

NEWSLETTER

Hong Kong Association of Critical Care Nurses Limited (HKACCN Ltd)

Message from the President

Vol. 18, No. 1, Nov 2017

LEUNG Fung Yee
President
HKACCN



Dear Members,

Cheers to 20 years! It is a great pleasure for all critical care nurses to celebrate the 20th Anniversary of the Hong Kong Association of Critical Care Nurses (HKACCN). Reaching our 20th Anniversary is a major milestone and signifies the cumulative success and commendable achievements we have made in promoting quality critical care nursing and building networks with other professional organizations for collective advancement.

Formed in 1997, HKACCN has been providing innumerable training opportunities to our members ever since. We are committed to not only developing advanced nursing practice, but also devoted to nurturing a passion in basic care in new nurse graduates. In July of 2017, we organized the “護動 Buddy Programme” in collaboration with the College of Nursing, the HK Nurses General Union and the Nurses Branch of Hong Kong Chinese Civil Servants Association. Through the programme, we offer genuine support to vitalize our new generations of nurses.



護動 Buddy Programme in July 2017



香港危重病學護士協會有限公司
Hong Kong Association of Critical Care Nurses Ltd.

It is clear that advanced nursing practices best flourish in an environment where healthcare practitioners and nurses alike can disseminate knowledge, share experiences and network with other world-wide experts. HKACCN has strived to foster such an environment and has been heavily involved in supporting international conferences including the 5th Asian Nephrology Nursing Symposium, the International Infection Control Conference and the Annual Scientific Meeting of the Hong Kong Society of Critical Care Medicine. We have also frequently conducted seminars with speakers invited from overseas to deliver talks on how to promote patient safety through knowledge and technology update and create an environment for change to impact patient outcome at unit level. It is our goal to provide an all-rounded platform for the development of our nurses in the critical care arena through these seminars.



The 5th Asian Nephrology Nursing Symposium in Sept 2017



ASM of Hong Kong Society of Critical Care Medicine in Dec 2016



HKACCN Seminar in July 2017



HKACCN Seminar in July 2017

It is always a proud moment and gratifying to witness the professional growth and personal achievement of our nurses and HKACCN remains committed to continue our pursuit of our Association's objectives. As the 2015-2017 term of Board of Directors is due to expire, we have elected the new directors to serve our members for the coming two years. At this jubilant time, I would like to take this opportunity to present the new Board of Directors (2017-2019) as follows:

Thrilled and honored as I am, by the confidence members have shown in me, I am also profoundly aware of the great responsibility entrusted to me to

be the President again in this new term. I am deeply grateful to all of you for giving me the opportunity to work with the new directors of HKACCN. I sincerely seek your continuous support to us and bestow a vote of thanks to all directors of the immediate past term.

Last but not the least; I cordially invite you to join our Annual General Meeting cum 20th Anniversary Dinner on 3rd November 2017. Let's celebrate and have fun together!!



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Enhancing the elevation of head of bed for patients at an angle of 30 degree with a lighting signal device

Intensive Care Unit
Department of Medicine
Alice Ho Miu Ling Nethersole Hospital

Introduction

Guidelines about the angles of elevating head-end of a patient bed vary and are inconclusive. Literature recommends elevation of the head of bed (HOB) at an angle of greater than 30 degree to prevent ventilator-associated pneumonia (VAP) (CHP, 2010). However, this conflicts with guidelines to prevent pressure ulcers, which recommends HOB elevation of less than 30 degree (Schallom et al., 2015).

A semi-upright position of mechanically ventilated patients is recommended to prevent VAP but the practice is not evidence-based (Niel-Weise et al., 2011). Among the discussion regarding various angles of 20, 30, and 45 degrees, the expert opinion of 30 degree is less controversial in improving quality of care.

Nurses in ICU are familiarized with the routine practice of elevated HOB to enhance tolerance of NG-feeding, prevent aspiration pneumonia, augment venous drainage in head injuries, and reduce the incidents of ventilator-dependent pneumonia. Nowadays all ICU beds are equipped with an angle measurement device (our beds have a small device with a metal ball as the indicator). Nevertheless, how high the HOB should be raised is not dictated by guidelines but also the discretion of case nurses. Hiner et al. (2010) noted that nurses tended to underestimate the angle, and other clinicians tended to overestimate.

According to the recommendations for VAP (CHP 2010), the practice of elevating HOB to more than 30 degree is adopted unless medically contraindicated. Nevertheless, the compliance with bed-elevation guidelines was far from satisfaction. A ventilator bundle audit performed by infection control nurses (ICN) in 2011 Quarter 3 to 2015 Quarter 2 in AHNH alerted us that only 63.6% of patient's HOB angles were adhered to the guidelines.

There are different methods that help to measure and assure the HOB angle to be at least 30 degree. Williams et al. (2008) placed a visible device on the side rails to help improving staff adherence to bed elevation guidelines (Fig 1).

New ICU beds are usually equipped with a built-in angle measurement device near the bottom of bed. Day-to-day clinical practice reveals that the judgments of HOB angle were made by individual eye-ball estimation rather than the built-in measuring tool, e.g. the protractor. To enhance the

accuracy, a positive reinforcement apparatus was deemed necessary to evaluate the differences in angle measurement between eye-balling and reading from the built-in protractor.

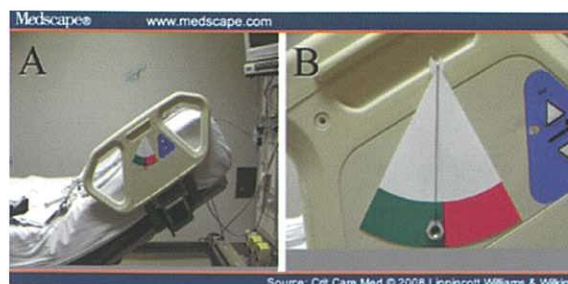


Fig 1. A visible device on the side rails indicating levels of HOB elevation

Method

An adjunctive HOB elevation monitoring apparatus using red light signals (when HOB angle is elevated to the pre-set angle a red light will turn on) is considered to be a suitable positive reinforcer. A similar reinforcing device was searched in the commercial market and literature but in vain. Finally, staff of the Electrical Medical Service Department (EMSD) at AHNH was consulted for the possibility of producing a home-made monitoring device. By trials and errors, two prototypes were produced.

1. Prototype A (Fig 2)
The signal design in this device was formed by a group of light indicators. These bright lights drew better nurses' attention but it may be too stimulating to eyes, especially during night shift. Furthermore, the ON/OFF switch was small.
2. Prototype B (Fig 3)
The number of light signals in this device was reduced to two, and the ON/OFF switch is bigger.

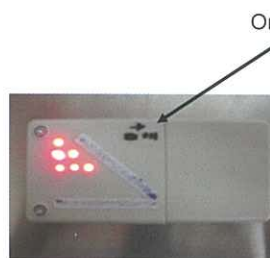


Fig 2. Small switch with brighter red

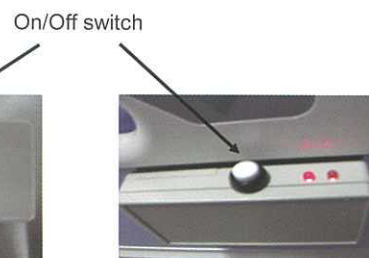


Fig 3. Bigger switch and less red

A Quality Improvement Project was planned and implemented to assure proper HOB angle for patients. The angle indicator Prototype B, severing as the positive reinforcer, was selected for this small project to modify ICU nurses practice in angle adjustment when HOB is being elevated. Working together with Prototype B, a commercially available digital measuring device (Fig 4) was used, as an objective data measurement, to indicate the real angle in numeric data. And readings from the built-in metal ball indicator were compared.

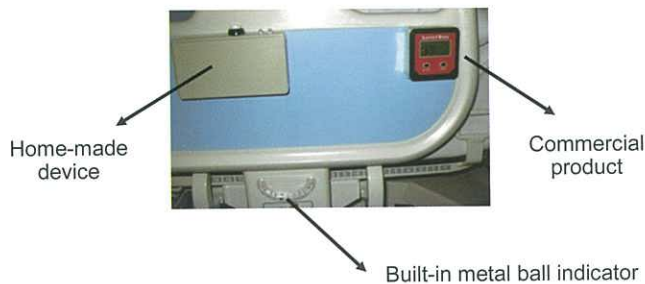


Fig 4. Set-up of devices for the appropriate HOB angle

Milestones of the Project

The significant events were,

- i) raising alertness / awareness of staff (a silent audit was conducted in June 2015 to collect primary data for examination of the current practice with the built-in device used),
- ii) using the commercially available digital display device to check and record the actual HOB angles (Nov 2015),
- iii) recognizing the differences between staff subjective visual judgment of the HOB angle of 30 degree and objective measurement by the home-made Prototype B (Oct 2015), and
- iv) follow-up action of the project (Jan-Mar 2016).

Implementation and Results

- i) During the silent audit, on-site actual measurements of HOB angle (by reading the built-in metal ball indicator) were recorded. Data were collected during A, P, N shifts at 11:00, 15:00, and 23:00 respectively after the patients' positions were turned and the HOB was elevated. Ninety-one angle measurements relying on subjective eye-ball judgment were checked against the bed built-in device. There were 37.2% of the results which achieved the 30 degree target; others between the range of 12 to 20 degrees (Mean: 24.1).
- ii) Nurses tended to use eye-balling method to estimate the HOB angle, making the angle of 30 degree varied from staff to staff either under or over-estimating the angle. Human factors such as stress, fatigue, violation of the rules, cutting-corners, lack of communication, and knowledge deficit, etc., may contribute to the non-compliance.

Changing non-compliance behaviours is not an easy task. This project applied the principle of step-by-step positive reinforcement to enhance accuracy of the HOB angles. Pettit (2013) acknowledged educators to use positive reinforcement to increase likelihood that the desired behaviours would sustain. Positive reinforcement increases learner's self-awareness and provokes confidence as the learners understand what they need to do. Each staff member was encouraged to follow the exercise and the regime of visual enhancement / adjustment programme. The

step-by-step approach was used to train staff to differentiate what 10, 20 and 30 degrees were. To begin with, each staff nurse was arranged to practice eye-ball adjustment of bed-angles using an empty bed to check what 30 degree would look like to them (under or over-estimation). The staff nurse was then asked to use the home-made device to raise HOB until the signals are activated. They would try 20 degree, 25 degree, and lastly 30 degree. The training programme was scheduled by stages in 2016 for practice by Jan-April for 20 degree; May-Aug for 25 degree; and Sept-Dec for 30 degree respectively.

- iii) At the end of project, compliance to perform HOB elevation with appropriate angles increased from 37% to 51%. The non-compliance was attributed to, a) poor condition of patients as evidenced by persistent low blood pressure, usually on double strength (2X, 4X) of inotropic support; and b) patients sitting in higher positions who are more likely to pull out life-supporting devices, e.g. ETT, NG tube, and central venous lines, etc. There were 63% of colleagues who found the Prototype B device (adjunctive angle indicator) practical.
- iv) Ways to secure device on the bed-side rail is a thorny issue. Our EMSD promised to fix the home-made device on the condition but there had to be no damage to the original bed, for example "to drill a small hole" is not allowed. Therefore, the only way was to fasten and fix the device by Velcro. It is a pity that the home-made device cannot be fixed permanently and they were removed at the end of the programme. The exercise was overall a good example of joint-efforts and collaboration in patient care with another department.

Conclusion

In conclusion, positioning of patients is a basic but essential nursing practice. Sitting-up patients in bed serves a number of purposes and the elevation of HOB at the angle of 30 degree are less controversial. All ICU beds are equipped with an angle measurement apparatus but few staff pay attention to use it. Staff relied on their eye-ball checks to estimate the degrees of elevation, leading to under or over estimation. Audits of our ventilator care bundle reviewed that there was room for improvement for HOB elevation. With the help of Electrical Medical Service Department, prototypes of light signals emitting apparatus were produced to reinforce good practice in the ICU of AHNH. A quality improvement exercise that aimed at enhancing patient care by accurate angle of HOB elevation with the use of Prototype B was implemented with promising results. Due to safety issue, the home-made device was unable to be fixed in the ICU beds, but the exercise demonstrated seamless co-operation across departments in providing good practice of care for patients. Future collaboration and continuous quality improvement exercises are warrant.

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香港危重病學護士協會有限公司
Hong Kong Association of Critical Care Nurses Limited

Mission

Established in 1997, the **Hong Kong Association of Critical Care Nurses (HKACCN)** exists as a non-profit, specialty organization, dedicated to promoting quality and cost-effective care for critically ill patients, and strengthening ties with their families and the community on achieving the purpose. This is accomplished through health education to the public and healthcare professionals; promotion of research activities to support evidence-based nursing practice; implementation of agreed practice standards of critical care nursing.

Objectives

- To define and promote the standards of critical care nursing practice.
- To provide critical care nurses with educational opportunities in the form of continuing nursing education.
- To support and facilitate critical care nursing research.

- To work collaboratively with other health-related organizations towards the improvement of critical care.
- To provide rapid information dissemination and effective communication networks to and on behalf of critical care nurses.

HKACCN COURSES (2017)

- Basic Life Support Provider Course:** 2 Dec, 5 Dec
- ECG Course for Beginners:** 29 Nov, 6 Dec, 13 Dec
- ACLS Provider Course:** 25 - 26 Nov; or 16 - 17 Dec
- Elementary Critical Care Nursing (ECCCN) — Module 2 / Cardiovascular Nursing 2017:** 31 Oct - 19 Dec

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Educating the use of chest compression device for the quality improvement of cardiopulmonary resuscitation

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Introduction

In 2015, there were about 77,600 inpatient discharges in all Hong Kong (HK) hospitals and 6,190 registered deaths related to heart diseases. Heart diseases were the third commonest cause of deaths in HK and accounting for 13.2% of all deaths in 2015 (Centre for Health Protection, 2017). The worst complication of heart diseases is cardiac arrest (Bonnemeier et al., 2011). In case of cardiac arrest, cardiopulmonary resuscitation (CPR) is the unique therapy to save lives. High quality chest compressions (CCs) is the key element in CPR (see Table 1) (American Heart Association, 2015).

A chest compression device (CCD) (LUCAS™ CPR, Figure 1) was introduced to our intensive care unit (ICU) since 2015. It is well known that the device is a feasible and safe alternative to manual CCs (Bonnemeier et al., 2011). The appropriate



Figure 1: A LUCAS™ CCD for CPR

4. prevent common pitfalls in applying CCD, and
5. assure effective CCs by CCD.

Methods

A small lecture was conducted to ICU staff to teach and demonstrate the application of CCD on a manikin. A pre- and post-evaluation would be conducted after the lecture. A compliance audit form was designed for the evaluation (Table 3). It contained 10 items in total, and the two of them labeled with * indicated that they were critical items which had to be fulfilled. According to the compliance audit form, with verbal instruction and critical points identified for trainees before conducting the audit, trainees were required to perform return demonstration of the proper use of CCD after the lecture. During the audit, at least two

Table 1 The dos and don'ts of basic life support for high-quality CPR in adults

Rescuers Should	Rescuers Should Not
Perform chest compressions at a rate of 100-120/min	Compress at a rate slower than 100/min or faster than 120/min
Compress to a depth of at least 2 inches (5 cm)	Compress to a depth of less than 2 inches (5 cm) or greater than 2.4 inches (6 cm)
Allow full recoil after each compression	Lean on the chest between compressions
Minimize pauses in compressions	Interrupt compressions for greater than 10 seconds
Ventilate adequately (2 breaths after 30 compressions, each breath delivered over 1 second, each causing chest rise)	Provide excessive ventilation (ie, too many breaths or breaths with excessive force)

use of CCD can provides more effective CCs, more ventilation time and minute volume, less hands-off time, and less decrease in effective CCs overtime compared with manual CCs (Szarpak, Truszewski, Czyzewski, Frass & Robak, 2017).

The improper use of CCD will result in numerous irreversible complications including fatal organs injury or bleeding (De Rooij, Wiendels & Snellen, 2009; Platenkamp & Otterspoor, 2013) (see Table 2). Although use of CCD improves CPR quality, it is observed that some ICU staff do not apply CCD appropriately or showing misunderstanding towards use of CCD. The consequence will be serious as it wastes precious time during CPR and induces injury to staff or patients (Platenkamp & Otterspoor, 2013). Owing to the potential harm and importance of proper use of CCD, an education program is decided for ICU staff to promote the use and operation of such device.

Aim & Objectives

The aim of the education program is to enhance the skills and knowledge of ICU staff in applying CCD on a cardiac arrest patient safely and effectively. The objectives are for the learners to competently,

1. check the functions of CCD,
2. follow the correct sequence of applying CCD on a manikin,
3. locate and place the suction cap of CCD,

Table 2 Complications of mechanical chest compression devices

Fractures	Injuries	Others
Sternal fracture	Severe cardiac injuries	Skin lesions
Rib fractures	Pneumothorax	Epicardial bleeding
	Liver injury	Mediastinal bleeding
	Thoracic aorta injury	Pericardial bleeding
	Lung injury	
	Spleen injury	
	Gastric perforation	

trainers would observe the performance of trainees. Trainers would provide feedback and advice after the audit. For those who were unable to fulfill the minimum requirement (<90% compliance) or failed to perform any of the item with an *, trainers would provide them with an additional chance for correction and improvement.

The procedures of operating CCD and related rationales are provided in Table 4.

Results

All ICU nursing staff (1 NO, 10 APN and 46 RNs) completed the audit successfully after the lecture. Over 90% of them passed the test in first attempt, when compared with below 50% before the lecture; the remaining fulfilled the requirement in second attempt. Nursing staff reflected that the lecture had

provided them with knowledge and skills to apply CCD safely and correctly. They also expressed confidence in applying CCD on real patients in future. They agreed that the lecture was useful and helped them knowing more about the CCD.

Table 3: Compliance audit form

Procedure: Set up of Chest Compression Machine (LUCAS 2)

Standard statement: Nurse can demonstrate their skill of set up chest compression system (LUCAS 2) timely with a minimum interruption of chest compression

	Standard criteria	Yes	No	Remark
1	Push ON/OFF for 1 second to start self-test and power up chest compression machine (LUCAS 2)			
2	Check the battery indicator			
3	Pause manual CPR, carefully put 'BACK PLATE' under the patient, below the armpits, then resume CPR			
4	Pull 'RELEASE RING' once to let the claw locks open, attach to Black Plate with click sound heard, then pull up once to ensure attachment			
5*	Locate the 'SUCTION CUP' to the nipple level with the lower edge above the lower end of the sternum			
6	Push the 'SUCTION CUP' down with two fingers when it is in Adjust mode			
7	Press 'PAUSE' button to lock Start Position, then remove your fingers from the suction cup			
8*	Start chest compression by selecting mode of 30:2 (without advanced airway) or 'CONTINUE' (with advanced airway)			
9	Press 'PAUSE' every 2 minutes for rhythm's check, resume chest compression if indicated with correct mode (30:2/CONTINUE)			
10	Monitor and adjust 'SUCTION CUP' in proper position during CPR			

* Critical Point

Compliance percentage: _____

Auditor: _____ Signature: _____

Staff Name: _____ Signature: _____

Conclusion

The lecture and return demonstration were found to be successful in promoting the proper use of CCD, and received positive feedback from staff. The skills and knowledge in applying CCD on a manikin safely and effectively among staff were observed. The review on applying CCD will be carried out yearly and communication book is developed to receive comments about using CCD. It is believed that CCD will improve overall CPR quality in ICU in future.

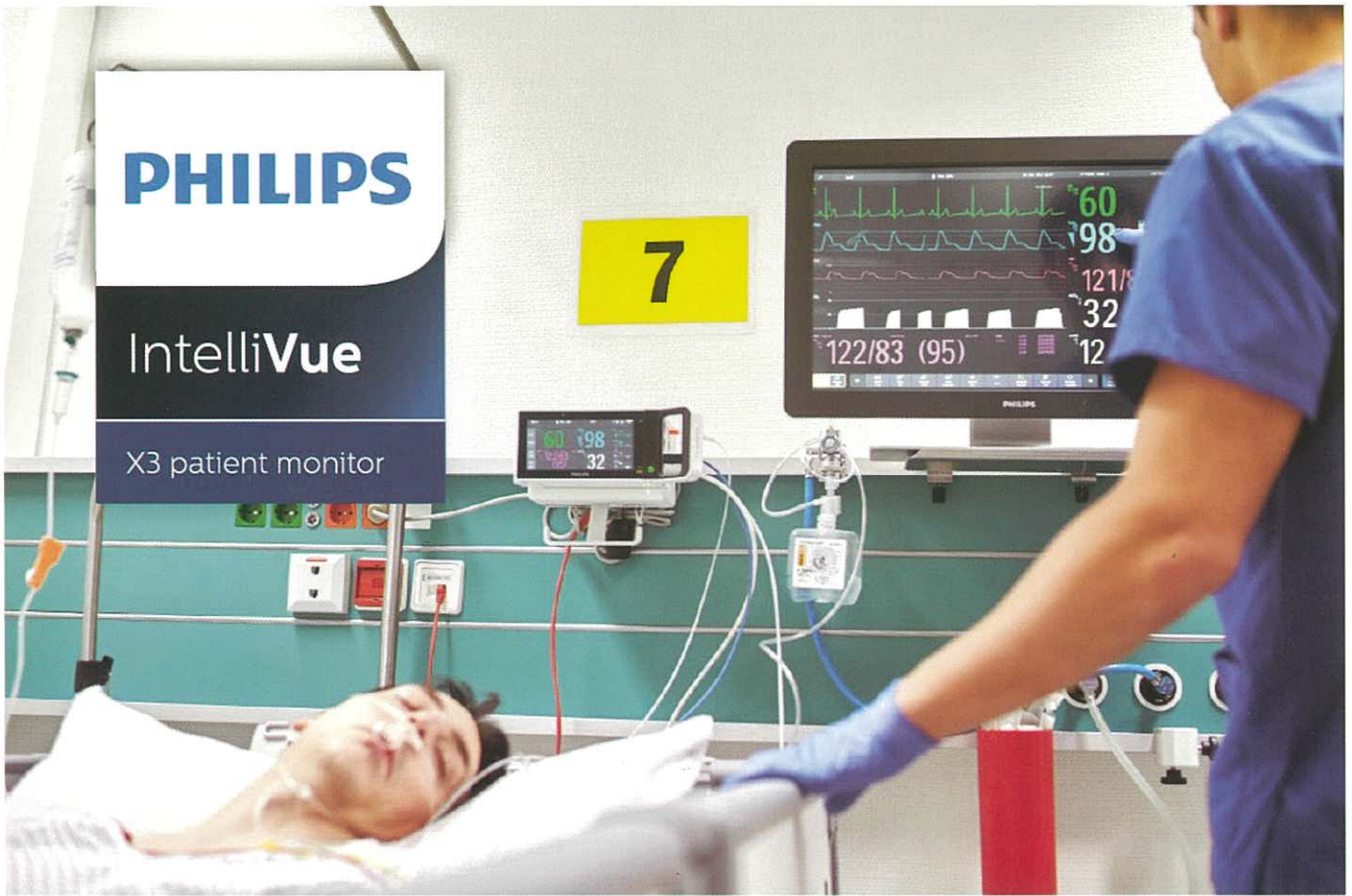


Table 4: Procedures and related rationales in operating CCD

Step	Procedures	Rationales
01	Press "On/Off" for 1 second to start the self-test and power up chest compression machine	Allow self-test to proceed
02	Check the battery indicator	Ensure appropriate battery level for normal functioning of CCD
03	Pause manual CPR, carefully put "Back Plate" under patient, below armpits, then resume CPR	Place back plate in proper position
04	Pull "release ring" once to let the claw locks open, attach to "Back Plate" with click sound heard, then pull up once to ensure attachment	Confirm the CCD is secured for future CC
05	Locate the "Suction cup" to the nipple level with the lower edge above the lower end of sternum	Confirm proper placement of suction cup
06	Push the "Suction cup" down with two fingers when it is in adjust mode	Ensure adequate compression depth
07	Press "Pause" button to lock start position, then remove your fingers from suction cup	Secure the position of suction cup
08	Start chest compression by selecting mode of "30:2" (without advanced airway) or "Continue" (with advanced airway)	Confirm correct mode is selected
09	Press "Pause" every two minutes for rhythm check, resume chest compression if indicated with correct mode ("30:2"/ "Continue")	Remind for rhythm check when indicated
10	Monitor and adjust "Suction cup" in proper position during CPR	Ensure proper placement of suction sup during CC

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Enhancing clinical service of imminent brain death patients in medical wards to increase potential organ donation: A 28-month experience of the critical care outreach team (CCOT) service

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Background

Despite having more than 2,000 patients awaiting solid organ transplant in Hong Kong, the deceased organ donation rate was 6.3 per million population in 2016 (International Registry on Organ Donation and Transplantation, 2017). It is well recognized that the chance of securing organ donation or retrieving more organs per donor from imminent brain death patients who are potential organ donors would be significantly reduced if they are managed in the general ward or non-intensive care settings during hospitalization (Singbartl et al., 2011).

Objectives

To set up a critical care outreach team (CCOT) as a 'satellite AICU' in medical wards for 24 X 7 (24

hours a day, seven days a week) service to provide critical care to imminent brain death patients.

Methods

Referral criteria, expedited pathway of critical care outreach service, and care protocol for management of patients with imminent brain death were formulated based on the consensus between critical care team and medical team (Figure 1 & 2). Seven medical wards were selected for the service. Intensive care nurses were trained to provide protocol-driven management to optimize patient's condition especially in hemodynamic support, mechanical ventilator care, temperature regulation, and fluid and electrolytes management for brainstem death test and organ support.

Procedures

The service of critical care outreach team was activated by the referrals of medical team. If the patient met referral criteria, a pre-outreach interview to family was conducted by the medical team to explain prognosis of patient's brain injury and introduce pathway of the outreach service. The outreach team was consisted of two AICU physicians and one nurse dispatching to the referring ward with equipment for supportive patient care (Figure 3 & 4). The physicians did not only determine the right time of a brainstem test and performed one set out of two of the test, they also set up arterial line and central venous line for patient's hemodynamic monitoring and stability. The CCOT nurse received report about the patient from a nurse in the referring ward and subsequently

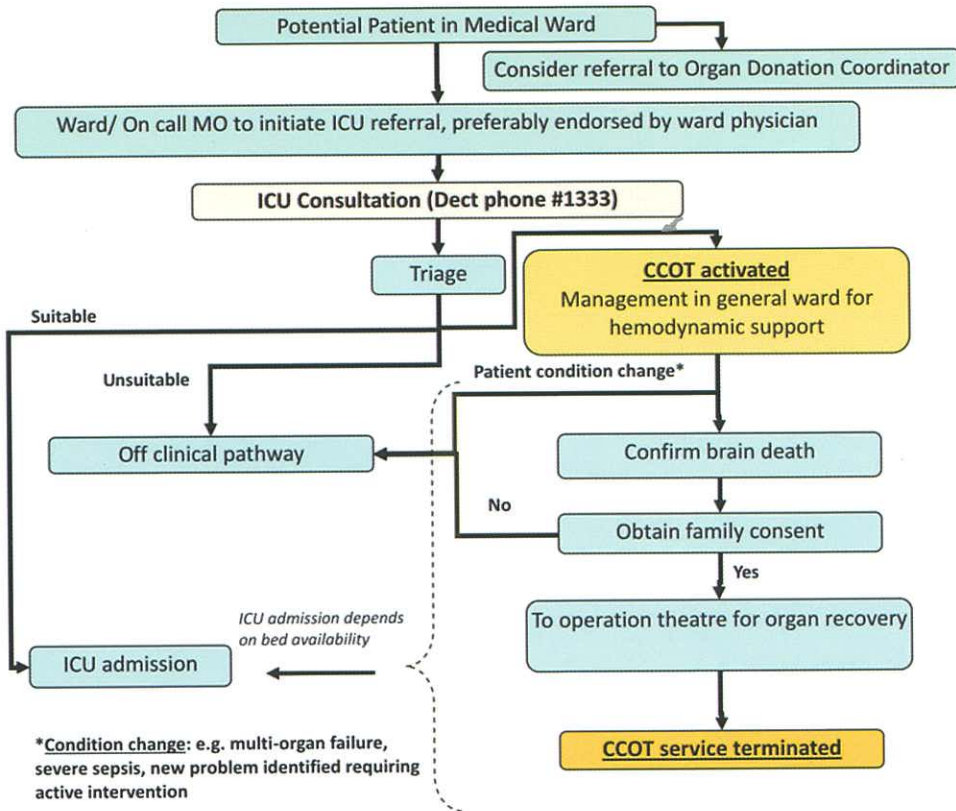


Figure 1: Expedited pathway of CCOT for the management of patients with imminent brain death in medical wards

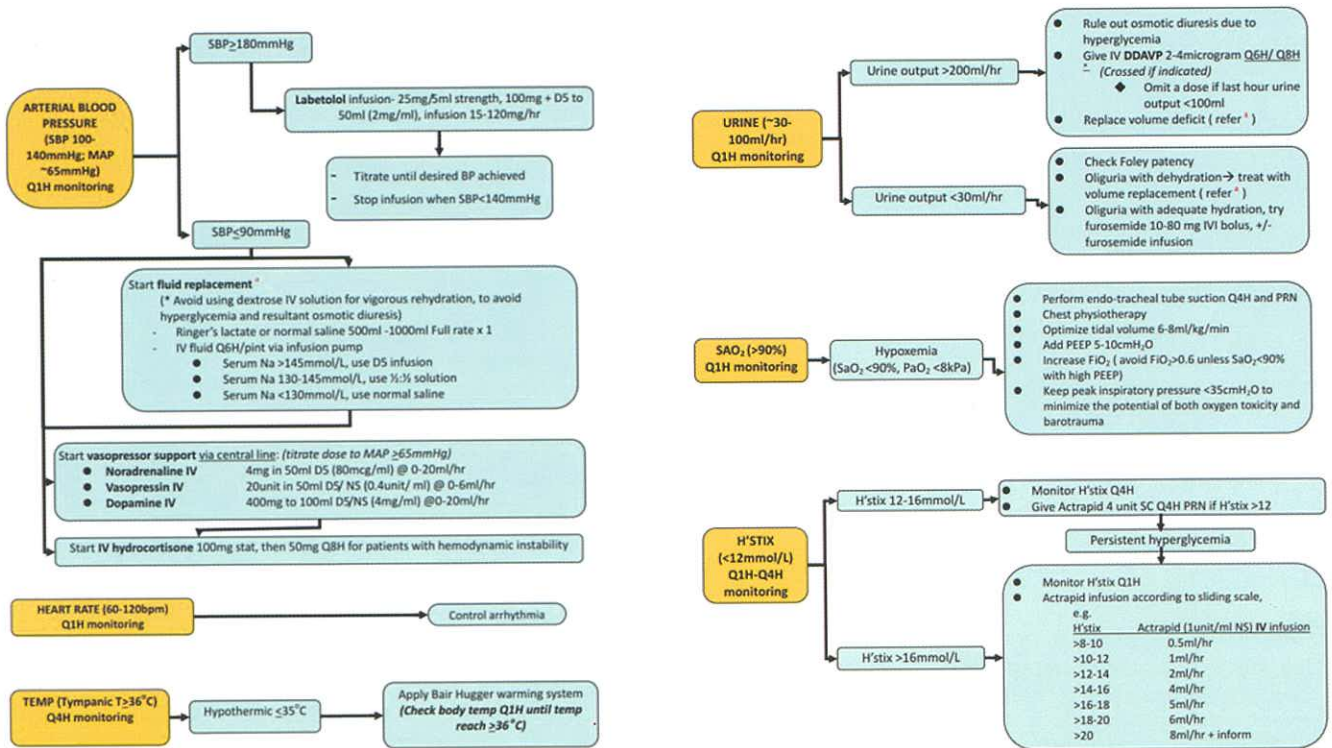


Figure 2: Protocol-driven orders for the management of patients with imminent brain death in medical wards

stayed in the ward to optimize patient's condition for brainstem death test and organ support. The CCOT nurse also collaborated with ward staff and organ donation coordinator to provide daily nursing care to patient, and psychosocial support to family.

OUTCOMES

The service has commenced since February 2015. In the first 28 months (up to June 2017) of piloting

the service, 11 male and four female patients with a median age of 54 years (range 30-68 years, SD 12) were recruited. Of the 15 patients, 14 had severe intracerebral hemorrhage and one had severe cerebral hypoxia. Eight of them were subsequently admitted to ICU (53%) through expedited pathway, and seven were supported by the outreach team in medical wards (47%). The duration of outreach service ranged from four to 38 hours. Donor care

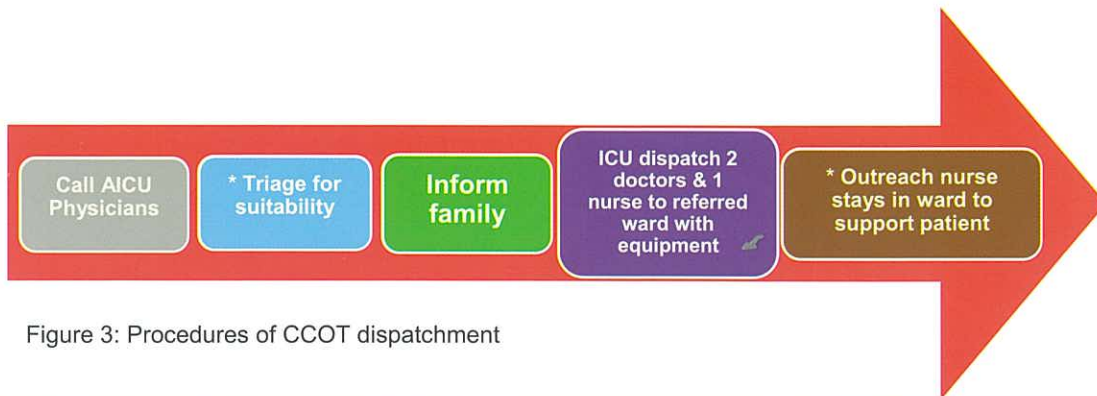


Figure 3: Procedures of CCOT dispatchment

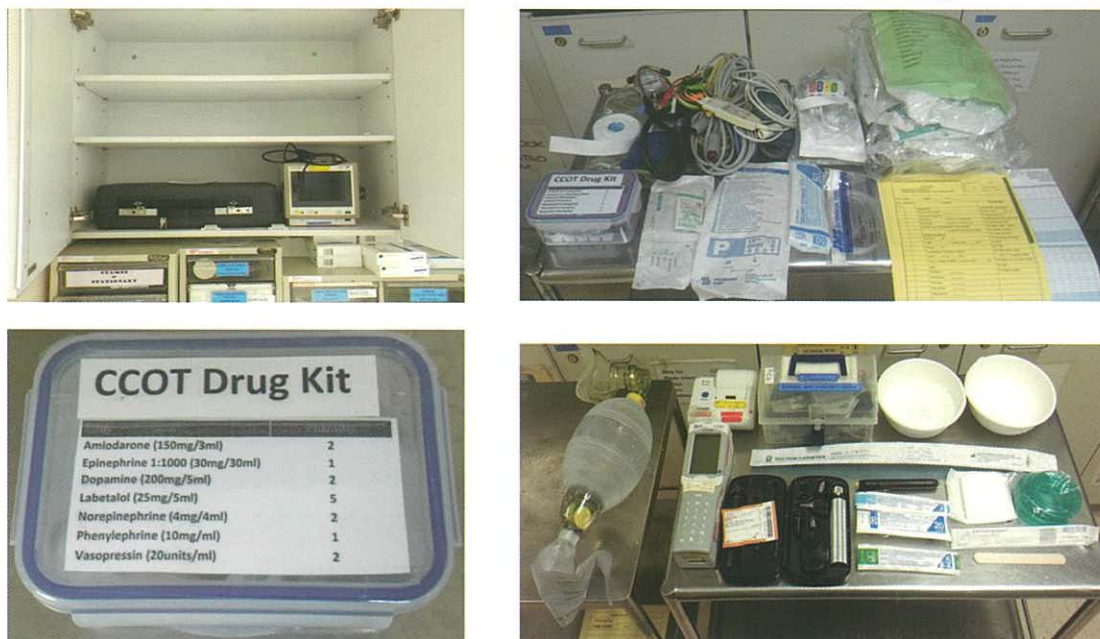


Figure 4: Outreach equipment

was rendered to all the patients. Brain stem death test was facilitated in 14 patients of whom two needed to proceed with confirmatory test for diagnosis of brainstem death. Five patients (33%) eventually became organ donors and none of them had acute organ dysfunction (Table 5).

evaluation of this CCOT service by comparing the outcomes with historical organ donation rates, and observation over time, are required to substantiate effects of the service.

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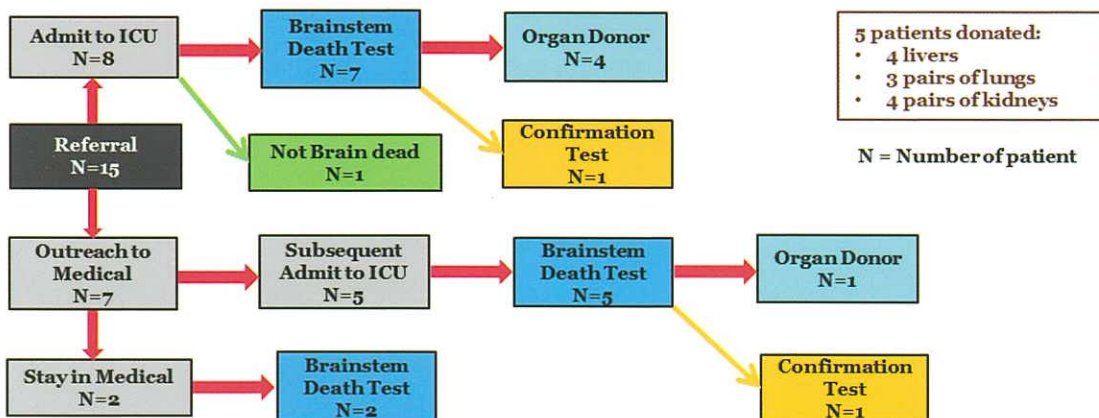


Figure 5: Outcomes of CCOT to increase organ donation (Feb 2015 – Jun 2017)

CONCLUSION

The results of 28-month experience suggest that critical care outreach service is promising in enhancing early detection, diagnosis and physiological maintenance of the brain dead patients, and minimizing loss of potential organ donors managed in medical ward settings. More

of brain-dead donors is associated with an increase in organ recovery for transplantation. *American Journal of Transplantation*, 11(7), 1517-21. doi: 10.1111/j.1600-6143.2011.03485.x
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CONFERENCES / EVENTS

Canadian Critical Care Conference

5 - 8 Mar 2018

Whistler, BC, Canada

<http://www.canadiancriticalcare.ca/>

AACN National Teaching Institute (NTI) 2018

21 - 24 May 2018

Boston, USA

<https://www.aacn.org/conferences-and-events/nti>

33rd Annual BACCN Conference

17- 18 Sept 2018

Bournemouth, United Kingdom

<http://www.baccnconference.org.uk/>

8th EfCCNa Congress 2019

13 - 16 Feb 2019

Ljubljana, Slovenia

<http://www.efccna.org/education/efccna-congress>

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<http://www.icn.ch/publications/2017-nursing-a-voice-to-lead-achieving-the-sustainable-development-goals/>

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<https://baccn.org/>

Canadian Association of Critical Care Nurses (CACCN)

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www.wfccn.org

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