

NEWSLETTER

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

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Message from the President

LEUNG Fung Yee
President
HKACCN



Heartfelt thanks to our new board of directors (2013/2015), we have a revamp of the office administration during the past few months. With concerted effort, we have established an electronic membership database which tightens our communication and connection with our members. We manage to send information to our members swiftly by electronic means and at the same time contribute to save more trees for a green environment. I am sure you all will appreciate the new membership management.

Definitely, to achieve a sustainable and vibrant professional association is our key goal! We thank a dedicated team of committed staff for serving the Association wholeheartedly. In addition to the 15 directors, we are privilege to have the largest number of co-opt members joining our Association last year, working voluntarily and enthusiastically for the engagement activities and office work. The Association is delighted to provide a good platform for members to flourish their managerial and leadership skills at after-hours of their clinical work.

As a professional association, we fulfill our objectives to provide critical care nurses with educational opportunities in the form of continuing nursing education. Our training programmes, seminars and workshops are all well conducted by experienced and knowledgeable critical care nurses and doctors. We have earned an enormous reputation in training so far. Our training programmes have now extended to areas beyond Hong Kong. We are able to maintain a stable financial status and we continue to maintain as a non-profit organization.

Our Association is not working alone. We value good network with other organizations. We work collaboratively with the Hong Kong Infection Control Nurses Association for the 6th International Infection Control Conference held on 1st – 3rd August 2014. On 31st November 2014, we will support the Hong Kong Society of Critical Care Medicine in organizing the 2014 Annual Scientific Meeting. I sincerely invite you for active participation.

Each year, our annual general meeting and annual dinner mark as the highlights for us to meet, to share and to celebrate our hard work and success.



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

Here, I cordially invite you to join us on 7th November 2014. I look forward seeing all of you in the coming events.

Toxicology Service in Intensive Care Units of NTWC

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Background

The developing of acute respiratory depression that requires ventilatory support and airway protection is a common consequence from acute poisoning such as the overdoses of psychotic drugs and organophosphate (Yu, Ash, Levinsky & Noskowitz, 2000). Renal support is also another essential management strategy for patients with acute poisoning. Mühlberg, Becher, Heppner, Wicklein & Sieber (2005) stated that the general prognosis of patients with acute poisoning became better and better due to the advancement in modern ICU medicine and technologies. It is valuable to promptly treat life threatening poisoned patients in the critical care setting after hospital admission. In 2012, intensive care units (ICUs) of NTWC (TMH & POH) collaborated with the AED Toxicology Team to establish the NTWC Toxicology Service Team. This team includes doctors and nurses from ICUs, and also colleagues from the Accident and Emergency Departments (AEDs).

Aims

The aims of developing of toxicology service in ICUs were to (1) provide timely and specialized intensive care to the poisoned patients, (2) streamline the current management for poisoned patients, (3) collaborate with the AED for continuity of care to poisoned patients, (4) minimize unwarranted burden on general ward staff, and (5) enhance the knowledge and skills of ICU staff on managing poisoned patients.

Development

Members in the NTWC Toxicology Service Team are specially trained in clinical toxicology. Bimonthly meetings are held for service review. The team also holds regular courses to doctors and nurses to enrich their toxicological knowledge and that related seminars have been organized for the hospital staff. As the toxicology nurses in ICU, I have acquired a certificate in toxicology training from the Hong Kong Poison Information Centre (HKPIC). All nursing colleagues are also encouraged to acquire basic toxicology training conducted by HKPIC. The competence on caring for acute poisoned patients can be further enhanced through continuous education among ICU nurses.

A website of the NTWC Toxicology Service Team

was constructed to provide various resources for both medical and nursing staff as the reference and guide on how to manage patients suffering from different types of poisoning (Figure 1). The management strategies and treatments for different types of poisoning are unique and distinct. Some of the poisonings are very rare such as organophosphate, paraquat, and heavy metal poisoning. The team also developed series of medical management and nursing care cue cards to facilitate the frontline staff and immediate handlers to care for the poisoned patients effectively and efficiently.



Figure 1: Website of the NTWC

The cue cards (Figure 2) outline the basic and necessary medical knowledge about the specific types of poisoning and the related management strategies and associated nursing care, such as the focuses of monitoring and the needs of staff protection from secondary poisoning. Furthermore, information about antidotes for various medications and snake venom are provided in the website. Apart from the hands-on patient care, a 24-hour on-call consultation service provided by ICU's staff in the NTWC Toxicology Service Team is made available to ICU on-call medical officers for expert opinions and support as necessary. There have been more than 40 patients with acute poisoning admitted to NTWC ICUs since the setup of toxicology beds in ICU in 2012.

Experience Sharing

Despite managing the most common types of acute poisonings such as overdose of paracetamol (Panadol), zopiclone (Imovane) and tricyclic antidepressant (TCA), the team has also treated some rare types of poisoning, such as the ingestion of paraquat and organophosphate. These exposures help us to learn and understand more on how to better manage patients with acute poisoning. For paraquat poisoning, hemo-perfusion is one of the most significant and immediate treatments that can help to save the patient's life. We learnt how to setup and prime the circuit and special hemofilter with high concentrated heparinized solution in order to extend service life of the filter. Oxygen therapy should also be maintained at a relatively low level for these poisoned patients to prevent speeding up of the oxidation process, which caus-

es excessive damage of internal organs such as lungs and liver. The experiences in managing various situations of acute poisoning enhance us to develop more knowledge and competence for our practice. Education on toxicology and skills training for both medical and nursing staff in ICUs should be promoted and more encouraged in the future to improve the quality of toxicology service being provided in other clusters of service in Hong Kong.

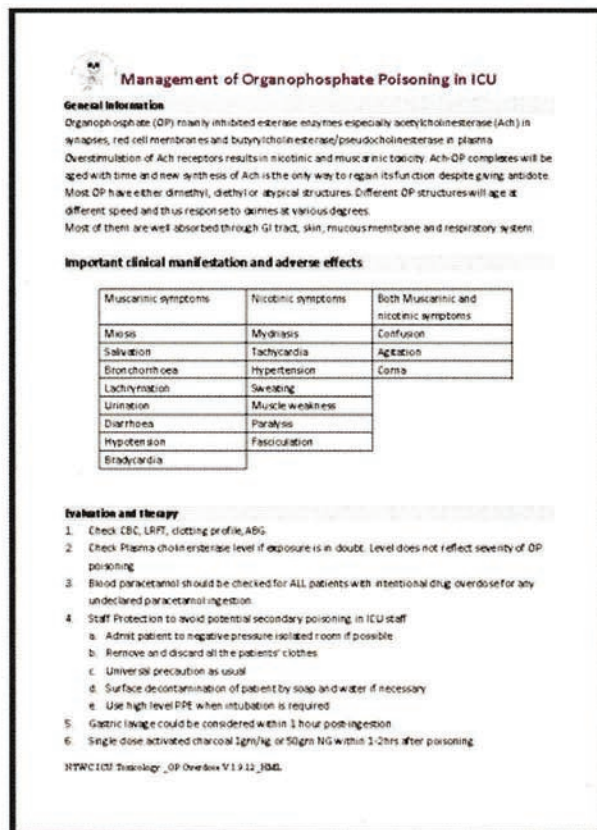


Figure 2: Cue card for organophosphate poisoning

References

Available on Request

Introduction of an evidence-based oral care practice for ventilated patients in the Intensive Care Unit

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Background

Ventilator-associated pneumonia (VAP) is a lung infection which develops in a person who is on a mechanical ventilator (Tablan, Anderson, Besser, Bridges & Hajjeh, 2003). This nosocomial infection increases morbidity and mortality as well as the cost of health care. Richards (1999) found that eighty-six percent of nosocomial pneumonias

in the intensive care unit (ICU) were associated with mechanical ventilation. Furthermore, clinic studies of deoxyribonucleic acid (DNA) had confirmed that up to 90% of VAP was caused by pathogens colonizing to the mouth.

There are no standardized guidelines or a comprehensive oral care protocol in Hospital Authority for the nursing staff to provide oral care for critically ill patients in ICU. The oral care methods used to provide care to the ventilated patients vary among ICU in Hong Kong (Table 1).

| Hospital | Mouth care solution and method for intubated patients |
|-----------|---|
| PWH ICU | 0.2% Chlorhexidine solution BD |
| TKOH ICU | Tooth Brush with water Q8H |
| NDH ICU | Thymol Gargle BD + Tooth brush PRN |
| PYNEH ICU | Tooth Brush BD + 0.2% Chlorhexidine QID |
| UCH ICU | Boiled cold water/Thymol Gargle QID |

Table 1: Oral care of patients in some Hong Kong ICU

Literature Review



Chlorhexidine gluconate (0.1 – 0.2%) mouth wash is a widely used broad-spectrum antibacterial agent for oral care of patients. It is effective on both gram positive and negative bacteria with both bactericidal and bacteriostatic mechanisms of action. The mechanism of action is related to membrane disruption of the

bacteria. Chlorhexidine is also used to control plaque and to prevent and treat gingivitis. Many studies found that 0.12% chlorhexidine mouth wash was associated with the prevention of VAP. For examples, the clinical trials by DeRiso, Ladowski, Dillon, Justice & Peterson (1996), Houston et al (2002), and Fourrier et al (2000) discovered a significant reduction in VAP in the treatment group using the 0.12% chlorhexidine mouth wash (in contrast to Koeman et al. (2006) that used chlorhexidine 2% which was also effective). Munro, Grap, Jones, McClish & Sessler (2009) conducted a randomized controlled trial to examine the effects of toothbrushing, topical oral chlorhexidine, and combination of both on reducing VAP of critically ill and mechanically ventilated patients in America. Results showed that 0.12% chlorhexidine mouth wash reduced early VAP in patients without pneumonia at baseline. Tooth brushing, as well as combining with the use of 0.12% chlorhexidine mouth wash, did not reduce early VAP in these patients. These findings were comparable to another randomized controlled trial by Pobo et al (2009) that adding tooth brushing to standard oral care with 0.12% chlorhexidine was not effective to prevent VAP.

Evidence-based practice (EBP) in oral care of the

critically ill and mechanically ventilated patients in Hong Kong is not assured. As discussed above, a suitable oral care method could successfully reduce the VAP rate. Therefore, a comprehensive set of oral care protocol and policy for critically ill patients should be established in ICU. In the ICU of United Christian Hospital, a project was developed to introduce EBP on oral care to prevent VAP. The solution currently available in Hong Kong is 0.2% chlorhexidine gluconate. Hence, we introduced the use of 0.2% chlorhexidine gluconate solution to replace distilled water and thymol gargle solution as the oral cleansing agent for the ventilated patients in our unit. Before the change, we need to increase nurses' awareness in the causes of VAP, the pathogens involved, and the change of oral care practices for ventilated patients based on research evidence.

Methods



A workshop was conducted for five times in July 2011 for all nurses in the ICU. It aimed to increase nurses' awareness about the causes of VAP, the pathogens involved, and the possible complications. After the workshop,

we introduced the use of 0.2% chlorhexidine gluconate solution for the oral care of ventilated patients. A questionnaire consisted of 10 questions relating to VAP and oral care for ventilated patients in ICU were distributed to the participated nurses before and after the workshop in order to evaluate the score differences regarding their knowledge of such evidence-based oral care practice. A questionnaire consisted of 10 questions relating to VAP and oral care in ICU were also administered to the participated nurses before and after the workshop to evaluate the scoring difference.

The recognized outcomes of this EBP oral care for ventilated patients in UCH ICU were (1) patients' oral status, (2) patients' comfort & satisfaction, (3) quality of care of the patients, (4) prevention of aspiration of the colonized respiratory pathogens, (5) reduced chance of VAP, and (6) nurses' satisfaction. The pre- and post-test design was employed to explore nurses' perceptions about the EBP in this project.

Results

There were 54 nurses (~77% of total nursing staff) who participated in the study. After two months, the results showed that 85% of the ICU nurses expressed their preference to use 0.2% chlorhexidine gluconate mouth wash solution for the oral care of ventilated patients rather than conventional methods. There was also 20% increase of nurses' satisfaction about the new oral care method which required less oral care frequency.

Conclusion

Nurses in our unit were satisfied with the change from conventional oral care practice to EBP. The results showed that using 0.2% chlorhexidine gluco-

nate mouth wash solution for oral care could decrease their workload and increase nurses' satisfaction, while at the same time may aid in prevention of VAP. The introduction of EBP into our unit was welcome by nurses, and we have changed the oral care practice to 0.2% chlorhexidine gluconate mouth wash since July 2011. Further studies are needed to investigate the patient outcomes of this practice in the future.



References

Available on Request

Sedation Titration by Intensive Care Unit (ICU) nurses

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Background

Patients in ICU are facing a lot of stresses and anxieties that related to treatments or therapeutic procedures during their critical phase. Sedation is usually used to relieve distress, and to achieving certain kind of therapeutic purposes. Optimizing sedation can reduce the duration of intensive care (Kollef et al., 1998). It can lower risk of ventilator associated pneumonia (VAP), and need for tracheostomy among critically ill patients with acute respiratory failure (Fuchs and Von Rueden, 2008).

Traditionally, sedation is given by mean of fixed rate infusion that is prescribed by doctors. Roles of ICU nurses are to monitor patient's ever changing conditions, and report to doctor if sedation adjustment is required. Sedation adjustment is usually performed by doctor daily. If additional sedation adjustment is needed, nurses should report to doctor. Doctors are not always available at bedside. They may be performing procedures to other critically ill patients, attending outreach consultations, and escorting critically ill patient for investigation, etc. The need of sedation adjustment may not be fulfilled on time. This situation is more significant during night shift. There may have a delay in managing patient's rapid change and as mentioned above, optimizing sedation can reduce the duration of need for intensive care (Kollef et al., 1998).

Failure of timely sedation management may lead to deleterious physiologic responses on patients. Patients will be under- or over-sedated. If nurses can take part in the adjustment of sedation dosage, the sedation management can be more effective that not only enhancing patient's' positive outcomes, but also diminishing the negative outcomes of delayed sedation management. In order to facilitate the optimization of sedation administration, a clinical

project calls "Sedation titration by ICU nurses" has been conducted in our unit since 2011. The aims of this project are to empower ICU nurses to perform sedation titration to strive for patient's optimal sedation state, and to enhance the sedation administration practice in my unit.

Planning

Over the 2-year period, a task force was created, consisting of a Senior Medical Officer, an ICU Nurse Specialist, Advanced Practice Nurses, and ICU Registered Nurses. The feasibility of sedation titration was identified after reviewing our traditional practice and comparison with other hospitals. Managing sedation in critically ill patient is a complex issue for ICUs worldwide. There are two components including assessment of sedation status and prescribing/administration of sedation (Ryder-Lewis, 2004).

A validated assessment tool for sedation level, Sedation-Agitation Scale (SAS), was chosen to assess patient. A set of clinical guidelines was established as the guidance for sedation titration. And a user-friendly flowchart was also formulated as a quick reference for staff. Seminars about sedation use, complications related to inappropriate sedation, details of new sedation practice were conducted for nursing staff. Overall, a 3-phase pilot scheme was performed and that the collected data were used to modify and refine the guidelines and flowchart. Questions and comments were collected from nursing staff in different ranks by means of questionnaire, suggestion book and personal communication with stakeholders after the pilot scheme.

Complications of Improper Sedation

Under-sedation

means dosage given to patient is inadequate. Physiologically this may be associated with cardiovascular effects of elevated blood pressure and tachycardia. Related agitation may cause ventilator dysynchrony that increases metabolic rate and oxygen requirement, leading to problems of inadequate oxygenation and inadequate ventilation. Eventually, the situation may place patients at risk of hypoxic injury (Uden, Stacy & Lough, 2004; Walker & Gillen, 2006; Ryder-Lewis, 2004). Stress and agitation may also lead to hypercapnia, respiratory failure, hypercoagulability, immunosuppression, and persistent catabolism (Ryder-Lewis, 2004). Apart from the physiological consequences, under-sedation may threaten patient's safety. It is the primary cause of unplanned self-extubation (Chevron et al. 1998). Agitation and struggling may also be associated with inadvertent removal of devices, catheters and surgical drainages (Uden et al, 2004).

Over-sedation

means patients in a status of unintended unresponsiveness, resides in suspended animation that resembles general anaes-



sthesia (Urden et al, 2004). It compromises breathing effort, make ventilator requirement higher that may prolong period of mechanical ventilation (MV), and leading to VAP (Walker and Gillen, 2006). Physiologically over-sedation prolongs alternation in consciousness, and also leading to hypotension, bradycardia and respiratory depression. These are again associated with increased period of MV, and hence length of stay in ICU. It is also associated with complications caused by immobility such as pressure ulcer, thromboembolism, gastric ileus and delayed weaning (Urden et al, 2004).

Sedation Titration by ICU Nurses

For the ICU nurse-led sedation titration, sedation infusion is prescribed by doctor with an initial rate, and the rate of infusion will be adjusted by ICU nurses according to patient's condition and as guided by the clinical guidelines. Occurrences of the harmful events associated with under- or over-sedation can be reduced by promoting the nurses' role in sedation management. Nurse-driven sedation management has demonstrated effectiveness in shortening the duration of MV and hence the duration of ICU and hospital length of stay (Fuchs & Von Reuden, 2008). With more effective sedation management, adverse effects of inappropriate sedation can be avoided that patient comfort is maximized and safety assured. For the profession development, sedation titration by ICU nurses promotes nurses' clinical autonomy while being empowered in their judgment and decision making. Job satisfaction of nurses may also increase.

Assessment Tool for Sedation Level

Nurses in ICU rely heavily on recognizing subjective cues to assess sedation levels of their patients, and that their assessment and outcome measures cannot be standardized and qualified. This may lead to inconsistencies in care (Olson, Thoyre & Auyong, 2007). The use of a standardized sedation scoring system ensures that sedation is sufficient but not excessive (Brattebo et al, 2002). Through the consistency in assessing patient's behaviours, sedatives can be titrated accordingly to achieve the optimal sedation. The new practice can improve communication between nurses and doctors, and enhance the consistency in care (Ryder-Lewis, 2004). There are several validated tools for assessing sedation status, for examples the Ramsay Scale, Sedation-Agitation Scale (SAS), Richmond Agitation-Sedation Scale, and Motor Activity Assessment Scale. In our unit, SAS was chosen since it was found to have high reliability and has been validated in ventilated patients in ICU (Fuchs and Von Rueden, 2008). It has also been found to be reliable when used by both inexperienced and experienced nurses (Ryder-Lewis, 2004).

Establishing a Set of Clinical Guidelines

To facilitate and guide the change of clinical practice, a set of guidelines based on an appraisal of the current best evidence and cost-effectiveness is needed to provide information and guidance for the

therapeutic interventions of given conditions (Taylor, 2004). In the guidelines, inclusion and exclusion criteria of target patients, roles of doctors and nurses, and the process and criteria for decision making are clearly stated. Essential measures ensuring patient's safety are also included. Sedation titration will be terminated in case of unstable haemodynamic status that is found to be caused by sedation use. Nurses were instructed to seek for doctor's advice to decide whether sedation titration is to be terminated for each individual case.

The Flowchart

A user-friendly flowchart was formulated at the beginning of the project, and it was revised comprehensively after comments and feedback had been reviewed throughout the project. By reading the flowchart, nurses are clear about when to start the titration, the monitoring criteria, actions to be taken when patients are under or over-sedated, when to inform doctor for assessment, and when they should terminate the titration. Copies of the flowchart were distributed by the bedside of each patient. And the availability of flowchart was ensured for each patient.

Seminars

Seminars were delivered to the nurses in our unit. The contents included a revision on sedation use, complications related to inappropriate sedation, introduction of the guidelines and flowchart, and details of the new practice.

Pilot Scheme

The pilot scheme was implemented by three phases. All recruited patients were assessed by ICU doctors. The mental and physical conditions of them were relatively stable and to be put on the weaning process soon. Sedation titration was terminated by two reasons: the weaning trial or unstable condition that sedation did not fit the nurse-led titration. If the weaning trial failed, patients would later enter the pilot again upon satisfaction of the doctor's assessment. The titration process was monitored by the duty nurse-in-charge and the dosage adjustments were performed by two Registered Nurses as peer checking. The documentations throughout pilot were reviewed and analyzed by the task force.

The 1st Pilot

The 1st pilot was held in the 3rd quarter of 2011 and last for two weeks. Seventeen post-operative patients were recruited (88% elective cases, and 12% emergency cases). Sedation titration was implemented for a total of 20 times. The reasons of terminating titration were mainly due to the weaning trial (70%). Some episodes were related to patient's unstable conditions such as severe hypotension, vigorous agitation and neurological condition that need to be assessed. In some cases, when patient was suitable, weaning with sedation titration was performed again. Some nurses did not document patients' SAS after assessing patients' sedation

level, only 40% of those assessed patients had completed SAS documentation completely (100%) while the others documentations were partially done.

After the 1st Pilot, comments and feedback from colleagues were collected and reviewed. The possible resistances on SAS documentation might be nurses being unfamiliar with this new assessment tool, and nurses were reluctant to change. To facilitate nurses in getting familiar with SAS, all nurses were asked to independently perform sedation assessment on respective sedated patients with a member of the task force. To relieve the reluctance to change, education on the benefits of sedation titration, and the importance of accurate documentation with SAS were shared with ICU nurses during the 1st pilot's report seminar. The flowchart was reviewed and updated after the 1st pilot.

The 2nd Pilot

The 2nd Pilot was held during the early months of 2012 and it also took two weeks. Other than post-operative patients, three medical patients were also recruited. A total of 16 patients were included and the sedation titration was performed 16 times. The reasons of termination were also mainly due to the weaning trial (81.75%). There were two episodes of sedation termination because patient's neurological needed to be assessed, and in another episode the patient was over-sedated. During the 2nd pilot, nurses remembered to document patients' SAS, and that the patient's sedation levels were recorded with 100% compliance.

The 3rd Pilot

The 2-week 3rd pilot scheme was completed after the 1st quarter of 2013. A total of 15 patients were recruited (47% post-operative; 40% medical; and 13% obstetrics & gynaecology). The reasons of termination were also mainly the weaning trial (40%) and severe hypotension (33%). Nurses' compliance on SAS documentation was 99%. Information about the three pilots was summarized in the following table.

| | 1 st Pilot | 2 nd Pilot | 3 rd Pilot |
|--|-----------------------|-----------------------|-----------------------|
| No. of patients | 17 | 16 | 15 |
| Types of patients | | | |
| Surgical | 100% | 81% | 47% |
| Medical | --- | 19% | 40% |
| O & G | --- | --- | 13% |
| Reason of terminating sedation titration: | | | |
| Weaning | 70% | 82% | 40% |
| Compliance on SAS documentation | 40% | 100% | 99% |

Conclusion

After the pilot scheme, we found that sedation titration by ICU nurses is feasible in our clinical setting. Some nursing colleagues found sedation titration is effective in handling patients who are difficult to be sedated with fixed rate sedation infusion, and the risk of ETT and CVL displacement was reduced to a certain extent. The communication between nurses toward patient's sedation status also improved. However, some colleagues found that the sedation titration was labour intensive, and preferred using the traditional method in sedation management.

With the generous support and efforts from all management and clinical staff, ICU nurse-led sedation titration became a practice in our unit since June of 2013. In the future, the possibility of measuring patient outcomes such as impact of sedation titration in VAP rate, length of ICU stay or number of accident related to sedation management can be explored.

References

Available on Request

UPCOMING PROGRAMS

Basic Life Support and Advanced Cardiac Life Support Courses

- Basic Life Support (BLS) Provider Course: 6 Dec 2014**
- Advanced Cardiac Life Support (ACLS) Provider Course: 27-28 Nov, or 29-30 Nov 2014**

For detailed information & application, visit <http://www.medicine.org.hk/hkaccn/activities.htm>

ENQUIRIES for ALL COURSES:

2861 2972

Email: hkaccn@hotmail.com.hk

(報名及繳費:填妥報名表格,連同劃線支票,親自遞交或郵寄至HKACCN Ltd.)

CONFERENCE ANNOUNCEMENT

12 - 15 Nov 2014

3rd Euro-Asian Critical Care Meeting / 11th Congress of The Turkish Society of Medical & Surgical Intensive Care Medicine

Place: Antalya, Turkey

Website: <http://www.criticalcare2014.com/eng/>

USEFUL LINKS

International Nurses Day 2014

Theme: Nurses: A force for change - A vital resource for health

<http://www.icn.ch/publications/2014-nurses-a-force-for-change-a-vital-resource-for-health/>

World Federation of Critical Care Nurses (WFCCN)

www.wfccn.org

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Vico Chiang

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