COVID-19 Assessment of a Critically Ill Patient

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Abstract:

With the major scale up of critical care services to respond to the increasing numbers of patients with severe COVID-19 infection, nurses need to be able to rapidly assess patients. While many patients present with signs of viral pneumonia and may develop respiratory failure, it is essential that the subsequent systemic complications are also recognized. Due to the unprecedented numbers of patients requiring critical care, many of them will initially have to be managed in the emergency departments and acute wards until a critical care bed becomes available. In this article, the assessment of a patient with suspected or confirmed severe COVID-19 has been presented initially from a ward perspective, followed by that of critical care, using the Airway, Breathing, Circulation, Disability and Exposure (ABCDE) approach. This article has been specifically designed to enable nurses to systematically assess patients and prioritise care.

Keywords:

SARS-CoV2, 2019-nCOV, COVID-19, Critical Care, Assessment

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Assessment of severe COVID-19 has to be effective but rapid. Therefore, this article suggests an assessment strategy for nurses to use based on the Airway, Breathing, Circulation, Disability and Exposure (ABCDE) approach. This fits with the expanding complexity of healthcare provision needed in hospitals and increased patient dependency being coupled with limited intensive care and high-dependency beds. Nurses are increasingly being asked to provide complex care to acutely ill adults on general medical and surgical wards and need to develop transferrable assessment skills [1]. Traditionally, many in-hospital cardiac arrests are deemed predictable and preventable, with a progressive deterioration as respiratory and circulatory failure worsens. With COVID-19 the situation is very different, with deterioration rapid and unless treated quickly, difficult to reverse. With COVID-19, patients may present with signs of viral pneumonia [2]. Common symptoms include fever, cough, dyspnea, myalgia, fatigue and anosmia/dysgeusia (loss of taste and smell). Approximately 90% present with more than one symptom, and 15%, present with fever, cough, and dyspnea [3-5].

Although COVID-19 is a respiratory disease and patients often require oxygen therapy to correct and prevent hypoxia, patients may subsequently develop systemic complications which must be recognized. Due to the high numbers of patients requiring critical care, many will initially have to be managed in emergency departments and acute wards until a critical care bed becomes available. In this article, the assessment of a patient with suspected or confirmed severe COVID-19 has been presented initially from a ward perspective initially, followed by critical care.

Planning for an Assessment

Full Personal Protective Equipment (PPE) as per hospital and national guidance must be worn when assessing a critically ill patient and will depend on the situation, on whether the assessment if for a non-COVID-19, suspected or confirmed COVID-19 patient. Staff should plan ahead as it takes additional time to don PPE, thinking about and planning for potential procedures that might need to be undertaken when working in isolation areas.

All wards should have emergency equipment immediately available, which must be checked daily and re-stocked following use, as it is crucial for patient stabilisation. However, the high number of patients requiring intubation and the high workload, may impact on replenishing all stock. Records must be made, and senior staff informed, when insufficient stock is available.

Assessment of the Deteriorating Ward Patient

Regular assessment is essential because of the limited window for rescue. It has to be accepted that the skills of the nurse and the equipment immediately available will determine the depth, detail and accuracy of the assessment. Essential physiological observations for these patients are respiratory rate, oxygen saturations, pulse rate, blood pressure, temperature, conscious level using the Alert, Confused, Voice, Pain and Unresponsive (AVPU) or Glasgow Coma Scale (GCS) scale, pain score and urine output. COVID-19 has changed the rules, with many patients now presenting with severe respiratory failure followed by a rapid decline.

In ward settings, Early Warning Scoring (EWS) tools may be used to support regular vital signs being performed. An EWS is a tool help ward staff to recognise patient deterioration by combining regular observations and calculating a physiological score (table 1) [7]. The score impacts on response and treatment, for example, the frequency of observations and necessity for escalation to an appropriate healthcare professional. Advantages of EWS include simplicity as only basic monitoring is required; the score should have reproducible consistently as all members of the healthcare team, regardless of experience can complete them, with minimal staff training. Nevertheless, there are several limitations including an over-reliance on the score, rather than on clinical judgement, a concern with limited appropriate equipment and staff available. It is essential to remember that EWS are only as accurate as the practitioner who records the observations. Also, that calculation of the score, does not equate to appropriate clinical action. EWS must only be used by nurses to support clinical judgement and not as a procedure to lead practice [8]. In severe COVID-19 disease many patients now present with rapid decline, and EWS are likely not to be sensitive enough, as the presenting symptoms mean that these patients will all score highly. In consequence, nurses now need to regularly record vital signs but also seek out additional clinical signs and symptoms, observing trends from the patient's vital signs. The limited availability of critical care beds are such that observations of patients with suspected or confirmed COVID-19 must be designed to maximise treatment possibilities.

The response may include a specialist team, but the nature and title of these teams varies internationally, for example, Medical Emergency Team (Australia), Critical Care Outreach

Team or Patient at Risk Teams (UK) and Rapid Response Team (US). The differences between teams has to be recognised when planning processes and procedures. Critical Care Outreach teams tend to be nurse-led and focused, with the team responding to a range of patients, which includes follow up on patients recently discharged from critical care. Whereas medical emergency, rapid response teams and patient at-risk teams more often have a medical (physician) lead and focus [9].

Assessment of the Critically Ill Patient

A major change in the assessment process is that COVID-19 patients' may be initially assessed by re-deployed staff and not a qualified Critical Care Nurse. In consequence, it has to be accepted that under the current regimen qualified Critical Care Nurses will use assessments made by others, but must themselves assess the patient at regular intervals, not just follow reported changes in status. In the light of this, all handovers must include precise details from the patient's notes, highlighting past medical history, reason for admission, a systematic overview of all physiological systems and any identified key events.

In critical care, at the start of each shift, bed-side emergency equipment must be reviewed, and any missing elements replaced so that all equipment is working and accessible. This includes emergency oxygen (oxygen port, Water's Circuit and or self-inflating bag), and suction unit with tubing. Patient safety checks include verification of the patient's identification band, confirmation of any allergies, the ventilator is correctly functioning (tubing, alarm limits and settings), and continuous intravenous infusions are running and correct. Also, that all electrical equipment is plugged in and not running on battery. It is best practice at all times, and that includes a shift change, for a nurse to introduce themselves to the patient and explain what they are doing. Even though the patient may be semi-conscious or unconscious, due to sedation they may still be able to hear, and verbal communications will help reassure the patient and reduce pain and anxiety [6].

Respiratory Assessment (Airway and Breathing)

In self-ventilating patients an assessment of airway patency includes whether the patient can talk in full sentences. If they have stridor, audible wheeze or gurgling (noisy breathing) due to secretions in the upper airway, they have the potential signs of a compromised airway. A patient may be transferred to the critical care unit prior to intubation or after being stepped down post recent extubation (the removal of the endotracheal tube (ETT)). It has to be noted that evidence suggests COVID-19 re-intubation rates within 24-48 hours are up to 60% higher, therefore, delaying initial extubation for longer may prevent re-intubation [11].

Inspection involves assessing the patient's respiratory rate, rhythm and depth. An inability to talk in complete sentences, must be recorded, as must use of accessory muscles, tracheal position, any audible respiratory sounds and signs of central or peripheral cyanosis or changes in colour. Tachypnoea, an indicator of illness, in COVID-19 is a warning that patient's may suddenly deteriorate [12]. Supplementary oxygen may be required to address hypoxia, with oxygen administration being a simple life-saving intervention. Oxygen delivery methods are classified into two groups, variable and fixed performance. Using variable performance devices (e.g. nasal cannulae), the amount of oxygen delivered (Fi02) is unknown, as it is dependent upon the patient's ventilatory pattern. Conversely, fixed performance is independent of the patient's ventilatory pattern. In severe COVID-19 disease to reduce the risk of Aerosol Generating Procedures (AGP), non-rebreath, venturi masks and nasal cannulae are usually used [10]. These have a lower risk of transmission when compared with high-flow nasal oxygen and non-invasive ventilation with facemasks or hoods and humidified oxygen [13]. The use of NIV and HFNO in COVID-19 patients currently remains controversial. It is suggested NIV such as Continuous Positive Airway Pressure (CPAP) if used early may avoid the need for intubation and invasive ventilation. Recommended by World Health Organization [14] close monitoring is needed as clinical deterioration that could result in the need for emergency intubation, and therefore increasing the risk of infection to healthcare workers.

A high proportion of patients admitted to critical care require an airway intervention and invasive ventilation. In consequence, nurses need to have the competence to care for patients with a variety of artificial airways, recognising and responding to any complications. Safe airway management of patients, especially with those suspected or confirmed COVID-19 disease requires careful assessment, planning, preparation, teamwork, and formal handover [10]

Invasive ventilation is one of the commonest reasons for admission to intensive care, with most patients intubated with an endotracheal tube (ETT) to facilitate invasive ventilation.

Care of an ETT includes noting the length of the ETT at the teeth or lips and checking the tube is secure. ETT can be secured using ties or commercially available tube ties for example, Anchor Fast or Thomas Tube Holders. When using ties, nurses must observe for signs of pressure damage caused, particularly at the corner of the mouth. ETT cuff pressure using a manometer should be recorded every 2-4 hours, with the aim of maintaining 25-30mmHg (picture 1). This range has been recognised as reducing tracheal damage [15]. There are various modes of ventilation depending on manufacturer. It is not the scope of this paper to discuss each mode of ventilation, however, they can broadly be grouped into three categories. Controlled or mandatory modes require the ventilator to deliver all breaths regardless of the patient's efforts, with the ventilator determining respiratory rate and tidal volume. Spontaneous modes allow the ventilator to respond to the patient's effort to breath, but alarm if the patient does not trigger a breath within the apnoea time set. A combination of the controlled and spontaneous modes allows the patient to breath spontaneously, but if the patient does not trigger a breath, the ventilator delivers a mandatory breath [16].

Endotracheal or tracheal suctioning removes secretions to maintain a patent airway enabling the nurse to assess the amount, colour and consistency of secretions. Traditionally, respiratory assessment includes verification of the ventilatory parameters, settings and alarms. Patient assessment includes auscultation, respiratory rate, Sp02, work of breathing, use of accessory muscles, agitation and review of arterial blood gases (ABG) results [17]. However, auscultation is not advisable due to the challenges with PPE and the risk of cross contamination [10, 18].

Inspection for any signs of pain, chest deformity (scoliosis), swelling, symmetry, tenderness, bruising or wounds is important. Chest symmetry should be assessed by placing the palms of the hand over the thorax and palpating for signs of pain, deformity, swelling, irregularities as the patient breaths in and out. The hand position is then moved to either side of the thorax and around the chest wall [16].

The chest should be percussed by placing a hyper-extended middle finger of a hand onto the chest. Using the middle finger of the other hand strike the middle finger on the chest (the movement should come from the wrist). The finger striking the finger on the chest should not remain in contact as it affects the noise. Listen for hypo-resonance, resonance and hyper-resonance. Positions for percussion include the anterior position, mid clavicle at the apex, second, third and fourth and axilla. Posterior position, second, third and fourth rib lateral to the vertebrae and medial to the scapula, continuing to inferior lateral portion of the lung [16].

Chest radiographs (X-Ray) are performed to identify abnormalities that may influence ventilation and diffusion. In COVID-19, chest radiographs should be performed in patients with suspected pneumonia [2], and may show signs of ground glass patterned areas, as healthy pulmonary tissue is radiolucent (transparent); abnormalities appear dense on the film [19]. In addition, patients who develop ARDS may have bilateral opacities on chest x-ray due to non-cardiogenic pulmonary oedema. Chest radiographs also confirm the position of invasive lines and tubes such as central venous catheters, ETT and naso-gastric (NG) tubes.

ABGs are regularly performed in critical care and are often taken from an arterial line. The indications for ABG sampling include being part of a new admission, ongoing assessment, or if the ventilator settings have been changed. They can also be used if there are signs of respiratory distress (e.g. increased respiratory rate, reduced tidal volumes, reduced saturations, or if the patient is clammy and sweaty), acid base balance, checking of potassium level, pre or post procedure, checking blood glucose level and if the patient is haemodynamically unstable. In COVID-19 patients these checks are essential as hyperoxia should be avoided [10].

Pulse oximetry detects a pulsatile signal in an extremity, then calculates the amount of oxygenated haemoglobin and a pulse rate [20]. Pulse oximetry readings do not provide information about respiratory rate, tidal volume, cardiac output or blood pressure, therefore assessment, monitoring and recording of these additional observations is essential [20]. In critically ill patients pulse oximetry is continuously monitored, it is important to observe the trace to check the waveform (figure 1). It is worth noting that in self-ventilating patients SpO_2 targets of 92-96% may be used, with lower targets in some patient groups [10].

Figure 1: Pleth waveforms

End Tidal Carbon Dioxide ($EtCO_2$) monitoring detects expired carbon dioxide [20]. It provides an indication of the amount of carbon dioxide in the exhaled air. In a ventilated patient a continuous waveform is monitored to confirm tube position (figure 1). Normal ETCO2 is 4.5 – 6 kPa which is equivalent to pCO2 on an ABG.

Figure 2: End Tidal Carbon Dioxide traces.

Patient positions include supine, semi-recumbent, side lying and prone. Most COVID-19 patients will either be nursed proned (to improve oxygenation) or semi-upright, between 30° to 45° as part of the ventilator care bundle to reduce Ventilator Associated Pneumonia (VAP) [17]. Prone position is commonly used in severe COVID-19 disease to improve oxygenation-ventilation-perfusion, by recruiting increased alveoli in outer dorsal regions of the lung, allow improved distribution of tidal volumes and drainage of secretions [17]. The process involves placing a patient face down and is often performed for patients who are severely hypoxic. Evidence suggests this should be done early and several times if needed [2], the nurse should note the length of time the patient has been in the position, when the arm position was last changed and any plans for un-proning.

Cardiovascular Assessment

Several studies have identified potential distinctive co-morbidities among patients with COVID-19 including cerebrovascular disease, diabetes, hypertension, coronary heart disease [22-24]. Fang et al., [14] suggest patients with cardiac disease, hypertension and diabetes on an angiotensin converting enzyme (ACE2) inhibiting drugs, should be deemed higher risk for developing severe COVID-19 infection.

Severe COVID-19 disease can cause ARDS a non-cardiogenic pulmonary oedema with diffuse lung inflammation syndrome and increases complications for patients' co-morbidities. Previous medical advice was that fluid balance management should be aimed at there being a euvolaemic (neutral) to a negative fluid balance particularly in the early phase of infection, in an attempt to reduce oedema [11]. However, often this did not take account of the period of illness prior to admission, which may have included tachypnoea and fever, which can result in significant deficit in a patient's fluid balance due to insensible losses. Aggressively aiming for euvolaemic fluid balance may cause significant complications including acute kidney injury. In severe COVID-19 disease renal injury is common and associated with 20-35% of critically ill patients [11]. In addition, invasive ventilation and the use of high PEEP causes increased intra-thoracic pressure and decreased venous return [17]. This may lead to hypovolaemic shock; clinically presenting with tachycardia, narrowing pulse pressures, hypotension and reduced urine output. In consequence, careful attention to hydration, fluid balance and lower use of PEEP may improve perfusion and prevent complications such as AKI.

All patients should be monitored using a continuous electrocardiogram (ECG) and invasive haemodynamic monitoring of blood pressure and central venous pressure (CVP). ECG monitoring provides tracing of the cardiac conduction system, monitoring in lead II offers the best view and is frequently used as the default setting. A typical adult heart rate is between 60 and -100 beats per minute. A rate of less than 60 beats per minute is termed bradycardia and a rate over 100 beats per minute is tachycardia [25]. In patients who are in the prone position monitoring is still required, however, the traditional lead placement is not possible, and chest leads are reversed, with electrodes placed on the patient's back (picture 1).

Manual palpation of a patient's pulse should be carried out irrespective of a display shown on a pulse oximetry, automatic blood pressure machine or cardiac monitor. The strength and the rhythm of the pulse as well as the rate should be noted, as this may be an indication of stroke volume and peripheral perfusion. Assessment includes measuring the rate and rhythm, also if appropriate assessing peripheral pulse in comparison to the apex beat [16]. If an abnormality is detected, for example, an irregularity, a 12 Lead ECG should be performed, and it should be investigated further. Commonly irregularity of heart rate is secondary to electrolyte disturbances, specifically potassium and magnesium. These bloods should be routinely checked, and electrolytes supplemented as indicated [16].

Blood pressure (BP) is the force or pressure exerted by the blood against the walls of the blood vessels. BP varies throughout the heart and vascular system, highest in the aorta, gradually reducing with the lowest pressure in the arterioles and capillaries [16]. Pressure is higher in arteries than in veins due to the reduction in pressure as blood is passed through the capillary bed. Ventricular contraction forces blood into the aorta creating the systolic pressure, this is followed by relaxation as the aorta recoils still maintaining some constriction, referred to as the diastolic pressure. The difference between the systolic and diastolic pressure is known as the pulse pressure. BP can be measured using either a non-invasive (sphygmomanometer and stethoscope); automated device or transduced invasively via an arterial line. Mean Arterial Pressure (MAP) is the average pressure reading within the arterial system. It is generally accepted a MAP >65-70mmHg is required to maintain adequate perfusion to key organs, for example the kidneys. In severe COVID-19 patients commonly develop AKI, maintaining an adequate MAP is an important preventative strategy. Automated BP machines record MAP intermittently, in comparison to transduced arterial BP, where MAP is shown continuously.

Non-Invasive BP (NIBP) is the most common method of recording blood pressure on wards. This method has limitations, of which nurses need to be aware. These include the accuracy of readings in hyper or hypotensive states. Potential complications include ulnar nerve injury and problems associated with prolonged or frequent NIBP cycling, such as oedema, petechiae and bruising, friction blisters, failure to cycle and intravenous fluid failure [16]. In haemodynamically unstable patients the NIBP method is less suitable due to the intermittent measurements given. Invasive blood pressure measurement is the preferred method of assessment in critical care. Arterial BP (ABP) is measured through an arterial catheter inserted into the radial, brachial or femoral artery. When attached to a monitor and transduced, a continuous waveform and real-time BP is provided. ABP is measured by recording the pressure exerted on the sides of the blood vessels, whereas manual BP involves listening for Korotkoff sounds. ABP can be affected by the ABP trace, level of the transducer table, the pressure in the pressure bag and how frequently the transducer has been re-calibration (re-zeroed). While the NBP and ABP cannot be compared, they can be a useful tool if the nurse is concerned about the accuracy of the ABP [16].

Central venous pressure (CVP) measures the pressure on the walls of the right atrium of venous return, through the insertion of a central line (also termed central venous catheter (CVC)) into either the subclavian, internal or external jugular vein. Femoral CVC lines are generally avoided due to the high risk of infection and inability to record CVP. CVP continuously changes, with the average measurement between 3-10cmH20 (16]. During invasive ventilation CVP reading may be higher; requiring other forms of haemodynamic function assessment may be used. Advanced haemodynamic monitoring includes Swan Ganz or Thermodilution Pulmonary Artery Pressure; Echocardiography methods (Oesophageal, transthoracic, suprasternal or transtracheal dopplers) and Pulse wave contour methods (LiDCO, Pulsion medical system, PiCCO), may be required for patients with severe COVID-19 disease. However, it is not within the scope of this paper to discuss these methods.

Other aspects of cardiac assessment include measuring central and peripheral capillary refill, skin colour, oedema, temperature, heart sounds and blood results. Capillary refill time (CRT) is a simple bedside test to determine the measurement of perfusion, with normal CRT under two seconds [26-27]. The patient's skin colour should be observed for signs of pallor (pale, cold and clammy), any scars or changes in skin colour e.g. mottled or flushed skin. Signs of anaemia, jaundice and cyanosis should be checked by observing the mucous membranes, e.g. inside the lips or lower eyelids [16]. Oedema is caused by abnormal fluid distribution to the third space into the extracellular and extravascular space [16]. To assess oedema, pressure is applied firmly over a bony prominence for five seconds, enabling the severity of the oedema. This is dependent of the depth in millimetres (mm) in the remaining finger imprint and termed pitting oedema.

A common non-specific feature of COVID-19 is pyrexia (fever), the body’s response to the infection [2]. Core temperature should be routinely measured, either via the axilla, oral or tympanic membrane. Other methods of temperature measurement include rectal, bladder, oesophageal or via a haemodynamic monitor e.g. Swan Ganz catheter, PiCCO. The sublingual route is rarely used in critically ill patients as they are intubated. Any anti-pyretic therapy should be noted as it may mask pyrexia reducing one of the key warning signs.

Critically ill patients are immobile and at increased risk of developing venous thromboembolism (VTE), which could be reduced with appropriate prophylaxis. In COVID-19 patients it is unclear if they are at increased risk of developing VTE. Wang et al. [28] found critically ill COVID-19 patients with a high risk of developing VTE had a poorer outcome and where anticoagulant drugs were used as part of the VTE prophylaxis they were at risk for bleeding. Assessment of the calves for signs of swelling, inflammation should be undertaken to observe and monitor for signs of VTE. Prophylaxis including mechanical compression such as VTE stocking should be prescribed and clotting status regularly assessed.

Routine bloods including renal profile, electrolytes, clotting, full blood count and inflammatory markers should be performed as a minimum daily. Patients with severe COVID-19 may have elevated Ferratin, procalcitonin and C-Reactive Protein inflammatory markers. These bloods should also be taken daily and observed for trends [29]. Elevated inflammatory markers may be associated with secondary bacterial infection and poorer outcome, anecdotal evidence suggests these may be indicators of change [30].

Neurological Assessment (Disability)

Patients admitted to ICU may have an undetected neurological impairment, due to sedations given, or as a result of conditions such as hepatic failure or meningitis. In consequence, the assessment and monitoring of neurological function is an important requirement for all patients regardless of the reason for admission. Neurological assessment includes the assessment of the patient's Glasgow Coma Scale and pupil reaction. This should take account of effects from drugs and underlying causes and interventions, in ventilated patients, a 'T' may be used to signify intubation or tracheostomy and recorded in the verbal response box. It is important to note that sedation, analgesia and paralysing agents are not the same thing. While some analgesics and anxiolytics sedate (and vice versa) the indications for use are different [11]. Patients requiring mechanical ventilation who are heavily sedated and/or paralysed, have been shown to have poorer outcomes that those with lighter sedation [31].

Invasive ventilation without sedation allows for greater interaction, promoting person-centred care [32]. However, lightened or no sedation may cause feelings of vulnerability, anxiousness, fear and loneliness [32]. Finding a balance between appropriate sedation and avoiding over sedation is complex and differs between patients. Nurse-driven sedation scales such as the Richmond Agitation and Sedation Score (RASS) allow the nurse to objectively assess a patient's sedation and titrate sedation levels accordingly [33].

Neuromuscular blocking agents may be required to maintain gaseous exchange by reducing extrapulmonary resistance and ventilatory dyssynchrony resulting in improved oxygenation. Paralysis of the diaphragm allows for metabolic rest, reduced oxygen consumption and control of breathing mechanics [17]. Neuromuscular blockage may be required in patients with ARDS as this allows for less PEEP to maintain oxygenation and reduced mortality.

Most patients in critical care will experience pain, commonly caused when undertaking routine critical care e.g. repositioning, endotracheal suctioning, procedures or wound care. Untreated pain leads to impaired mobility, prolonged ventilation, psychological stress and possible delirium. Conscious patients should be encouraged to self-report when assessing pain using validated scoring tools such as the Numerical Rating Score (NRS) 0-10 scale, with

0 being no pain and 10 being the worse pain imaginable. This should be compared with pain at rest and during movement or intervention, including aspects which improve the pain experienced. Ventilated patients may not be able to communicate, and reliance on vital signs to assess pain has been found to be ineffective and a poor judgement on severity of pain. Nurses should, therefore, utilise a validated pain tool such as the Critical Care Pain Observation Tool (CPOT) [33, 34].

The risk of delirium increasing mechanically ventilated patients rises each day the patient remains sedated and/or immobilised [35]. Delirium is triggered by the use of anti-anxiety medications, age, environment (busy noisy, bright lit units) and sleep disruption caused by frequent taking vital signs, bloods and repositioning. Risk factors include dementia, history of hypertension, alcoholism or critically ill at time of admission [31]. Tools such as the Confusion Assessment Method for ICU (CAM-ICU) are reliable and valid screening tools to assess patients for delirium [31].

Exposure and Essential Care:

With significant pressures on staffing, a potential lack of pressure relieving equipment and use of the prone position, patients are at increased risk of developing pressure sores. Ideally, patients pressure areas should be assessed regularly, and a pressure risk assessment tool used to identify patients at risk [36-37]. Prone position is known to increase the risk of complications such as pressure sores, endotracheal tube displacement and loss of venous access [38-39]. In spinal surgery patients, rates of intraoperative pressure sores have been reported as being between 5% and 66% [40]. While prevention of pressure sores may be difficult every effort should be made to minimise the risk [41].

The fundamentals of patient care, such as assisting with washing, oral and eye care are a priority in critical care. However, with reducing nursing to patient ratios and the focus on management of organ function, this aspect of care can become side lined. Every effort must be made to prioritise essential care to reduce the potential for long term effects and delayed recovery. For example, a complication of sedation and coma is that some patients are unable to maintain effective eyelid closure and are at increased risk of corneal abrasion and oedema [43]. Also, many patients complain of complain of extreme thirst [43], therefore oral assessments and regular oral hygiene interventions are essential.

Insertion of a NG tube and early enteral feeding are common practices on critical care, to reduce the metabolic changes that occur due to the stress response, resulting in increased protein catabolism, loss of body mass and higher incidence of complications [43]. However, during the COVID-19 pandemic hospitals may run out of enteral feeds and have to consider using alternative feeding administration options such as gravity and bolus feeding due to a lack of available pumps. Enteral feeding in the prone position is thought to have considerable risks, but to date there is limited evidence [45]. Best practice guidelines recommend the NG tube should be inserted and position confirmed when the patient is in the supine position. Patients in the prone position, receiving enteral feeds should be nursed in the reverse Trendelenburg position to prevent micro-aspiration. These feeds should be delivered via a pump, with gravity pumps avoided unless there are no others available. Bolus feeding avoided until they are in the supine position. It is important to note that enteral feeding should be stopped a minimum of one hour before proning / de-proning [45]. Gastric residual volumes (GRV) should be aspirated every 4-6 hours as staffing ratios allow.

It is accepted that the process of assessment can be overwhelming. Adopting a systematic approach to assessment allows nurses to go through a complex assessment step-by-step to prioritise care. Once the assessment has been completed, the information gathered will help to formulate a nursing care plan and tailor each type of assessment in a timely manner to meet patient need. The care plan needs to provide specific, measurable, reliable and timely goals to direct care. At the end of a nurse’s shift care should be evaluated and the result used as a tool for handover and communication during the daily critical care medical rounds.

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