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THE EARLY DILEMMA AND NEW WAY OF WORKING AT ST. LUKE'S BOISE MEDICAL CENTER DURING THE COVID PANDEMIC

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INTRODUCTION

The healthcare supply chain has seen a disruption with the COVID-19 pandemic. The threat of COVID-19 immediately changed how hospitals like the St. Luke's Boise Medical Center at Idaho managed the equipment inventories—especially for personal protective equipment (PPE) like face masks and isolation gowns. PPEs are critical to protecting medical staff and patients from contracting the SARS-CoV-2, the virus that causes COVID-19, and is spread through droplets in the air. Healthcare staff and personnel regularly use PPEs to protect themselves and patients from infectious patients, contagious materials, toxic medications, and other potentially dangerous substances. However, PPEs are a necessity when providing care for COVID-19. Thus, hospitals need more PPEs, leading to burdensome demands.

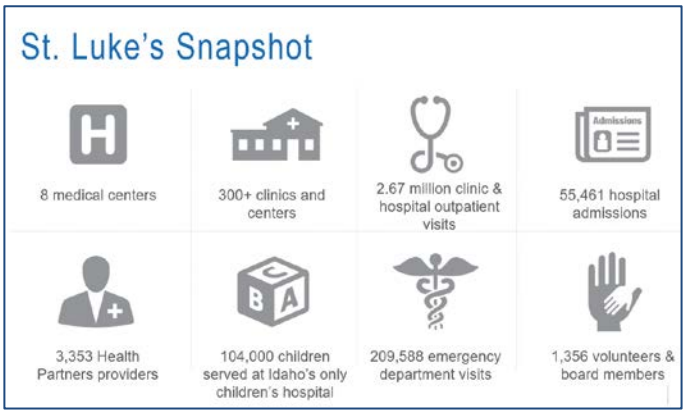
Healthcare facilities all over the world require more PPEs during the COVID pandemic. Equipment vendors are facing a huge demand that is well beyond their standard capacity of production and supply. Many healthcare facilities are having difficulty accessing the needed PPE and are trying to identify alternative ways to provide patient care. It is no wonder that PPE shortages are currently posing a tremendous challenge to the United States healthcare system because of the COVID-19 pandemic.

Even though not a perfect solution, but a critical assessment and control of own consumption, and carefully addressing the dilemma of 'to spare or not to spare' an additional PPE piece to a staff member was a critical strategy for St. Luke's Boise Medical Center at Idaho. Additionally, the hospital took many innovative approaches such as realigning workforce, shift to in-house testing, and preparedness from the supply chain perspective that deserves mentioning.

ABOUT ST. LUKE'S BOISE MEDICAL CENTER, IDAHO

St. Luke's Health System serves Southern Idaho, Eastern Oregon, and Northern Nevada. It is a community-based health system, Idaho based, and has 117 years of history in Idaho. A snapshot of St. Luke's is presented in Figure 1.

FIGURE 1: ABOUT ST. LUKE'S



St. Luke's Boise Medical Center, the flagship hospital of St. Luke's Health System, was founded in 1902. St. Luke's is Idaho's only Idaho-based, not-for-profit health system, with local physicians and boards who further the organization's mission "To improve the health of people in the communities we serve." St. Luke's is nationally recognized for excellence in patient care, with prestigious awards and designations reflecting the exceptional care that's synonymous with the St. Luke's name. St. Luke's is also home to Idaho's only Children's Hospital and the region's first Virtual Care Center.

CHALLENGES FACED BY ST LUKE HOSPITAL, BOISE DURING COVID CRISIS

St Luke's health had initial difficulty with the supply and inventory of necessary PPEs to tackle this pandemic. Procuring supplies and equipment was a challenge. As the COVID situation got escalated in the U.S., the Centers for Disease Control and Prevention released a set of guidelines to manage and optimize the supply of PPEs and equipment.[1]

There was an increased use and disrupted the supply of PPE and other critical inventory. Starting the onset of COVID, the hospital saw a substantial increase in the rate of consumption of surgical masks. As noted by Sandee Gehrke, Vice President of Operations at the St. Luke's Boise Medical Center, Idaho during the interview, *"This initial rise in use was not due to seeing actual cases in Idaho – it was one of the last states to have a confirmed case of COVID-19 (the first case was March 13). Rather, it was created by the awareness of the possible risk and the "unknown" factors surrounding this new illness."*

Consumption rates of PPE supplies continued to rise throughout the period in question. In Jan 2020, the monthly usage of N95 masks was 3,000, with patient encounters of

[1] https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html

about 23,000. There was a surge in the use of masks. In March 2020, the burn rate increased to 4300 N95s with a patient count of less than 2,000, and in April 2020, the usage rate was 4,000 with a patient count of 14,000. The system ended elective procedures at the end of March, resulting in the lower usage of N95 Masks in April.

In response to the challenges, much work had to be done. One is to set standards and protocols on the priority of the use of PPEs. The focus was on who should be using what PPE supplies, and when or in what situations this use needed to occur. Setting the rules and communicating the same to the staff was a challenging task as well, as the CDC continued to change its guidelines too often. On the supply chain side, work was done to identify alternative sources of supplies that included using a broker and even a Chinese translator to identify new supply chain routes.

Focus also shifted to the reprocessing of N95 masks for reuse. Identified patients were put in isolation status, and cleaning procedures were revamped to address the situation. As part of the conservation strategy, five days waiting period was identified and implemented for giving supplies of N95s to employees. The usage rate of PPEs was monitored using a dashboard by the executive leadership. The dashboard details the existing inventory as well as the previous days/weeks inventory. This allowed greater visibility around potential issues occurring, such as conservation efforts not being implemented, or hoardings not in place—all that needed to be resolved. All of the above measures helped the system as they never ran out of PPE supplies and were able to maintain a steady flow. The lowest supply point was about five days on hand.

Another challenge was the spread and exposure of COVID in the critical access hospital in Blaine County. Before there was full awareness of this virus and the need to prevent the spread, about half of the hospital staff were exposed to COVID. Those affected were sent home or quarantined to reduce the exposure. St. Luke's system closed that hospital and transferred remaining patients to another of their hospitals.

The hospital also made a large part of the non-clinical workforce home to work remotely. That created a challenge as well, to ensure that the work quality and performance was not impacted. So, one of the priorities was to create and understand a more robust work from home program.

Guidelines around PPE use continued to change under CDC, and this created much anxiety among the clinical staff. One of the excellent learning experiences was for the employees to learn how to handle these types of uncertain situations in their areas of responsibility.

Another issue that deserves attention is the readiness to allow people to return to work safely. Creating physical barriers in workspaces whenever needed, was helpful. The hospital increased additional environmental services support as well as high-touch and frequent cleanings. The meetings were limited to ten or fewer people with a physical presence. New patient access policies and visitor policies were enacted that became the "new normal." The challenge was to find the right level of balance that allowed access but at the same time, limit the exposure. Patients were cohosted in isolation wards, and the cleaning procedures were revamped. Foodservice delivery to rooms was discontinued.

THE NEW WAY OF DOING THINGS AT ST. LUKE'S

Response to the pandemic was reactive in the early stage. However, preparedness in the subsequent days gave the necessary impetus. The hospital had the incident command set up around thirty days in advance of the first patient. With time, the hospital did institute several activities and steps, as reported on a blog site maintained by St. Luke's[2].

PREPARATION WAS A KEY FOR ST. LUKE'S

The Supply Chain team at St. Luke's Health System did a remarkable job in ensuring that PPE supplies were not interrupted, and the inventory was manageable[3]. In mid-January, Supply Chain began experiencing supply blips. Mostly these shortages were about PPEs, almost following similar situations by other hospitals across the country.

In the first two weeks of January 2020, St Luke supply chain team looked for alternate sources and brands for PPE supply, and that was one of the key reasons why they did not run out of PPEs, unlike other hospitals in other communities.

The supply chain leaders at St Luke tapped into domestic dental, veterinary, hospitality, pharmaceutical lab, and even tattoo distribution channels and pulled together roughly six to 11 months' worth of PPE. The St. Luke's Supply Chain team used different channels across the globe to find N95 respirator masks, procedure masks, and isolation gowns. The value analysis team in Supply Chain ensured quality and safety, no matter what the source was. The idea was to maintain standards, although there might be differences in standards of PPEs that they got from different sources and brands.

Supply Chain employees have hustled to keep up with the organization's needs, and Laurie Martin, a project manager in Supply Chain, has observed that St. Luke's preparedness has risen above that of some counterparts

[2] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/laboratories-begin-covid-19-testing-in-house

[3] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/preparation-is-key

elsewhere[4]. St Luke hospital staff, so far, had managed to avoid homemade PPEs, due to the fantastic effort of the Supply Chain team.

IN-HOUSE TESTING

External testing by labs is a time-consuming and challenging process. Moreover, during the COVID pandemic, the stakes are high. The testing process involves sending the sterile collection kit to the testing locations, getting the sample, and matching them with the patient information, packaging appropriately, and sending it to the labs. Specimen are frozen before they are sent for out of state labs. Once the results come back, they are verified and matched with the patient information and entered into medical records. Then the provider or the facility communicates the results with the patient.

The staff at St Luke laboratories worked relentlessly to assemble and provide specimen testing kits for the drive-by tents[5]. St Luke's supply team helped with the supply and distribution part. St Luke has an Integrated Health Technologies application available at their end beforehand that took care of the flow of information about testing into electronic medical records. Medical lab scientists and other ancillary staff worked overtime to enter results in medical charts. The challenge was to overcome the shortfalls of the testing and testing kits as the virus spread.

By April 1, almost 7,000 specimens had been sent to out, with more than 5,000 results entered into charts – a big jump over the 3,000 specimens sent off to other labs as of March 21 with about 450 results entered. As reported, St. Luke was able to close the gap results by June and produce results quite times, so that providers can start treating the patients[6].

Initially, St Luke sent all the specimen to external labs (Idaho State Lab/University of Washington Medical Center/the University of Utah), the turnaround time for testing is usually three days. St Luke did not use large commercial testing sites where the turnaround time is around eight days.

Internal testing has a turnaround time of two to four hours for the test results. St Luke has four systems for COVID 19 testing, but they were not able to use the same because of the scarcity of reagent, a short shelf life substance that is required for testing. The United States Department of Defense had limited the supply of reagent to organizations depending on factors such as locations, populations, and hot spots. Around Mid-April 2020, St Luke got its supply of reagent and started testing internally and hoped to stop sending samples outside for external testing. The forecast is that surpass 1700 testing/day internally by May 2020.

REALIGNING WORKFORCE REPOSITORY

St. Luke's staff took some innovative steps during this difficult time. St. Luke's spirit of innovation has never shone more brightly before. After non-urgent/non-emergent operative and invasive procedures were temporarily suspended to support safe care and continual readiness during the spread of the novel coronavirus, many members of the team were called to service in new ways.

To meet needs, St. Luke has created a workforce repository to pair clinicians, providers – and their highly needed skills – with work that was critically needed[7]. For example, Dr. Lance Hubsmith at St. Luke's Magic Valley is an anesthesiologist. Instead of spending his time in the operating room with elective surgeries, he was drafted for needs in the intensive care unit, helping to intubate patients. The staff pitched in wherever they can and comfortable working. St Luke did the exercise of matching skills with the department to reorganize staff in areas where the labor is required most

St. Luke's workforce repository has become a matchmaker of sorts, allowing for the redeployment of staff to other departments throughout the health system. St. Luke's Magic Valley Surgery Center team members are greeting at St. Luke's Jerome, working in the screening tent, being material management runners and stockers, helping with personal protective equipment support on the floors, making phone calls on the floors to help alleviate the stress from the nurses taking patients, helping with linen services and working in the emergency department and the ICU. It is needed, and much appreciated support, showing just how a team can function in challenging times.

When a department has a need, they put their request into the repository and available qualified staff are found to fill those needs.

St. Luke's is committed to patient and employee health and care; the repository has helped to ensure safe staffing across the system, including departments that have been heavily impacted by the arrival of the coronavirus.

RESUMING SERVICES

As of July 10, 2020, St Luke's Health System's plan for resuming services in a phased plan is in place to ensure the well-being and hospital care requirements of the community. St Luke's health system is staging a return to providing non-

[4] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/preparation-is-key
[5] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/laboratories-begin-covid-19-testing-in-house
[6] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/laboratories-begin-covid-19-testing-in-house
[7] https://www.stlukesonline.org/blogs/st-lukes/news-and-community/2020/apr/workforce-repository-helps-staff-and-providers

urgent services such as imaging, procedures, elective surgeries, and clinic visits over the next few months[8].

St. Luke's plan for opening will be guided by a set of further challenges and solutions, apparent from their preparedness so far. First, they want to ensure that personal protective equipment, supplies, and the workforce are available well. Second, they are determined for continual evaluation and attention to clinical standards regarding testing and evaluation for COVID-19. Third, St. Luke's will keep monitoring the ongoing inpatient and surge activity levels within the hospital; and ensure smooth alignment and function of almost all capacity, i.e., availability of medical, surgical, and ICU beds. Fourth, to accommodate the cases safely, that was previously canceled for service, St. Luke hospital will adjust hours and staffing as needed for surgery, medical imaging, mammography, and clinics. Finally, St. Luke will continue to offer alternative visit options such as telehealth or video visits, as appropriate. These accommodations and plans are so much directed towards the new normal, while being ready and prepared to maintain the internal functionalities and operations quite smoothly.

For surgical services, patients with increased health risks will be given priority in the next three to eight weeks. Surgery cases began ramping up in hospital operating rooms on May 20, 2020. The plan is to address cases about outpatient surgery centers. St Luke expects to return to normal service levels in early June 2020. For Medical imaging and mammography, ordering provider inputs will be given the priority that is expected or ordered for March, April, or May. Starting June 1, 2020, new appointments for non-urgent and routine tests are expected.

Patients awaiting or needing to schedule non-urgent appointments and procedures should reach out to their provider to schedule an appointment. In some cases, providers will reach out directly to patients to provide details on the next steps and to schedule appointments. Patients will be required to wear a mask while visiting St. Luke's. Telemedicine options have been added to help patients receive at-home care using the video capabilities of a smartphone, tablet, or computer.

St. Luke's offers COVID-19 testing to the high-priority patients, as per recommendations from the Idaho State Testing Taskforce. These are mainly the patients with COVID-19 symptoms, as confirmed through myChart self-triage, nurse triage by phone, or clinical evaluation. Asymptomatic patients (not exhibiting symptoms) will be tested under the following circumstances. Patients should ideally be tested between 24-48 hours (and no more than 72 hours) before (1) A planned surgery or specific procedures that involve increased exposure to a patient's breath and/or airway (St. Luke's will coordinate this testing as part of the pre-surgery/pre-procedure process.) (2) Discharge or transfer from a St. Luke's hospital to long-term care or skilled nursing facility.

For Patients with COVID-19 Symptoms, there is a self-triage tool in myChart first that will help the patients to determine what to do next. Self-Triage screening tool to help one to determine what to do if one thinks he/she might have symptoms of COVID-19 or may have been exposed.

CONCLUSION

St Luke's health system and Boise Medical Center have come a long way during this difficult time. The new ways of managing the supply chain, a new way of doing things such reorganizing the workforce, preparedness, managing the PPEs, taking conscious decisions for supply chain and distribution, and the surge has helped the St Luke heath system to cope up, address many of the unpreceded issues and move forward in sticking to it' mission.

ACKNOWLEDGMENTS

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[8] https://www.stlukesonline.org/blogs/st-lukes/notes-and-announcements/2020/jul/st-lukes-covid-19-resuming-services-resources-for-patients