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How a Critical Care Network Implemented Lean Methodology

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A Network Lean Methodology Approach improves the cost-effectiveness of, and reduces the wastage in, critical care delivery.

What is Lean Methodology?

Lean methodology (LM) was originally developed by Toyota, and has since been adopted throughout British industry under various names, including Total Quality Management and Total Preventative Maintenance. It can be defined as a process of identifying the least wasteful way to provide value in order to produce better, safer and more cost-effective results without unnecessary delay.

Cost pressures and the worldwide economic downturn have driven the widespread implementation of lean methodology across the UK National Health Service (NHS). In this context the main aims are to:

• Get things right first time, thus improving quality and lowering costs;

• Empower staff to motivate them to sustain results;

• Make high quality evidence-based decisions;

• Improve flow to eliminate waste and reduce delays;

• Produce rapid results using workplace learning.

The Cheshire & Mersey Critical Care Network

The Cheshire & Mersey Critical Care Network (CMCCN) was first established in 2001 as part of the NHS Modernisation Agency programme. The CMCCN oversees the critical care units in 12 NHS acute hospital Trusts throughout the Cheshire and Mersey region in the North West of England. Over time the roles of the CMCCN have expanded to include contingency planning, commissioning, performance management, peer review and expert guidance amongst others; however a core function of the CMCCN has always been service improvement, overseen by the CMCCN Clinical Effectiveness Group. The principles of LM are particularly relevant to service improvement in critical care practice.

How Critical Care Medicine Can Use Lean Methodology

Critical care provides care for our very sickest patients and relies on the round-the-clock availability of a highly skilled multiprofessional team. It is a high-cost, low-volume, demand- led service, which is essential to hospitals with core services such as major elective surgery and emergency admissions. Although critical care in the UK represents only approximately 1% of acute beds, each unit employs a large number of direct care and indirect care professional staff, amounting to 1,500 individuals in the CMCCN. A collaborative approach to safe, equitable, efficient and effective critical care service is consistent with the principles of LM to ultimately improve patient experience and outcomes as well as reduce inequalities. However, for some patients in critical care, an improved outcome may be a well-managed and dignified death.

How the Cheshire & Mersey Critical Care Network Developed a Lean Approach Strategy

Patients are admitted to critical care when organ support is required, and can therefore present from any clinical pathway. The CMCCN supports all of its trusts to manage the critical care pathway, including end-of-life care. This is achieved through a clear strategic focus on agreed strategy, priorities and regular reviews of measures to quantify progress.

The CMCCN Clinical Group is the key expert body, which manages both critical care-related issues and developments across Cheshire & Mersey. The Clinical Group's membership comprises multiprofessional clinical leaders from all hospitals across the Network.

The CMCCN acts in a facilitative clinical governance capacity to ensure that safe practice is in place in all of the Network's constituent units. When compliance with agreed standards is not being achieved the CMCCN alerts the relevant organisations involved to effect change. The CMCCN Medical Lead plays a key role in this process by ensuring that provider organisations comply with current national and local policy. The end result is that patients can be assured that only safe and effective services are actually commissioned.

The CMCCN supports Trusts and commissioners in prioritising critical care service developments and their associated financial consequences, in line with agreed strategy and priorities on a Network basis. The CMCCN advises on the need for additional investment or disinvestment, as well as identifying areas where efficiency might be further improved:

• Through the Clinical Group, new and updated clinical pathways are discussed and may result in modernisation and improved efficiency (as an example the collaboration with laboratory services to improve access to investigation results at specific times to meet clinical need).

• The CMCCN is leading a work programme to identify opportunities to enhance patient recovery, to reduce length of stay, to ensure that safe clinical pathways are delivered consistently, contributing towards a reduction in patient length of stay and therefore costs. A similar project is planned for critical care follow- up services.

• The CMCCN supports the development of pathways that maximise the utilisation of resources and teams that are already available.

An example is that in developing an approach to psychological support, the Network has ensured that work is directly linked to developments around improving access to psychological therapies.

• The Network has achieved agreement from all constituent units to use standardised drug concentrations, thus reducing clinical risk and cost.

• The CMCCN is committed to ensure that critical care services deliver quality and innovation as well as productivity. As a result the Network was the first nationally to have a rehabilitation strategy and to address the long term future of education and training of the multiprofessional critical care workforce.

Examples of Lean Methodology in Action Across the CMCCN

1. Long Term Learning Aligned with the Patient Journey

In 2008 the CMCCN carried out a wide-ranging review of education and training for non-medical critical care professionals. The results demonstrated that training was fragmented with no clear standards or transferability across the Network or beyond. This was shared nationally, and similar issues were identified across the country. This resulted in the CMCCN carrying out a project to identify the competencies required to meet patient needs, including the underpinning scientific knowledge base where appropriate, to ensure a safe and efficient service in the long term.

This project has informed the national development of an education programme to support the education and training of critical care nursing staff, utilising learning packages that can be delivered in ways that suit the needs of the workplace.

Each of the CMCCN units has a Practice Educator in post whose role is to facilitate learning and to support mentors. The CMCCN Practice Educator Task Group provides vital peer support across the Network, and has been the vehicle through which the project has been

implemented across the Network. The Practice Educators also act as external assessors to other units across the Network to ensure that the project is implemented in a consistent fashion.

2. Service Improvement

The CMCCN employs a team of service improvement leads (SIL) so that one individual is employed for one day each week in each of the 12 critical care units. The SIL's primary role is to initiate, coordinate and report on local multiprofessional service improvement projects. Over 300 service improvement projects have been undertaken across Cheshire and Mersey including the:

• Introduction of patient diaries;

• Introduction of care bundles;

• Bereavement follow-up;

• Introduction of nurse-led weaning;

• Introduction of new observation charts;

• Identifying opportunities for waste reduction and cost savings;

• Publication of a CMCCN Service Improvement Newsletter.

The SILs also collate safety incidents data from each unit, which is then analysed at Network level and any lessons learnt are shared across the Network. The CMCCN Pharmacy Group has identified considerable savings in drug budgets, and the group's recommendations have been implemented across Cheshire and Mersey.

3. Delayed Discharge

Delayed discharge from critical care units is a major problem across the UK. Delayed discharges result in a number of undesirable outcomes including delayed admission and capacity transfers to critical care units in other hospitals. One of the CMCCN's units introduced a delayed discharge task group consisting of doctors, nurses and bed managers to ensure that patients were discharged within four hours of the discharge decision. This resulted in the bed managers giving higher priority to critical care discharges and also greater planning for more complex discharges. This project successfully reduced capacity transfers and delayed admission, resulting in more efficient throughput and a better patient and relative experience.

4. Handover

The need for a high quality handover when a patient is discharged from critical care to the general ward is well recognised. One unit redesigned its handover form into a concise multiprofessional single sheet handover form resulting in more efficient and more clinically relevant handovers.

5. Data Collection

Not uncommonly the collection of Critical Care Minimum Dataset System information (organ failure-based activity data) is undertaken by nonclinical administrative staff. One unit introduced mandatory input from a senior clinician on a daily basis resulting in increased data accuracy and reduced need to review the data retrospectively.

6. Guideline Implementation

The CMCCN Neurosurgical Centre's unit considered its brain injury management guideline to be used inconsistently. The centre's unit, with the assistance of the CMCCN, developed a safety- based project in collaboration with other members of the CMCCN to design an online modular learning package for the use of doctors and nurses. This resulted in more efficient teaching, more timely decision making, reduced length of stay and improved patient experience.

Conclusion

The need to demonstrate value for money is greater today than it has ever been. We believe that a Network-wide Lean Approach shares learning more rapidly and improves quality indicators more effectively as well as justifying the underlying costs of running a Network.

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