</td>
<td>0.12 μg/L</td>
</tr>
<tr>
<td>No High Dose Hook</td>
<td>up to 10,000 μg/L</td>
</tr>
</tbody>
</table>

**References:**

Please review Product Information before prescribing. Contact Baxter Healthcare for full Product Information.

**Thermo Fisher Scientific**

Supreme_A4_2017Aug_OP01.pdf   1   25/8/2017   4:19 PM
Roche NT-proBNP

Diagnosis of patients with dyspnea and suspected acute heart failure

After clinical and physical evaluation to assess HF probability, NT-proBNP is the initial diagnostic test (Class IA, LOA) and acts as a gatekeeper to identify patients who require echocardiography.

In trusting NT-proBNP in heart failure management, I can give answers to one. And hope to many.