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KEYWORDS : ICU, Patient care, Patient safety

Introduction:

Patient safety is defined as the absence of injuries associated with healthcare in patients admitted to intensive care unit. The common goal is to improve patient outcome which is often indicated by survival and discharge from ICU. To achieve this goal, an efficient and dedicated ICU team is needed which includes treating physicians, nurses, pharmacists, respiratory therapists, dietitians, physiotherapists and other helping members. Each of them has a specific role which helps in improved patient outcomes.^[1]

11 WONDERS OF PATIENT SAFETY IN ICU



UNITED FIRST FOR SAFETY FIRST

Effective communication:

A good communication between different personnel in ICU is considered as the mainstay of an intensive care. $^{\rm [2],[3]}$

Critical care teams carry out many activities where effective communication is essential to ensure patient safety and reduce susceptibility to error. Good interactions with effective communication is essential to have positive outcomes with fewer adverse events.^[4] At the same time, poor communication and lack of teamwork contribute to severe medical errors in intensive care.^[5]

Patient identification:

A slight mistake in patient identification can be devastating.^{[7,[8],[9]} Identification on the basis of bed number or name in file is not sufficient. To ensure patient's identity a wrist band mentioning patients name and other important data should be worn.^[6] Identification and ensuring correct patient is very much crucial in cases of blood collection, blood transfusion, laboratory investigation, and surgery.

Improved hand washing:

Proper hand hygiene is the key for an effective control of infections in intensive care.^[10] It not only reduces microorganisms during daily work in ICU but it also reduces antibiotic resistance of pathogens, hospital acquired infections (HAI) and ICU deaths.^[11] Hand hygiene should be practiced :^[11]

 Before touching a patient. Even between the care of different patients and between different care activities for the same patient

- After touching a patient or any activity that leads to contamination of hand.
- After touching patient surroundings.
- After removal of gloves.
- Washing agents that can be used for hand hygiene are:^[1]
- Plain soap and water.
- Antimicrobial solution such as alcoholic rub or
- Waterless antiseptic agents

Blood transfusion safety:

Correct and matched blood to right patient at right time and right place defines safe transfusion.^[12] It also includes avoiding unnecessary transfusions. Most of the mistransfusion are almost always related to human errors during the patient identification and collection of wrong blood and its transfusion.^[12]

Key for Safe transfusion includes:

- Proper patient identification.
- Good communication.
- Good documentation.
- Barcode system to prevent errors.
- Avoiding night administration

Preventing fall:

This is an unexpected and accidental event leading to unintentional fall from bed to ground. The fall could be accidental and anticipated. It results in morbidity, extended stay and patient and party dissatisfaction.^[1]

- The following steps can be done to prevent the occurrence of falls in intensive care. [14](15]
- Evaluation of the risk at the time of admission.
- Reassess the risk daily.
- Patient-specific interventions in susceptible patient.
- Communication using transfer forms, visual signals or huddles.
- Frequent assessment of high-risk patients.
- Address needs (e.g., 3Ps: pain, potty, position-pressure).
- Use non-slip mats, hip protectors, custom toileting timing.
- Avoid unnecessary hypnotics and sedatives.
- Education about fall prevention measures.
- Audit of falls and ways to improve.

Preventing and learning from errors :

Human error is common in severely sick patients requiring complex treatment in ICU. Nearly all ICU patients suffer from such harmful events. ^[16] Almost half of adverse events can be prevented. Most of the times it is denied by the ICU personnel that mistake was done. Many of the errors are not mentioned or discussed at times.

Common ICU errors are related to treatment, medication and lack of efficient communication.

seriously ill patients are more prone due to the severity of the medical conditions, multiple comorbidity, complex treatment, polypharmacy and newer technology for interventions.^[17]

Medication safety: Medication errors are common and it can be

Before any aseptic procedure.

due to wrong prescription, wrong dilution-dosing of drugs and lack of communication. $^{\rm [1]}$ 78% of medical errors in the ICU are due to wrong medication. $^{\rm [19]}$

Steps to avoid medication error: [18]

- · Identify"look-alike, sound-alike" medications.
- Arrange different locations, labels, alternate packaging for such drugs.
- Minimizing nurse distraction during the medication.
- Standardize concentrations and adjust doses in hepatic and renal diseases.

Care of central lines: [21], [22], [23], [24], [25], [26]

- Implement insertion bundle. Follow hand hygiene and aseptic technique for insertion and care. Avoid femoral vein, maximal sterile precautions and skin prep with 2% chlorhexidine.
- Adhere to insertion checklist.
- Daily meticulous follow up of lines.
- Adopt maintenance bundle of dressing changes (every 7 days for transparent) line changes.
- Use chlorhexidine for dressing.
- Avoid frequent replacement of CVCs, PICCs, hemodialysis catheters or pulmonary artery catheters.
- Use USG when available.

Preventing VAP:

Ventilator associated pneumonia (VAP) is an important cause of morbidity and mortality in ICU.

Following standard care can be given to a patient on ventilator in $\text{ICU}^{\scriptscriptstyle[27](28](29]}$

- Head-up position.
- Hand Hygiene
- Oral care every 2 hours with antiseptic mouthwash and chlorhexidine 0.12% every 12 hours.
- Disinfection and care of tubing.
- Check Respirators and humidifiers to prevent contamination..
- Sterile tracheal suctioning.
- Aspiration Precautions- Including peptic ulcer disease prophylaxis.
- VTE prophylaxis.
- Early weaning trails.
- Delirium management: judicious use of sedative, daily reduction according to Richmond Agitation Sedation Scale.

Sepsis control:

Follow 3 important Bundles. [20], (30], (31], (32], (33]

Sepsis Resuscitation Bundle:

- Measure serum lactate and collect blood for culture prior to antibiotic administration.
- Administer broad-spectrum antibiotics within 3 hours for Emergency admissions and 1 hour for non-Emergency ICU admissions.
- In case of hypotension and/or lactate > 4 mmol/L (36 mg/dl)infuse initial minimum of 20ml / kg of crystalloid.
- Use vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) > 65 mm Hg.
- In case of persistent hypotension and despite fluid resuscitation (septic shock) and/or lactate > 4 mmol/L (36 mg/dl): Try to achieve central venous pressure of 8mm Hg and central venous oxygen saturation of > 70%.

Sepsis Management Bundle

- Use low dose steroid and Dotrecogin alfa (activated) for septic shock in accordance with a standardized ICU policy.
- Maintain Glucose control above lower limit of normal, but < 150 mg/dl (8.3 mmol/L).

Maintain Inspiratory plateau pressure less than 30 cm H2O for ventilator patients.

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The Antibiotic Care Bundle

- Follow clinical criteria to start antimicrobial therapy.
- Collect and send specimens for microbiology.
- Initial empiric antibiotic choice based on institutional policy.
- Look and remove infection foci
- Modify antibiotics according to microbiology results
- Daily review of antibiotic choice and deescalate.
- Check on antibiotic resistance.

Preventing pressure injuries:

Patients admitted in ICU are prone to develop Decubitus ulcer or pressure sore. It is caused by prolonged uninterrupted pressure over bony prominences leading to necrosis and ulceration. Hip and buttock are the most common sites to get affected.

Following measures can be taken in order to prevent hospital acquired pressure ulcers (HAPU) in ICU. $^{\scriptscriptstyle (1)\!\!\!(23)\!\!\!(234)}$

- Head to toe risk and skin assessment should be done within 4 hrs of admission.
- Individualized plan of care based on skin and risk assessment.
- Daily at least once a day assessment of skin and risk.
- Use topical agents to hydrate the skin to reduce skin damage.
- Reposition patient, such as hourly or every- two-hours rounding with a purpose (the 3 P's: pain, potty, position-pressure).
- Monitor weight, nutrition and hydration status in high-risk patients.
- Use special beds and mattresses to redistribute pressure (pillows should only be used for limbs).
- Use breathable glide sheets and lifting devices to prevent friction and skin damage.

A well coordinated and dedicated team is needed to deal the complexity of care in patients admitted to ICU. For no doubt, the protocols and guidelines helps in improving the patient outcome. Also, writing protocols is relatively easy, but difficult to implement. Therefore, the protocols should be made available in writing and the members of ICU team should be adequately trained to follow the same. Appropriate and competent staff with good communication ensure a better patient safety in ICU.

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