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ROOT CAUSE ANALYSIS REQUIREMENTS WHEN IMPLEMENTING LEAN IN A HEALTH DEPARTMENT

Abstract

Introduction: To identify challenges which are pertinent to service delivery using Lean tools through the involvement of rural and remote mental health operational staff. The challenges that come with introducing a new management system in a department within a large organisation need to be addressed systematically to ensure active participation of the staff in addressing the identified aetiologies. This requires early onset engagement and involvement of staff in identifying the problems so that they will take ownership in creating and developing the future action plans and counter-measures. Practical targeted root cause analysis sessions involving mental health staff in 3-hour problem-solving sessions using Lean tools facilitated by a certified Lean specialist were undertaken.

Key words: clinical pathways, government strategy, root cause analysis, Lean tools,

A LEAN-MÓDSZER BEVEZETÉSÉNEK ELEMZÉSE EGY EGÉSZSÉGÜGYI SZERVEZETBEN KATASZTRÓFAVÉDELMI SZEMPONTBÓL

Absztrakt

Bevezetés: A cikk egy olyan külföldi példát mutat be, ahol az egészségügyi szolgáltatásokkal kapcsolatos kihívások megoldására az ún. Lean-eszközök alkalmazását hívják segítségül. A példában szereplő legnagyobb kihívást az adott szervezeten belül egy új szervezet-irányítási rendszer bevezetése jelenti, de emellett lényeges a szervezet tagjainak, a személyzetnek az aktív bevonása is. Ez utóbbinál nagyon fontos a személyzet változások iránti elkötelezettségének a biztosítása, amivel az adott problémák feltárása őszintén és gyorsan megtörténhet, ill. a jövőbeli cselekvési tervek és ellenintézkedések pedig kidolgozhatók. A munkafolyamatokat mentálhigiénés szakemberek végezték egy kb. 3 órás okfeltáró elemzés során, ún. Lean eszközök, ill. az ebben járatos szakemberek segítségének igénybevételével együtt.

Kulcsszavak: klinikai irányító utak, kormányzati stratégia, okfeltáró elemzés, Lean eszközök,

INTRODUCTION

This paper presents the preparatory requirements and root cause analysis necessary when implementing Lean in a single process within a department in a large healthcare organisation. It also presents how top management and external expertise were secured for the successful implementation of Lean in the Central Queensland rural mental health services. Thereafter follows a brief synopsis of the Central Queensland mental health service profile then the diagnostic or brainstorming sessions that were undertaken to develop a common understanding of the problems and issues from the rural mental health staff's perspective. Moreover, a detailed account of the

brainstorming sessions is also provided, as well as the key discussions, implications to nursing management and a conclusion to the paper.

Aim

To identify challenges which are pertinent to service delivery using Lean tools through the involvement of rural and remote mental health operational staff.

Key issues: The identified issues included:

- Increasing demand for mental healthcare services was not matched with capacity due to budget constraints.
- The increased prevalence of drug and alcohol issues, which were closely aligned to the downturn in the mining industry, contributed to the increase in demand for mental healthcare services.
- The lack of resources included the challenges of recruiting staff to rural areas.
- The constant change of government strategy impacted negatively on service provision.
- The current government funding structures related to commissioning of services separated primary from secondary healthcare, making it difficult to streamline services.
- Inter-departmental staff animosity led to silo working.
- A lack of clarity in clinical pathways and roles led to role confusion.

Background

Central Queensland Health and Hospital Services (CQHHS) is a publicly funded health service that provides hub and spoke specialist mental health services across the district for people with serious mental health challenges. The Central Queensland main mental health services are located at Rockhampton. The service comprises of an Acute in-patient unit (23 beds) with high and low dependency unit, an adult acute care team which provides 24/7 intake, crisis response and short term clinical management.

The Rockhampton mental health in-patient unit is the only acute mental health in-patient unit in the region. The Acute care team also provides after-hours and weekend

crisis mental health services for the whole region. The In-patient Unit and Acute care team are well supported by several other community mental health teams that are located in different centres. The community teams are situated in Rockhampton, Gladstone, Yeppoon, Biloela and Emerald. All the satellite rural and remote mental health community teams outside Rockhampton provide services to several other widely spread small centres within their catchment areas.

The rural and remote community mental health centres do not have resident psychiatrists; however, they access specialist medical coverage from the Rockhampton mental health team. Mental health teams have some logistic problems, which is mentioned in other types of intervention as well. [1] Some rural community mental health areas have a designated consultant psychiatrist in Rockhampton, but most areas rely on the Acute Care Team medical officers for urgent and complex case consultation. Specialist mental healthcare services in Australia, including the Central Queensland region, are funded to provide acute and crisis management, hence the need to work closely with other local service providers for ongoing mental health consumer care.

The other service providers closely linked to mental health include Non-government organisations (NGOs), General Practitioners (GPs), mainstream health services (general hospitals and emergency departments) and other government services (police, ambulance, criminal and juvenile services, and child safety, family and welfare services).

CHALLENGES IN IMPLETMENTING LEAN IN HEALTHCARE

There are several challenges in implementing Lean or improving flow in regional and rural mental health service processes. The challenges include, but not limited to:

1. Variations in work procedures;
2. Different professionals with different codes of ethics; and
3. Significant variations in lead-time.

However, the bulk of the processes is repetitive and can be standardised if value adding steps are clearly defined. Jackson posits that before implementation there should be a shared recognition that problems exist and that improvements are needed. [2] Liker concurs in his principle 13 of the Toyota management system, which is termed *Nemawashi*; a Japanese word which means involving all stakeholders in discussing problems, consensual agreement on plan of action, and implementing the action plan rapidly. [3]

If staff fail to see the need for change, it may result in Lean being viewed as a waste of effort or as a dubious effort by management and leadership to overwork staff or cut costs. As a result, Central Queensland rural mental healthcare services sought full endorsement from the top leadership team before introducing Lean followed by a proficient cause and effect brainstorming session.

Top Management and external expertise

According to Teich and Faddoul it is vitally important to first engage the executive management and leadership team to foster support from the very top levels of the organisation when initiating Lean implementation. [4] Liker concurs by stating that successful implementation of Lean philosophy is a long term commitment that requires endorsement from the top leadership. [3] The CQHHS Chief Executive Officer and Executive Director of operations and innovation, who both had previous extensive experience in implementing Lean philosophy in the UK NHS system, endorsed the implementation of Lean in Central Queensland Rural Mental Healthcare Services. After securing the top management support, the organisation hired external expertise.

CQHHS hired the highly reputable American based business consulting company, Rona Consulting, to introduce and provide Lean management and methodology training at a district level. According to Liker, an external expert on Lean, change management, or quality improvement, can educate internal stakeholders and help to facilitate initial efforts at implementation. [3]

Hiring external *senseis,* a Japanese word which means (teachers or mentors) ensures that the local team do not quickly adopt the philosophy to a local context too early, because early localisation can create challenges such as complete deviation from evidence based implementation. [5] The Director of Operations and Innovation, who has 20 years' experience of implementing Lean and the Team Manager of the Central Queensland Rural Mental Healthcare Services accessed and completed the Rona certification programme, which enabled them to use the tools and acquire the skills and expertise required when implementing Lean methodology. After skills and expertise acquisition, the Lean implementation journey in Central Queensland Rural Mental Healthcare Services began with the root cause analysis sessions.

Evaluation

The Chief Executive Officer of CQHHS introduced clinical half-days after several discussions on how clinical staff could create time to focus on quality improvement activities, without constant disruptions from their clinical duties. According to Dixon-Woods, McNicol, and Martin, [6] it is very important for all staff to be involved in quality activities; however, most clinical staff do not prioritise involvement in such initiatives. Clinical half-days were mandated by the CQHHS Chief Executive Officer to occur once a month for 4 hours. It was stipulated that staff are only to attend to emergency clinical matters with no clinics to be scheduled at that time.

There are several Lean tools which can be used for diagnostic purposes. Lean philosophy can be described as a process management system which examines organisational processes with the aim of limiting the use of resources only to those processes which add value to the end customer. The definition suggests that Lean is basically an analysing process hence the emphasis on involving the people to analyse their own work.

The root cause analysis commenced with a brainstorming session which was conducted during one of the clinical half-day sessions on 25th November, 2015. The structured tools used included the fishbone diagram, A3 and 5-Whys during clinical half-days to develop a good understanding of the processes, service provision and to

identify real problems. According to Liker, [3] 5-Whys is closely related to the Cause and Effect (fishbone) diagram, and can be used to complement the process of analysis necessary to complete a Cause and Effect diagram.

The 5-Whys analysis process is more than just an iterative process or a simple question-asking activity. The purpose behind the 5-Whys analysis process was to get the right people in the room discussing all of the possible root causes of issues of concern in the provision of rural mental healthcare services. Figure 1 shows the completed 5-Whys analysis undertaken by the staff.

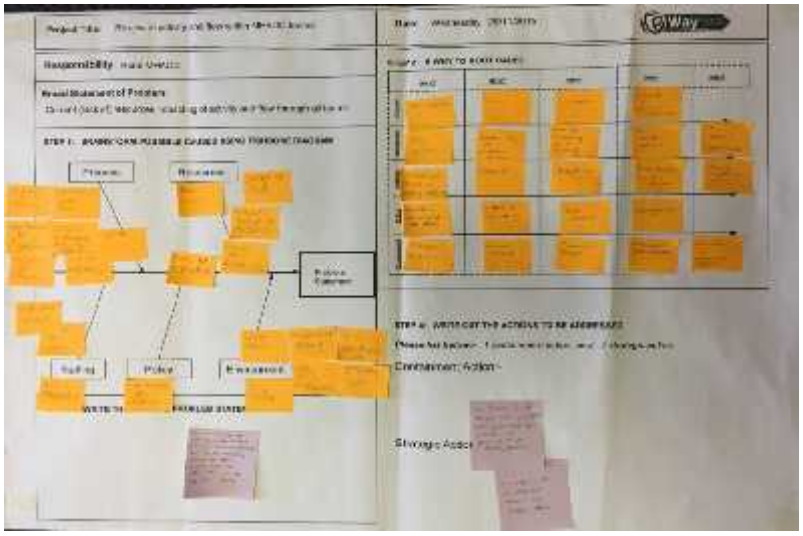

Figure 1: Root Cause Analysis

KEY ISSUES

The clinical half-day session enabled staff to identify the challenges faced by the services. In addition, the session allowed staff to clearly label and configure the issues and problems in a way they easily understood. The diagnostic process focused on five key areas:

1. Process issues;
2. Resource issues;
3. Staffing;

4. Policy; and
5. Environment

The root cause analysis highlighted a number of areas that needed improvement in Central Queensland rural and regional mental healthcare services. The first highlighted issue was the increasing demand for mental health services, which was not matched with capacity. The increasing demand and budget constraints means rural mental health services have to provide the same quality of care with the same amount of funding or less.

To develop a good understanding of the problem, the team spent time discussing the reasons behind the current increased demand for mental health services in the region. Reasons identified for driving an increase in mental healthcare services, included: the regional rural community's economic dependence on agricultural and mining activities, and the recent downturn in both sectors; agriculture, drought, and mining, as a result of reduced commodity prices contributing immensely to lifestyle changes for the rural population. In an attempt to keep these industries running, wages and employee benefits have been slashed. However, several mines within Queensland have closed while some have retrenched workers. This has resulted in unexpected changes in people's socio-economic standing. Consequently, this has contributed negatively to the emotional wellbeing of people, subsequently triggering mental illness. [7]

Notwithstanding the economic causes, the participants also mentioned that the increased prevalence of drug and alcohol issues, also closely aligned to the downturn in the mining industry, contributed to the increase in demand for mental healthcare services. The increase in drug and alcohol misuse in rural areas was viewed by participants as also contributing to the increase in relationship breakdown, thus leading to increased presentations in rural emergency departments with situational crisis and suicidal thoughts. In addition to the issue of drug and alcohol misuse, the participants also mentioned there was a lack of resources in rural areas, especially for drug and alcohol services. In Central Queensland, drugs and alcohol services are provided to rural services as outreach services from the main hub.

One of the reasons cited by the group of participants for the lack of resources included the challenges of recruiting staff to rural areas. As a result, most positions allocated to the rural areas end up being occupied by staff who reside in regional areas resulting in outreach services to rural areas being provided by regional centres. The outreach model of service was also cited by the participant group to result in fragmentation of services. The clinicians at the regional centres visit the rural areas for a few days once in a month which does not provide adequate time to become fully integrated into the team. The general health seeking behaviours of the rural population (stoicism) was also identified by the participant group as an issue. The group stated that a considerable number of rural folk delay in seeking help. By the time they present themselves to the services their illness would have progressed to a critical stage.

A further issue which was identified by the rural mental health team was the constant change in government service provision strategies, which also impacted negatively on service provision. Several examples of this phenomenon were given by the group, however, the example of the recent change from local Medicare services to new Primary Health Networks (PHNs) is useful to present. When PHNs were introduced to replace the local Medicare services, the rural areas were left with very few public community primary mental health clinicians in the Central Highlands during this transition period. This caused distress for clients and created a workload burden for staff.

The group also cited that the current government funding structures related to commissioning of services separated primary from secondary healthcare, making it difficult to streamline services, work collaboratively and to prioritise the use of the limited resources. The group also mentioned that most rural healthcare organisations work in silos due to different funding sources and strategic focus, resulting in inherent separation or disintegration to service provision. They further mentioned that the rural areas become increasingly affected by the constant changes in strategic and policy directions as a result of some of the few staff who are resident in the rural areas feeling the need to relocate to other areas, because of the perceived uncertainty of their continued employment prospects.

Staffing

Another issue raised by the group was interdepartmental staff animosity, which was seen to cause working in silos. The group elaborated that mental health staff are of the opinion that the emergency department (ED) staff of rural hospitals have misunderstood the way in which the service capability framework is meant to be implemented, resulting in rigid adherence to the established roles and poor integration of the provision of healthcare. Such a situation was further exacerbated by no clear joint departmental guidelines as recommended by the Queensland state-wide policies. As a result, this interdepartmental silo working results in compromised consumer safety and unnecessary additional costs related to inappropriate transfers of consumers from rural hospitals to the regional mental health inpatient unit.

Using the 5-Whys iterative problem identification resulted in other reasons being raised by the group concerning the staffing and workload issues and these were:

- Increased referral activity.
- Meeting dominated approach which reduces clinical contact time.
- Consumer Integrated Mental Health IMHA documentation requirements
- Improved quality and safety measures and guidelines which require more clinical contact time—example CQ intensive support follow-up guidelines.
- Inappropriate referrals due to lack of service criteria specifications which leads to continual problems with people being denied access because of access criteria.
- A lack of clarity in clinical pathways and roles regularly leading to confusion as to who should be the service responsible for the provision of care. This lack of clarity in clinical pathways led to common complaints from service users and allied health services.

Process

The diagnostic process used by the rural mental health staff identified that the variation in processes and lack of standard work instructions as the two main issues

resulting in duplicated efforts from staff and re-work when mistakes occurred. Other related problems which were identified by using the 5-Whys iterative style included:

- Issues on flow of information which impacted on treatment delays and clinicians involvement in the provision of care.
- Inefficient use of private psychiatrists for consumers who have private insurance.
- Inefficient use of the bulk billing by private psychiatrists who provide tele-health psychiatry.

Finally, the staff identified that the Central Queensland region is sparsely populated, compounded by a tyranny of distance between geographical areas. The huge distances results in fragmented service provision, inaccessibility and inefficiencies.

REVIEWING QUEENSLAND STATE-WIDE MODELS OF SERVICE

According to Liker, successful implementation of Toyota management system requires good strategy deployment from senior leadership to frontline staff. [3] Liker describes this as *Hoshin Kanri*, a Japanese term that means strategy deployment or management by policy. *Hoshin Kanri* requires the leadership team to have a clear understanding of the strategies and set key performance targets. [8] Hence, after identifying the problems through brainstorming sessions during clinical half-days, the principal investigator and rural mental health staff reviewed the Queensland state-wide models of service. The principal investigator also reviewed the state-wide KPI guidelines to have a good understanding of the KPI requirement targets. The purpose of reviewing the models of service was to identify gaps in current best practices for rural mental health services and develop relevant countermeasures using Lean methodology. In addition, the aim of this activity was to align with the argument that

if teams review and quantify goals together, then goals, roles and expectations can be agreed upon and clearly communicated. [3]

The review of the models of services and state-wide KPI guidelines enabled the rural mental health staff to target areas that needed urgent service improvement and development. It also enabled good strategy deployment, cascading the right information to achieve the required key performance and significant service indicators. The process of reviewing policies and guidelines should be conducted regularly to be able to measure the effectiveness of the methods employed as shown in Figure 2.

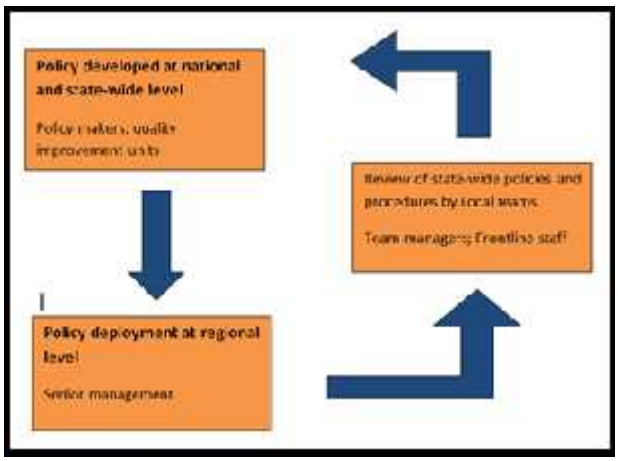

Figure 2: Policy Review Process

The Queensland Models of care outline introductory expected care pathways in the State but do not outline the specific available services in rural areas, making the Models of care a reference guideline because some of the recommended service specifications are not available or inaccessible. Despite the publication of policy implementation guidelines it has been shown that regional, rural and remote mental health services remain diverse in operation and function. [9] Although management strategies differ substantially, the consumers referred to and are given care by rural mental health services tend to be similar in presentation. [10]

Appleby describe the benefits of analysis of the Models of care to be the identification of gaps in the service and being able to map service improvements. [11] Reviewing the current state-wide policies provided access to other service ideas and elements to draw upon in order to improve practice. In addition, reviewing the state-wide models of service aided in identification of gaps between the current services

provided and the recommended services from state-wide polices, subsequently attempting to align the service improvements to the state-wide recommendations. However, some of the state-wide recommendations could not be automatically transferred into the regional, rural and remote mental health settings due to several reasons, which include the geographical challenges in Central Queensland.

Figure 3 shows the gap analysis tool which was used to identify the differences between what was currently provided by the rural services and the recommended service provision by the State-wide. The tool shows the state-wide requirement, a traffic light section, red, amber and green then a section for comments. A red traffic light depicts that the service did not provide the recommended service; Amber for almost met the recommended, and green for met the recommended.

	Requirement	RAG	Comment
	Intake function as the first point of contact to public mental health services 24 hours, 7 days a week. Following triage, they facilitate the most appropriate type of care (e.g. inpatient, community, crisis interventions) for the individual.	G	Local Rural MH services are not 24/7 however after hours and weekend services are provided by Rockhampton ACT
	Not all health service districts (HSDs) will have a designated ACT however, all HSDs will have a mechanism for providing 24 hour, 7 days a week access to mental health care.	G	Rockhampton ACT
	The Intake provides a multidisciplinary mental health service to consumers with acute care needs in a community setting.1 The majority of Intake service provision occurs in the consumer's home, a community clinic, a general practice (GP) or other nominated place. In exceptional circumstances, service provision may be delivered via an emergency department (ED).	G	

Figure 3: Gap analysis tool

The majority of the steps in the guidelines and policies in mental health are mandated by State and National policies, for example, guidelines that are followed when a consumer is under the Mental Health Act. Therefore, it was important to have a good understanding of these requirements before undertaking any Lean initiatives to refine the processes or guidelines. Removing some steps from state-wide mandated

processes could improve lead time (total time it takes a consumer to go through the process from service initiation to completion) but could also result in serious litigations in the event of mortalities.

CONCLUSION AND IMPLICATIONS TO NURSING MANAGEMENT

The staff responsible for providing service identified problems or issues using evidence-based tools rather than relying on service leaders or functional managers to identify operational issues which they are rarely involved in. Implications to nursing management will ensure that the action plans which will emanate from future rapid improvement workshops (*kaizen* workshops) will address real gaps in service delivery, operational staff concerns and increase ownership and participation when creating action plans or developing counter measures to the identified problems. This paper identified issues pertinent to service delivery in rural and remote mental healthcare services. The issues were identified using evidence-based Lean tools and involving the clinical staff. The paper sets the tone for further value stream mapping events and rapid improvement events (*kaizen workshops*) following the systematic identification of problems with active involvement of staff. The identified problems can be addressed through further Lean application, hence the need to seek top management involvement early when applying Lean. Many Lean projects fail due to lack of top management involvement as well as lack of engagement of the operational staff at an early stage of implementing Lean. As a result, operational staff tend not be motivated to actively participate in future continuous improvement projects. In addition, a thorough diagnostic process or root cause analysis with the involvement of operational staff ensures that key improvements will focus on the real day to day challenges that affect the department and the staff as opposed to managerial issues, therefore benefiting the intended recipients. The involvement of staff at an early stage ensures that the operational staff will take ownership of the projects and programs, hence improving effectiveness and continuity of Lean implementation since Lean application is a long term exercise. Moreover, the rural staff who are otherwise

isolated from the main regional centres would have acquired skills in evidence-based scientific methods to dissect the anatomy of the challenges related to the daily flow of consumers, information, equipment and specialists clinic schedules. By and large, thorough root cause analysis empowers and enhances rural staff's self-reliance in problem identification and formulating counter-measures as opposed to waiting for the senior leadership to resolve operational matters for them.

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