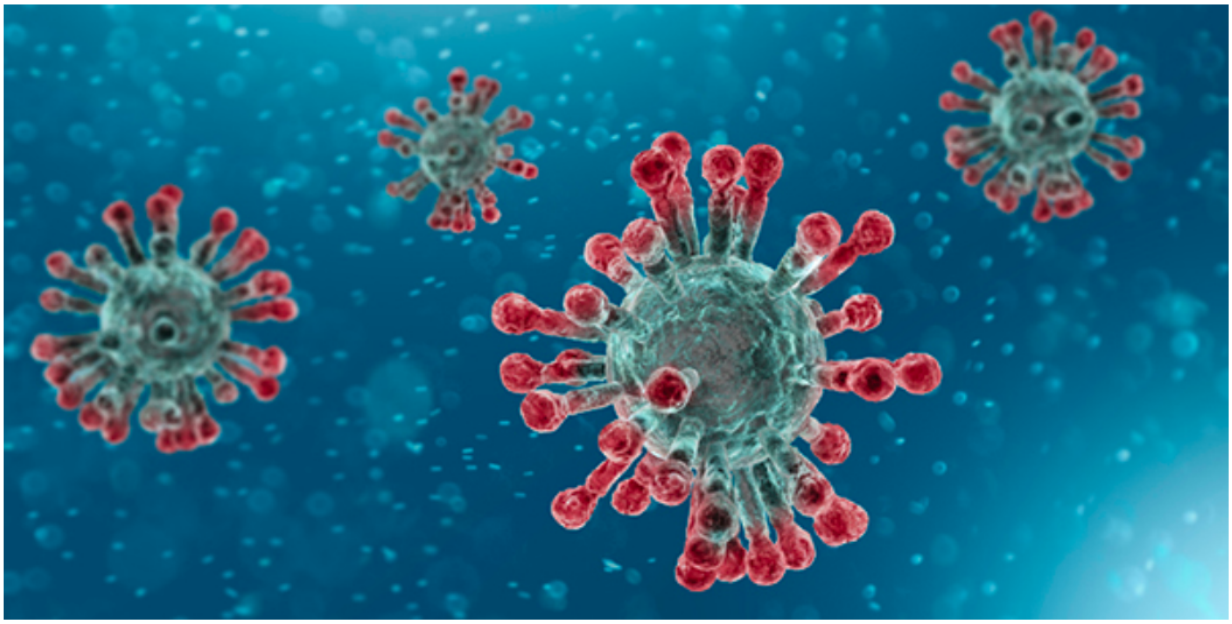
UTAH COVID-19

MEDICAL SURGE OPERATIONS PLAN

Utilizing a Medical Operations Coordination Cell



Steward Health Care System

UHA 100 YEARS UTAH HOSPITAL ASSOCIATION

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HEALTH UNIVERSITY OF UTAH

UTAH DEPARTMENT OF HEALTH

Utah Medical Surge Operation Plan DRAFT

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INTRODUCTION

Recent healthcare data findings from areas of the country that were hit earlier and harder by the pandemic indicate that COVID-19 resulted in asymmetrical hospital utilization. Because most disease hot spots are geographically localized, nearby healthcare facilities become overwhelmed. Neighboring areas with disease limiting factors such as successful mitigation and demographic considerations, however, report excess hospital capacity.

This trend in hospital utilization creates an opportunity to share resources and transfer patients to better balance patient load, both within and between healthcare systems, to improve patient well-being.

PURPOSE

COVID-19 patient volumes could exceed all possible surge capacity, necessitating triage decisions that will significantly impact patients, referring and receiving hospitals, clinicians, and ancillary public health support systems. Current planning and approach to health care delivery does not address two fundamental questions:

- How will hospitals utilize contingency care strategies evenly across the state to ensure the highest level of surge capacity possible, prior to entering crisis care?
- How will hospitals coordinate provision of care during crisis care to ensure fair and equitable distribution of scarce resources?

To answer these two questions, all health care systems and independent hospitals in the state have begun to engage in comprehensive and collaborative planning efforts for an acute care medical surge.

This plan describes coordinated efforts, to include the sharing of situational assessments, insights from subject matter experts, planning materials, real time assessments and monitoring of combined surge capacity, distributing patients with push and pull load leveling, coordinating the timing and implementation of contingency elements, and developing consensus recommendations to executive, clinical, and management personnel, as well as the Governor, Lt. Governor, the legislature, state and local health departments, federal authorities, and other relevant authorities.

To ensure a commensurate response to the pandemic, **we recommend a formal and coordinated approach that includes all health care systems in the state, rural and independent hospitals, the Utah Department of Health, the Utah Hospital Association and emergency medical systems, all operating within the State's Unified Command Structure**. In the event of a patient surge requiring critical care that exceeds available capacity, a coordinated triage approach from a centralized command can best match the highest priority patients with the most appropriate facility that has treatment capacity available. This will lead to the best utilization and efficient allocation of resources.

Crisis care central triage will focus on "pulling" patients to a higher level of care rather than inefficiently "pushing" patients from referrals into a higher level of care.

Standing up and operating this coordinated approach are significant undertakings that will require consensus to utilize common technology and then **operationalizing all of the elements of a unified, multi-system call center referred to as a Medical Operations Coordination Cell (MOCC)**. This approach will also

require the rapid development of triage protocols and identification of health care professionals that can make complex and difficult triage decisions with limited information.

Goal & Objectives

The goal is to ensure the highest standard of care possible for the greatest number of patients during an extreme surge event, with the following objectives:

- Coordination between Stakeholders through the Unified Command Structure
- Establish a Centralized Coordination Cell (Medical Operations Coordination Cell)
- Identify surge Indicators that Elicit Shared Response Activities
- Use of Common Hospital Tier Designations
- Load Balancing and "Pulling" Patients in a Coordinated Triage Approach
- Coordinated Resource Utilization Process
- Augmenting Rural Care and Healthcare Workforce

These objectives are described in more detail in later sections of the plan.

LEGAL AUTHORITIES

The response strategies and processes described herein are not legally binding, and there is no legal obligation to participate. Where possible, the plan leaves the majority of the decisions and processes up to the healthcare systems and transfer centers. The use of a coordination body is outlined in order to assist healthcare systems when overwhelmed, by leveraging statewide resources and supplies to assist in caring for patients or transferring patients to other systems with excess capacity.

The State's Medical Operations Coordination Cell (MOCC) and the other clinical care strategies discussed herein must be created and conducted based on a governor's executive order(s) or comprehensive MOUs between Utah's hospitals/healthcare systems, emergency/medical transport system (private and public agencies) regarding both vehicle and aircraft, and skilled nursing systems to implement these care strategies.

The authorization of the Utah Crisis Standards of Care Task Force will be activated by governor executive order. The Task Force advises the governor and other decision-makers in the use and allocation of scarce or restricted resources such as ventilators and critical care transport units when surge levels require altered care

MEDICAL OPERATIONS COORDINATION CELL (MOCC) OVERVIEW

The Statewide Medical Operations Coordination Cell offers real-time expert consultation for hospital staff to assist patient stabilization and/or transfer during an extreme surge event. The Coordination Cell will be staffed by physicians, hospital system transfer center personnel, EMS, and Department of Health personnel. Coordination will occur virtually via video conference or verbal, email, text, telephone, or (ham) radio.

Organizational Structure

The central function of the MOCC is to facilitate timely communication between the various stakeholders to ensure equitable patient transfers and resource sharing. It aims to do this by ensuring the use of a workable platform for all, engaging relevant health systems and supporting agencies, and utilizing existing protocols and procedures where possible. The following organizational principles apply:

- ***Virtual Coordination Cell (Platform)*** - the MOCC will operate through virtual conference (preference) or telephone calls and will utilize existing equipment, space, worksites and systems.
- ***Engaging All Stakeholders*** - All four hospital systems operating in Utah, a Centralized Intensivist Physician (MOCC Medical Officer), EMS, Utah Hospital Association, and Utah Department of Health will all have digital representation at the MOCC. Utah Hospital Association leads conference calls and processing of requests.
- ***Neutral Leadership*** - Utah Hospital Association ensures MOCC neutrality and fairness.
- ***Continued Use of Existing Hospital System Transfer Centers*** – Involving and coordinating with existing hospital system transfer centers allows the MCRT to keep those employees in place and prevents a disruption of existing workflow. Each transfer center uses different software, procedures and staffing, therefore synchronizing all four would be an incredibly difficult task.
- ***Patient Transport Support*** – Transport of patients will be fielded by EMS and supporting agencies. The transferring facility can also use internally available transportation procedures if available. Support will include COVID and non-COVID patients.
- ***Coordination Cell Physician*** - The Coordination Cell will consult with a Centralized Intensivist Physician (CIP) to address region-wide bed control between advanced critical care hospitals. Additionally, the CIP will provide clinical guidance as needed to ensure patients are transferred to a hospital with the appropriate level of care.

MOCC ACTIVATION

The Medical Operations Coordination Cell will be activated when hospitals are moving from Conventional Care to Contingency Care (pg. 18), so that the healthcare systems' capacities are balanced as the state prepares to enter Crisis Care. To appropriately respond to the existing circumstances, hospital systems will monitor internal data and provide regular updates to the team. Those updates will consist of the current level of stress the system is experiencing. The report will take into account capacity levels, staffing constraints, equipment, resources, PPE, medication, and overall workflow. The five tiers are normal, mild, moderate, high, and extreme. Each tier will elicit a commensurate response, as shown in the table below.

Response Activities Based on Hospital System Stress Report

	Normal	Mild	Moderate	High	Extreme
Response Activities	-Weekly conference calls, -Standard reports to UHRMS -Monitor dashboard Refine ops plan	-Begin data sharing (Google -Sheet or similar) -Meet twice a week -Soft Divert where possible	-Data sharing updated twice a day -Three meetings per week -Prepare MOCC -Begin resource sharing and patient transfers	-Daily conference calls -Report data three times per day -MOCC goes live -Prepare to enact Crisis Standards of Care	-Real time data sharing -24/7 staffing of centralized command center -Enact Crisis Standards of Care

It is critical that hospitals often share status updates of their system's level of stress, so that appropriate response activities can be taken immediately. The MOCC facilitator (Utah Hospital Association representative) will track hospital status updates on a "System Status Tracker" spreadsheet to gain continued situational awareness as the pandemic progresses.

MOCC OPERATIONS

Utilizing existing hospital system transfer systems, a MOCC representative will facilitate transfers between hospital systems, based on clinical acuity and hospital capacity, to enable a more equitable distribution of COVID and non-COVID patients when systems are in contingency care. The MOCC will coordinate the inter-system transfer of patients, including to alternate care sites, IF the initially contacted system is not able to accept the patient due to capacity concerns. The MOCC does not replace 911 operations for pre-hospital transport of patients originating outside of the healthcare system. All transfers occur only after the patient receives a medical screening exam and stabilizing treatment appropriate to the capabilities of the facility. All transfer protocols and decision making will observe and comply with existing EMTALA regulations. Utah Healthcare Systems will use the patient's clinical profile to determine the best possible care available. Insurance status and ability to pay will not be a determining factor for patient placement.

1. Requested Transfer Center Communicates Request for Escalation to the MOCC

The request for a COVID or non-COVID patient transfer can be made by the contacted system transfer center by calling the MOCC representative, who will trigger a live Zoom conference call. The contacted system will provide the following information to the MOCC:

- The number of patients requiring transfer
- Each patient's age, gender, acuity, language and/or effective communication needs and level of care needed
- Each patient's COVID-19 status (positive, negative, unknown)
- Additional pertinent clinical information, including requirements for transfer (e.g., oxygen, intravenous medications/drips, cardiac monitoring, other special equipment, weight for aeromedical transfers, life sustaining treatment information)

2. MOCC Facilitates Patient Placement

Each transfer center will determine if their system has the clinical capability and capacity to treat the patient. Three outcomes of this discussion are probable:

1) If only one system feels capable of accepting the patient, then that system will be the accepting system for that patient.
2) If more than one system is able to accept the patient, the systems will together decide, in conjunction with the MOCC representative, which system is best for the patient and the state overall, and thus be selected as the accepting system for that patient.
3) If no system is able to accept the patient outright, then the MOCC representative will look at previous patient transfers done through the MOCC, as well as any known data on capacity, and determine which system should be "up next" for a patient, and ask that system to accept the patient. If that asked system disagrees with the decision of the MOCC representative, another discussion amongst all systems will occur to determine if any system can accept the patient after reconsideration. If this process does not lead to mutually agreed upon accepting system, the CMO group, which includes all of the systems, should be emergently notified and asked to be included in the discussion, until an accepting system is determined.

3. Receiving Facility Completes and Confirms Successful Patient Transfer

Once accepted by a system, the system's transfer center would then propose a specific hospital to receive the patient and coordinate a provider call between the requesting facility and receiving facility. A traditional transfer process would ensue. The accepting system would confirm completion of all significant transfer steps with the MOCC representative to ensure closure. The MOCC will document the transfer and its completion on a secure tracking sheet.

HOSPITAL TIER LEVELS FOR COVID-19 PATIENTS

Continued collaboration of all hospital response partners and supporting agencies within the Unified Command Structure is foundational in responding effectively to a medical surge. The Medical Surge Workgroup currently works with all health care systems in the state, rural and independent hospitals, the Utah Department of Health, the Utah Hospital Association and emergency medical systems. There is variance among these partners for some processes, protocols and terminology, so establishing alignment in some areas, including tier levels for caring for COVID patients and surge indicators and response levels, is helpful for a more effective response.

Individual health systems should conduct assessment and categorization of hospitals and acute care facilities to assign each facility to one of four tiers of hospital capacity, capability and catchment. This will permit standardization of referrals and transport for different levels of care and identify geographic areas of need and potential gaps in services. This designation will include consideration of the following:

- Identifying the maximum bed capacity, by type of bed, for facilities within the region
- Establishing regional receiving facilities to ensure transport is as short as possible, is available, and conserves hospital beds along the Wasatch Front for the highest acuity patients.
- Deployment of personnel with core critical care training and assets to rural healthcare settings to ensure the ability to adapt the available trained personnel in time of excessive demand. Additionally, telemedicine and tele-critical care should be leveraged to the greatest degree possible as workforce and competency extenders.
- "Cohorting" and sequestering adult patients within each facility where possible to provide the most effective and efficient use of PPE, thereby minimizing the spread.

Within the 4-tier system, facilities or areas within facilities will be identified and designated as care sites for special populations of COVID-19 patients, including children, pregnant women, and patients with established immunocompromising conditions. Criteria for transfer of patients between hospital tiers have been established based on the presence of these and other clinical parameters and conditions and the capabilities of the tier. Tier designations are outlined in more detail in the table following.

Each facility will assist in determining their tier using the criteria established in this plan. Facilities will report their existing ICU bed capacity, ventilator count, dialysis capabilities, and RT/ RN /Critical Care or Pulmonologist staffing or Hospitalist ICU capabilities. Facilities will be expected to maximize and exceed their normal levels of capacity during this crisis.

Hospital Tier Designations

Tier Level	COVID19 & Advanced Care Capabilities	Transfers Accepted
Tier 4 - Community, Rural, Critical Access Hospitals with limited or no critical care capacity	-No COVID-19 ICU patients can be managed -Can diagnose & keep non-critical patients on simple 02 (0-10 LPM)	
Tier 3– Hospitals able to provide care for admitted, non-ventilated patients	-Can keep COVID-19 patients who are on high flow nasal cannulae or noninvasive ventilation in AIIR or are intubated on low vent settings but are otherwise healthy patients with single organ system issues -Prepare intubated patients to move to Tier 3 on a semi-urgent (less than 12-24 hours) basis -If a patient has multiple organ dysfunction syndrome (MODS) or requires immediate high ventilator settings, the patient should be immediately transferred to a higher tier	-Can accept discharged patients from a Tier 2 or 1 who require a lower acuity of care.
Tier 2 – Hospitals able to provide care for admitted, ventilated patients	-Can keep COVID-19 patients and provide high-level ventilator settings and prone positioning -Must have intermittent dialysis (CRRT) and sepsis management capabilities -Should be prepared to care for severely ill for 4 to 8 hours while transport to Tier 1 is being arranged -When transport is not readily available, must be able to render crisis-level, life-sustaining care pending availability of transport or intervening patient outcome	-Can receive patients from Tier 3 or 4, requiring more advanced, but not highest level of care
Tier 1 – Hospitals able to provide advanced critical care services	-Able to provide the highest level of care for COVID-19 patients, including advanced ventilator management or ECMO -Must be able to provide CRRT, cardiac catheterization, surgery, and stroke management -Can leverage their critical care expertise via telemedicine (TeleCritical Care and TeleICU) to other tiers	-Can receive all COVID-19 patients that other Tiers are unable to manage

MEDICAL EQUIPMENT & RESOURCE SHARING

Another key purpose of the Medical Operations Coordination Cell is to facilitate the sharing of resources between healthcare facilities. The steps for requesting pharmaceuticals, supplies, or equipment include the following activities:

1. Requesting Facility Communicates Request

The request for the transfer of pharmaceuticals, supplies, or equipment initially can be made by calling the MOCC via Zoom call. A verbal request must be followed by a written resource request. The requesting facility will identify the following information in the request:

- The quantity & exact type of requested items
- Estimate of how quickly the request is needed
- Location to which the supplies should be delivered

The written request should ideally occur before the receipt of any material resources at the requesting facility. The MOCC will coordinate with an assisting facility to determine who has sufficient resources to share. The assisting facility will identify how long it will take them to fulfill the request and pass the information to the MOCC. This can be accomplished and tracked digitally.

2. MOCC Identifies Resources

The MOCC will contact potential assisting facilities via Zoom to identify available resources.

3. Requesting and Assisting Facilities Fulfill Documentation Requirements

The requesting facility will honor the assisting facility's standard order requisition form as documentation of the request and receipt of the materials. The requesting facility's security office or designee will confirm the receipt of the material resources. The documentation will detail the following information:

- The items involved
- The condition of the equipment prior to the loan (if applicable)
- The responsible parties for the borrowed material

The assisting facility is responsible for tracking the borrowed inventory through their standard requisition forms. Upon the return of the equipment, the original invoice will be co-signed by the senior administrator or designee of the requesting facility recording the condition of the borrowed equipment.

4. Requesting Facility and MOCC Coordinate the Transport of Supplies, Equipment or Pharmaceuticals

The requesting facility, in coordination with the MOCC, is responsible for coordinating the transportation of materials both to and from the assisting facility. This coordination may involve government and/or private entities, and the assisting facility may also offer transport. Upon request, the requesting facility must pay the transportation fees for returning or replacing all borrowed material.

5. Requesting Facility Supervises Borrowed Resources

The requesting facility is responsible for appropriate use and maintenance of all borrowed pharmaceuticals, supplies, or equipment.

6. Requesting Facility Leads Demobilization Procedures

The requesting facility is responsible for the rehabilitation and prompt return of the borrowed equipment to the assisting facility. Any consumed resources, such as pharmaceuticals and supplies, must be filled through the requesting facility's normal supply chain process and resupplied to the assisting facility.

RURAL CARE & WORKFORCE AUGMENTATION STRATEGIES

In addition to the establishment of the MOCC, supporting rural hospitals and augmenting the healthcare workforce throughout the state will significantly increase our ability to respond effectively to a medical surge.

Rural Clinical Care Strategies

It is recommended that those efforts to provide training and support of rural healthcare providers to increase capacity for critical care at all levels of service be continued and augmented. This will include:

- Maximizing existing real-time telehealth-based provider support for critical care which is currently in place in multiple rural hospitals.
- Providing healthcare providers with clinical support and training on key considerations in COVID-19 care and treatment remote learning services, such as those offered by the University of Utah Burn Center.
- Establishing criteria for discharge to the home of COVID-19 patients after treatment, based on testing criteria or clinical presentation.

These clinical care strategies will address the need to maximize the ability of rural healthcare providers to continue to care of COVID-19 and other critical patients in local hospitals or other community settings and establish an efficient and effective method to transfer patients between facilities when needed. They will also decrease the strain on the EMS transport system which will be needed to transport patients to and between facilities and return to base.

Workforce Augmentation & Regulation Strategies

The transport and ICU workforces are projected to be the largest constraints to providing care in Utah's COVID-19 surge. Workforce needs prohibit effective use of available EMS transport units. Depending on exposure and quarantine of healthcare workers, the entire healthcare workforce will need augmentation during this surge event. Every effort must be taken to remove regulatory barriers to making the workforce available, including those that are unique to Utah such as the strict requirements for ambulance providers. The need for discharge acceptance of COVID-positive patients to preserve acute care resources for appropriate patients is also critical to free up critical care services providers.

ICU Workforce:

- All hospitals should re-deploy operating room and procedural area staff into emergency room, ICU and transport roles and begin to develop competence to cover surge in those areas.

- All COVID-receiving facilities should begin to enact alternative ICU strategies contained in their emergency operations plans to expand ICU capacity and capabilities.
- Remote training and outreach resources should maintain focus on supporting COVID-receiving facilities across the state in expanding ICU capacity and capability and preparing Anesthesiologists, CRNA's and perioperative staff to function in critical care roles

Medical Transport Workforce:

- The State should work with ambulance providers, air ambulance providers, National Guard medical and non-medical units, health service volunteer corps and other resources at its disposal to create an augmented medical transport branch and a single dispatch and prioritization function for the state, taking care not to pull working healthcare providers into mandatory service outside their agencies.
- The State should work to remove barriers to expansion of medical transport services. Potential ideas include exempting ambulance services from Department of Transportation medical clearance regulations that keep trained Paramedics and EMTs from serving, encouraging local communities to minimize the number of units required to respond to each 911 critical call to free up additional units to respond to an increased volume of calls, and fast-tracking qualified paramedic students into licensure.
- The State should work to replicate and expand critical care transport services by directing local authorities to relax ambulance personnel requirements to allow RN's, respiratory therapists, physicians and other disciplines to serve on ambulances, and lowering the minimum staffing requirements of paramedics from two to one per ambulance.

Additional Workforce:

- The State should implement all relevant expanded scopes of healthcare and public safety practice available in the Public Health Emergency Response Act and individual professional licensing regulations.

EMS TRANSPORT DECISION-MAKING GUIDELINES

To expedite safe, efficient and appropriate transfer of COVID-19 patients, the following guidelines should be adhered to. Note that patient transfer coordination will include step-down transfers and repatriation.

Make Transport Decisions Quickly

It is CRITICAL that transport decisions regarding COVID-19 patients are made quickly to avoid further decompensation and deterioration of patient's condition.

- Coordinate all inter-hospital transfers through the MOCC
- Less time spent in the transferring facility will mean less risk of contamination of the ED and ED personnel.
- Stable versus unstable transport:
    - A stable but sick COVID-19 patient needing a higher level of care is likely appropriate for transfer.
    - A non-stable COVID-19 patient may need to be stabilized prior to transport. If stable on pressors or other meds, they may still be appropriate for transfer.
    - Transfer appropriateness will need to be determined by the ED provider.

Consider Advanced Life Support & Air Ambulance

In the majority of COVID -19 cases needing transport, Advanced Life Support personnel will be required in case of decompensation of the patient.

- Many small rural agencies have advanced EMTs rather than paramedics. Advanced EMTs can manage the airway, however they are only approved to administer a limited number of medications. They are likely able to manage a moderately ill patient.
- Advanced EMTs may not be appropriate depending on the condition of the patient. If a higher level of care is deemed necessary, air ambulance transfer will likely be required.

Limit Risk of Disease Spread

- Non-intubated patient: Risk of droplet contact with non-intubated patient.
- Patient requiring oxygen: Consider nasal cannula when possible to avoid possible aerosolization and droplet spread within an oxygen mask.
- Patient requiring bronchodilator: Nebulizer treatments will put the crew at greater risk of airborne exposure.
- Ventilator dependent: some smaller agencies may not have ventilator capability.
- Hemodynamic instability: This will present a challenge especially with longer transport. Consider stabilizing patients prior to transfer while maintaining isolation.

Coordinate Transfer Time

- Once a transport decision is made, coordinate the transport to eliminate the transporting agency having to wait in the ED for extended periods of time. Consider the time needed for the transport agency to arrive at the facility when coordinating transport.
- If transport is determined immediately to be needed, call the transporting agency and ask for an estimated time of arrival and coordinate times with them to minimize time transferring crew waits in the ED for the patient to be ready.

Shorten Transport Times

- Consider the distance and time of transport when making a transport decision. For a very high-risk, potentially unstable patient, shorter transport times will lead to less exposure to the transporting crew.
- Ground transport should likely only be used for those taking 30-60 minutes or less, otherwise air transport may be more appropriate.

Notify Dispatch of COVID-19 Status

- When speaking with dispatch, please advise them this is a patient with known COVID-19 or person under investigation (PUI).
- Notify dispatch of all the necessary medical equipment, ventilators, medication pumps, personal protective equipment (PPE), etc.

Coordinate Air Ambulance Transports

- All potential air ambulance transports will utilize existing air transport contracts and the MOCC will assist and coordinate as needed.
- As numbers of COVID positive and critically ill patients increase throughout Utah, undoubtedly air ambulances will be stretched thin, resulting in increased wait times for transfer by air ambulance.

Secure the Airway Prior to Transport

- If advanced airway is required, or anticipated, secure the airway prior to transferring the patient to avoid having to secure an advanced airway in the confined space of an ambulance or air ambulance.

Notify Dispatch ASAP of PPE Required

- Advise the transporting crew dispatch of the PPE required during transport as soon as that is established. Most agencies will not readily have PAPR available and may need to gather appropriate PPE. This will prevent having to call another crew with appropriate PPE.
- Be aware rural transporting agencies will likely have much less variety and possibly availability of PPE.

Minimize Transporting Crew Exposure

- The goal is for EMS to be in the ED the shortest amount of time possible to avoid further contamination.
- When giving a patient report to the transporting agency, do so outside of the patient isolation room to minimize exposure.
- Observe, encourage, and ensure the transporting agency has proper PPE donned prior to entering the patient room or any patient contact.
- If air ambulance, we recommend the pilot remain outside the hospital to minimize exposure.

APPENDIX A: Planning Assumptions & Constraints

SARS-Cov-2 is a novel coronavirus that has killed well over half a million people world-wide as of July 10, 2020. Due to the novel nature of the disease and its pandemic, there are severe limitations to our collective knowledge about the specifics of the disease. Future transmission dynamics will depend on the seasonality of COVID-19, duration of immunity, the degree of cross immunity between COVID-19 and other coronaviruses, and the intensity and duration of future public health intervention measures.

The latest data gives the following characteristics of the disease:

- Mean Incubation Period: 5.2 days
- Infectious Period: 5 days
- Infection Fatality Rates: 0.5-1%
- Hospitalizations admitted to the ICU: 32%
- ICU admission requiring ventilation: 15%

Utah health systems have medical, data science and other resources that have been made available to assist in planning for the response effort. Data Analysis Teams within the Unified Command structure develop disease models to create a scenario range for COVID-19. The purpose of modeling is to aid in rapid decision-making and resourcing, not to forecast the future. Preliminary results of several modeling techniques have demonstrated similarities in hospitalization rates, ICU and ventilation rates, and mortality rates, with key differences in assumptions of the speed of transmission in the population due to the level of public health measures mandated.

Key planning assumptions emerging from existing disease models include:

- Peak hospital capacity of non-ICU beds is approximately 4250
- Peak ICU capacity of approximately 600 beds
- Both of these bed types would be allotted between COVID-19 patients and non-COVID-19 patients according to facility capability and patient acuity
- Depending on the effectiveness of social distancing interventions and community mask adoption prevalence, peak hospital census could occur in the coming weeks or several months later.

Additional planning assumptions and constraints:

- Levels of system response should be established based on current disease burden with clear triggers to initiate the next level of response. Patients should be cared for in their local community to the greatest degree possible.
- A potential limiting factor in a statewide response to a pandemic is the availability of emergency medical services transport (ambulances). EMS support and coordination is essential to the logistical goals of this effort.
- A limiting factor in current healthcare services is the availability of Personal Protective Equipment (masks, gloves, gowns) for healthcare providers, employees, and patients. The state has established a Medical Supply Workgroup that has sought to bolster PPE procurement and distribution as traditional supply lines remain constrained. Proper PPE use is imperative to slowing the spread of the disease.
- Some medical resources and equipment may become scarce. This includes, but is not limited to sedation medication e.g. propofol, pain medication, ventilators, dialysis machines and components, extracorporeal membrane oxygenation, testing materials and collection kits.

- Rural areas have more limited capacity and capability and remote distance complicates diagnosis, treatment and transport.
- Many provider organizations lack adequate reserve funding to maintain or augment workforce levels required to meet the projected demand if a surge occurs. Critical care staffing ratios provide an indication of whether care delivery is at conventional, critical, or crisis levels.
- Actions taken by the Governor can have immediate and powerful effects on the ability of the healthcare system to respond, and decision-makers must consider the unintended consequences for the healthcare system and its workforce when making all public health emergency actions.

APPENDIX B: UTAH'S COVID-19 RESPONSE

COVID-19 Unified Command

Responding successfully to any crisis requires a multifaceted approach that utilizes existing assets and leverages those advantages to overcome any constraints. The state's response has been led by a structured Unified Command, that is composed of task forces and workgroups staffed with subject matter experts from the public and private sector. It provides open lines of communication, data collections, messaging, guidance, and regulatory support. Within the Unified Command, teams have provided alternate care sites, facility inspection and support, medical supplies and equipment, federal coordination, and EMS patient transport.

The Medical Surge Workgroup is housed within the Unified Command structure and seeks to support Utah's overall healthcare response. It has brought together clinical and administrative leaders from all four hospital systems, leadership from the Utah Department of Health, EMS, and the Utah Hospital Association. Cooperation and collaboration have fostered a united partnership to prepare for this crisis. Additionally, members of this group have provided contacts within their system's transfer center to communicate real time data to the centralized group.

Public Health Measures

The Unified Command's response approach has endorsed the overarching strategy of "flattening the curve" through public health measures including social distancing, mask wearing, and aggressive self-isolation directives. Without these measures, international experience has shown that the healthcare delivery system will become overwhelmed.

Public health measures during a pandemic are directly tied to availability and quality of healthcare in the state. When the acute care medical delivery system is operating at maximum possible capacity, all public health measures and orders as recommended by the Unified Command will include appropriate provisions and exceptions to allow for and support this accelerated activity. These considerations will include processes to ensure healthcare workers can access childcare and housing and can travel in-state and from out-of-state to report for work; fast-tracked shipments of medical supplies and equipment; continuation of blood donation services; and only the most limited and necessary restrictions on the movement of registered health system and public safety volunteers.

Additional public health strategies that aid in reducing burden on the healthcare system, and are therefore advocated and adhered to by the Unified Command, include:

- Coordinated statewide messaging and policy on social distancing and mask wearing. These will be the most readily available strategies to effectively flatten the infection curve and delay exhaustion of resources and entry into crisis care. Expanding healthcare capacity can be expected to add proportionally little benefit if the rate of infection is not slowed.
- Coordinated messaging and policy on social distancing and face coverings with border state community leaders.
- Encouraging employers to facilitate remote work for employees when possible.

Even with these measures in place, it is possible that Utah's healthcare system will be overwhelmed. Hospitals are largely already beyond conventional levels of care and moving into contingency plans.

Healthcare Response

Within the Utah Concept of Operations for the Crisis Standards of Care, a continuum of care exists that transitions at the low end to the high end of intensity from Conventional Care escalating to Contingency Care and finally Crisis Care. Conventional Care represents the standard or usual level of care, with the typical amounts of space, staff and supplies. Contingency Care begins when staff are subject to longer shifts and different configurations or supervision, supplies are being conserved, adapted or substituted, and care may be delayed. In Crisis Care, cots are utilized, ICU care may be stepped down, significant changes in nursing to doctor or care provider to patient ratios occur, rationing of supplies, and care at crisis level with triage is likely. It is important to note that as demand for healthcare increases, so does the risk to patients due to limited and potentially altered standards of care.

- ***Moving from Conventional to Contingency Care*** - The indicators and trigger points for these transitions are situational and not well defined. Escalating Contingency Care activities have included: limiting hospital visitation; cancelling elective surgical care; modification/reduction of non-essential ambulatory care; repurposing hospital space for critical care and ICU units; preparing to adapt operating room anesthesia equipment to use as ventilators. In some cases, this will create a potential workforce, such as surgical and anesthesia providers, that can be deployed to augment patient care in other areas. However, we also recognize that limiting and shifting patient care in this manner poses potential operational and financial risks to some health care facilities that could introduce instability in the delivery system during a time of greatest need.
- ***Crisis Care*** - The transition from Contingency Care into Crisis Care becomes necessary when demand for care exceeds capacity to meet that demand. Crisis Care occurs when the indicators enter the black tier, i.e. ICU capacity at 181% or a staffing ratio of 1:6. International and domestic experience with COVID-19 indicates that **Utah will likely reach this level even with aggressive public health measures in place**.

It is critical that we plan for the likelihood of a medical surge requiring operating under Crisis Care standards. It is for this reason that this plan has been created.

APPENDIX C: ACRONYMS LIST

AIIR	Airborne Infection Isolation Room
APRV	Airway Pressure Release Ventilation
CIP	Centralized Intensivist Physician
CMO	Chief Medical Officer
CSC	Crisis Standards of Care
CRNA	Certified Registered Nurse Anesthetist
CRRT	Continuous Renal Replacement Therapy (low-stress dialysis)
ECMO	Extracorporeal Membrane Oxygenation (life support machine)
ED	Emergency Department
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMTALA	Emergency Medical Treatment And Labor Act
ETA	Estimated Time of Arrival
FiO2	Oxygen Flow Rate
ICU	Intensive Care Unit
iNO	Inhaled Nitric Oxide (respiratory distress therapy)
LPM	Liters Per Minute (oxygen flow measure)
MCRT	Medical Command Response Team
MOCC	Medical Operations Coordination Cell
MODS	Multiple Organ Dysfunction Syndrome
PAPR	Powered Air Purifying Respirator
PEEP	Positive End-Expiratory Pressure (therapy used with ventilator)
PPE	Personal Protective Equipment
PUI	Persons Under Investigation

RN	Registered Nurse
RT	Respiratory Therapist
UDOH	Utah Department of Health
UHA	Utah Hospital Association
UHRMS	Utah Healthcare Resource Management System

SOURCES

- World Health Organization, *Coronavirus Disease 2019 (COVID-19) Situation Report – 66* (WHO,2020); **https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200326-sitrep-66-covid-19.pdf?sfvrsn=9e5b8b48_2**.
- Centers for Disease Control and Prevention, *Transcript for the CDC Telebriefing Update onCOVID-19* (CDC,2020); **https://www.cdc.gov/media/releases/2020/t0225-cdc-telebriefing-covid-19.html**.
- Assistant Secretary for Preparedness & Response TRACIE Healthcare Emergency Preparedness Information Gateway, *Establishing Medical Operations Coordination Cells (MOCCs) for COVID-19*, **https://files.asprtracie.hhs.gov/documents/ aspr-tracie-mocc-webinar--4-24-20-final-slides.pdf**
- New Mexico Department of Health & COVID-19 Medical Advisory Team, *New Mexico Statewide Acute Care Medical Surge Plan for COVID-19 Pandemic Response,* April 2020.

UNIFIED COMMAND COVID-19 MISSION ASSIGNMENTS

MEDICAL OPERATIONS Coordination Cell (MOCC)

MISSION CATEGORY	Medical & Public Health Surge
UNIFIED COMMAND POSITION	Unified Command Group / Medical Surge
OVERALL PURPOSE	Establishment of a Medical Operations Coordination Cell (MOCC) for statewide coordinated approach to implementing healthcare triage and contingency care strategies
RESPONSE PHASE(S)	Alert Phase Pandemic Phase Transition Phase

MISSION DESCRIPTION
Please refer to the Medical Surge Operation Plan for more details. The plan answers two fundamental questions of how hospitals will utilize contingency care strategies evenly across the state to ensure the highest level of surge capacity possible. It also seeks to coordinate provision of care during crises to ensure fair and equitable distribution of scarce resources. This involves establishing a unified, multi-system call center called a Medical Operations Coordination Cell (MOCC). It also requires rapid development of triage protocols and identification of health care professionals that can make complex and difficult triage decisions with limited information. The process also includes self-assessments and designations of each hospital according to four predetermined tiers, to permit standardization of referrals and transport.

MISSION ACTIVATION	
Essential Elements Of Information	● Hospital bed availability & peak capacity for the state, including ICU beds ● ICU capacity and staffing ratios ● Healthcare resource availability, including staffing, PPE, ventilators, etc ● Modeling of disease and hospitalization rates ● Emergency medical transport availability/capacity
Triggers For Activation	● When patient volumes exceed surge capacity of hospitals ● When a coordinated triage approach will best match the highest priority patients with the most appropriate facility with treatment capacity available. ● Governor's executive order
Time Needed for Full Activation	1-2 hours
Activation Steps	1. Governor's executive order OR comprehensive MOUs between hospitals/healthcare systems, emergency medical transport system (private and public agencies, vehicle and aircraft), and skilled nursing systems. 2. Establish virtual Statewide Medical Operations Coordination Cell by identifying the location, personnel and equipment needed (see table below).

	3. Invite participation and share operational procedures to all potential members, including a Centralized Intensivist Physician, EMS, Utah Hospital Association and Utah Department of Health. 4. Establish regular virtual meeting times, reporting mechanisms and resource sharing based on colored-tier system (described within the plan). 5. Utilize EMS transfer guidelines and resource sharing guidelines within the plan.
Communication & Information Sharing	● Members of the Medical Surge Branch and Unified Command Group will participate in the MOCC and provide regular updates to Unified Command.

MISSION REQUIREMENTS		
Location	Personnel	Equipment
● Medical Operations Coordination Cell can be housed in a room or portion of a room near the State EOC with adequate space for personnel & equipment (note: most partners will meet virtually, so space needs to be adequate for Unified Command members supporting this mission)	● Physicians, hospital system transfer center personnel, EMS and UDOH personnel	● Computers or laptops with microphones/cameras for virtual meetings

MISSION DEMOBILIZATION	
Triggers For Demobilization	● When patient volumes decrease, hospital staffing and supplies are back near normal levels and there is no longer a need for coordinated triage activities.
Demobilization Steps	● Refer to Demobilization for overarching tasks ● Facilities that have requested use of equipment is responsible for the rehabilitation and prompt return of borrowed equipment to the assisting facility. ● Any consumed resources (pharmaceuticals and supplies) must be filled through the requesting facility's normal supply chain process and resupplied to the assisting facility

ADDITIONAL CONSIDERATIONS / NOTES
A formal plan is in the works, titled "Utah Medical Surge Operation Plan". Please see Unified Command Group Medical Surge personnel to access the most recent version.