

# Agile Teams and Lean Methods in a Tertiary Care Hospital During COVID-19 Pandemic

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## Abstract

**Objective:** To share the experience of agile team approach and Lean methods with improvement projects during the COVID-19 pandemic. **Methods:** We report the use of agile team approach and Lean methods through two examples of improvement projects during the COVID-19 pandemic in a tertiary care hospital in Oman. **Results:** The use of agile team approach and Lean methods during the COVID-19 pandemic had positive outcomes in engaging different clinical and non-clinical health workers through effective communication, innovation and collaborative actions. **Conclusions:** Across healthcare settings, agile teams and

lean methods are essential to ensure the quality and safety of patient care, and to maximize health care workers engagement particularly in pandemic settings.

**Key Words:** Lean; Agile; Teams; COVID-19 Pandemic

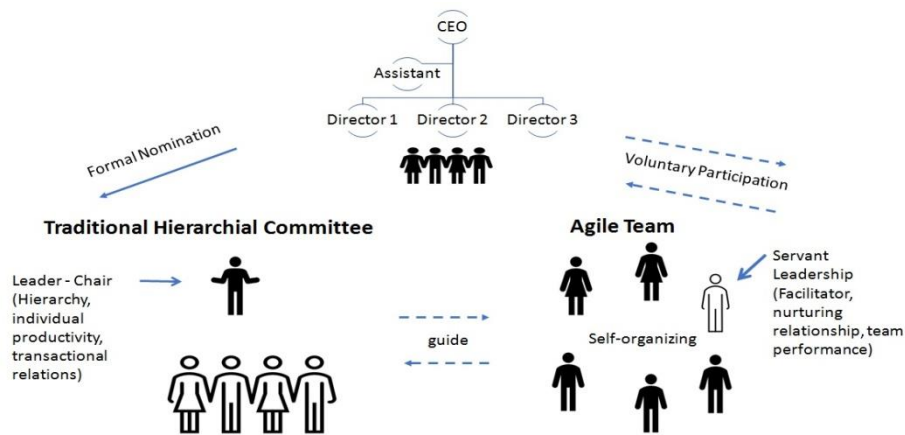
## **Introduction**

The COVID-19 pandemic has created numerous complexities and major demands on hospitals, including the inevitable need for working as part of a team. In Oman, the first two cases of COVID-19 infection were detected on 24th February, 2020 and within 10 weeks, there were almost 3000 laboratory confirmed cases<sup>1</sup>. In this urgent context, teams encompassing both interprofessional and interdisciplinary members became the principal tool for effective planning and execution at hospitals. Coordinated communication and sustained collaboration are essential to preserve healthcare capacity to meet community needs in times of pandemic, where there's pressure for organizations to react faster than normal<sup>2</sup>.

Using Lean systematic methods in the health care organizations to define problems and understand processes and/or value stream mapping to illustrate a patient pathway; not only reduces waste but also boosts performance, enhances patient experience, increases employee engagement, and controls cost<sup>3,4</sup>.

Similarly, agile approach that is based on teamwork<sup>5</sup> is fundamental to the health care organizations. The agile approach to teams does not follow prescriptive practices or set tools, although do employ some organizational frameworks such as a strategic directive to plan work<sup>6</sup>. Documentation in the forms of workflow algorithms or standard operating procedures (SoP) are created as part of the innate process of collaborating, promoting sustainability but with the initial intent on communication<sup>4,6</sup>. This approach allows internal work processes to be improved at a faster rate to deliver more value, allows care to be more adaptive and responsive to new knowledge and more effective in adopting new technologies<sup>6</sup>. The Agile approach

values human communication and feedback, producing results in small units with flexibility. Agile strategy as described by Kotter<sup>7</sup> is designed to function within a traditional organizational hierarchy, where accelerator teams require the flexibility and agility of a network (Figure 1).



**Figure 1:** Traditional hierarchical committee versus agile team and their relationship.

## Methods

Royal Hospital is the largest tertiary care hospital under the Ministry of Health in Oman with 1056 beds. It is a referral center with free access to specialized healthcare for the entire country. During the COVID-19 pandemic, the hospital faced extraordinary challenges being assigned to care for many patients including those that require critical care. A project management team was established for the facilitation of the different improvement projects within the hospital. The implementation of the improvement projects was driven by the agile teams that consisted of 6-12 members per team while the core project management team maintained weekly track of progress and facilitated meetings with agile team leaders. The project management team reported the progress on the project's biweekly to the hospital Director General. The members of the agile teams were recruited voluntarily by the agile team leader based on 1. an individual who had the heart and mind to be voluntarily involved in the initiative, 2. with at least one member having prior experience in leading projects or is trained in process improvement (e.g.,

Lean methods). There were regular virtual communications by the team leaders of the agile teams through WhatsApp® (free social media platform). Virtual communication was established for every agile team to enhance effective communication on the progress between the different team members.

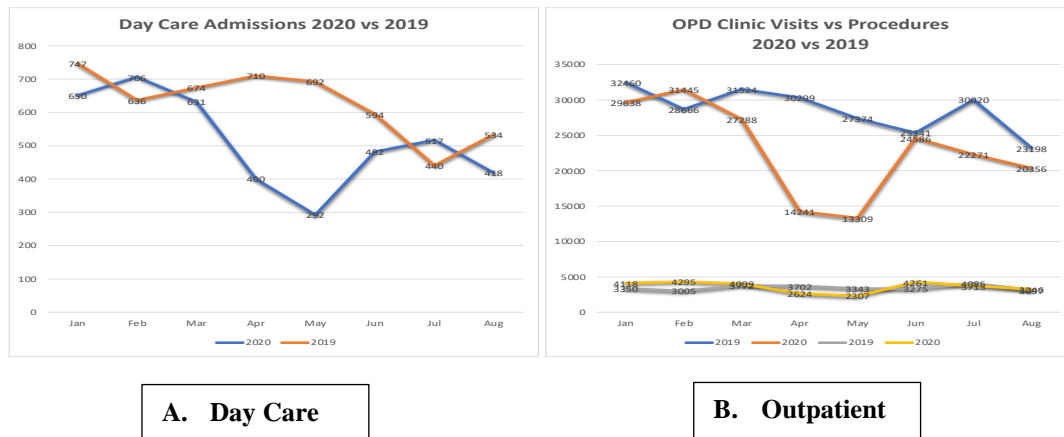
For project 1, which was about elective service resumption. A core operational team (5 members) were convened formally by the hospital administration. This team acted as the core project team to direct and facilitate further voluntary agile team engagement (see Figure 1). Agile teams were involved within the context of the specialty to contribute to service resumption guideline development. Surgery service resumption guideline involved working with a surgeons' representative to contribute to the development of service resumption, ambulatory care service resumption involved the clinician and the nurse involved in ambulatory care. Imaging services involved department of Radiology representation. The process of guideline development and implementation was initiated informally by April 2020 and formally by May 2020, however, due to the nature of the pandemic and the constant flow of new specialty driven information, guideline modification and implementation continued to evolve over the summer for most of the services until September 2020.

## **Results**

### **Project 1: Elective service resumption during COVID-19 pandemic**

The efforts of the project management team and the agile teams are illustrated in **Figure 2**, reflecting the contribution of some of the teams such as the outpatient team and day care utilization team as examples. The graphs illustrate a comparison between services in 2019 versus 2020, with an apparent dip related to the suspension of the elective services early in the pandemic from the period between March to May 2020. Guidelines were produced and distributed within the hospital to standardize the approach to elective services resumption<sup>7</sup> and

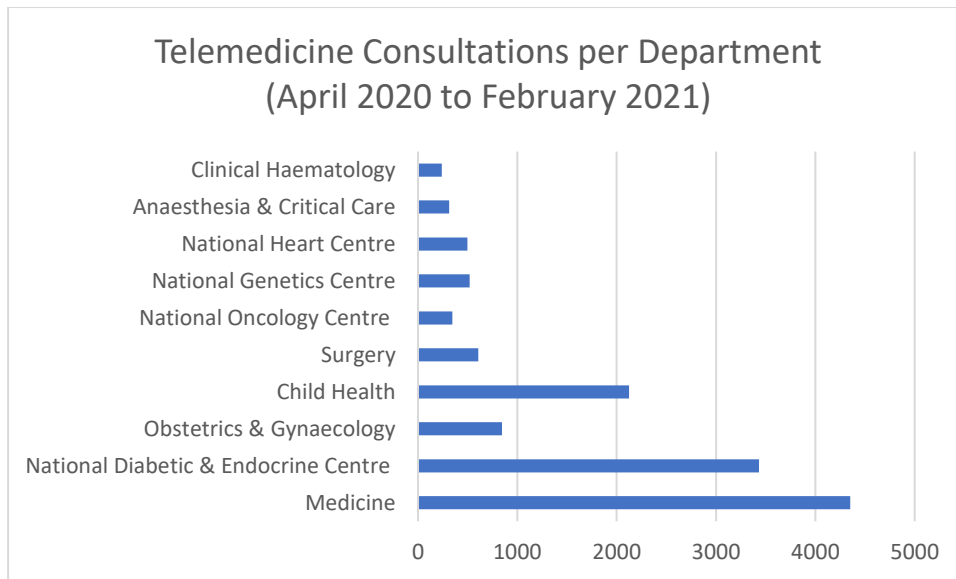
shared at a national level to be utilized by other hospitals. Agile approach created flexibility in progress outside formal lines and formal nominations.



**Figure 2:** Impact of COVID-19 pandemic on hospital elective services in the year 2019 versus the year 2020. **A.** Day care and **B.** Outpatient (OPD).

### Project 2: Telemedicine clinics during COVID-19 pandemic

Telemedicine use was established in some departments of the hospital prior to the COVID-19 pandemic through various platforms such as WhatsApp®, Zoom®, email and telephonic consultations. The project management team focused on integrating telemedicine clinics into the hospital’s Health Information System (Al Shiffa®), while the agile team put active efforts to advocate for the service through online and face to face platforms. In telemedicine, as the service evolves, it will be important to create collaboration with technology accelerators<sup>11</sup>.



**Figure 3:** Telemedicine clinic consultation per department during COVID-19 pandemic

## Discussion

We provided two examples of how improvement concepts such as Lean and agile can be operationalized within a healthcare environment. Lean management introduces structured methods to improve performance and processes in which teams work together to complete and eliminate unnecessary steps that previously happened separately and were vulnerable to delay. Meanwhile, agile approach relies on concepts such as cross-functional teams, which follow the same underlying philosophy as Lean but with more flexibility and smaller work progress goals<sup>7,8</sup>. Agile organizations are fast, resilient, adaptable and in theory could be perfectly suited to respond to shocks such as the COVID-19 pandemic<sup>2</sup>. The implementation of Lean and Agile methods during times of crisis provides a unique insight in understanding the usefulness of management principles within the health care organizations and helped us to improve the quality of care during times of crisis<sup>9</sup>. The experience was shared in detail with the International Hospital Federation in November 2020 and resulted in the recognition of the hospital for “beyond the call of duty for COVID-19 organizations”<sup>10</sup>. Nevertheless, there were some

challenges faced that could be unique to the pandemic situation such as delays in progress of some of the agile teams due to COVID-19 exposures or infections among team members

### **Conclusion**

The success of agile team based collaborative effort provides a unique learning opportunity towards efficient, effective and high-quality patient care while utilizing Lean methods. The COVID-19 pandemic resulted in a need for effective collaborations among teams to address the volatile and unpredictable demands of this unprecedented crisis. Our experience is one of successful planning that brought together clinical and non-clinical disciplines, and professions.

### **Conflict of Interest**

Nil Reported

### **Acknowledgement**

Royal Hospital Teams

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