

# Developing Nursing Care Guidelines for Patients With COVID-19

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The COVID-19 pandemic has produced an abundance of new and evolving evidence related to providing care for this complex patient population. Keeping up with the rapid flow of published information can be challenging and time-consuming, even for those skilled at interpreting the literature. To help clinical nurses readily apply standardized, evidence-based recommendations in a rapidly changing healthcare environment, the Good Samaritan Medical Center Education Team created a nursing-specific guideline for care of patients with COVID-19.

The purpose of this article is to describe the process used by the Good Samaritan Medical Center (GSMC) to create an accessible and evidence-based nursing-specific guideline to promote safe and quality care for patients diagnosed with COVID-19. The state of Colorado reported its first positive COVID-19 test on March 5, 2020,

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and GSMC treated the first patient positive for the disease shortly thereafter (Colorado Department of Public Health & Environment, 2020). The GSMC education team took advantage of the low census of patients with COVID-19 after the early spring surge to evaluate and improve nursing care for future patients. This team consisted of the critical care clinical nurse specialist, clinical nurse educators, evidence-based practice specialist, director of education, and clinical education manager. The team initially intended to find evidence-based nursing-specific practices for decreasing hypercoagulability in patients diagnosed with COVID-19. However, after their attempts to locate a thorough nursing-specific clinical practice guideline for this patient population revealed a gap in the nursing literature, they chose to expand their focus and develop patient care guidelines based on the best available evidence. As a result, they synthesized recommendations in the literature to create an evidence-based, comprehensive, and easy-to-access nursing care guideline for patients with COVID-19 in emergency department, critical care, and medical/surgical/telemetry settings. This guideline allows clinical nurses to quickly access, interpret, and implement evidence-based nursing care practices designed to improve outcomes for patients with COVID-19.

GSMC is a 234-bed Level II trauma-designated community hospital located in the Denver Metro area. GSMC is a part of the Sisters of Charity of Leavenworth (SCL) Health System. The creation of these guidelines was not supported financially by any external funders.

## METHODS

Following the Johns Hopkins Nursing Evidence-Based Practice model, a Patient, population, problem; Intervention; Comparison or other interventions; Outcomes, Time (PICOT) question was developed, and the literature was searched. The initial PICOT question was, "What interventions can nurses use to decrease hypercoagulability in patients with COVID-19?" Although the initial literature review included

many recommendations for medical and pharmacy practice, nursing-specific recommendations were peppered throughout and could not be identified in a single focused article. As a result, the team took a broader approach and revised the PICOT question to, “In patients hospitalized with COVID-19, what nursing interventions decrease acute complications of the disease?”

Deciding how to review a large amount of rapidly evolving evidence was challenging. To address this challenge, the evidence-based practice specialist completed a literature search. A search was conducted using the terms COVID-19 and hypercoagulation, venous thromboembolism or VTE, acute respiratory distress syndrome or ARDS, prone position, awake proning, delirium, and pressure injury. The reference list of individual articles was combed for relevant articles that may have been missed in the literature search. Professional organization websites, such as the Infectious Disease Society of America website and the Centers for Disease Control and Prevention (CDC) website, were scanned for recommendations. The team also searched the Internet for any available guidelines from other hospitals that might lead to referenced evidence for review. New knowledge was being published and shared quickly as there was a great need across the globe for best practices in guiding care for the patients hospitalized with this new disease. Journal articles were distributed among the team for review and appraisal.

The team then met to discuss and synthesize findings. A total of 19 articles were reviewed. Level I, III, IV, and V evidence were identified, with Level III being the most common. Recommendations applicable to nursing were grouped according to nine categories: isolation and personal protective equipment, laboratories, venous thromboembolism (VTE) prevention, self-proning the nonmechanically ventilated patient, proning the mechanically ventilated patient, oxygen administration and ambulation, pressure ulcer prevention, deconditioning, and delirium (see Table 1).

A recommendation was included in the guideline under one of three circumstances: when supported by evidence specific to COVID-19, when supported by fundamental nursing practices that could minimize a complication specific to COVID-19 (e.g., some VTE prevention interventions; see Tables 2 and 3), or when an organization-specific trend identified among patients with COVID-19 merited additional attention by the nursing staff (e.g., oxygen administration and ambulation; see Tables 2 and 3). Evidence-based recommendations specific to COVID-19 or fundamental nursing practices were identified by citations in the table. Organization-specific trends were explicitly identified as a bullet under the Rationale header and applied only to Oxygen Administration and Ambulation. The team included this section after the critical care clinical nurse specialist reviewed all rapid response events and identified that this patient population appeared to experience more hypoxemia

**TABLE 1** Overview of Topics of Nursing Guideline for Caring for the COVID-19 Patient

Nursing Guideline for Caring for the COVID-19 Patient (Critical Care and Emergency Department)	
● Purpose	
● Background	
● Isolation	
● Personal protective equipment	
● Laboratories	
● Venous thromboembolism prevention	
● Self-proning for the nonmechanically ventilated patient	
● Prone positioning for the mechanically ventilated patient	
● Oxygen administration and ambulation	
● Pressure ulcer prevention	
● Deconditioning	
● Delirium	
Nursing Guideline for Caring for the COVID-19 Patient (Medical/Surgical/Telemetry)	
● Purpose	
● Background	
● Isolation	
● Personal protective equipment	
● Laboratories	
● Venous thromboembolism prevention	
● Self-proning for the nonmechanically ventilated patient	
● Oxygen administration and ambulation	
● Pressure ulcer prevention	
● Deconditioning	
● Delirium	

and recover more slowly after ambulation. The team made adjustments to the guidelines specific to their specialty areas and in accordance with organization-wide policies as appropriate (see Tables 2 and 3).

Prior to publishing, key stakeholders were invited to review the guidelines and provide feedback. Reviewers included clinical nurses, Nursing Professional Governance Council representatives, service line nurse directors, infection preventionists, the chief nursing officer, intensivists, and hospitalists.

**TABLE 2 Nursing Guideline for Caring for the Patient With COVID-19 (Critical Care and Emergency Department)**

Purpose:
This clinical practice guideline is to be used for all patients being ruled out for and with a confirmed diagnosis of COVID-19, admitted to the ICU, the IMCU, or the emergency department. The intent is to provide the best evidence-based care and the accompanying rationale for these interventions.
Background:
Patients with COVID-19 present with a variety of symptoms that require specialized care. Aligning your practice with the below evidence-based recommendations can promote healing and recovery in this complex patient population.
These are generalized guidelines for the care of patients with COVID-19. Evidence-based recommendations are identified by citations. There may be exceptions to these recommendations. Contact the physician, the pharmacist, or other appropriate consultants with specific questions.
Isolation:
Rationale
● Minimizing transmission risk is key to reducing the further spread of this disease.
Interventions
● When able to do so, patients with COVID-19-type symptoms (including fever or chills, sore throat, cough, runny nose or congestion, muscle aches, shortness of breath, or sudden loss of taste and/or smell) will remain in their room with the door closed (CDC, 2021b).
● If a patient is suspected to have COVID-19 with any of the above symptoms and a COVID-19 swab has been sent, the patient should be flagged with isolation (contact and droplet) precautions in the EMR.
● If the patient is taken off the unit for testing procedures or surgery, they must be wearing a well-fit mask (SCL recommends a procedure mask; CDC, 2021b).
● If intubated and ventilated, the ventilator and tubing must be a closed system.
● Common aerosolizing procedures include:
○ Intubation and extubation (CDC, 2021a)
■ Once intubated = source control with the closed circuit
○ Proning
○ Saline suction of intubated patients and extubation
○ Ventilation (CDC, 2021a)
○ CPR (CDC, 2021a)
○ NIPPV, CPAP, BiPAP (CDC, 2021a)
○ Heated high-flow nasal cannula $\geq 40$ L/min
○ Nasopharyngeal aspirates/swabbing
○ Tracheostomy or stoma patients
○ Bronchoscopy (CDC, 2021a)
○ Nebulized treatments
○ Sputum inductions (CDC, 2021a)
○ Ventilated patients receiving MDI therapy
○ Open suctioning of patients (CDC, 2021a)

(continues)

**TABLE 2** Nursing Guideline for Caring for the Patient With COVID-19 (Critical Care and Emergency Department), Continued

<ul style="list-style-type: none"> <li>■ This may include NT suctioning and should be avoided.</li> </ul>
<ul style="list-style-type: none"> <li>○ Chest physiotherapy</li> </ul>
<ul style="list-style-type: none"> <li>○ Transesophageal echocardiography</li> </ul>
<ul style="list-style-type: none"> <li>○ Second stage of labor</li> </ul>
<ul style="list-style-type: none"> <li>○ Swallow evaluation (FEES)</li> </ul>
<ul style="list-style-type: none"> <li>○ Pulmonary function test</li> </ul>
<ul style="list-style-type: none"> <li>● Negative airflow rooms will be used when aerosolized procedures are anticipated (CDC, 2021b).</li> </ul>
<p>Personal Protective Equipment</p>
<p>When caring for patients diagnosed with or being ruled out for COVID-19, wear the following:</p>
<ul style="list-style-type: none"> <li>● Face shield or goggles (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>● N-95, PAPR, or half- and full-face respirator (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>○ If you are wearing goggles with your N-95 instead of a full face shield, wear a procedure mask over your N-95</li> </ul>
<ul style="list-style-type: none"> <li>● Gown (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>● Gloves (CDC, 2021b)</li> </ul>
<p>Laboratories</p>
<p>Rationale:</p>
<ul style="list-style-type: none"> <li>● Can help provide differential diagnosis since COVID-19 has a wide range of presenting symptoms</li> </ul>
<ul style="list-style-type: none"> <li>● Early signs of hypercoagulability and inflammation may be observed through laboratory work</li> </ul>
<p>Interventions:</p>
<ul style="list-style-type: none"> <li>● The following laboratories may be ordered for monitoring: lactate, d-dimer, fibrinogen, procalcitonin, CBC, BMP, PT/INR, aPTT, C-reactive protein, CK (Behnood et al., 2020; Brigham and Women’s Hospital et al., 2020; Connors &amp; Levy, 2020; Llitjos et al., 2020).</li> </ul>
<ul style="list-style-type: none"> <li>● SARS COV-2 swab will be ordered.</li> </ul>
<p>Venous thromboembolism prevention</p>
<p>Rationale (Behnood et al., 2020):</p>
<ul style="list-style-type: none"> <li>● Patients with COVID-19 and severe acute respiratory distress syndrome (ARDS) are at increased risk to a hypercoagulable state in the venous and arterial circulation systems (Llitjos et al., 2020; Middeldorp et al., 2020; Pavoni et al., 2020).</li> </ul>
<ul style="list-style-type: none"> <li>● This is due to the excessive inflammation process, platelet activation, and endothelial injury.</li> </ul>
<ul style="list-style-type: none"> <li>● This increases a patient’s risk for DVT, PE, microvascular thrombosis, MI, stroke, and clotting of catheters (Llitjos et al., 2020; Middeldorp et al., 2020; Pavoni et al., 2020; Schnur, 2020).</li> </ul>
<p>Interventions:</p>
<ul style="list-style-type: none"> <li>● Ensure SCDs are placed immediately and on at all times, while in bed and while in the chair (D’Alesandro, 2016).</li> </ul>
<ul style="list-style-type: none"> <li>● At least once per shift and as needed:                             <ul style="list-style-type: none"> <li>○ Review MAR at least once per shift to ensure prophylactic anticoagulation medications are ordered.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>○ Assess for signs and symptoms of DVT such as increasing upper or lower extremity pain, tenderness, warmth, redness, or swelling of the extremity (D’Alesandro, 2016; Llitjos et al., 2020).</li> </ul>

(continues)

**TABLE 2** Nursing Guideline for Caring for the Patient With COVID-19 (Critical Care and Emergency Department), Continued

○ Assess for signs and symptoms of PE, which can include unexplained tachycardia, hypoxemia, and respiratory distress (Llitjos et al., 2020).
Self-proning for the nonmechanically ventilated patient
Rationale:
● Prone positioning is a lung-protective strategy that improves ventilation and oxygenation by reducing the pleural pressure gradient and atelectasis, which helps to improve oxygenation.
● Self-proning has been shown to improve oxygenation and decrease the need for mechanical ventilation (Scaravilli et al., 2015; Sun et al., 2020; Zellefrow et al., 2020).
Interventions:
● Assess for contraindications
● Order must be obtained prior to initiation; verbal is acceptable
● If no contraindications, implement self-proning
Major contraindications (Bamford et al., 2020):
● Respiratory distress
● Immediate need for intubation
● Hemodynamic instability (SBP < 90 mm Hg) or arrhythmia
● Agitation or altered mental status
● Unstable spine/thoracic injury/recent abdominal surgery.
● Pregnancy in 2nd/3rd trimester is a relative contraindication
● A comprehensive list is available on the GSMC Landing Click 4 Help under “COVID-19 Nursing Guidelines”
Procedure:
● Assist patient into a prone position.
● Assess for pressure injuries.
○ Consider moving EKG leads to the back if the patient self-prones for an extended period of time to protect the skin.
● Patient will rotate to different self-proned positions every 30 minutes to 2 hours (Bamford et al., 2020).
○ Oxygenation should be checked 15 minutes in a position change and should be continuously monitored (Bamford et al., 2020).
○ Full guidelines on changing position are available on the GSMC Landing Click 4 Help under “COVID-19 Nursing Guidelines.”
Prone positioning for the mechanically ventilated patient
Rationale:
● Prone positioning is a lung protective strategy that improves ventilation and oxygenation by reducing the pleural pressure gradient and atelectasis, which helps to improve oxygenation.
● Prone positioning has been shown to reduce 28-day and 90-day mortality in patients with severe ARDS with a low complication rate (Guérin et al., 2013, 2018).
Interventions:
● Order must be obtained prior to initiation; verbal is acceptable
● Prior to proning, apply foam dressings to all pressure point areas (knees, chest and breast areas, hip and pelvis areas)

(continues)

**TABLE 2** Nursing Guideline for Caring for the Patient With COVID-19 (Critical Care and Emergency Department), Continued

● Just prior to turning to a prone or supine position, remove EKG leads and pulse ox—EKGs should be placed on the patient's posterior side when prone and placed on the anterior side when supine.
● Adjust all IV tubing, including CRRT lines, to be at the head of the bed.
● Temporarily stop and disconnect tube feeding—plan to restart once patient in position (prone or supine)
● Keep the arterial line connected to watch blood pressure and pulse rate.
● Assemble necessary supplies—second positioning sling and disposable underpads, and ceiling lift.
● Assemble a team to help with turning. RT will be in manually holding the ETT during the entire procedure. Two RNs (one on each side) may need an additional RN or CNA for a large patient. Bedside RN is in charge of the turning process.
○ Discuss plans with the team to determine which side to turn to.
○ Depending on the stability of the patient, FiO <sub>2</sub> may need to be increased so the patient can hyperoxygenate during the proning process.
○ With a lift in place, pull the patient to the top of the bed and to the opposite side (left or right) of the turn.
○ Turn the patient laterally to side (left or right).
○ Begin to tuck new positioning sling and disposable underpads under the patient.
○ Check with the team to make sure the patient is stable and then turn the patient to the prone or supine position.
○ Reposition patient, new sling, and disposable underpads as needed.
○ Tilt the patient to the right or left side with pillows and positioning cushions.
○ Swim arms of the patient above their head—alternate arms and position every 2 hours.
● Replace EKG leads and pulse ox.
● Reconnect and restart tube feeding at the previous rate.
● Monitor patients closely for a decrease in oxygenation or hypotension.
● Leave the patient in a prone position for a minimum of 16 hours, but can go longer (dependent on patient stability). Must have physician approval to turn patient to supine.
● Leave the patient in a supine position for about 6–8 hours. Must have physician approval to turn the patient to a prone position.
● If the patient is unstable in the supine position, their position may need to be changed to prone immediately.
Oxygen administration and ambulation
Rationale:
● With activity, patients with COVID-19 may desaturate quickly and take longer to recover compared to other patients with respiratory distress.
● These recommendations are based on trends identified in rapid responses at GSMC.
Interventions:
● Caution and close monitoring should be used when asking the patient to ambulate.
● Strict bed rest for any patient on greater than 4 L of oxygen.
● Monitor patients on the continuous pulse ox.
● Patients requiring heated high flow oxygen (>40 lpm) or BIPAP must be in a negative pressure airflow room.
● Initiate physical medicine and rehabilitation (PM&R) as soon as the patient is stable to mitigate deconditioning.

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**TABLE 2** Nursing Guideline for Caring for the Patient With COVID-19 (Critical Care and Emergency Department), Continued

Pressure ulcer prevention
Rationale:
<ul style="list-style-type: none"> <li>● Hemodynamic instability and hypoxemia place patients at very high risk for developing pressure injuries (Cox &amp; Schallom, 2021).</li> <li>○ Hemodynamic instability and hypoxemia are common among patients with COVID-19.</li> </ul>
<ul style="list-style-type: none"> <li>● Pressure ulcers have been reported as the most common complication of patients being prone (Guérin et al., 2018).</li> </ul>
Interventions:
<ul style="list-style-type: none"> <li>● Assess skin with every assessment</li> <li>● Assist with turning patient every 2 hours</li> <li>● Use foam dressings on potential pressure areas (e.g., coccyx)</li> <li>● Elevate heels at all times to prevent breakdown</li> <li>● Ensure proper cushions are ordered and available for the patient (positioning boots, fluid positioners, and wedge cushions)</li> <li>● Monitor the area surrounding the ETT and areas with adhesive (such as EKG leads) for signs of breakdown</li> </ul>
Deconditioning
Rationale:
<ul style="list-style-type: none"> <li>● Deconditioning occurs frequently with severe illness and is important to prevent. Among patients diagnosed with ARDS who were discharged from the ICU, muscle weakness is associated with worse mortality over 5 years, whereas greater muscle strength at ICU discharge is associated with improved 5-year survival (Dinglas et al., 2017).</li> <li>● ARDS is a common secondary diagnosis for patients hospitalized with COVID-19.</li> <li>● Patients hospitalized with COVID-19 are at risk for deconditioning because of the length and severity of their illness along with the numerous medications, sedation, and pain medicines that they may have received during their hospital stay.</li> </ul>
Interventions:
<ul style="list-style-type: none"> <li>● If a patient is too unstable to do physical therapy, do a range of motion (ROM) with arms and legs as the patient can tolerate per shift.</li> <li>○ Monitor for desaturation during ROM.</li> <li>● Once the patient is hemodynamically stable, initiate PM&amp;R and early mobility.</li> <li>● If the patient is stable, assist the patient out of bed to chair for as long as tolerated, at least 3 times per day.</li> </ul>
Delirium
Rationale:
<ul style="list-style-type: none"> <li>● Delirium is a common presenting condition with severe illness in older adults. Early reports are showing not only an increase in delirium related to COVID-19 infection but also altered mental status or delirium as a presenting symptom of COVID-19 (Poloni et al., 2020).</li> </ul>
Interventions:
<ul style="list-style-type: none"> <li>● Institute delirium prevention measures and perform delirium assessment (CAM-ICU) each shift on all patients, regardless of their age.</li> <li>● Ask the pharmacy to review the medication list for potential delirium-causing agents with significant changes to the medication regimen. For all patients positive for delirium, notify physicians and request medications for treatment as indicated.</li> </ul>
<p><i>Note.</i> EMR = electronic medical record; NIPPV = Non-invasive positive pressure ventilation; CPAP = Continuous positive airway pressure; BiPAP = Bilevel positive airway pressure; CBC = complete blood count; BMP = basic metabolic panel; PT/INR = prothrombin time/international normalized ratio; aPTT = activated partial thromboplastin time; CK = creatine kinase; DVT = deep vein thrombosis; PE = pulmonary embolism; MI = myocardial infarction; SCDs = sequential compression devices; MAR = medical administration record; SBP = systolic blood pressure; CRRT = continuous renal replacement therapy; ETT = endotracheal tube.</p>

**TABLE 3 Nursing Guideline for Caring for the Patient With COVID-19 (Medical/Surgical/Telemetry)**

Purpose:	
This clinical practice guideline is to be used for all patients being ruled out for and with a confirmed diagnosis of COVID-19, admitted to medical/surgical/telemetry units. The intent is to provide the best evidence-based care and the accompanying rationale for these interventions.	
Background:	
Patients with COVID-19 present with a variety of symptoms that require specialized care. Aligning your practice with the below evidence-based recommendations can promote healing and recovery in this complex patient population.	
These are generalized guidelines for the care of patients with COVID-19. Evidence-based recommendations are identified by citations. There may be exceptions to these recommendations. Contact the physician, pharmacist, or other appropriate consultants with specific questions.	
Isolation:	
Rationale	
● Minimizing transmission risk is key to reducing the further spread of this disease.	
Interventions	
● When able to do so, patients with COVID-19-type symptoms (including fever or chills, sore throat, cough, runny nose or congestion, muscle aches, shortness of breath, or sudden loss of taste and/or smell) will remain in their room with the door closed (CDC, 2021b).	
● If a patient is suspected to have COVID-19 with any of the above symptoms and a COVID-19 swab has been sent, the patient should be flagged with isolation (contact and droplet) precautions in the EMR.	
● If the patient is taken off the unit for testing procedures or surgery, they must be wearing a well-fit mask (SCL recommends a procedure mask; CDC, 2021b).	
● If intubated and ventilated, the ventilator and tubing must be a closed system.	
● Common aerosolizing procedures include:	
○ Intubation and extubation (CDC, 2021a)	
■ Once intubated = source control with the closed circuit	
○ Proning	
○ Saline suction of intubated patients and extubation	
○ Ventilation (CDC, 2021a)	
○ CPR (CDC, 2021a)	
○ NIPPV, CPAP, BiPAP (CDC, 2021a)	
○ Heated high-flow nasal cannula ≥ 40 L/min	
○ Nasopharyngeal aspirates/swabbing	
○ Tracheostomy or stoma patients	
○ Bronchoscopy (CDC, 2021a)	
○ Nebulized treatments	
○ Sputum inductions (CDC, 2021a)	
○ Ventilated patients receiving MDI therapy	
○ Open suctioning of patients (CDC, 2021a)	

(continues)



**TABLE 3** Nursing Guideline for Caring for the Patient With COVID-19 (Medical/Surgical/Telemetry), Continued

<ul style="list-style-type: none"> <li>■ This may include NT suctioning and should be avoided.</li> </ul>
<ul style="list-style-type: none"> <li>○ Chest physiotherapy</li> </ul>
<ul style="list-style-type: none"> <li>○ Transesophageal echocardiography</li> </ul>
<ul style="list-style-type: none"> <li>○ Second stage of labor</li> </ul>
<ul style="list-style-type: none"> <li>○ Swallow evaluation (FEES)</li> </ul>
<ul style="list-style-type: none"> <li>○ Pulmonary function test</li> </ul>
<ul style="list-style-type: none"> <li>● Negative airflow rooms will be used when aerosolized procedures are anticipated (CDC, 2021b).</li> </ul>
<p>Personal protective equipment</p>
<p>When caring for patients diagnosed with or being ruled out for COVID-19, wear the following:</p>
<ul style="list-style-type: none"> <li>● Face shield or goggles (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>● N-95, PAPR, or half- and full-face respirator (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>○ If you are wearing goggles with your N-95 instead of a full face shield, wear a procedure mask over your N-95</li> </ul>
<ul style="list-style-type: none"> <li>● Gown (CDC, 2021b)</li> </ul>
<ul style="list-style-type: none"> <li>● Gloves (CDC, 2021b)</li> </ul>
<p>Laboratories</p>
<p>Rationale:</p>
<ul style="list-style-type: none"> <li>● Can help provide differential diagnosis because COVID-19 has a wide range of presenting symptoms.</li> </ul>
<ul style="list-style-type: none"> <li>● Early signs of hypercoagulability and inflammation may be observed through laboratory work.</li> </ul>
<p>Interventions:</p>
<ul style="list-style-type: none"> <li>● The following laboratories may be ordered for monitoring: lactate, d-dimer, fibrinogen, procalcitonin, CBC, BMP, PT/INR, aPTT, C-reactive protein, CK (Behnood et al., 2020; Brigham and Women’s Hospital et al., 2020; Connors &amp; Levy, 2020; Llitjos et al., 2020).</li> </ul>
<ul style="list-style-type: none"> <li>● SARS COV-2 swab will be ordered.</li> </ul>
<p>Venous thromboembolism prevention</p>
<p>Rationale (Behnood et al., 2020):</p>
<ul style="list-style-type: none"> <li>● Patients with COVID-19 and severe acute respiratory distress syndrome (ARDS) are at increased risk to a hypercoagulable state in the venous and arterial circulation systems (Llitjos et al., 2020; Middeldorp et al., 2020; Pavoni et al., 2020).</li> </ul>
<ul style="list-style-type: none"> <li>● This is due to the excessive inflammation process, platelet activation, and endothelial injury.</li> </ul>
<ul style="list-style-type: none"> <li>● This increases a patient’s risk for DVT, PE, microvascular thrombosis, MI, stroke, and clotting of catheters (Llitjos et al., 2020; Middeldorp et al., 2020; Pavoni et al., 2020; Schnur, 2020).</li> </ul>
<p>Interventions:</p>
<ul style="list-style-type: none"> <li>● Ensure SCD’s are placed immediately and on at all times, while in bed and while in the chair (D’Alesandro, 2016).</li> </ul>
<ul style="list-style-type: none"> <li>● At least once per shift and as needed: <ul style="list-style-type: none"> <li>○ Review MAR at least once per shift to ensure prophylactic anticoagulation medications are ordered.</li> <li>○ Assess for signs and symptoms of DVT such as increasing upper or lower extremity pain, tenderness, warmth, redness, or swelling of the extremity (D’Alesandro, 2016; Llitjos et al., 2020).</li> </ul> </li> </ul>

(continues)

**TABLE 3** Nursing Guideline for Caring for the Patient With COVID-19 (Medical/Surgical/Telemetry), Continued

○ Assess for signs and symptoms of PE which can include unexplained tachycardia, hypoxemia, and respiratory distress (Llitjos et al., 2020).
Self-proning for the nonmechanically ventilated patient
Rationale:
● Prone positioning is a lung-protective strategy that improves ventilation and oxygenation by reducing the pleural pressure gradient and atelectasis, which helps to improve oxygenation.
● Self-proning has been shown to improve oxygenation and decrease the need for mechanical ventilation (Scaravilli et al., 2015; Sun et al., 2020; Zellefrow et al., 2020).
Interventions:
● Assess for contraindications
● Order must be obtained prior to initiation, verbal is acceptable
● If no contraindications, implement self-proning
Major contraindications (Bamford et al., 2020):
● Respiratory distress
● Immediate need for intubation
● Hemodynamic instability (SBP < 90 mm Hg) or arrhythmia
● Agitation or altered mental status
● Unstable spine/thoracic injury/recent abdominal surgery.
● Pregnancy in 2nd/3rd trimester is a relative contraindication
● A comprehensive list is available on the GSMC Landing Click 4 Help under “COVID-19 Nursing Guidelines”
Procedure:
● Assist patient into a prone position
● Assess for pressure injuries.
○ Consider moving EKG leads to the back if the patient self-prones for an extended period of time to protect the skin.
● Patient will rotate to different self-proned positions every 30 minutes to 2 hours (Bamford et al., 2020).
○ Oxygenation should be checked 15 minutes in a position change and should be continuously monitored (Bamford et al., 2020).
○ Full guidelines on changing position are available on the GSMC Landing Click 4 Help under “COVID-19 Nursing Guidelines”
Oxygen administration and ambulation
Rationale:
● With activity, patients with COVID-19 may desaturate quickly and take longer to recover compared to other patients with respiratory distress.
● These recommendations are based on trends identified in rapid responses at GSMC.
Interventions:
● Caution and close monitoring should be used when asking the patient to ambulate.
● Strict bedrest for any patient on greater than 4 L oxygen.
● Monitor patients on the continuous pulse ox.

*(continues)*

**TABLE 3** Nursing Guideline for Caring for the Patient With COVID-19 (Medical/Surgical/Telemetry), Continued

● Patients requiring heated high flow oxygen (>40 lpm) or BIPAP must be in a negative pressure airflow room.
● Initiate physical medicine and rehabilitation (PM&R) as soon as the patient is stable to mitigate deconditioning.
Pressure ulcer prevention
Rationale:
● Hemodynamic instability and hypoxemia place patients at very high risk for developing pressure injuries (Cox & Schallom, 2021).
○ Hemodynamic instability and hypoxemia are common among patients with COVID-19.
● Pressure ulcers have been reported as the most common complication of patients being prone (Guérin et al., 2018).
Interventions:
● Assess skin with every assessment
● Assist with turning patient every 2 hours
● Use foam dressings on potential pressure areas (for example, coccyx)
● Elevate heels at all times to prevent breakdown
● Ensure proper cushions are ordered and available for the patient (positioning boots, fluid positioners, and wedge cushions)
● Monitor the area surrounding the ETT and areas with adhesive (such as EKG leads) for signs of breakdown.
Deconditioning
Rationale:
● Deconditioning occurs frequently with severe illness and is important to prevent. Among patients diagnosed with ARDS who were discharged from the ICU, muscle weakness is associated with worse mortality over 5 years, while greater muscle strength at ICU discharge is associated with improved 5-year survival (Dinglas et al., 2017).
● ARDS is a common secondary diagnosis for patients hospitalized with COVID-19.
● Patients hospitalized with COVID-19 are at risk for deconditioning due to the length and severity of their illness along with the numerous medications, sedation, and pain medicines that they may have received during their hospital stay.
Interventions:
● If a patient is too unstable to do physical therapy, do a range of motion (ROM) with arms and legs as the patient can tolerate per shift.
○ Monitor for desaturation during ROM.
● Once the patient is hemodynamically stable, initiate PM&R and early mobility.
● If the patient is stable, assist the patient out of bed to chair for as long as tolerated, at least 3 times per day.
Delirium
Rationale:
● Delirium is a common presenting condition with severe illness in older adults. Early reports are showing not only an increase in delirium related to COVID-19 infection but also altered mental status or delirium as a presenting symptom of COVID-19 (Poloni et al., 2020).
Interventions:
● Institute delirium prevention measures and perform delirium assessment (CAM-ICU) each shift on all patients, regardless of their age.
● Ask the pharmacy to review the medication list for potential delirium causing agents with significant changes to the medication regimen. For all patients positive for delirium, notify physicians and request medications for treatment as indicated.
<i>Note.</i> EMR = electronic medical record; CBC = complete blood count; BMP = basic metabolic panel; PT/IRN = prothrombin time/international normalized ratio; aPTT = activated partial thromboplastin time; CK = creatine kinase; DVT = deep vein thrombosis; PE = pulmonary embolism; MI = myocardial infarction; SCDs = sequential compression devices; MAR = medical administration record; ETT = endotracheal tube.

After approval, the guideline was posted to the hospital-wide resource site, accessible to 549 clinical nurses across GSMC. Information about and hyperlinks to the guidelines were shared using two major communication channels: the clinical virtual learning platform and the weekly department updates. The guidelines were further disseminated by clinical nurses, the critical care nurse specialist, clinical nurse educators, and the nurse director. In addition, guidelines were reinforced during key meetings for the nursing shared leadership council, meetings for the research and evidence-based practice council, staff meetings, and nurse director meetings. They are included in the standardized curriculum for nursing orientation, and a printed copy is included in every newly hired nurse's orientation binder. Training sessions specific to self-proning were conducted in real time at the bedside or in group sessions as schedules permitted in the medical/surgical/telemetry, emergency department and critical care settings. The guidelines were also shared with SCL Health System's Nursing Branch of COVID-19 Incident Command.

## RESULTS

These guidelines have been implemented in three hospitals across this eight hospital system in Colorado and Montana. Feedback from bedside nurses and nurse leaders has been positive as these clinical guidelines reduce variation in nursing care of this vulnerable patient population. As of March 2021, the GSMC website that hosts the guidelines received 368 views by 221 unique users at GSMC. These numbers may not capture all users, as the guidelines are also printed and stored in reference binders on each of the affected units.

Given the global increase in knowledge regarding the treatment and management of COVID-19, causality between the guidelines and patient outcomes is difficult to demonstrate. However, several outcomes that might be influenced by these guidelines were monitored, including: deep vein thrombosis, pulmonary embolism, myocardial infarction, stroke, and mortality percentage. The rationale for selecting these measures was twofold. The critical care clinical nurse specialist and clinical educators shared anecdotal observations that patients with a COVID-19 diagnosis seemed to experience pulmonary embolism, myocardial infarction, and stroke at a higher rate than the general population at GSMC. Concurrently, literature surrounding hypercoagulability in patients with COVID-19 began to be published and shared more broadly. Therefore, the team chose to monitor coagulation complications alongside mortality percentage. This period of measurement began in March 2020, when GSMC diagnosed its first patient with COVID-19, and continues to be monitored. As of early March 2021, GSMC cared for 789 patients who tested positive for COVID-19. Currently, there is insufficient data to determine the true impact of the guidelines at this time.

## DISCUSSION AND IMPLICATIONS FOR PRACTICE

The complexity of the COVID-19 pandemic illuminated the need for easily accessible and nursing-specific guidelines at GSMC. The team encountered a number of challenges in the creation of the guideline.

It was difficult to determine the quality of the evidence identified. Articles related to COVID-19 learnings were published rapidly in order to guide care and to help the global community learn more about how to treat the virus. Some articles had small sample sizes or lacked peer reviews. As a result, information considered valuable one week sometimes became inconsequential the next once a larger population was studied. In response, the team recognized the need to identify trends relevant to nursing before pulling specific recommendations and then structure the guideline around those larger headings (see Table 1). This structure made it easier to organize recommendations from the literature and track changes in those recommendations without having to edit the entire guideline.

After creating the larger thematic structure, the team focused on pulling specific recommendations from the literature. The team was surprised to learn that, despite the complexity of the COVID-19 disease process, many of the nursing-specific guidelines were, in fact, fundamental nursing practices rather than new skills or interventions. Two examples of these are pressure ulcer prevention basics and VTE prophylaxis. The team chose to include these familiar standards of care for two reasons. First, it served as a reminder of the importance of those basic nursing cares. Second, it provided reassurance to the nursing staff that they already possessed the ability and knowledge to manage many of the most common complications of COVID-19.

Limited resources and time also provided challenges to keeping the guideline up-to-date. As was the case with many hospitals across the country, the rise in intensive care unit admissions and the need for an expanded incident command structure at the hospital level led team members to juggle more roles than was typical. The team only identified the need for this guideline once the number of admitted patients with COVID-19 began stabilizing after the first surge and operations began to normalize. As the number of admitted patients with COVID-19 began increasing again in fall 2020, the team balanced the work of updating the guideline with a number of department-specific needs related to both COVID-19 Incident Command and daily service line department operations. Close collaboration and prioritization of the guideline with service line directors and incident command was and continues to be critical to ensure this work continues in a timely manner.

Finally, it should be noted that the work related to this guideline was significantly streamlined by having a system-level evidence-based practice specialist as a resource. She was able to complete timely, specialized, and

high-quality literature searches on behalf of the team. In addition, she was able to close gaps in skills team members had in interpreting the literature and served as an on-call resource as questions arose.

Creating an evidence-based nursing guideline enhances the ability of the clinical nurse to provide quality, standardized care to the COVID-19 population. Access to this information continues to be critical. As of early March 2021, the Institute for Healthcare Metrics and Evaluation reports over 514,000 deaths have been reported in the United States, with over 576,000 deaths projected by July 1, 2021 (Institute for Health Metrics and Evaluation, 2020). Evidence continues to evolve, and the guidelines are reexamined by the team on a monthly basis to ensure the most current recommendations are incorporated. In the future, outcomes will continue to be tracked, trended, and shared with relevant stakeholders in order to adapt to the evolving global pandemic.

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