Implementation of Lean in the public health sector is crucial for enhancing and sustaining universal health coverage (UHC). Achieving UHC by 2030 is embedded in the Sustainable Development Goals (SDGs), and is a work program priority for the World Health Organization (WHO) over the next decade. The WHO defines UHC as all individuals and communities receiving the health services they need without suffering financial hardship, with coverage for the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care. 1,2 Oman, one of the Gulf Co-operation Council Countries (GCC), achieved the full spectrum of UHC similar to Eastern Europe back in 2015 because of meeting key UHC index indicators.3 However, the global epidemiological data is negatively impacting countries with heavy reliance on oil production and fluctuating oil prices; such as Oman.4 GCC countries are one of the fastest-growing populations in the world. Although, less burdened with communicable diseases and notable increase of non-communicable diseases.5 The chronic nature of communicable diseases is an epidemiological challenge to UHC sustainability and the need for continuous service improvements.6 There’s an international agreement on the importance of implementing and sustaining UHC. However, in the celebration of the 40th anniversary of the Alma Ata Declaration in 2018, there was a call to reconsider the role of public hospitals and specialized care in relation to the primary healthcare system.7 It was announced that more focus is needed to better understand how hospital reform can be integrated into the broader health system reform, especially in the context of global prioritization of quality and equity in access to UHC.8 Harnessing innovation and creativity (e.g. pharmacueticals, diagnoses, devices, etc.) and in information and communication technologies could substantially change the way health services are provided.9 Therefore, the major focus of this work is sharing the experience of how to improve hospital performance using Lean improvement, while reflecting on its impact in quality, safety, capacity, efficiency and service access. The experience of Royal Hospital, should augment the recent report shared by the WHO about hospitals being powerful institutions that have political, economic and social weight to make change happen.10

LOCAL SETTING

According to the Omani National Centre of Statistics and Information (NCSI, 2019), Oman has a population of 4.6 million. The Royal Hospital (RH), is a tertiary care public hospital under the ministry of health with free access to healthcare. It is the largest medical institute in the country with 970 beds and 2,700 employees. RH provides advanced healthcare services and training for the majority of clinical and supportive care services. In addition, there is the nascent development of liver transplantation service, home ventilation and home total parenteral nutrition. Oman has a homogenous healthcare system across the country. That integration of services is provided in a primary healthcare center per 10,000-30,000 inhabitants, depending on population density (NCSI, 2019). Locally and globally, healthcare systems are challenged by increased demands, and compromised access. There is shortage of care providers, fears of not enough doctors, nurses, pharmacists, and surgeons to treat people. Therefore, healthcare systems are full of waste and experience an enormous amount of variation.11 The challenges that face Oman’s healthcare system include, increasing waiting time, waiting lists, to improve access, shortages in inventory and care providers resulting provider burnout as the case with many healthcare systems across the globe.

APPROACH

Lean performance improvement is continuous, incremental, and measurable improvements, which is embedded in the belief that one role in operations is to tackle multiple challenges that plague the healthcare systems. Lean Methods enhance the elimination of 8 system waste such as over-processing, over-production, underutilized talent, inventory, motion, transportation, time and defects. In addition, some tools such as value stream mapping, critical activity analysis that describe the role of Lean improvement is outside the scope of this article. However, its impact on the system is relevant at an organizational level and should be shared at a global level. It improves care provider engagement, efficiency and timeliness of services.

In September 2017 to March 2018, the hospital leadership invested in introducing Lean performance improvement training through a hired external consultant (Lean Sensei) who visited the hospital on a monthly basis for 7 months for 2-4 days per week. The initial goal, was building capacity and capability through training of 30 lean champions who continue to practice in their clinical areas, while advocating and training in lean throughout the organization. However, focus on Lean was supported and facilitated throughout the organization by the establishment of a performance improvement unit led by a senior care provider with an advanced management degree and a performance improvement steering committee led by the hospital CEO. The objective of the unit is to help support lean champions at departmental level and to ensure work continues and is shared with top management through site visits. Site visits by top management are an opportunity where leaders meet frontline and are made to feel they have a voice. It is also an opportunity to share and acknowledge success. The detailed role of Lean in the implementation phase is outside the scope of this article. However, its impact on the system is relevant at an organizational level and should be shared at a global level. It improves care provider engagement, efficiency and timeliness of services.

At an organizational level, Lean improvements had a direct impact on the hospital performance. For example, more than 200 reported improvement projects (see figure below) have been initiated, and 81% were completed by the end of 2018. All the improvements that have been started had a direct impact on patient experience such as, reducing waiting time, improved scheduling time, improving inventory control, and improving patient and employee satisfaction. In addition, some of the completed projects had a direct impact on improving processes impacting patient safety by the enhancement of environmental efficiency. For example, before Lean implementation there was small space for medication preparation in the wards, after Lean, it improved the availability of space. The application of 5S in some sites in the hospital resulted more than 200,000 USD direct cost savings of inventory and more than 400,000 indirect cost saving by improving the efficiency of processes. Another example is the application of Lean at the Royal Hospital has contributed to the improvement of timeliness of ordering surgical items. This was achieved by reducing the request from process steps by 75% to less than 30. It reduced cardiology intervention cancelation from 20% to zero in 2018. In addition, day care improved its bed utilization by 50%, while departments of surgery reduced its surgery intervention rate from 7.5% to September 2018. Lean improvements had an impact on reducing the hierarchy and creating more effective team-based work with empowerment of all professionals especially the nursing teams. The nurse empowerment is a very well described effect in the literature. Although lean has been studied from a performance perspective, the Lean experience shows that it has direct impact on healthcare providers morale and engagement. There is an emerging literature to support this finding, that lean creates a positive psychosocial environment when employees are directly involved in the change process.

There were critical success factors for the hospital which were observed during deployment and implementation of Lean process such as:

- Lean Performance Improvement methods equips care providers with tools that help define the problem from a client/patient perspective
- The tools identify bottlenecks in the processes in the patient journey to help focus improvements that influence efficiency and timeliness of service
- Without top management responsibility and commitment, it is a waste of time and resources to start a Lean Improvement project
- In addition to the above there was the following relevant points:
  - Improving work methods through lean initiatives has more effect on organizational culture than just training employees.
  - Measuring productivity, safety, quality and financial performance is important
  - Information system adjustment plays a crucial role in augmenting sustainable improvements.
  - The role of an external consultant is important at the beginning in creating a sense of urgency by building pressure.
  - Measurable improvement there was small space for medication preparation in the wards, after Lean, it improved the availability of space. The application of 5S in some sites in the hospital resulted more than 200,000 USD direct cost savings of inventory and more than 400,000 indirect cost saving by improving the efficiency of processes. Another example is the application of Lean at the Royal Hospital has contributed to the improvement of timeliness of ordering surgical items. This was achieved by reducing the request from process steps by 75% to less than 30. It reduced cardiology intervention cancelation from 20% to zero in 2018. In addition, day care improved its bed utilization by 50%, while departments of surgery reduced its surgery intervention rate from 7.5% to 5.5% in September 2018. Lean improvements had an impact on reducing the hierarchy and creating more effective team-based work with empowerment of all professionals especially the nursing teams. The nurse empowerment is a very well described effect in the literature. Although lean has been studied from a performance perspective, the Lean experience shows that it has direct impact on healthcare providers morale and engagement. There is an emerging literature to support this finding, that lean creates a positive psychosocial environment when employees are directly involved in the change process.

REFERENCES