

Annexure B 7: Final set of nurse-sensitive indicators for adult ICU in South Africa

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INDICATOR	SIGNIFICANCE	FORMULA FOR CALCULATION	INDEX	SOURCE OF DATA
Respiratory system				
Ventilator associated pneumonia (VAP)	VAP is a frequent iatrogenic complication of mechanical ventilation that increases mortality	$(\text{Number of patients who had ventilator-related pneumonia} \div \text{Total days of patients using the ventilator}) \times 100$	%	Patient chart
Length of mechanical ventilation	Number of days a patient is on a mechanical ventilator affects recovery	Number of ventilator days		Patient chart
Unplanned endotracheal tube extubation (removal)	Accidental extubations (removal) include accidental slippage or removal of an endotracheal tube by nonmedical practices	$(\text{Number of cases of unplanned extubation following endotracheal intubation} \div \text{Total duration of endotracheal intubation [Days]}) \times 1000$	Per 1000	Patient chart
Re-intubation	Re-intubation done properly in a timely manner can prevent respiratory complications	Endotracheal tubes repositioned and retied every 12 hours	Per 1000	Patient chart
Cardiovascular system				
Central line associated blood stream infections	Central line catheterization plays an important role in the treatment of critically ill patients, but can increase the risk of infection	$(\text{Number of CLABSI} \div \text{Number of central line days}) \times 1000$	Per 1000	Patient chart
Accidental removal of IV catheters	Risk of complications and complete device failure are increased when dislodgement occurs			Patient chart
Implementation of DVT prevention	ICU patients are with limited physical activity are at a high risk of deep vein thrombosis	$(\text{Number of patients who received DVT prevention} \div \text{Number of patients in the ICU}) \times 100$	%	Patient chart
Neurological system				
Evaluation rate of level of sedation	Excessive sedation may prolong the duration of mechanical ventilation and increase the LOS resulting in increased hospital costs and increased rate of morbidity and mortality.	$(\text{Number of patients who underwent evaluation for sedation} \div \text{Number of ICU patients who took sedative drugs}) \times 100$	%	Patient chart
Evaluation of analgesia	Untreated pain can do great harm to the patient and result in a high metabolic state, cardiopulmonary dysfunction or arrhythmias, and ultimately, complications and poor recovery	$(\text{Number of patients responding very satisfied} \div \text{Number of patients in the ICU}) \times 100$	%	Patient chart

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Gastrointestinal system				
Implementation of enteral nutrition	Compared to those on parenteral nutrition, patients on enteral nutrition have better prognoses and may have a significantly lower mortality, infection rates, and length of stay	(Number of eligible patients who receive enteral nutrition within 24 hours of admission ÷ Total number of patients who received enteral nutrition at the same period) × 100		Patient chart
Management of blood glucose level	Close monitoring of blood glucose in a critically ill patients is needed because hyperglycaemia and hypoglycaemia may affect the rate of recovery	(Total number of time with blood glucose level reaching 8–10 mmol/L ÷ Total number of blood glucose measurements performed for critically ill patients) × 100	%	Patient chart
Integumentary system				
Pressure ulcers	Prolonged contact between the skin and devices used in patient care can result in pressure ulcers	(Number of patients who had pressure ulcer during the period under consideration ÷ Number of ICU patients' total hospitalization days) × 100	%	Patient chart
Incontinence associated dermatitis	Promotion of skin integrity is a fundamental nursing intervention and a patient outcome associated with nursing quality, hospital costs, and liability	(Number of patients who had incontinence-associated dermatitis ÷ Number of ICU patients' total days of hospitalization) × 1000	Per 1000	Patient chart
Infection control				
Implementation of early appropriate broad-spectrum antibiotic	Early and appropriate broad-spectrum antibiotic therapy within 1-hour of diagnosis can improve the prognosis of patients with severe infection or sepsis.	(Number of patients who had a serious infection or septic shock treated with broad spectrum antibiotics within 1 hr after definite diagnosis ÷ Number of patients who had a serious infection or septic shock) × 100%	%	Patient chart
Implementation of hand hygiene	The hand is an important route for transmission of microbes	(Frequency of implementation of qualified hand hygiene during the observation period ÷ Frequency of hand hygiene implementation at the same period) × 100	%	Unit report
Use of Personal Protective Equipment	Personal protective equipment (PPE) is key to protecting healthcare workers from COVID-19 infection and other communicable diseases			

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Urinary tract system				
Catheter related urinary tract infection	Urinary tract infection caused by an indwelling catheter is one of the most common nosocomial infections	(Number of patients who experienced an infection related to a catheter ÷ Number of catheter days) x 1000	Per 1000	Patient chart
Urine test	Dipstick analysis, the microscopic exam, and other information gathered from a urine test enable decision-making for a variety of diagnostic, therapeutic, and disposition issues			
Patient safety				
Potentially inappropriate medications (PIM)	A PIM is a medication having potential risks that outweigh its potential benefits, use of which may result in adverse drug reactions, and is related to increased health-related expenditures	PIM is a medication having potential risks that outweigh its potential benefits		Adverse events report
Medication administration errors	Giving a patient the wrong drug, wrong dose, wrong concentration, wrong way, at the wrong time or even to the wrong patient can seriously harm or cause death of the patient	(Number of reported medication errors within the statistical period ÷ number of dispensed doses during the statistical period) x 1000 patient days	Per 1000	Adverse events report
Outgoing transport related accidents	Transferring an unstable patient out of ICU can have serious harm to the patient's outcome	(Number of cases with outgoing transport-related accidents ÷ Number of transported patients) x 1000	Per 1000	Unit report
Inappropriate turn-off of alarms	ICU depends on the stable functioning of technical equipment, failure of which may lead to events that compromise patient safety, with some deaths attributable to the failure of a device			
Nursing processes				
Discharge planning	Discharge planning focuses on the patient's problem, including prevention, rehabilitation and nursing care that provides the patient and their family with an understanding of the disease and any caring interventions			Patient chart
Failure to rescue	Nurses spend the majority of time at the patient's bedside, and are in the best position to recognize signs of deterioration in a patient's condition, record and report these changes, and intervene with treatments.	(Number of deaths ÷ Number of deaths resulting from complications of care such as pneumonia, deep vein thrombosis/pulmonary embolism, sepsis, acute renal failure, shock/cardiac arrest, or gastrointestinal haemorrhage/acute ulcer)		Adverse events report
Work-load				
Nursing staff turnover rate	Adverse outcomes have been attributed to a series of deficiencies including high nursing staff turnover			

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Number of continuous hours worked	Associations have been found between extended work shifts and the risk of occurrence of adverse events	Nursing care hours per patient day		Unit report
Professional nurse per ICU bed	Nursing workload consists of the time spent by nursing staff to perform the activities for which they are responsible, whether directly or indirectly related to patient care	(Number of ICU nurses registered during the period of research ÷ ICU beds at the same period) ×100	%	Unit report
Training and experience				
ICU nursing staff with ACLS	Advanced life support training enables nurses to deal with patient's resuscitation process more effectively and with confidence, thereby increasing the chances of patient's survival.	(Number of ICU staff who had completed the advanced cardiac life support training ÷ Number of registered ICU nurses at the same period) × 100	%	Personnel data
Institution related				
Length of stay (LOS)	Decreased LOS has been associated with decreased risks of opportunistic infections and side effects of medication, improvements in treatment outcome and lower mortality rates.	Mean ICU length of stay (days)		Unit report
Cost of treatment	Treating a patient in ICU involves the use of expensive equipment's, investigations, and expensive medicine	Number of patients readmitted to the ICU within 30 days		Unit report
ICU mortality	The number of deaths in ICU within a 30-day period	Hospital cost per patient		Hospital data
Do Not Resuscitate /End of Life Care	Support given to families during transition from active treatment to end of life care is related to the interaction between patient, family and the nurses			