The background features a photograph of a building entrance with a large, arched doorway. The entrance is framed by stone arches and has the words "DODD CHAUX HALL" inscribed above the door. A large, dark silhouette of a tree is overlaid on the left side of the image, partially obscuring the building. The right side of the image is a solid dark green color with a subtle grid pattern.

# **COVID-19 ICU Readiness: Thematic Analysis of Rapid Cycle Survey Responses**

Wendy Kollross, MBA, BSN, RN

# Introduction

The novel coronavirus of 2019 (COVID-19) has significantly impacted and transformed lives and entire societies globally.

- ▶ As of November 1, 2020, the World Health Organization (WHO) reported **global COVID-19 infections at almost 46 million confirmed cases with 1.2 million deaths worldwide** ("Weekly epidemiological update - 3 November 2020", 2020).
- ▶ In the **United States**, as of November 11, 2020, the Centers for Disease Control (CDC) reported **10,170,846 confirmed cases of COVID-19 and 239,590 deaths** ("COVID-19 Cases, Deaths, and Trends in the US | CDC COVID Data Tracker", 2020).
- ▶ November 11, 2020 - U.S. **case-fatality rate of 2.3%** (10,392,889 cases, 240,919 deaths) ("COVID-19 Map - Johns Hopkins Coronavirus Resource Center", 2020).

# Introduction

- ▶ Of COVID-19 positive patients who require hospital admission, **3%-6% become critically ill** (Edelson et al., 2020).
- ▶ **95.0% of deaths** (167,799, n=176,624) are **patients  $\geq 50$  years old** ("COVID-19 Cases, Deaths, and Trends in the US | CDC COVID Data Tracker", 2020).
- ▶ **5 medical conditions elevate severity risk**
  - Obesity
  - Heart disease
  - Chronic kidney disease
  - Diabetes
  - Chronic obstructive pulmonary disease ("COVID-19 Cases, Deaths, and Trends in the US | CDC COVID Data Tracker", 2020).
- ▶ ICU care for COVID-19 patients mandates a better understanding of ICU resource needs to ensure healthcare requirements of this patient population are met (SCCM, 2020).



# Problem Statement

- ▶ Thematic analysis of ICU clinician feedback addressing ICU readiness for COVID-19 patient care had not been published previously.
- ▶ Readiness is a clinical problem - identified by Society of Critical Care Medicine (SCCM) as ICU rapid-cycle surveys were developed to assess ICU readiness across the U.S.
- ▶ The scope of the problem - impacts all U.S. ICU clinicians, including nurses, advanced practice nurses, physicians, pharmacists, and respiratory therapists
- ▶ **The focus of this project was to decrease the gap in understanding ICU clinician experiences in caring for COVID-19 patients by analyzing descriptive feedback from Society of Critical Care Medicine's (SCCM, 2020) surveys on ICU readiness to care for COVID-19 patients.**



# Purpose and Objectives

The purpose of this project was to analyze and evaluate how ICU clinicians in the United States described their readiness to care for COVID-19 patients, during the first months of the COVID-19 pandemic, through their responses to open-ended questions detailed in two ICU Readiness rapid cycle surveys, conducted by SCCM during March 2020 and April 2020.

- ▶ The objectives of this project were to:
- ▶ (1) Conduct an analysis of clinician responses to each survey question that allowed for open-ended responses:
  - Categorize the descriptive responses based on thematic analysis
  - Categorize the descriptive responses based on respondent profession
- ▶ (2) Provide descriptive statistics based on the thematic categories of the open-ended survey question responses for each survey for:
  - Thematic analysis for descriptive responses
  - Clinician type – nurse, physician, respiratory therapist, pharmacist
- ▶ (3) Identify other analytics that may result from the data or themes

# Background

- ▶ COVID-19 is a fast-spreading illness that may cause acute respiratory distress syndrome (ARDS) requiring ICU hospitalization in an estimated 5% of patients.
- ▶ Once in the ICU setting, the incidence of hypoxic respiratory failure in patients with COVID-19 is estimated at 19%, with as many as 12% of these patients requiring invasive mechanical ventilation (SCCM, 2020).
- ▶ Understanding of ICU resource needs is mandatory to provide current and future patients with optimal, evidence-based care (SCCM, 2020).
- ▶ This project analyzed qualitative evidence received via ICU clinician responses to two national surveys.
- ▶ This investigator sought to provide a greater understanding of critical care providers' perspectives and improve ICU COVID-19 readiness for clinicians and, ultimately, the COVID-19 patients cared for by staff within those ICUs.

# Concepts

- ▶ The main concept for this project is Critical Care (ICU) Pandemic Preparedness or Readiness in the United States.
  - critical care* refers to intensive care units in U.S. hospitals and medical centers
- ▶ Merriam-Webster (2020) definitions:
  - *pandemic* “an outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population”
  - preparedness* as “the quality or state of being prepared”
  - readiness* “the quality or state of being ready such as: a state of preparation”
  - ready* “prepared mentally or physically for some experience or action” or “immediately available”

# Framework

- ▶ Thematic analysis framework and methodology guided this project.
- ▶ The methodology followed a six-step process **familiarization, coding, generating themes, reviewing themes, defining and naming themes, and writing up results** (Caulfield, 2020).
- ▶ Bias was minimized by establishing trustworthiness at three levels of the analysis: coding, generating themes, and defining and naming themes (Nowell et al, 2017).
  - Peer debriefing and researcher triangulation ensured credibility of the thematic analysis findings. The committee chair and 2 committee members served as peer debriefers.
  - A reflection journal was kept to capture thoughts on possible codes.
  - Diagramming theme connections and note taking occurred.
  - Committee chair and project owner met regularly to ensure alignment.
  - Concurrence or revision after review and discussion led to each successive step.
- ▶ An inductive approach was employed using data to drive themes due to limited existing knowledge.



# Synthesis of the Evidence: Evidence Search

- ▶ The following PICOT question provided the basis for the project literature search:

**During the first four months of the COVID-19 epidemic in the United States, how did ICU clinicians describe their readiness to care for COVID-19 patients on the ICU Readiness rapid cycle survey?**

- Population: ICU clinicians
- Intervention: rapid cycle survey
- Comparison: (implied) prior to the COVID-19 survey time period
- Outcome: descriptions by clinicians

# Synthesis of the Evidence

- ▶ The level of evidence found in the reviewed articles was low with most rating a VI or VII per the Melnyk & Fineout-Overholt (2019) Level of Evidence scale.
- ▶ The body of evidence review revealed 5 major themes:
  - Pandemic readiness planning and experience
  - Recommendations for ICU COVID-19 patient care
  - Safety and wellness of healthcare workers
  - Ventilator allocation
  - Capacity
- ▶ The pandemic readiness planning and experience articles were the largest group and collectively an older group of literature.

# Synthesis of the Evidence

## Pandemic readiness planning and experience

Influenza pandemics create exceptional and demanding health care environments. Pandemic readiness may be achieved through detailed planning and is essential to saving lives and decreasing disease spread.

- ▶ Military and civilian leaders create separate plans for pandemics in isolation, but collaboration is more effective to ensure resource optimization & efficiency Devereaux et al. (2014) .
- ▶ Vasa et al. (2017) conducted a full-scale table-top pandemic preparedness simulation which identified areas of weakness including PPE, staffing, and resource management.
- ▶ According to Morton et al. (2009) the most overwhelming disaster that U.S. hospitals may experience is a pandemic influenza with significant loss of life if virulence is like the 1918-1919 pandemic.

# Synthesis of the Evidence

## Recommendations for ICU COVID-19 patient care

Patient care during a pandemic is not usual patient care. Guidelines are needed in advance of a pandemic to provide the best care outcomes for the impacted population.

- ▶ Rubinson et al. (2008) proposed the Emergency Mass Critical Care (EMCC) framework as changes from usual ICU patient care to address staffing, equipment, and treatment spaces
- ▶ Griffin et al., (2020) provided rich detail of their COVID-19 experience in patient intubation, communication, visitor restrictions, and multidisciplinary team approach to care.
- ▶ Phua et al., (2020), also cautions that the “pace of research and data sharing must be balanced with scientific quality and ethical integrity” (p.8).
- ▶ To decrease healthcare work exposure to COVID-19, Edelson et al., (2020) argue for limiting personnel involved in hospital cardiac arrests & limiting the number of intubation attempts

# Synthesis of the Evidence

## Safety and wellness of healthcare workers

While heroic efforts were made by many, health care workers should not be in the position of having to choose between saving patient lives or potentially saving their own life.

- ▶ In 2015, Carias et al. described the predicted surge in mask demand during an influenza pandemic would create a gap that may expose critical care workers to unacceptable risk of infection.
- ▶ Garrett et al., (2009), found that to mitigate absenteeism, specific needs of health care workers during a pandemic must be met with the most often cited concern being safety.
- ▶ Burrer et al., (2020), agree that health care workers in ICU caring for COVID-19 patients should be protected from infection and strategies to optimize clinician protection are needed.

# Synthesis of the Evidence

**Ventilator allocation - A pre-conceived, detailed, collaborative plan across health care facilities, geographies, and governmental organizations is needed to meet pandemic-associated ventilator demands.**

- ▶ Meltzer et al. (2015) argued public health authorities must begin planning on optimal response to the next pandemic which may need a large and rapid demand for ventilators in critically ill patients.
- ▶ Strategies are needed to support planning for allocation of stockpiled ventilators in times of pandemic (Koonin et al., 2020)

**Capacity – Supply constraints, treatment availability, and space are best resolved with detailed pre-pandemic planning and a coordinated and integrated local, regional, and national response.**

- ▶ Calculators for allocation of scarce resources, such as ventilators, beds and ECMO, are needed to ensure optimal survival rates. (Steinberg et al., 2020).
- ▶ Christian et al., (2008), argue “deficiencies in critical care surge capacity may be exacerbated by lack of an adequate framework for integration and coordination of critical care locally and within more widespread geographies as part of an institutional response” (p. 8S).

# Synthesis of the Evidence

- ▶ Weaknesses of the evidence include the lack of higher-level evidence, such as randomized, controlled trial studies or controlled trials without randomization
  - ethical considerations during a time of pandemic may preclude this type of research
- ▶ Future research into U.S. ICU readiness from a critical care clinician perspective for coronavirus or other pandemics is needed and may include areas such as family visitation, staff wellness, and end of life considerations.
- ▶ This project provides a foundation for that future research as it is iterative in nature and occurring contemporary with the unfolding of this national crisis.

# Methods

## Project Design

- ▶ This project centered around the clinical or practice-based problem that the gap in knowledge presents.
  - Analyzed and evaluated 2 questions from the first survey and 6 questions from the second survey
  - Reviewed and summarized the open-ended, qualitative, “other” responses to identify themes across all cohorts and by provider cohorts.
  - Open-ended questions varied across the two surveys; hence, separate inductive thematic analyses were followed for Survey 1 and Survey 2.
  - Descriptive statistics were used to report findings.



# Methods

## Setting

- ▶ Intensive care units which did or may have cared for COVID-19 patients in the U.S. during the first two months of the pandemic.
  - Included units such as surgical ICUs, medical ICUs, and cardiac ICUs.
  - May be housed in large, academic hospitals or smaller community hospitals.
  - Major metropolitan areas to more rural or remote geographies.
  - ICUs may be in hospitals that are part of a larger network or system of hospitals while others may be single, independent hospital settings.
- ▶ Intensive care unit staff included:
  - Critical care nurses (RNs)
  - Respiratory therapists (RTs)
  - Advanced Practice Nurses (APRNs)
  - Pharmacists (RPhs)
  - MDs/DOs - intensivists, residents, and specialty physician faculty, such as pulmonologist and infectious disease physicians

# Methods

## Participants

- ▶ Potential participants in the two rapid cycle ICU Readiness surveys were members of the Critical Care Societies Collaborative, which included the four major national critical care professional organizations:
  - American Association of Critical-Care Nurses (AACN)
  - American College of Chest Physicians (CHEST)
  - American Thoracic Society (ATS)
  - Society of Critical Care Medicine (SCCM)
- ▶ Members of the American Association for Respiratory Care were also included.
- ▶ The anonymous, SCCM national surveys were provided to potential respondents through a web-based portal.
- ▶ Each of the surveys were available for 1 week and interspaced 2 weeks apart.

# Methods

## Plan for Implementation

- ▶ Implementation of this project commenced with the approval of the presentation of the proposal paper and receipt of the data set for each of the two surveys.
- ▶ Dr. Ruth Kleinpell provided this project owner with the downloaded, Excel-formatted data from the open-ended question responses from the 2 surveys in early May 2020.
- ▶ Thematic analysis of the descriptive data occurred separately for each of the survey data sets, both utilized an inductive approach.
- ▶ Completion of the analysis of the data sets from the two surveys occurred on July 31, 2020.

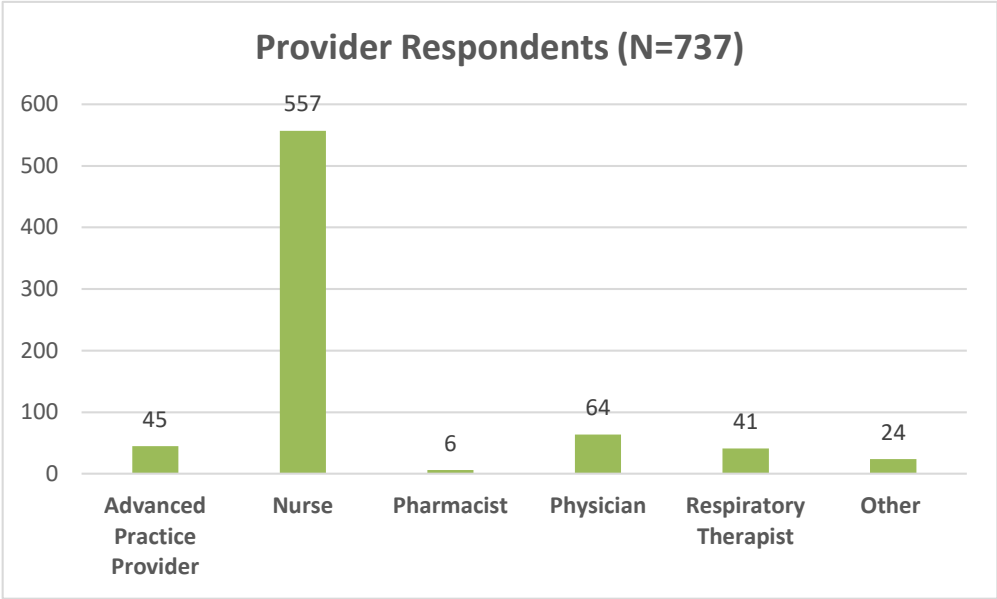
# Analysis

- ▶ This analysis followed a **six-step approach**, (Caulfield, 2020), to generate broad themes found in the data sets for each qualitative question.
- ▶ The qualitative data was evaluated using **inductive thematic analysis** for each of the two individual open-ended survey questions.
- ▶ The analysis of open-ended questions did not include inferential statistics as **clinical significance**, rather than statistical significance, was the outcome consistent with the qualitative data provided by survey respondents.
- ▶ Data was reported using **descriptive statistics**, including counts and percentages.
- ▶ The software used to analyze the data was Microsoft Office 365 Excel platform.



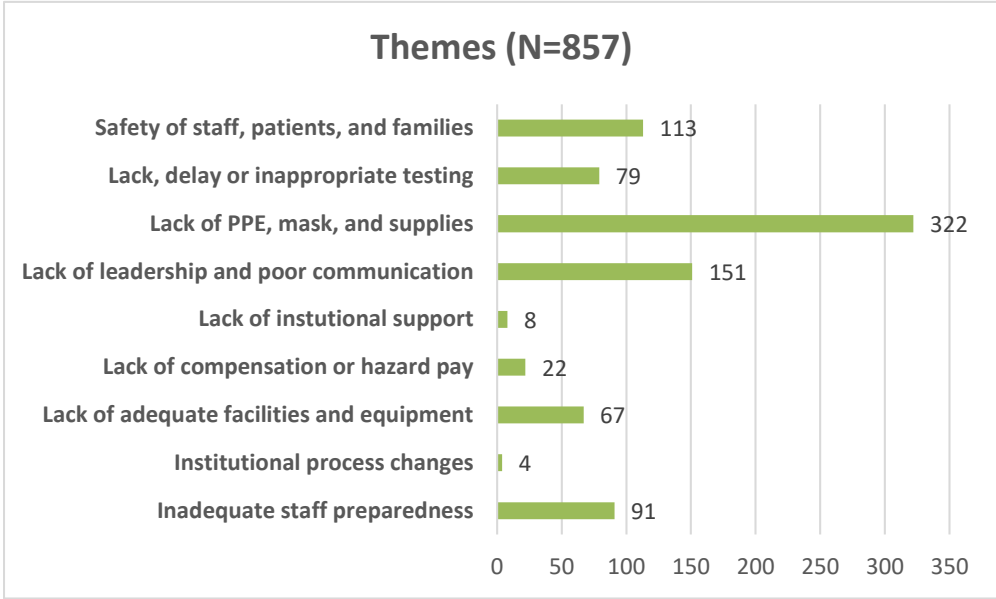
# Results

Survey 1 Question 1 - What concerns do you have related to caring for COVID-19 patients in your ICU?  
Other (please specify)



**Respondent Percentage**

Nurse	75.6%
Physician	8.7%
Advanced Practice Provider	6.1%
Respiratory Therapist	5.6%



**Top 3 Themes:**

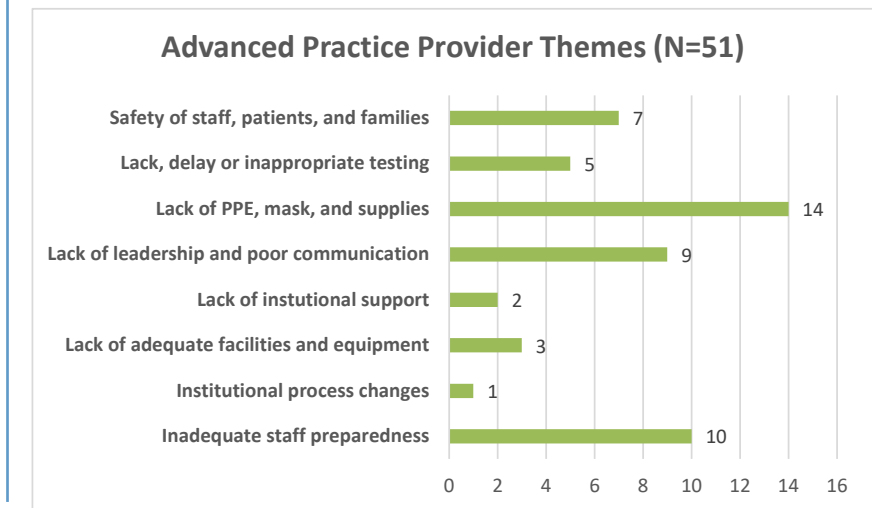
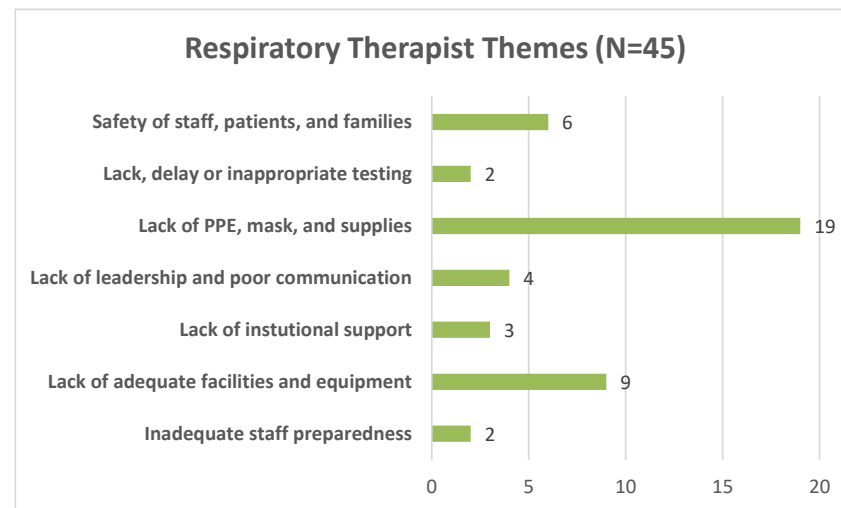
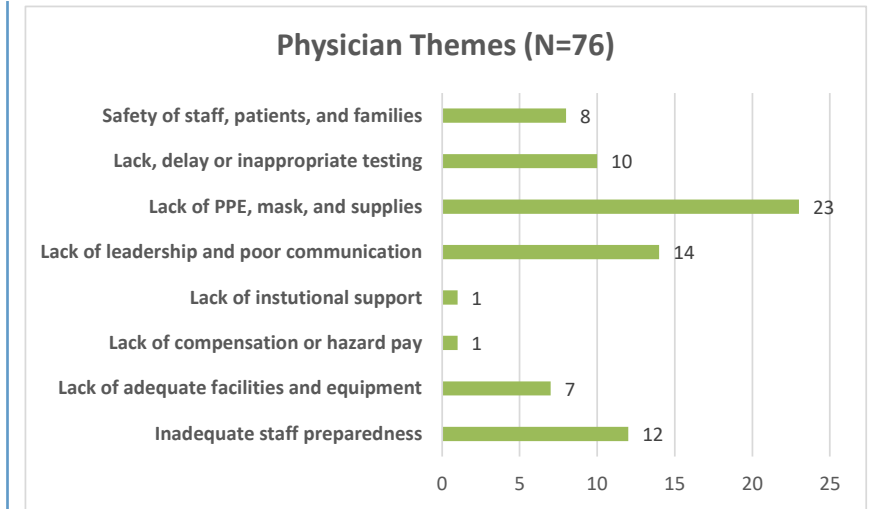
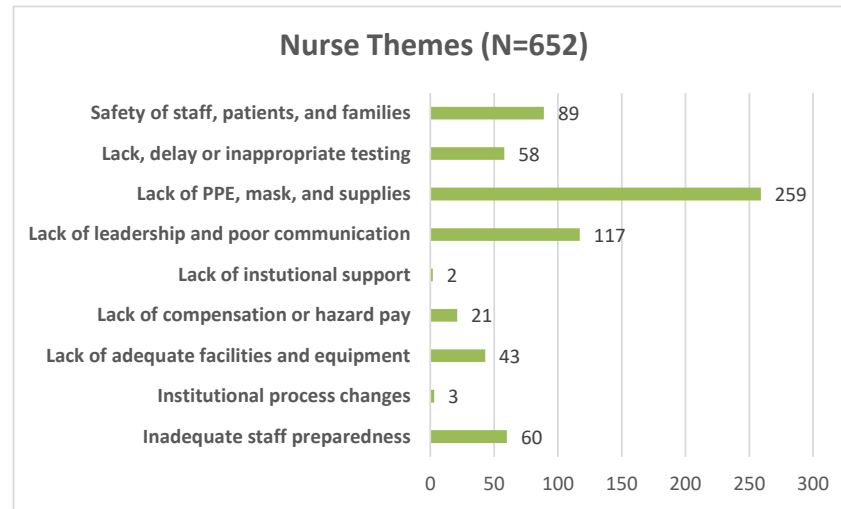
- Lack of PPE, mask, and supplies 37.6%
- Lack of leadership and poor communication 17.6%
- Safety of staff, patients, and families 13.2%

\*Themes graph does not include 17 vague or irrelevant codes



# Results

- All providers identified Lack of PPE, masks, and supplies as the top concern
- Advanced Practice Providers and Physicians identified Inadequate staff preparedness as a top concern, while Nurse and Respiratory Therapist described Safety of staff, patients, and families as a top concern
- Respiratory Therapists identified Lack of adequate facilities and equipment in their top 3 concerns

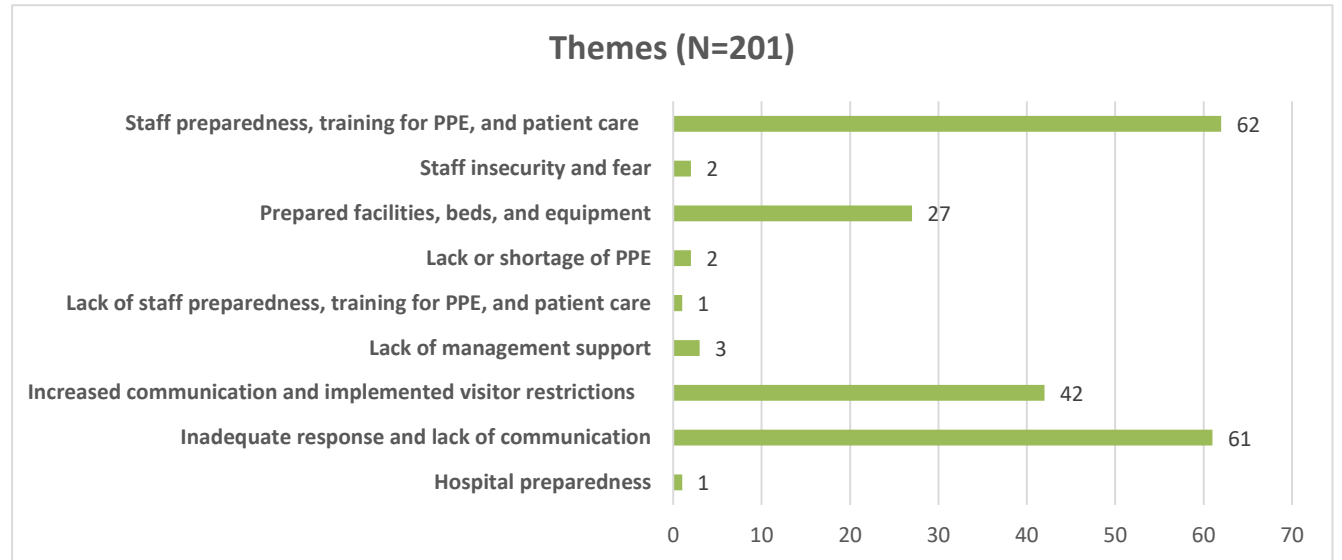
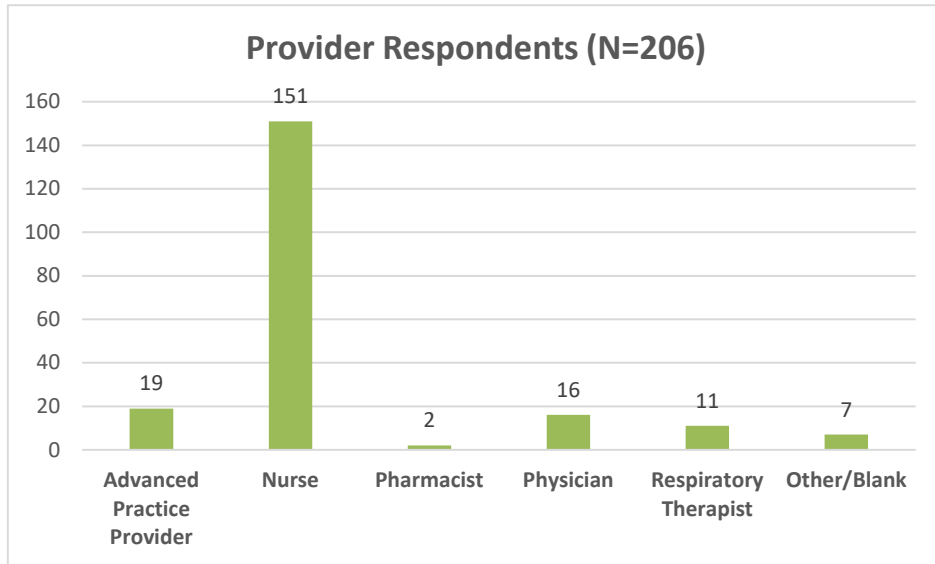


Survey 1 Question 1 - What concerns do you have related to caring for COVID-19 patients in your ICU? Other (please specify)

\*Themes graphs do not include vague or irrelevant codes

# Results

## Survey 1 Question 2 - What efforts has your primary ICU made to prepare for COVID-19? Other (please specify)



### Respondent Percentage

Nurse	73.3%
Advanced Practice Provider	9.2%
Physician	7.8%
Respiratory Therapist	5.3%

### Top 3 Themes:

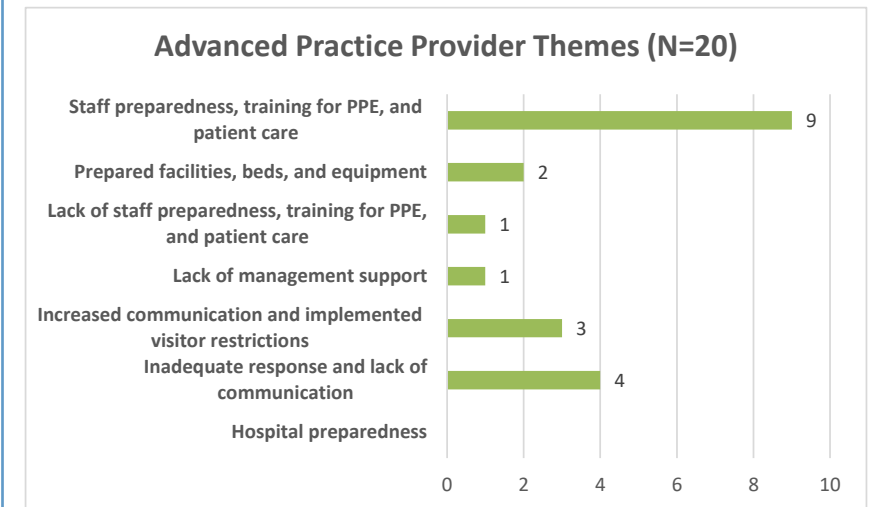
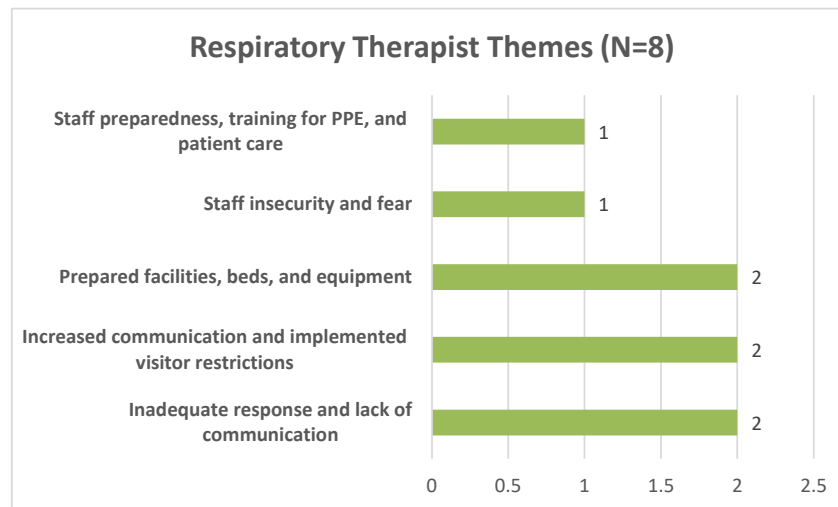
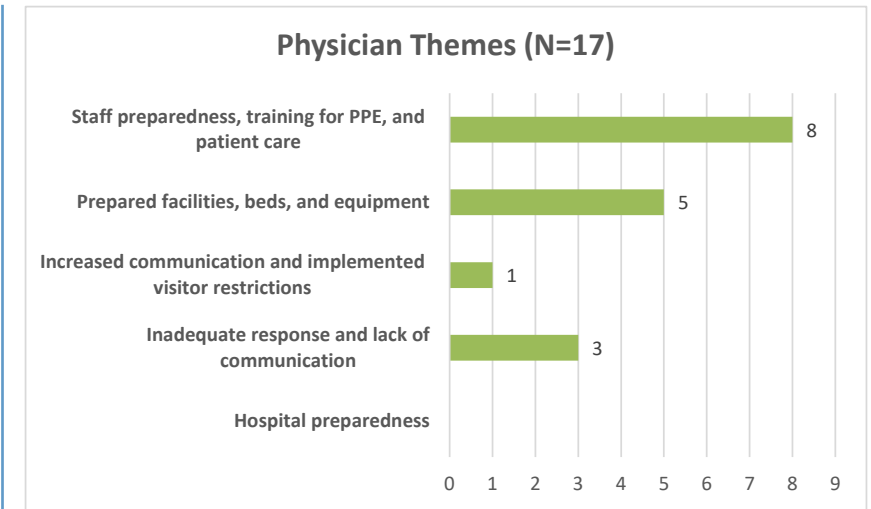
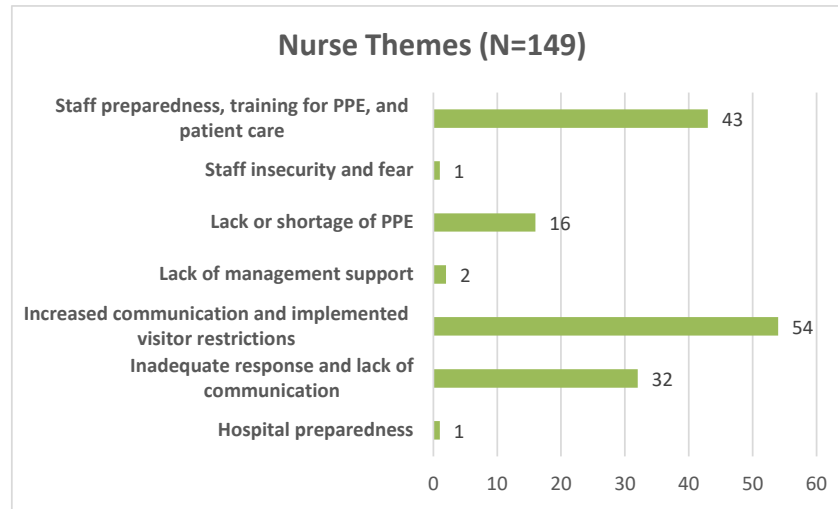
- Staff preparedness, training for PPE, and patient care 30.8%
- Inadequate response and lack of communication 30.3%
- Increased communication & visitor restrictions 20.9%

\*Themes graph does not include 16 vague or irrelevant codes



# Results

- Nurse, Physician, and Advanced Practice Providers identified Staff preparedness, training for PPE, and patient care in their top 2 themes
- Nurses top theme was Increased communication and implemented visitor restrictions
- Respiratory Therapists and Physicians included Prepared facilities, beds, and equipment in their top themes



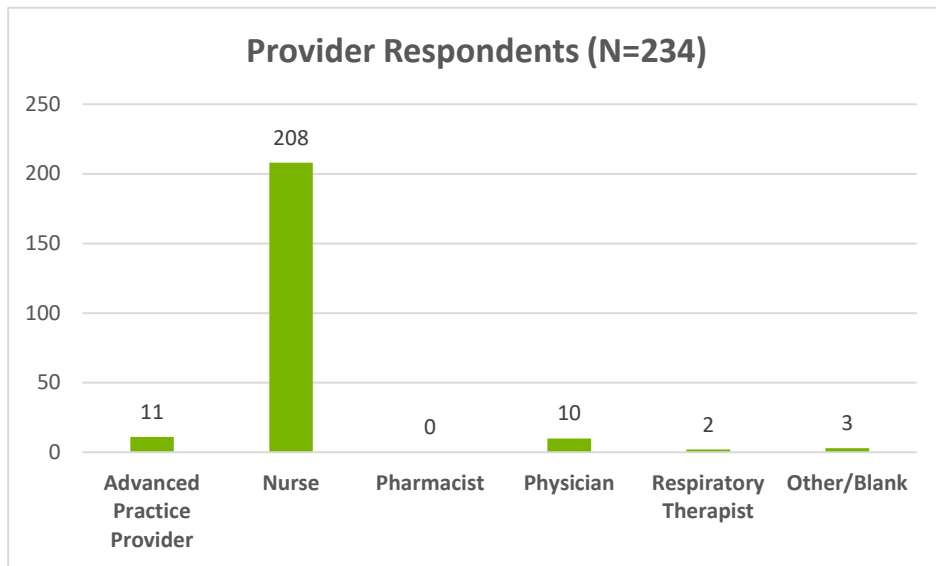
Survey 1 Question 2 - What efforts has your primary ICU made to prepare for COVID-19? Other (please specify)

\*Themes graphs do not include vague or irrelevant codes



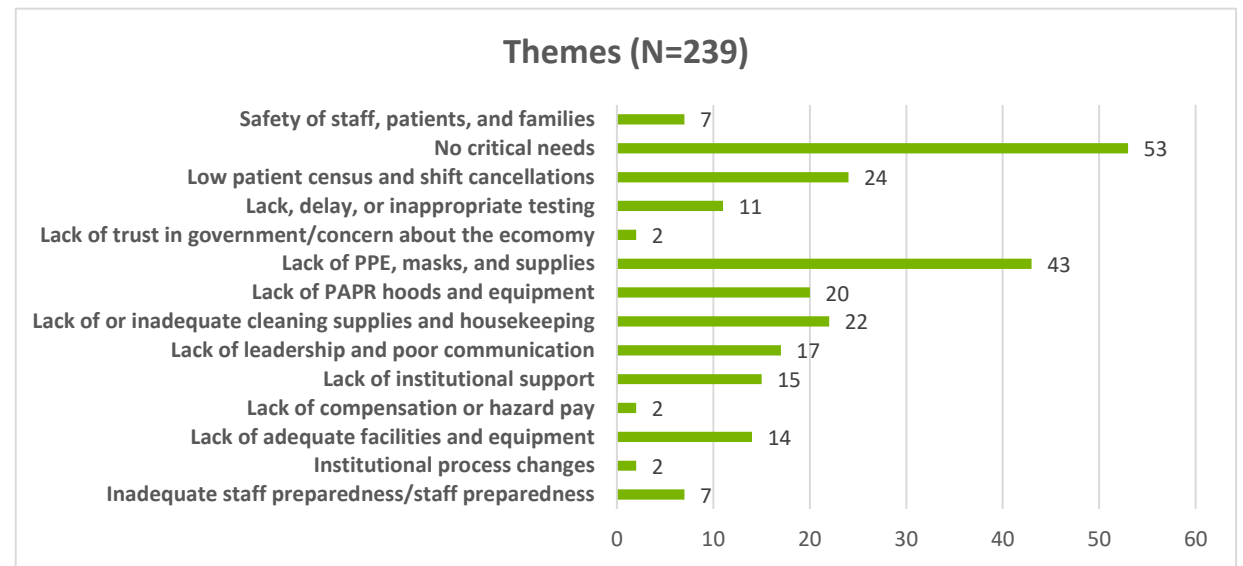
# Results

Survey 2 Question 1 - What is the most critical need that your ICU is currently facing to manage the COVID-19 pandemic? Other (please specify)



## Respondent Percentage

Nurse	88.9%
Advanced Practice Provider	4.7%
Physician	4.3%
Respiratory Therapist	0.9%



## Top 3 Themes:

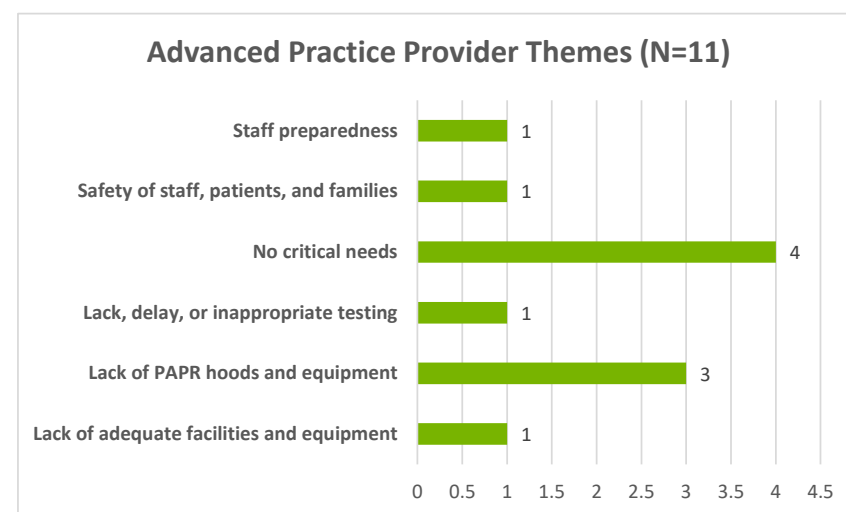
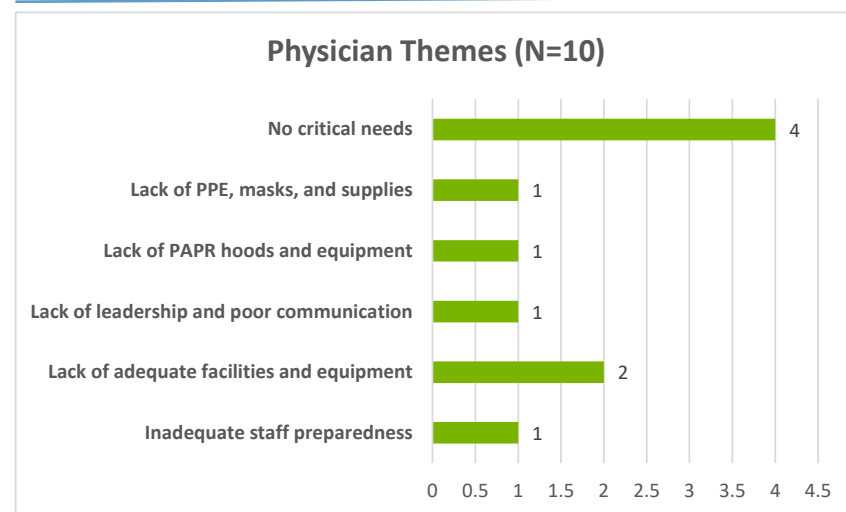
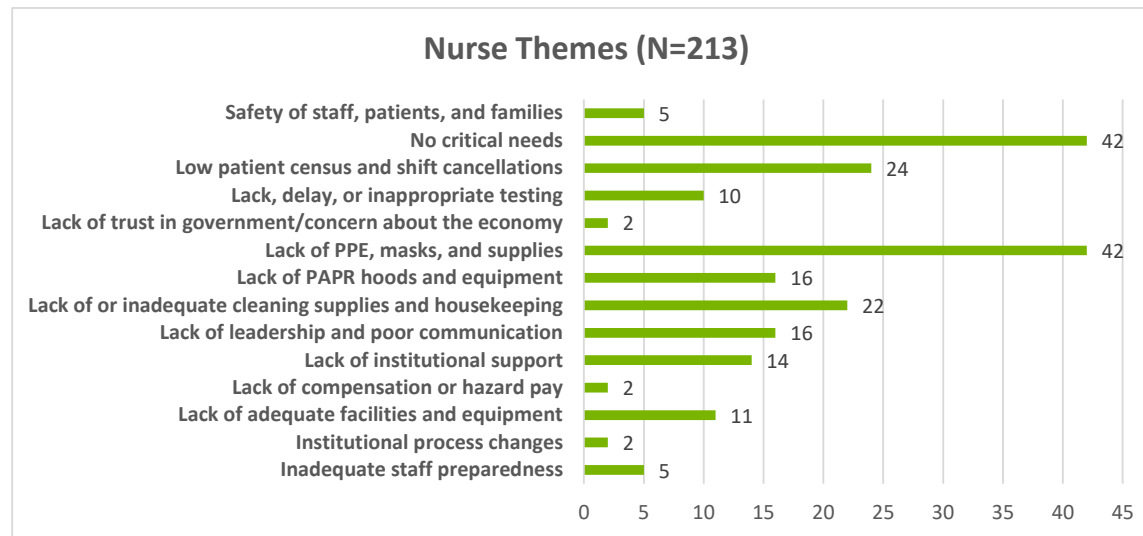
➤ No critical needs	22.2%
➤ Lack of PPE, mask, and supplies	18.0%
➤ Low patient census and shift cancellations	10.0%

\*Themes graph does not include 4 vague or irrelevant codes



# Results

- All providers identified No critical needs; however, the number and diversity of themes increased compared to the first survey
- Lack of PPE, masks, and supplies remained a top concern
- Lack of or inadequate cleaning supplies and housekeeping emerged with many commenting on the lack of disinfectant wipes
- Low patient census and shift cancellations appears for the first time in this April survey



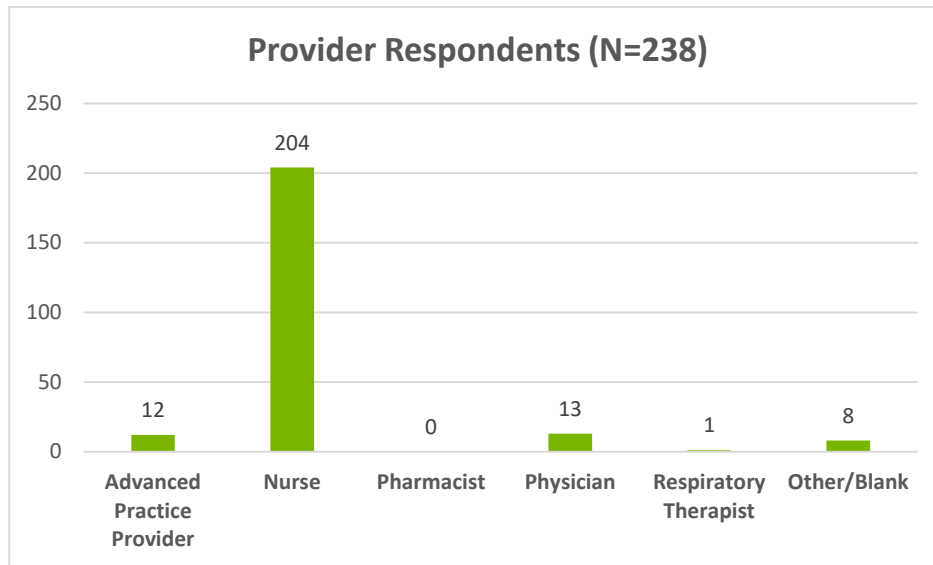
Survey 2 Question 1 - What is the most critical need that your ICU is currently facing to manage the COVID-19 pandemic?

Other (please specify)

\*Themes graphs do not include vague or irrelevant codes

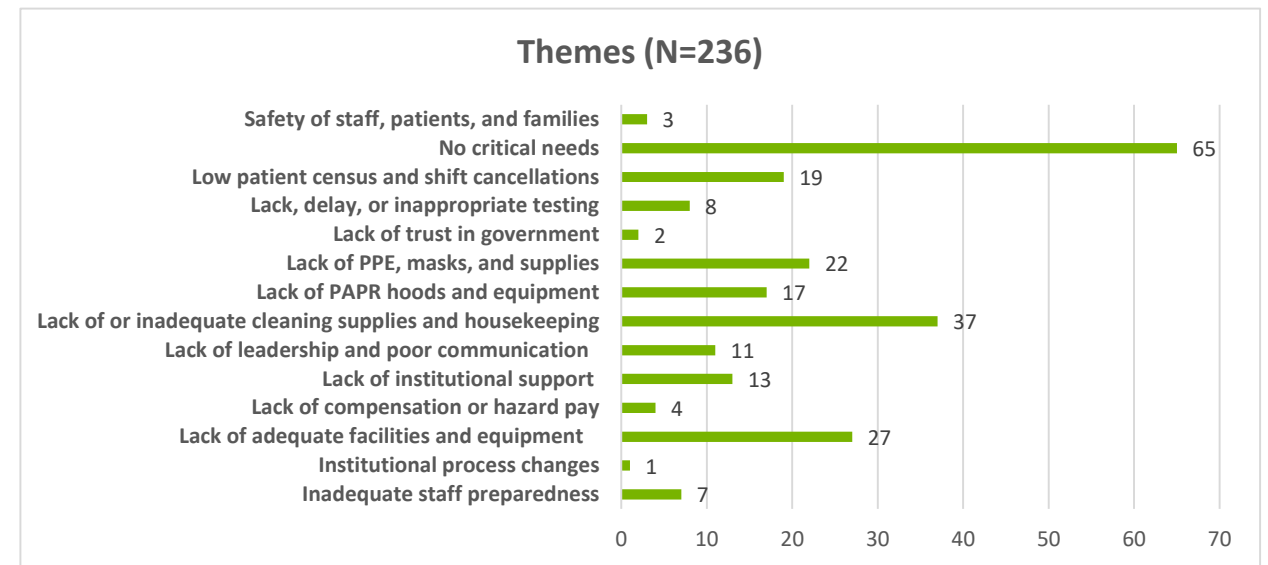
# Results

Survey 2 Question 2 - What is the second most critical need that your ICU is currently facing to manage the COVID-19 pandemic? Other (please specify)



## Respondent Percentage

Nurse	86.0%
Advanced Practice Provider	5.0%
Physician	5.5%
Respiratory Therapist	.04%



## Top 3 Themes:

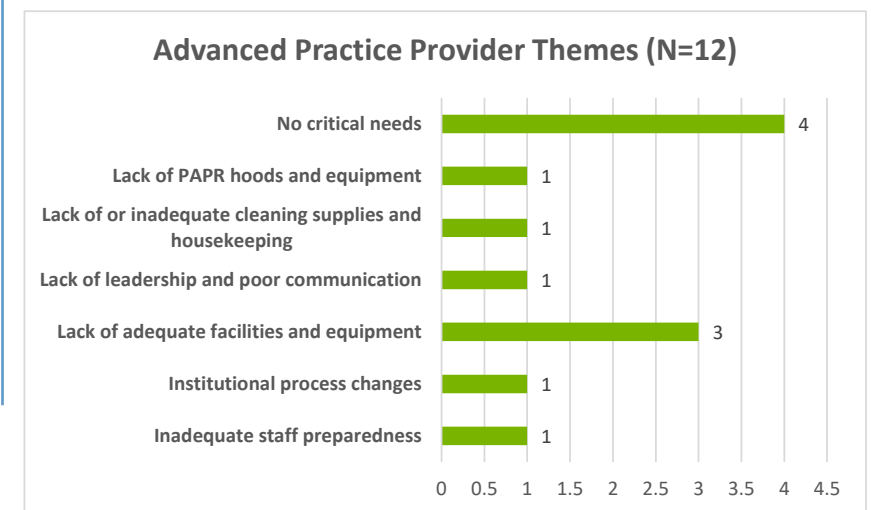
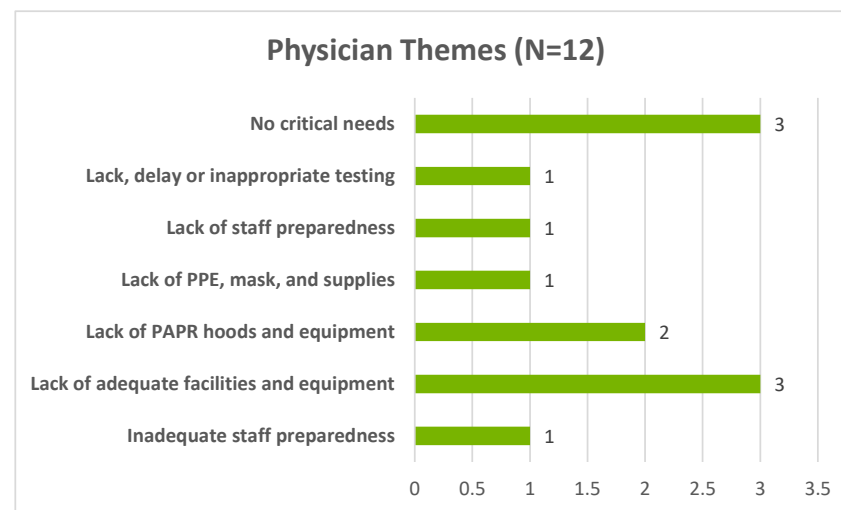
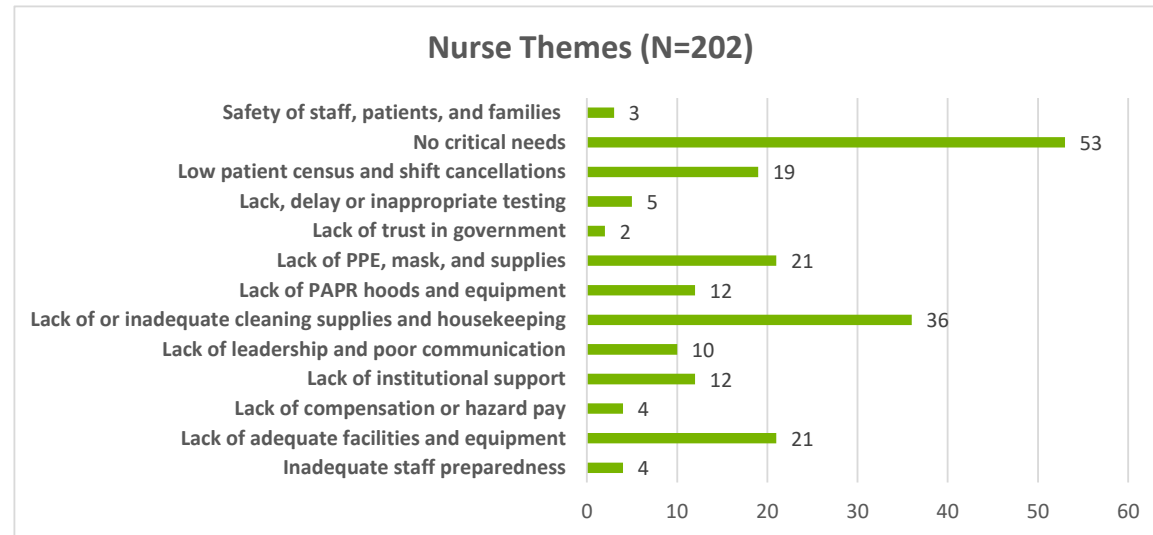
➤ No critical needs	27.5%
➤ Lack of or inadequate cleaning supplies & housekeeping	15.7%
➤ Lack of adequate facilities and equipment	11.4%

\*Themes graph does not include 9 vague or irrelevant codes



# Results

- Nurse themes demonstrate a top concern with Lack of or inadequate cleaning supplies and housekeeping
- Physician, Nurse, and Advanced Practice Provider top concerns included Lack of adequate facilities and equipment
- Lack of PPE, masks, and supplies continues to appear as a concern across providers



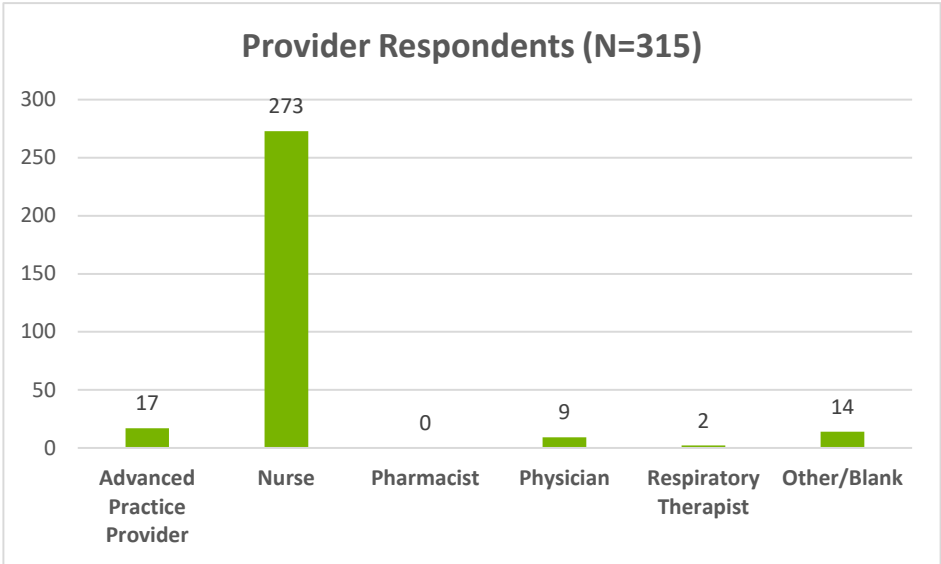
Survey 2 Question 2 - What is the second most critical need that your ICU is currently facing to manage the COVID-19 pandemic? Other (please specify)

\*Themes graphs do not include vague or irrelevant codes



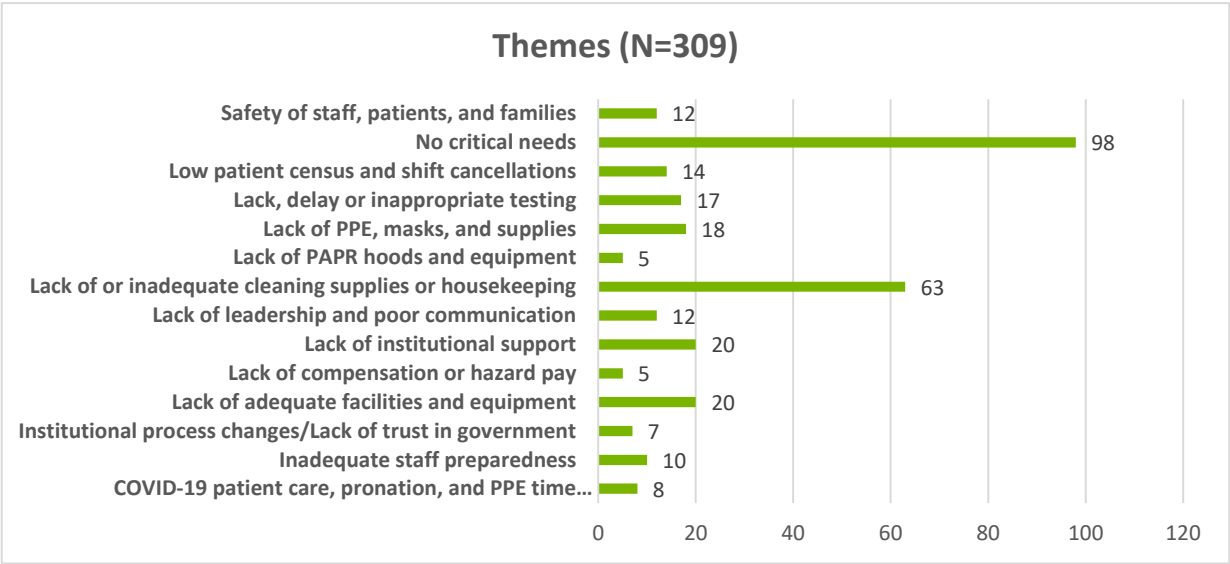
# Results

## Survey 2 Question 3 - What is the third most critical need that your ICU is currently facing to manage the COVID-19 pandemic? Other (please specify)



### Respondent Percentage

Nurse	87.0%
Advanced Practice Provider	5.4%
Physician	2.9%
Respiratory Therapist	.06%



### Top 4 Themes:

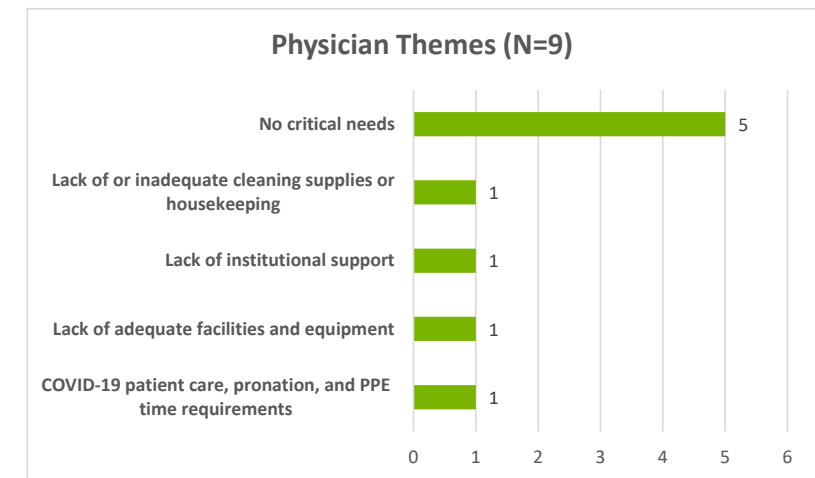
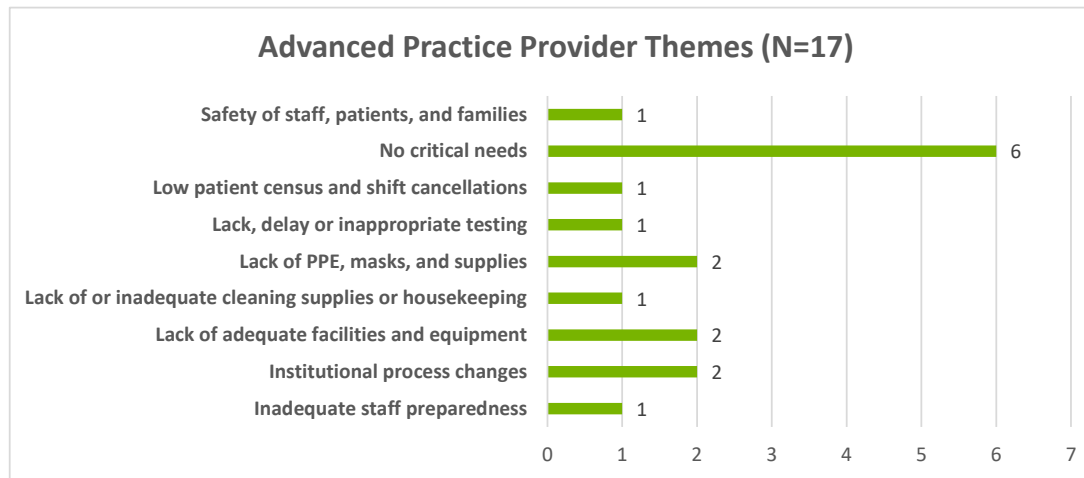
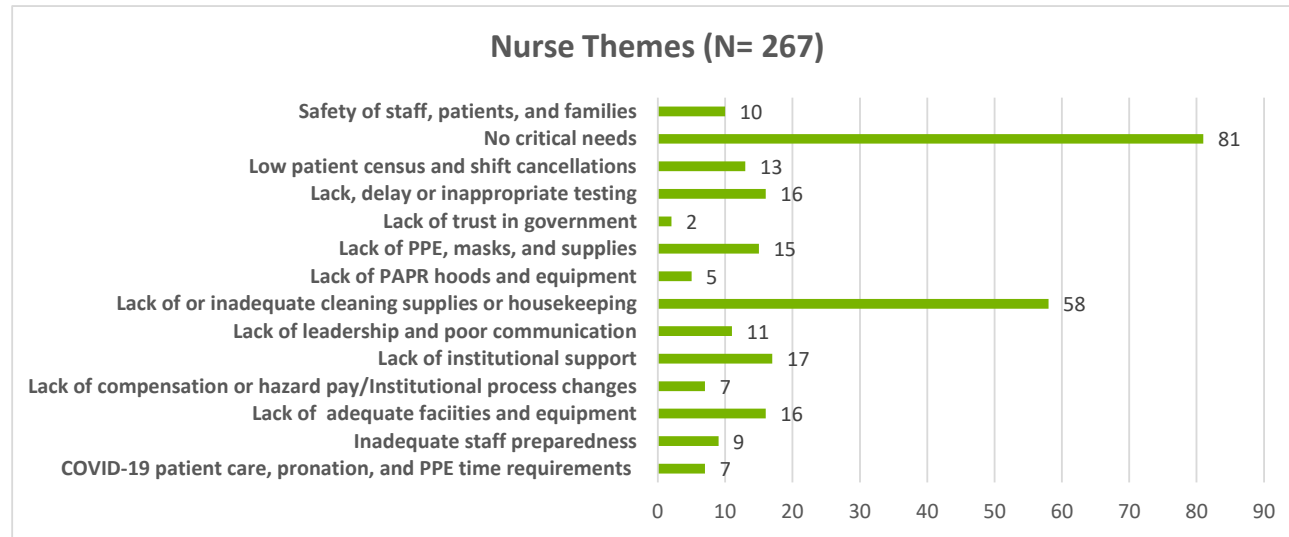
➤ No critical needs	31.7%
➤ Lack of or inadequate cleaning supplies & housekeeping	20.9%
➤ Lack of institutional support	6.5%
➤ Lack of adequate facilities and equipment	6.5%

\*Themes graph does not include 11 vague or irrelevant codes



# Results

- No critical needs
- Lack of or inadequate cleaning supplies or housekeeping continues as a top concern
- Lack of institutional support is cited as a significant concern for the Nurse cohort of responses
- Lack of adequate facilities and equipment and Lack, delay or inappropriate testing appear

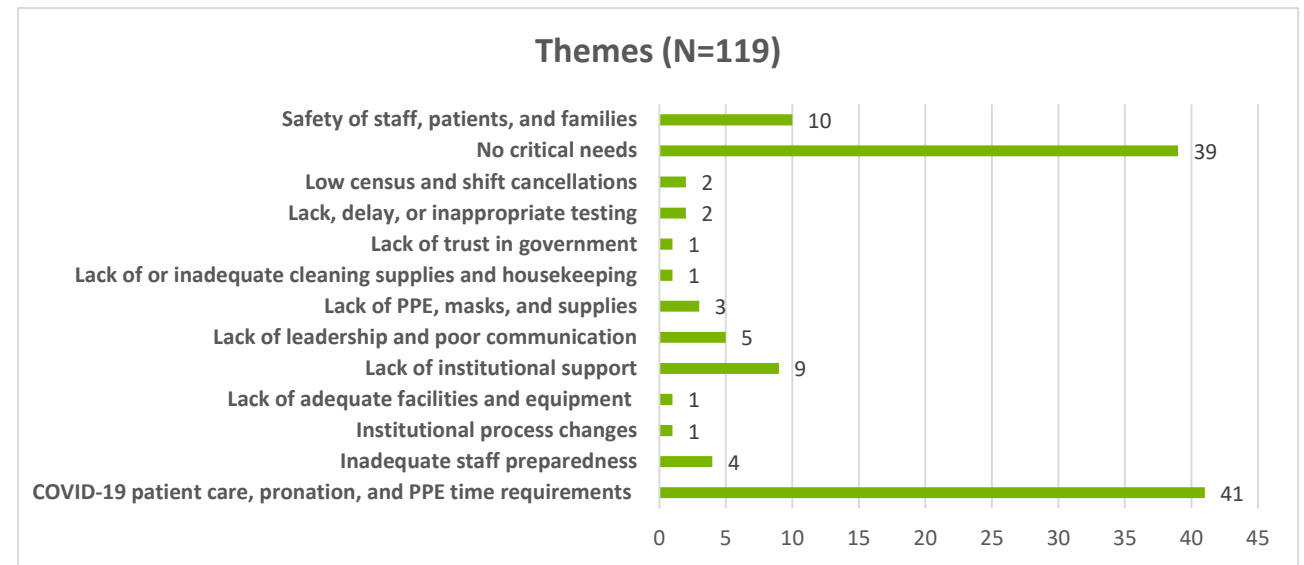
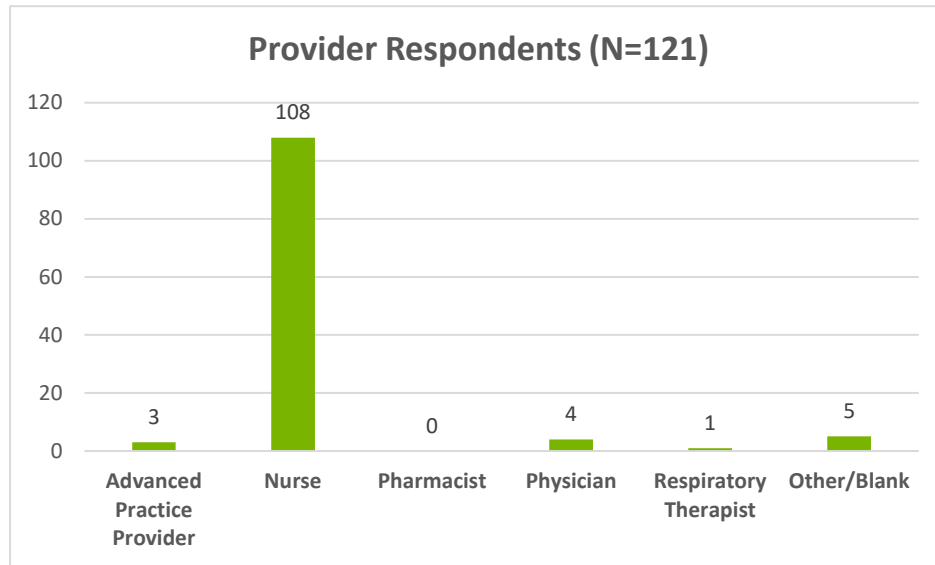


Survey 2 Question 3 - What is the third most critical need that your ICU is currently facing to manage the COVID-19 pandemic?  
Other (please specify)

\*Themes graphs do not include vague or irrelevant codes

# Results

## Survey 2 Question 4 - Choice 1 Other (please specify)?



### Respondent Percentage

Nurse	89.2%
Advanced Practice Provider	2.5%
Physician	3.3%
Respiratory Therapist	.08%

### Top 3 Themes:

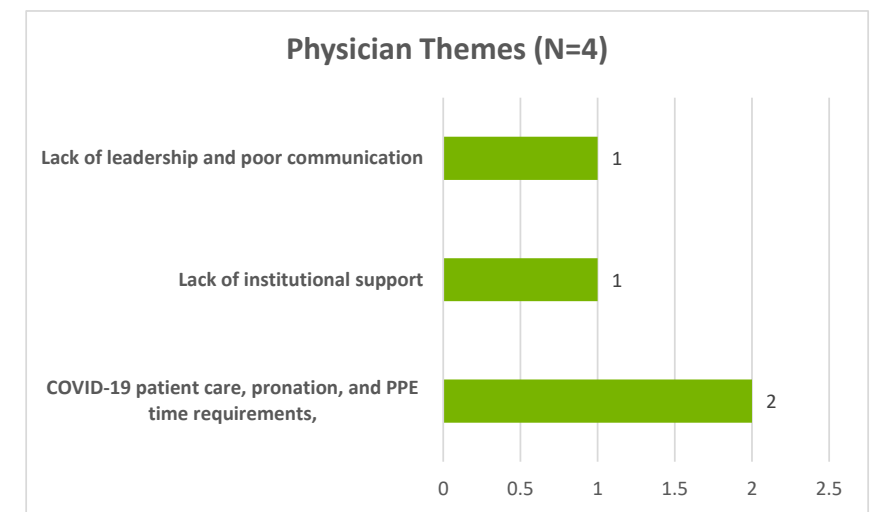
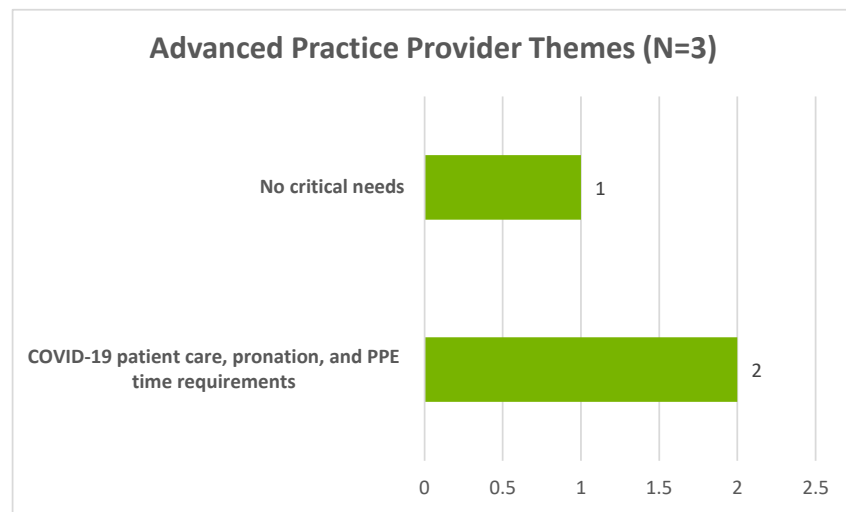
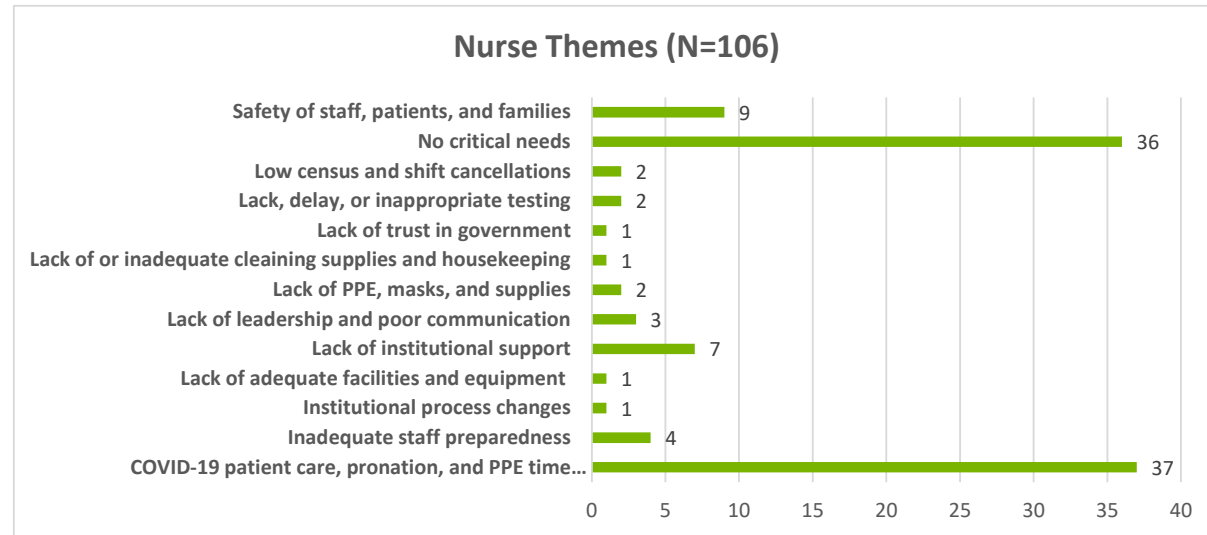
- COVID-19 patient care, pronation, and PPE time requirements 34.5%
- No critical needs 32.2%
- Safety of staff, patients, and families 8.4%

\*Themes graph does not include 5 vague or irrelevant codes



# Results

- No critical needs continues to be cited by Nurse, Physician, and Advanced Practice Providers
- A new, significant concern emerged across Nurse, Physician, and Advanced Practice Provider cohorts, that being COVID-19 patient care, pronation, and PPE time requirements
- Lack of institutional support continues as a concern for Nurse and Physician providers



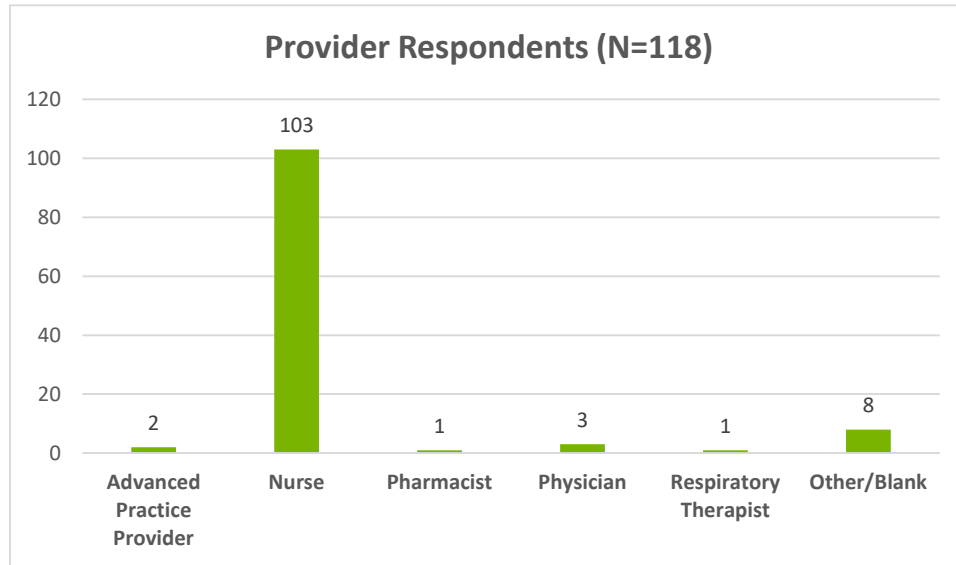
Survey 2 Question 4 - Choice 1 Other (please specify)?

\*Themes graphs do not include vague or irrelevant codes



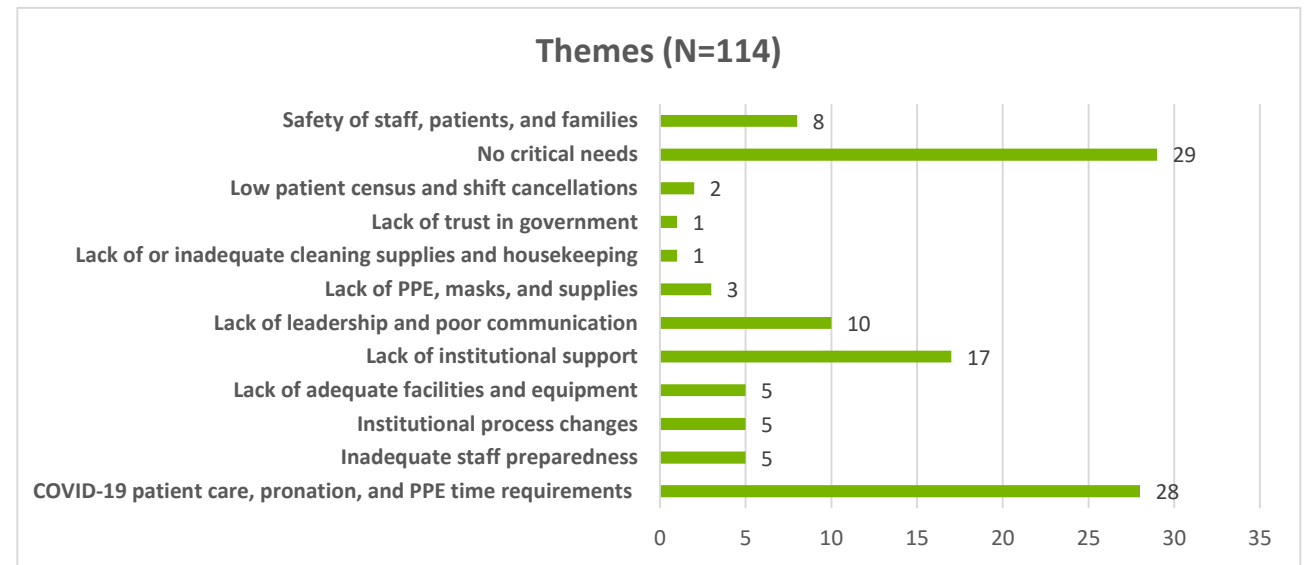
# Results

## Survey 2 Question 5 - Choice 2 Other (please specify)?



### Respondent Percentage

Nurse	87.3%
Advanced Practice Provider	1.7%
Physician	2.5%
Respiratory Therapist	.09%



### Top 3 Themes:

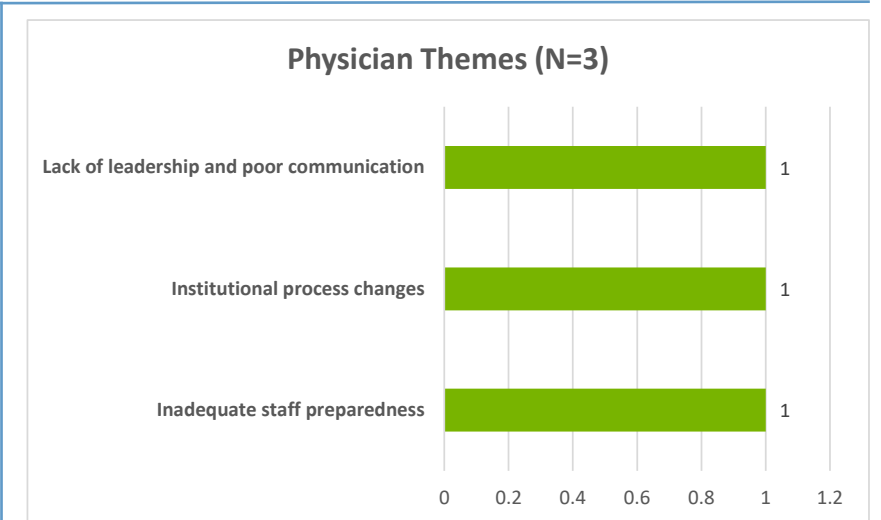
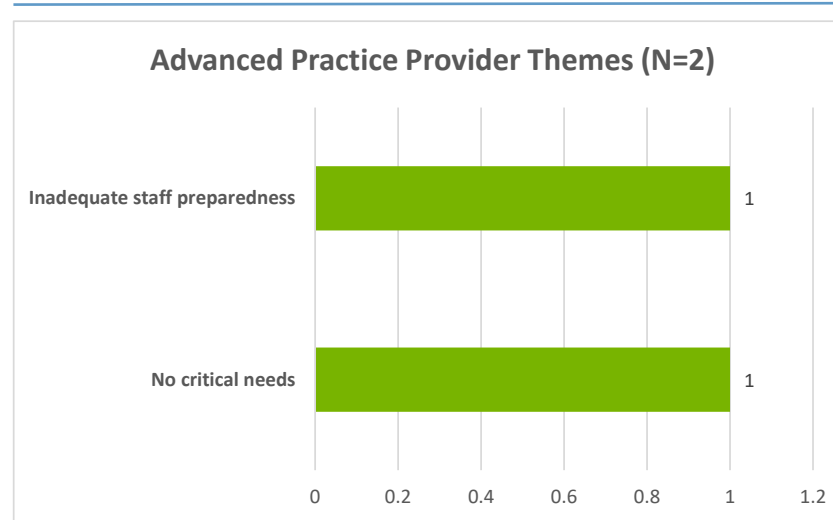
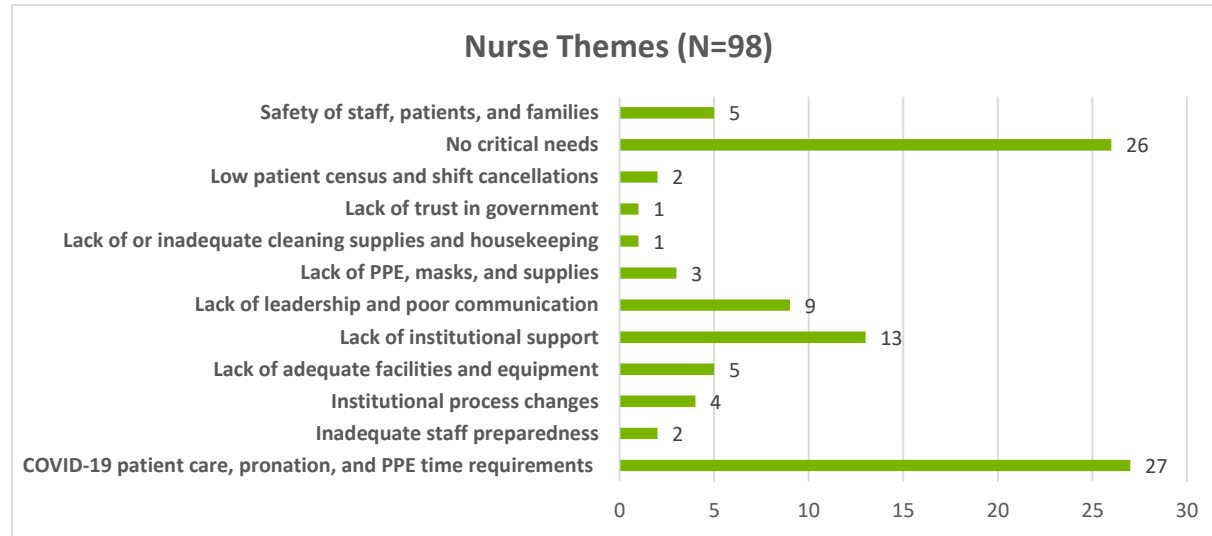
➤ No critical needs	25.4%
➤ COVID-19 patient care, pronation, and PPE time requirements	24.6%
➤ Lack of institutional support	15.0%

\*Themes graph does not include 10 vague or irrelevant codes



# Results

- Low number of respondents for Advanced Practice Provider and Physician cohorts
- Top Nurse concerns reported include COVID-19 patient care, pronation, and PPE time requirements
- Lack of institutional support, Lack of leadership and poor communication, and Inadequate staff preparedness continue as themes reported across providers

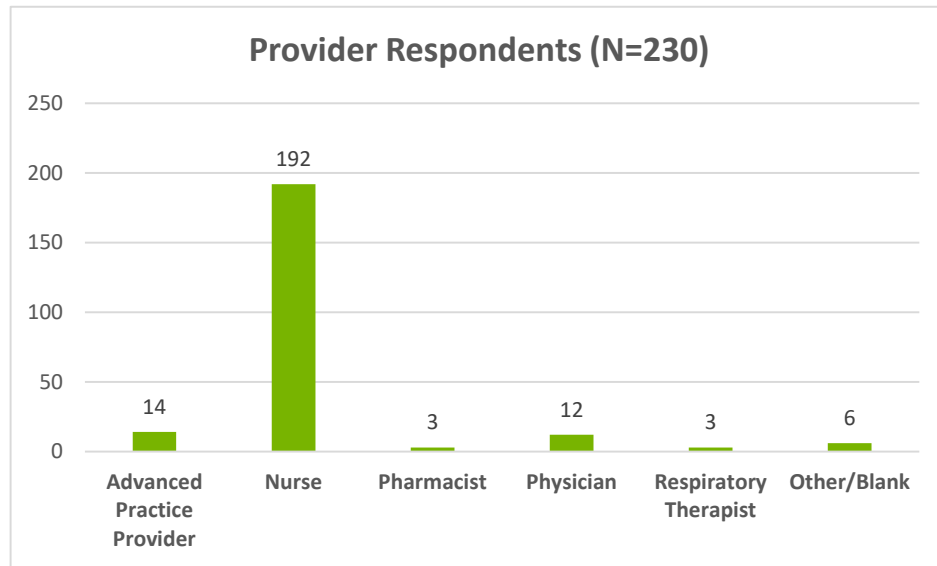


Survey 2 Question 5 - Choice 2 Other (please specify)?

\*Themes graphs do not include vague or irrelevant codes

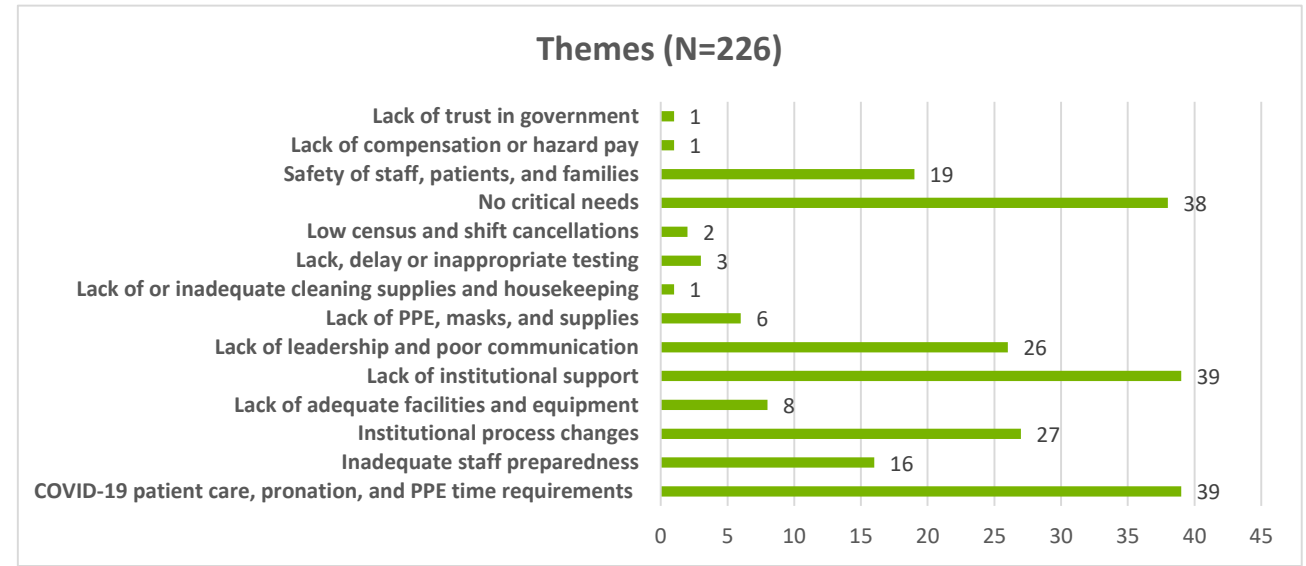
# Results

## Survey 2 Question 6 - Choice 3 Other (please specify)?



### Respondent Percentage

Nurse	83.5%
Advanced Practice Provider	6.1%
Physician	5.2%
Respiratory Therapist	1.3%



### Top 3 Themes:

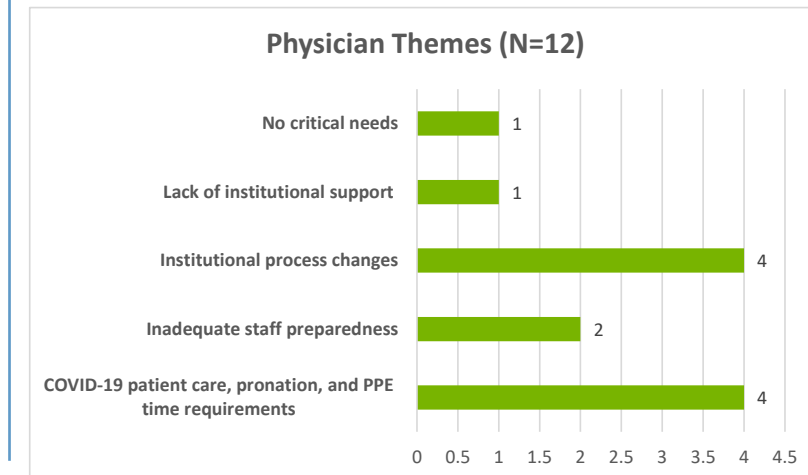
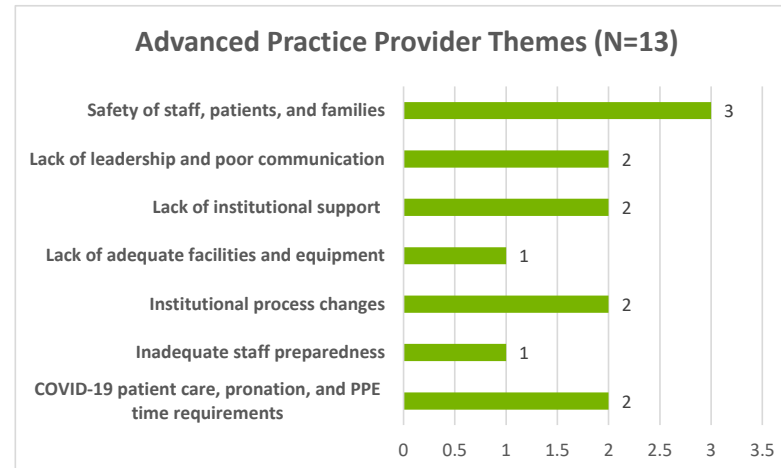
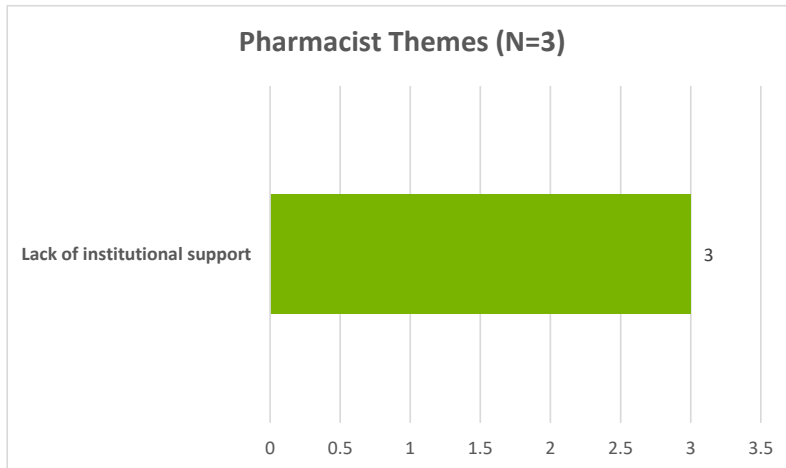
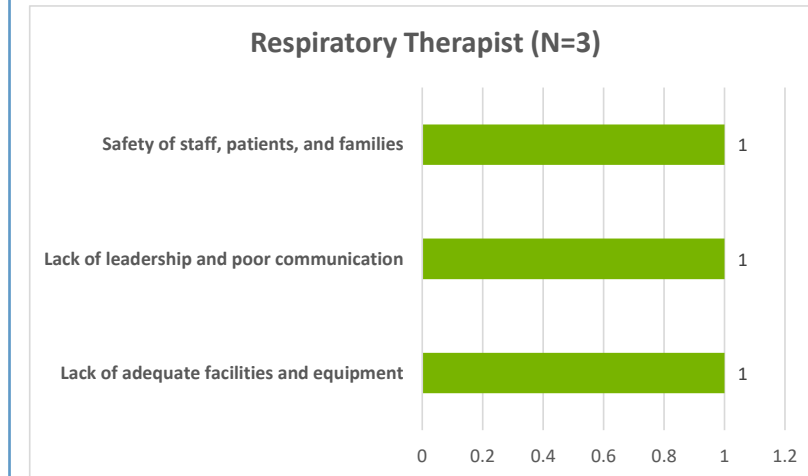
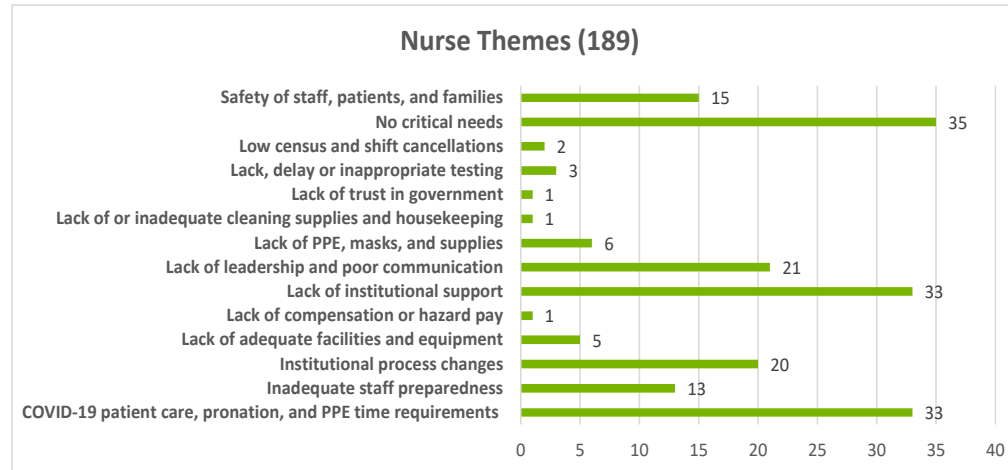
➤ COVID-19 patient care, pronation, and PPE time requirements	17.3%
➤ Lack of institutional support	17.3%
➤ No critical needs	16.9%

\*Themes graph does not include 11 vague or irrelevant codes



# Results

- On-going concerns with Lack of institutional support
- COVID-19 patient care, pronation, and PPE time requirements a top concern for Nurse, Physician, and Advanced Practice Providers



Survey 2 Question 6 - Choice 3 Other (please specify)?

\*Themes graphs do not include vague or irrelevant codes

# Discussion

- ▶ Eight open-ended questions elicited responses from between 118 and 737 respondents
- ▶ An average of 274.9 (N=2,199) responses per question
- ▶ The first survey primary response theme identified the most critical need for providers:
  - Lack of PPE, masks, and supplies (N=322, 36.9%)
- ▶ The second survey responses report No Critical Needs (N=53, 21.8%) as the most prevalent theme across providers
- ▶ Secondary responses included early themes in the COVID-19 pandemic:
  - Lack of PPE, masks and supplies (N=43, 17.7%)
  - Lack of or inadequate cleaning supplies and housekeeping (N=11, 9.1%)
  - Lack of institutional support (N=15, 6.2%)

# Discussion

- ▶ The purpose of this project was to analyze and evaluate how ICU clinicians in the United States described their readiness to care for COVID-19 patients, during the first months of the COVID-19 pandemic, through their responses to open-ended questions detailed in two ICU Readiness rapid cycle surveys, conducted by SCCM during March 2020 and April 2020.
- ▶ The purpose of this project was met as described in the reported results. Open-ended responses were analyzed and evaluated by:
  - Provider
  - Theme
  - Theme by provider

# Discussion

- ▶ The literature review disclosed 5 primary themes
  - Pandemic readiness planning and experience – **predicted mask, staff & supplies demand, along with communication and decision-making operations**
  - Recommendations for ICU COVID-19 patient care
  - Safety and wellness of healthcare workers – **safety, mental wellness, containment of disease**
  - Ventilator allocation
  - Capacity – **predicted staff, beds, & equipment needs**
- ▶ Themes that emerged in both Survey 1 & 2:
  - Lack of PPE, masks, and supplies, Lack of leadership and poor communication, and Lack of institutional support. Safety of staff, patients, and families emerged in Survey 1
  - These themes reflect a gap in the knowledge we possessed from previous pandemic learnings in the initial months of COVID-19

# Discussion

- ▶ Strengths of the project:
  - Large number of survey respondents
  - Variety, clarity, and richness of descriptive, qualitative data
  - Conducting the surveys contemporary with the early evolution of the COVID-19 pandemic
- ▶ Limitations of the project:
  - Low number of respondents representing Respiratory Therapists, who were frontline ICU clinicians during the early months of the pandemic
  - Low number of Pharmacists, though they are not as frequently frontline ICU care providers



# Discussion

- ▶ Implications of the findings and next steps for future innovation:
  - Findings revealed significant gaps in ICU readiness to care for COVID-19 patients
  - Implications of findings and associated gaps
    - Impacted the provision of optimal ICU care necessary to save lives in vulnerable patient populations
    - Highlighted inadequacies in ensuring clinician safety
    - Identified shortages in availability of equipment & supplies
    - Insufficiencies in hospital communication and a lack of hospital leadership during crisis
  - Next steps include disseminating the knowledge gleaned from the surveys
    - Presentation to committee



# Conclusion

- ▶ Thematic analysis of the March 2020 survey revealed the primary ICU clinician concern were the availability of PPE, masks, and supplies followed by Lack of hospital leadership and poor communication and Safety of staff, patients & families
- ▶ The April 2020 survey showed a changing focus to either No critical needs or availability of PPE, masks, and supplies, Lack of adequate facilities and equipment and Lack of institutional support
- ▶ It is incumbent on healthcare providers and leaders to ensure that these lessons learned provide a basis to prevent the same issues from recurring, whether in the short-term with the next possible surge of COVID-19 or in the decades to come until the next major pandemic occurs

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