

## COVID-19 Workforce Surge Planning Playbook for Patients Requiring Critical or ICU Care

\*Visit the [NC AHEC Program website](#) to assure that you have the most up-to-date document.

### Executive Summary:

COVID-19 will result in an increase in patient volume needing critical care. Hospitals should estimate the staff needed using surge staffing ratios, accounting for attrition due to infection, PPE concerns, and time off due to family illness or home caregiver needs. Care should be taken to ensure the safety and resilience of clinical staff during surge response to reduce attrition. Hospitals should consider alternate sources of staffing to supplement existing critical care staff. These may be internal resources or external resources. Existing workforce will need to be deployed differently, with everyone “flexing” to maximum skill utilization in defined clear roles. A model of team-based critical care should be implemented; and, depending on their level of experience, staff should be cross-trained to execute the skills needed to take care of a critical care patient.

*This document focuses on providing resources for surging critical care skills, not critical care professionals. This document contains suggestions for focused strategies to maximize skill utilization in defined roles to meet the surge demands of the COVID-19 pandemic. State regulatory and scope of practice restrictions should always be consulted.*

### Surging critical care skills to meet the need requires:

- Adopting a team-based care approach that includes a plan for ensuring staff safety and resilience.
  - Re-distributing and training of skills of both internal and external health care workers.
- I. [Team-based care approach](#): Utilize a team-based approach for critical care patient management that is supported by formal policy/procedure. This approach should also ensure safety and resilience by following proactive strategies to prevent staff attrition. Recommendations for team-based care are provided in the narrative of the document.
  - II. [Skills redistribution](#): Identify skills needed for the patient population and inventory skills in the current workforce. Identify gaps and provide training to fill those gaps when necessary. Self-study resources on specific skills are provided in the narrative of the document.
    - [Identify and train experienced critical care health care providers who can serve as team leads for the management of critical care patients.](#)
    - [Identify and train alternate clinicians who can manage the medical care of a critical care patient as part of a team.](#)
    - [Identify and train alternative staff who can execute advanced critical care skills.](#)
    - [Identify and train alternative staff who can execute fundamental patient care skills.](#)
    - [Provide a virtual infrastructure to deliver support to on-site staff.](#)

## I. Team-Based Care

Utilize a team-based approach for critical care patient management that is supported by a formal policies/protocols. Deploying each team member to execute their unique skill sets in a collaborative approach will provide force multiplication and allow for efficient care management teams. The Academy of Medical-Surgical Nurses recommends a [structured approach to critical staffing](#).

*The advantage to utilizing a team-based approach is that staff that do not specialize in critical care can assist with the needed skills yet are not expected to independently take a full patient load. In other words, the team-based approach allows staff to share their skills across the team and through collaboration with team leads.*

**A team-based critical care during the COVID-19 pandemic should include/address the following:**

1. **Team huddles at the start of each shift** to enhance communication, optimize patient care activities, and allow each team member to discuss their clinical strengths and address any concerns.
  - a. Resource:
    - o Articles: [Teamwork in the Intensive Care Unit](#), [Two Principles for Leading Your Organization Through the COVID-19 Crisis](#)
    - o Video: [How to Turn a Group of Strangers into a Team](#) (13 minutes)
  - b. Goals:
    - i. Orient new team members to plans of care
    - ii. Synchronize team goals and accomplishments
    - iii. Discuss assignments
    - iv. Discuss patient care goals
    - v. Provide opportunity to answer questions or concerns
    - vi. Address accountability and responsibility of each team member.
    - vii. Address red flags - should be reported immediately to the critical care team leads
  - c. Critical Care Team architecture example:
    - i. The physician team lead consists of one experienced critical care physician who supervises those with less critical care experience throughout multiple critical care units and organizes the medical care of critical care patients through coordination with team leads from other disciplines.  
Example: Physician team members can do the initial patient rounding and then consult the physician team lead regarding changes in patient status, advanced plan of care management, and seek further advice.
    - ii. The nursing team lead is an experienced critical care nurse who coordinates execution of patient care skills among less experienced critical care nurses and other flexing health professionals for multiple patients in one critical care unit.  
Example: Lead RNs can delegate specific tasks of patient care, such as vital sign monitoring, low risk medication administration, documentation, and intravenous management, to team members with those skills. Ventilation management and recommendations can be completed by specialists (e.g. CRNAs) in consultation with

an experienced critical care respiratory therapist.

- iii. Pharmacists without specialty in critical care can write protocols for drug replacements and administration under the guidance of an experienced critical care pharmacist. The lead pharmacist can be responsible for communicating new protocols to other team leads.
- d. A structured, cascading plan for huddles should be implemented. An example of huddle architecture:
- i. Base Huddles:
    - a) Team members who are responsible for “placing orders” can pre-round, followed by consultation with the physician team lead. Interprofessional rounding should include each members’ patient assessment and possible changes in plan-of-care.
    - b) Team members who are responsible for executing the physician/APP orders should pre-round, followed by consultation with the nurse team lead.
  - ii. Interprofessional Huddles: Interprofessional rounding, including members of the medical team and the nursing/allied health team, should include discussion of each members’ patient assessment, summary of the recommendations from the team leads, and expected changes in the plan-of-care.
    - Additional consultation with the team leads may be needed after interprofessional huddles.
  - iii. Lead Huddle: Leads of each team should huddle to share the status of their team and to assess the need for additional resources, including skills gaps. The lead pharmacist and respiratory therapist should participate in the Lead Huddle.
2. **Base, Interprofessional, and Lead Huddles should take place at regular intervals throughout the shift (~every 4 hours)** to keep all team members informed of changes in plan of care, allow new questions from the team to be addressed in an open forum, provide the opportunity to address any arising concerns, and ensure a minimum frequency of team communication.
3. **Define roles for team members.** Team leads should work to prevent redundancies or gaps in task assignment.
1. All staff should be active members of the team and practice at the top of their skill set for patient monitoring, care decisions within their skill set, and reporting changes to the team leads.
  2. Other staff should make clear their training/experience levels to the team lead so that they may be properly distributed into roles.
  3. Staff without critical care training should discuss their care role with the critical care team lead for each patient care team.
  4. Team members should articulate their comfort level with assignments and clarify reporting structure for questions or assistance.
  5. Leadership and staff should recognize that the professional make-up of teams may fluctuate as patient care demands change and staff turns over.

4. **Implementation of additional unit-level incident command roles, such as a safety officer role.** This individual could be an Emergency Medical Technician, Nursing Technician, Medical Student, or health professions student familiar with PPE, or another identified individual who is trained in PPE utilization to:
  - a. Monitor PPE and staff exposure risk as part of a total staff safety model. [Request PPE from DHHS](#) if needed.
  - b. Provide [just-in-time PPE training](#) for those not comfortable with donning and doffing of PPE.
  - c. Ensure proper isolation room exiting.
  - d. Intermittently audit PPE utilization (inventory and proper use).
  - e. Assess staff for skin breakdown related to extended time periods in PPE.
  - f. Ensure team members take routinely scheduled breaks for hydration, rest, toileting, refreshments, and other needs.
  - g. Ensure needed supplies are available.
  - h. Minimize entry/re-entry to patient rooms, running supplies if necessary.
  
5. **Use of existing psychiatrists, chaplains, therapists, and social work staff** to help with counseling and support.
  - a. Utilize [Washington State Medical Association](#) guidance for supporting staff.
  - b. Conduct a periodic, brief burnout assessment, to identify at-risk staff
    - i. Develop a plan to cycle at-risk staff from the front line and communicate expectations for return to service.
    - ii. Burnout self-assessment tools
      - [Burnout self-assessment](#)
      - [Well-Being in Academic Medicine: Resources for Faculty](#)
      - [Valid and Reliable Survey Instruments to Measure Burnout, Well-Being, and Other Work-Related Dimensions](#)
      - Resource: 59 Mental Health Resources for Health Care Providers <https://nursinglicensuremap.com/resources/mental-health-resources/>
  
6. **Regular assessment of team coping skills** should be scheduled with a plan for team debriefing.
  - a. Establish an action plan for teams in crisis, e.g. how do team leads and team members elevate concerns and ask for help.
  - b. Prepare to execute team debriefings more frequently as cases, morbidity, death or other critical incidents escalate.
  
7. **End of shift Debriefing** should occur before shift change. This will allow the team to review the day's events and recognize any changes that should occur prior to the next shift report.

## II. **Skills Re-distribution and Training Resources**

In the event of a patient surge, the workforce may also need to surge. Identify skills needed for the patient population and inventory skills in the current workforce. Identify gaps and provide training to fill those gaps when necessary. Changes in role and workflow may be needed to capitalize on existing skills and supervise any new team members.

This section identifies potential sources for workforce skills needed to meet the needs of the critical care patient population, along with potential training resources.

### Resources for all Staff:

\*[UpToDate](#) has a list of freely available clinical effectiveness resources on COVID-19.

\*All staff caring for COVID-19 patients would also benefit from regular review of [Dynamed's opensource resource on COVID-19](#), the [NIH COVID-19 Treatment Guidelines](#), and [Week in Review COVID-19 Scientific News](#).

\*The American Heart Association, with support of AACN and other organizations, released [interim guidelines for basic life support, pediatric advanced life support and advanced cardiovascular life support to treat patients with COVID-19](#).

1. **Identify and train experienced critical care health care providers who can serve as team leads for the management of critical care patients.** Internal sources are preferred.
  - a. Physicians and clinicians who currently practice in the critical care setting and can lead a team of less experienced, alternate, flexing clinicians in the medical management of the critical care patient.
  - b. Critical care registered nurses, preferably certified, who can lead a team of nurses with minimal critical care experience, or alternate, flexing nurses.
  - c. Experienced respiratory therapists who can lead a team of respiratory therapists returning or new to the profession, as well as lead alternate clinicians who may be flexing to assist with ventilator and airway management.
  - d. Experienced critical care pharmacists, preferably board certified, who can lead a team of other pharmacists to provide pharmacologic guidance and recommendations to the health care team, particularly if there is a depletion of commonly used drugs.
  - e. **Training** should include self-studying concepts of teaming, leadership, and delegation (including accountability and responsibility concepts), as well as orientation to the hospital's incident command structure.

### **Self-Study Resources:**

- i. [Society of Critical Care Medicine's Suggested Staffing and Delegation Model](#) (Scroll to "Tiered Staffing Strategy for Pandemic")
- ii. [NC Board of Nursing Delegation and Assignment of Nursing Activities](#)
- iii. [NC Board of Nursing Decision Tree for Delegation to UAP](#)
- iv. [COVID-19 Patient Intubation](#) : This video depicts effective leadership, teamwork, safe intubation in a COVID+ patient, and PPE preservation.

2. **Identify and train alternate clinicians who can manage the medical care of critical care patients.** Consider physicians, advanced practice nurses (Clinical Nurse Specialists, Certified Registered Nurse Anesthetists, and Hospitalist Nurse Practitioners), and physician assistants from both internal and external sources:
  - a. Clinicians in non-critical care specialties who have managed ventilators as part of their residency or fellowship within the last 5 years (cardiologists, hospitalists, general internists, all recently graduated subspecialists, surgeons, and anesthesiologists).
  - b. Clinicians in non-critical care specialties who have experience in line placement (Arterial, central lines) as part of their residency or fellowship within the last 5 years (surgeons, anesthesiologists, CRNAs, and interventionists).
  - c. Clinicians further out from training who are willing to take a critical care refresher course.
  - d. Clinicians who have transitioned to ambulatory settings but have been out of the hospital environment for less than 5 years.
  - e. Health care professionals licensed in another state, are retired, or have inactive licenses; persons who are skilled but not licensed; and students at an appropriately advanced stage of professional study are potential sources. Consult the relevant professional health care licensure board for training requirements.
  - f. **Training** should include self-study of pertinent clinical topics in the critical care setting that require both medical and technical intervention. Clinicians should discuss their comfort level and skill set with the team lead critical care physician to determine which patients they are most prepared to manage.

**Self-Study Resources:**

- i. [SCCM | Critical Care for the Non-ICU Clinician](#)(Video Review Modules) **OR** [Critical Care Medicine Merk Manual](#) (Reading-Based Refreshers)  
*Clinical Resource Topics:* Recognition of critical illness, airway management and assessment, critical care for older adults, acute respiratory failure, mechanical ventilation, and shock diagnosis and management. There is also a specific video module for non-ICU nurses available. *Total time to complete:* ~2.5 Hours
- ii. [ACP's COVID-19 Clinician's Guide](#) *Time to complete:* Dependent on which modules are most useful for the care setting, recommend completing: chapters 8-13 for this level of training and resources/links section - particularly ethics of ventilator triage.
- iii. [JN Care for Critically Ill Patients with COVID-19 Management Overview](#)  
*Time to Complete* ~20 Minutes
- iv. Society of Critical Care Medicine [Surviving Sepsis: Guidelines on the Management of Critically Ill Adults with COVID-19](#): 101 pages.
- v. [Harvardx Mechanical Ventilation for COVID-19](#)  
Topics range from basic introduction to advanced topics in mechanical ventilation. Staff who are comfortable with mechanical ventilation management can still benefit from the *Mechanical Ventilation in COVID-19* patients component. For that part, *Time to complete:* 20 mins

- vi. [UNC Health Care short lectures](#) via NC AHEC Program  
Critical care refresher topics include airway management for COVID-19 patients, altered mental status/psychiatry in emergency medicine, ARDS, GI Bleed, DKA, and mechanical ventilation. *Time to complete:* each video is about 20 minutes
  - vii. [ACP Critical Care Video Shorts](#)  
*Clinical Resource Topics:* Oxygenation assessment, analysis, hypercapnic respiratory failure, ARDS, sepsis, vasopressors, and prevention in the critical care unit  
*Time to complete:* ~1.5 hours for all videos
  - viii. [Hospitalist guide to COVID-19](#)  
*Time to complete:* 4 hours, 1 hour per video. Can redeem CME credit.
  - ix. [Extracorporeal Life Support: RN Management of ECMO Patients](#)  
Create an account and then navigate to course title (no need to buy a membership). Also [ECMO Intervention Review specifically for COVID-19 patients](#)  
*Time to Complete:* 1 hour
  - x. [One-page ICU guidelines](#)  
Rapid review of COVID-19 from epidemiology to prognosis. *Time to complete:* ~15 min - quick reference.
  - xi. [Mass General Hospital guidelines on prone positioning in alert and oriented hypoxemic patients](#). MGH guidelines for placing non-intubated, hypoxemic patients in prone position to improve arterial oxygenation
  - xii. [LitCovid from NCBI](#). Scientific literature hub for tracking information about SARS-CoV-2. Updated daily with most recent developments
3. **Identify and train alternative staff who can execute advanced critical care skills.** Consider both external and internal staffing sources.
- a. Relevant critical care skills include:
    - i. airway management
    - ii. ventilator support, including High-frequency oscillatory ventilation
    - iii. central line management, including arterial lines
    - iv. high risk medication administration (each facility should provide on-boarding staff with guidelines and pathways for medication administration to the critically ill)
    - v. EKG monitoring
    - vi. ECMO management
  - b. Potential internal sources for staff with prior critical care experience:
    - i. Advanced Practice Nurses: Clinical Nurse Specialists, Certified Registered Nurse Anesthetists, Nurse Practitioners
    - ii. Nurses in procedural areas (post- anesthesia care unit, cardiac catheterization lab, interventional radiology, electrophysiology lab, and operating room)



- iii. Nurses in progressive care units (intermediate care, telemetry, or stepdown units) contribute to team-based care with the guidance and expertise of a critical care preceptor.
  - iv. Nurses in other settings who have had critical care experience within the last 3 years.
  - v. Health care professionals licensed in another state, are retired, or have inactive licenses; persons who are skilled but not licensed; and students at an appropriately advanced stage of professional study are potential sources. Consult the relevant professional health care licensure board for training requirements.
- c. Consider partnering with prehospital sources to support the ICU care team. Consider contacting local emergency medical services (EMS) to utilize paramedics or emergency medical technicians for appropriate patient care skills, such as intubation, medication administration, and nebulizer treatments.
- d. **Training** should include self-study resources focused on advanced critical care skills, in addition to an 8-12 hour shift with a critical care team lead preceptor.
- i. The precepted shift should focus on an inventory and validation of each team members' advanced critical care skills, introduction to team-based care, and orientation to the unit and workflow.
  - ii. **Self-study resources:**
    - a) [SCCM | Critical Care for the Non-ICU Clinician](#)(Video Review Modules) **OR** [Critical Care Medicine Merck Manual](#) and [Merck Manual for procedures and exams](#) (Reading-Based Refreshers)  
*Clinical Resource Topics:* Recognition of critical illness, airway management and assessment, critical care for older adults, acute respiratory failure, mechanical ventilation, and shock diagnosis and management. There is also a specific video module for and non-ICU nurses available.
    - b) [ACP's COVID-19 Clinician's Guide](#)  
Free to access. Most important chapters are 6, 7, 8, and 9. *Time to complete:* 2-3 hours.
    - c) [Ventilator Management: Essential Skills for Non-ICU Nurses](#). Topics: Basic ventilator settings and abbreviation, how to assess a patient on a ventilator, ventilator alarms, troubleshooting measures and interventions, and how to assist during intubation. You may need to register. *Time to complete:* 1 hour
    - d) [COVID-19 Pulmonary, ARDS, and Ventilator Resources](#). Create an account and then navigate to course title (no need to buy a membership). *Time to complete:* 4 hours.
    - e) [Harvardx Mechanical Ventilation for COVID-19](#)  
Topics range from basic introduction to advanced topics in mechanical ventilation. Staff who are comfortable with mechanical ventilation management can still benefit from the *Mechanical Ventilation in COVID-19* patients component. For that part, *Time*



to complete: 20 mins; Time to complete the entire course: 2-3 hours

- f) Society of Critical Care Medicine [Surviving Sepsis: Guidelines on the Management of Critically Ill Adults with COVID-19](#): 101 pages. [Topics directly actionable for nurses: Infection Control \(recommendations 1,3 and 4; Supportive Care; Vasoactive Agents.](#)
- g) [Extracorporeal Life Support: RN Management of ECMO Patients](#)  
Create an account and then navigate to the course title (no need to buy a membership). If interested in ECMO Intervention Review specifically for COVID-19+ patients, it is available [here](#). *Time to Complete*: 1 hour.
- h) [Evidence-Based Early Recognition and Management of ARDS Drives Outcomes: The Why and the How](#)  
Create an account and then navigate to course title (no need to buy a membership). *Time to Complete*: 1.25 hours.
- i) The following resources are printable or mobile friendly pocket reference tools:
  - i. [Pulmonary Management Pocket Reference Card](#) includes pulmonary management information, including: pulmonary assessment, blood gas analysis, ventilator settings and spontaneous breathing trail.
  - ii. [Commonly Used IV Cardiac Medications for Adults Pocket Reference Card](#) includes vasoactive intravenous medications.
  - iii. [Cardiovascular Assessment Pocket Reference Card](#) includes cardiovascular information, including: assessments, distinguishing between types of chest pain, evaluating for signs and symptoms of cardiovascular compromise, and more.
  - iv. [Dysrhythmia Recognition Pocket Reference Card](#) includes dysrhythmia recognition information, including: steps for ECG rhythm analysis, risk factors for common dysrhythmias, waveform characteristics of common dysrhythmias and images of various dysrhythmias.
  - v. [Hemodynamic Management Pocket Reference Card](#) includes hemodynamic information, including: hemodynamic response, oxygenation, hemodynamic alterations in shock, and factors affecting heart rate, preload, afterload, and contractility.
  - vi. [Mechanical Ventilation: Settings and Basic Modes](#) is a handy reference guide to help you safely manage oxygenation and ventilation goals for your patients on ventilator therapy.
  - vii. [Prone Positioning: Mechanically Ventilated Patients](#): Provides an overview and key concepts of a technique of turning a patient from the supine to the prone position to improve oxygenation. This maneuver has been successful in the management of patients with acute lung injury or acute respiratory distress syndrome (ARDS).
  - viii. [One-page ICU guidelines](#) are one page, **free**, documents that are curated by ICU providers. Most relevant is intensivists guide to COVID-19 Other available documents include: COVID-19 for hospitalists, Overview of ventilator modes, Understanding and treating ARDS, Weaning from the ventilator, and ventilator troubleshooting
  - ix. A full list of [Key Acute Care Adult Medications](#) and [Key Acute Care Pediatric Medications](#) with indications and dosing

4. **Identify and train alternative staff who can execute fundamental patient care skills** to provide task-specific relief to the critical care team. Consider both internal and external sources.
  - a. Relevant patient care skills include:
    - i. Physical assessments
    - ii. Low-risk medication preparation and administration
    - iii. Blood administration
    - iv. IV maintenance and central line care
    - v. Oxygen set-up
    - vi. Vital sign monitoring, including intake and output
    - vii. Dressing changes and wound care
    - viii. Nutrition management, NGT and OGT bolus feedings
    - ix. Intake and output management, including catheter care
    - x. EHR documentation
    - xi. Pulmonary care: Turn-cough-deep-breath, chest percussion
  - b. Potential sources for staff who can execute fundamental patient care skills:
    - i. Acute care nurses with no critical care experience
    - ii. Ambulatory, outpatient, infusion, and urgent care nurses
    - iii. Health care professionals licensed in another state, are retired, or have inactive licenses; persons who are skilled but not licensed; and students at an appropriately advanced stage of professional study are potential sources. Consult the relevant professional health care licensure board for training requirements.
  - c. Consider partnering with community practices for staff with additional patient care skills, such as private outpatient practices.
  - d. **Training** should include self-study resources focused on basic critical care concepts, in addition to an 8-12 hour shift with a preceptor.
    - i. The precepted shift should include an inventory and validation of each team members' skills, introduction to team-based care, and orientation to the unit and workflow.
    - ii. **Self-study resources:**
      - a) [SCCM | Critical Care for the Non-ICU Clinician](#)(Video Review Modules) **OR** [Critical Care Medicine Merck Manual](#) and [Merck Manual for procedures and exams](#) (Reading-Based Refreshers)  
Merck Manual for procedures and exams for critical care include procedures. Likely relevant examples: [Bag mask ventilation](#), [Non-invasive positive pressure ventilation](#), and other relevant critical care procedures.  
*Clinical Resource Topics:* Recognition of critical illness, airway management and assessment, critical care for older adults, acute respiratory failure, mechanical ventilation, and shock diagnosis and management. There is also a specific video module for non-ICU nurses available.
      - b) [ACP's COVID-19 Clinician's Guide](#) - *Time to complete:* 1-2 hours. Focus on chapters 1-7 and chapters 10, 11, and 12 regarding infection control.

- c) [Ventilator Management: Essential Skills for Non-ICU Nurses](#). Topics: Basic ventilator settings and abbreviation, how to assess a patient on a ventilator, ventilator alarms, troubleshooting measures and interventions, and how to assist during intubation. You may need to register. Time to complete: *1 hour*
  - d) [COVID-19 Pulmonary, ARDS, and Ventilator Resources](#) - Create an account and then navigate to the course title (no need to buy a membership). *Time to complete*: 4 hours for entire course; however, the course documents may be most relevant to those providing task specific relief to the critical care team, including: [Calculating Doses, Flow Rates, and Administration of Continuous Intravenous Infusions](#); [Suctioning: Endotracheal or Tracheostomy Tube](#); [Arterial Catheter Insertion \(Assist\), Care, and Removal](#); [Endotracheal Tube and Oral Care Practices for Ventilated and Non-ventilated Patients](#); and [Endotracheal Intubation \(Assist\)](#)
  - e) [Harvardx Mechanical Ventilation for COVID-19](#)  
Register for free access to the course. Topics range from basic introduction to advanced topics in mechanical ventilation. Staff assisting with fundamental patient care should focus on the *Basic Introduction to Mechanical Ventilation*, *Time to complete*: 55 mins **AND** *Mechanical Ventilation in COVID-19*, *Time to complete*: 20 mins
  - f) [Coronavirus e-Learning Program from eIntegrity](#) - Create an account and navigate to the course. Registration is a bit cumbersome. You will need to create a free account, wait for a confirmation email, and complete the required information. Registration takes about 10 minutes, but the content is valuable. Prioritize Resources for staff working in critical care setting, resources for staff working in acute hospital setting, and infection prevention and control. *Time to complete*: 3 hours
  - g) [Infection Prevention and Control: Critical Role of the Bedside Nurse](#)  
Create an account and navigate to the course title (no need to buy a membership). *Time to Complete*: 2.5 hours
- iii. Consider including nursing assistants and certified medical assistants for basic patient care needs, skin care, and mobility. Training for these team members should include clear role delineation, the hospital's infection prevention and control, safe patient handling and movement, and pressure ulcer prevention resources, as well as orientation to the unit and workflow.
5. **Provide a virtual infrastructure to deliver expert support to on-site staff**, such as telemedicine support, E-ICU monitoring, and off-site assessment of social determinants of health and virtual discharge planning. Consider:
- a. Telemedicine consultation, particularly for community facilities with limited specialist support. Consider pairing with other hospitals in the region for a shared resource.

- b. E-ICU monitoring (remote monitoring of patients by critical care nurses and providers at an offsite facility) is also a potential means of force expansion to provide support to on-site staff.
- c. Partnering with local health professional schools to engage students in virtually assessing social determinants of health for discharge planning and to connect patients and the health care team with families.
- d. Designating a responsible party to ensure that decision-makers and staff members have the most up-to-date information that they need to deliver safe, efficient, and effective care, as well as keep open and fluid communication with the local health department. Sign up for updates from NC DHHS, CMS, various other professional organizations who offer resources (see resources in previous sections), and the [NC AHEC Program](#). Potential sources for staff include unlicensed assistive personnel, LPNs, RNs, health professions students, retired health professionals, activity professionals, staff in administration, current health care staff who are at [high risk for COVID-19 complications](#) (this role can be completed virtually in many case).
- e. **Resources**
  - [SCCM discussion board about COVID-19](#): This discussion board provides a way for clinicians to communicate between institutions.
  - Utilize additional established resources through the US Department of Health and Human Services Assistant Secretary of Preparedness Response (ASPR) Technical Resources, Assistance Center, and Information Exchange (TRACIE) at <https://asprtracie.hhs.gov/>.
    - The [COVID-19 Healthcare Workforce Toolkit](#) is a collection of various resources on federal regulatory funding flexibilities, workforce training, state/territorial/local resources, and an information exchange that can be accessed if you register.
  - An optional patient triage support line is available [Community Care of NC](#) if facilities need support triaging patients prior to arrival to the hospital.
  - [Social determinants of health screening tool](#) and [instructions for use](#) : 2-page questionnaire developed by the EveryOne Project and the American Academy of Family Physicians can be used to assess the social needs of each patient. The instructions for use (8 pages) provide guidance for how to administer and interpret the questionnaire. Free [training and other screening tools on social determinants of health](#) is offered by the American Medical Association.
  - Communicating with patients and families:
    - [Virtual/Digital/Telehealth Patient and Family Engagement Overview](#)
    - [Vital Talk COVID Ready Communication Playbook](#)
  - Local universities, colleges, and technical schools can implement a [COVID-19 Student Service Corps](#) as a means to connect students with the needs of health care workers and systems:
    - UNC-Chapel Hill's Office of Interprofessional Education and Practice has an active NC based student service task force, the [Carolina COVID-19 Student Services Coalition](#).

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Revision history:  
04/08:

- Added Harvardx resource to resources under Section II-2

- Added Harvardx resource to replace [Standard vs. Alternative Vent Modes: What's the Difference?](#) and reduce redundancy in resources under Section II-3.
  - Added Harvardx resource to resources under Section II-4
- 04/09
- Altered 5MinuteConsult instructions
  - Added COVID-19 Patient Intubation video under Section II-1
  - Added UptoDate to Section II
  - Added *Health care professionals licensed in another state, are retired, or have inactive licenses; persons who are skilled but not licensed; and students at an appropriately advanced stage of professional study are potential sources. Consult the relevant professional health care licensure board for training requirements* to Section II-2,3,4
- 04/10
- Added Quick read article: [Two Principles for Leading Your Organization Through the COVID-19 Crisis](#) and video [How to Turn a Group of Strangers into a Team](#) to Section I-1
- 04/13
- Updated link for 5MinuteConsult
- 04/14
- Added [Ventilator Management: Essential Skills for Non-ICU Nurses](#) to Section II, 3-d-ii and 4-d-ii
- 04/16
- Added [UNC Health Care short lectures](#) via NC AHEC Program to section II-2.
  - Added [NC Board of Nursing Decision Tree for Delegation to UAP](#) to section II-1
- 04/16
- Added to Section I-3: [Request PPE from DHHS](#) if needed.
  - Added to the beginning: \*Visit the [NC AHEC Program website](#) to assure that you have the most up-to-date document.
- 04/20
- Added Academy of Medical-Surgical Nurses resource to the opening of Section I.
- 04/22
- Added the [NIH COVID-19 Treatment Guidelines](#) to Section II opening.
- 04/23
- Added training and other screening tools on social determinants of health to Section 2-5.
  - Added AHA interim guidance on life support for patients with COVID-19 to Section 2 intro.
  - Added SCCM's Surviving Sepsis Guidelines to Sections 2-2 and 2-3.
- 04/24
- Added the COVID-19 Healthcare Workforce Toolkit to Section 2-5.
- 04/27
- Added "updater" role to Section 2-5d.
- 05.08
- Added [Week in Review COVID-19 Scientific News](#) to Section 2 intro.
- 06/18
- Added references to Section 2-3d (vi-vii)
- 07/23
- Removed 5 minute consult; subscription expired
  - Added new resource for mental health