TheAHSNNetwork

NHS Improvement

# Delirium Prevention in Elective Orthopaedic Surgery: A quality improvement project

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## Context

This quality improvement project was aimed at reducing delirium and length of stay (LOS) in elective orthopaedic patients at Chesterfield Royal Hospital. The East Midlands Academic Health Science Network Patient Safety Collaborative funded the nursing post to develop this piece of work.

## Problem

Post-operative delirium is a serious complication in elderly patients, with incidences of delirium estimated at between 3.6% and 28% in elective orthopaedic patients.

It may also increase a patient's length of stay (LOS), and is also associated with increased nursing time and higher per day costs.

## Intervention

A new Delirium Nurse Specialist (DNS) post was created. Patients with any of the following indicators were counselled and referred to the DNS for an orthogeriatric assessment for possible optimisation of their conditions prior to surgery:

- Frailty score above 7
- Unstable medical co-morbidity
- Polypharmacy
- Any patient with any general cause for concern.

## Strategy for Change

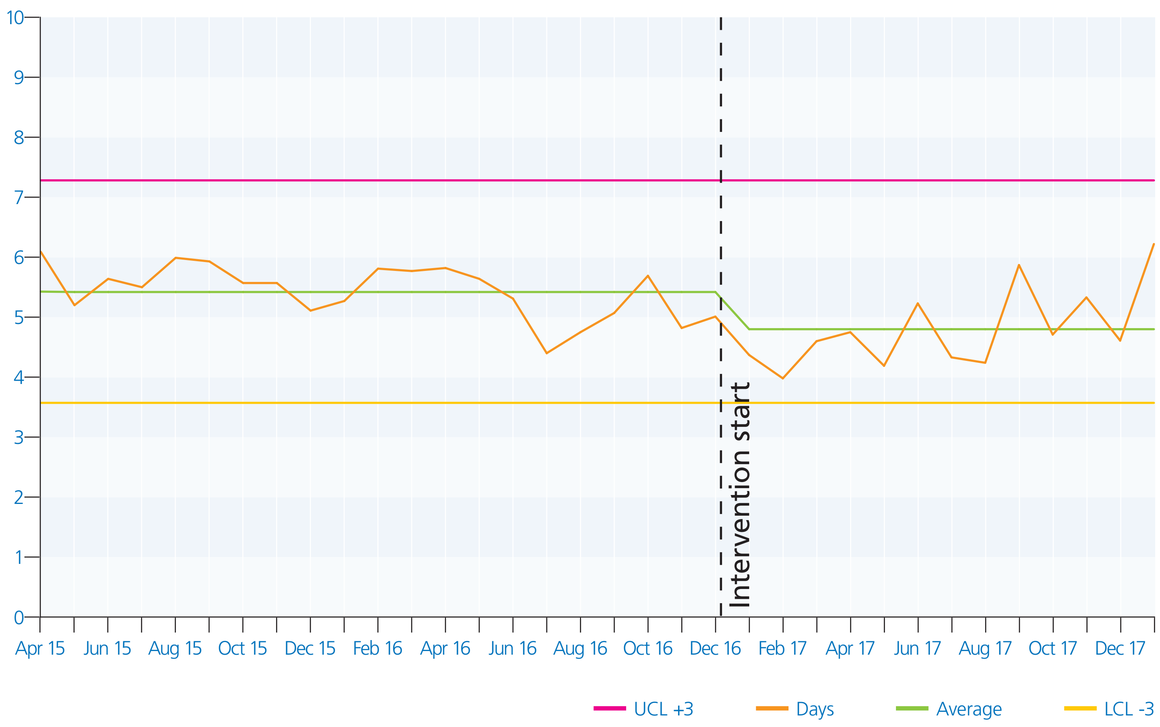
The project aims were to:

- Identify which range of screening tools is a best fit application for these patients.
- Develop and deliver a training package and support materials for staff to identify and manage delirium in elective orthopaedic surgery patients.
- Reduce incidents of delirium and associated adverse effects, to impact LOS.

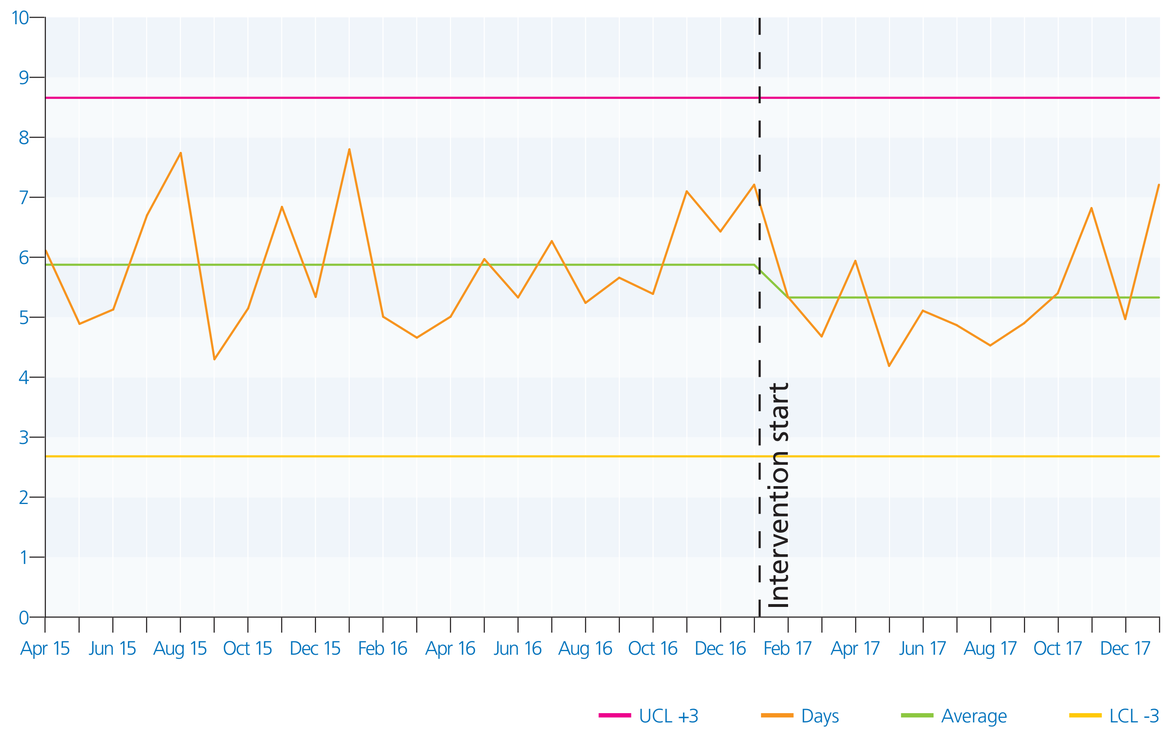
## Measurement of improvement

Comparison of data between the hip and knee groups indicates that a reduction of LOS to knee replacement patients by 1.205 days (Graph 1) and in hip patients of 0.655 days (Graph 2) was achieved. This represents a median reduction of 1.4 days for all patients in these groups.

**Graph 1** LOS for elective knee replacement patients Apr 15 - Dec 17




**Graph 2** LOS for elective hip replacement patients Apr 15 - Dec 17




## Effects of changes

- Saving of 1,015 bed days
- This saved the trust up to £179,200 (depending on optimism bias factor rating)
- Set against the direct nursing costs of a Band 7 DNS at £40,863 – £52,940, this project is cost effective
- HCA costs reduced by 212%
- 63% of patients returned a questionnaire with 78% finding the information about delirium useful
- Potential for national scale up: The AHSN ROI methodology has been applied to a sliding scale of LOS from the national mean of 16 days down to 4.2. Based on optimism bias of 0.4 (lowest level) and a population of 400 (small district hospital input) the model demonstrates that costs could be cut by a minimum value of £704,000. This clearly could be applied nationally leading to millions of savings
- Sustainability – A business plan has been approved to roll out the project across the Trust.

| Days reduction of LOS | Population Treated | Reduction in LOS | Cost per day in patient stay | Optimism bias | Value of reduced LOS |
|---|---|---|---|---|---|
| 16>5=11 | 400 | 1.0 | 400 | 0.4% | 64,000 |
| 16>14=2 | 400 | 2.0 | 400 | 0.4% | 128,000 |
| 16>13=3 | 400 | 3.0 | 400 | 0.4% | 192,000 |
| 16>12=4 | 400 | 4.0 | 400 | 0.4% | 256,000 |
| 16>11=5 | 400 | 5.0 | 400 | 0.4% | 320,000 |
| 16>10=6 | 400 | 6.0 | 400 | 0.4% | 384,000 |
| 16>9=7 | 400 | 7.0 | 400 | 0.4% | 448,000 |
| 16>8=8 | 400 | 8.0 | 400 | 0.4% | 512,000 |
| 16>7=9 | 400 | 9.0 | 400 | 0.4% | 576,000 |
| 16>6=10 | 400 | 10.0 | 400 | 0.4% | 640,000 |
| 16>6=10 | 400 | 11.0 | 400 | 0.4% | 704,000 |

## Lessons learnt

- The intervention has provided an assessment and tailored care management process which has reduced the LOS
- LOS reduction is evidence of the process effectiveness and its effect on the severity of the post-operative delirium and its clinical sequel
- The DNS gave education sessions to the nursing staff on the recognition of delirium
- Consultant Orthopaedic involvement in the project has been crucial, the trust developed between the DNS and the consultant group has enabled culture change
- 78% of patients said the information given to them prior to their operation was useful.

East Midlands Patient Safety Collaborative

**For more information**
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