Measurement for Improvement
A National Quality Profile

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Aim: To explore whether information that is already collected and used as part of the monthly HSE performance reporting cycle can be analysed and presented in a format that allows evaluation and promotion of improvements in quality of care.

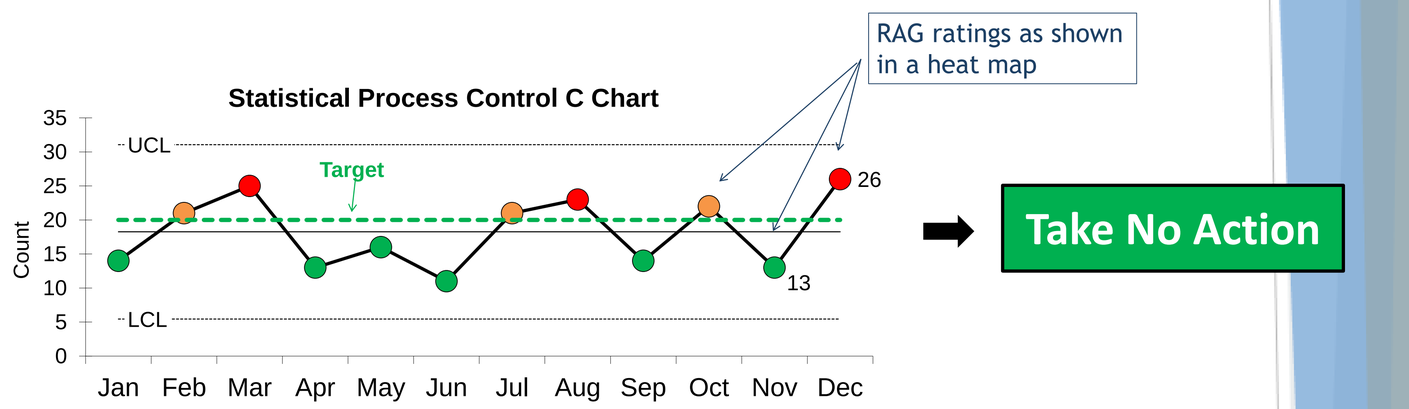
What's the Problem?

There are two common mistakes in interpreting data:

1. **Interpreting noise (or random variation within a normal range) as if it were a signal requiring action**

Month	Nov	Dec	Change
Count	13	26	+100%

➡ **Take Action?**



➡ **Take No Action**

The **Statistical Process Control** (SPC) Chart illustrates that due to chance alone, we can expect the monthly count to be anywhere between 5 and 30. The variation from month to month is common cause variation, and there are no signals of unexpected or special cause variation.

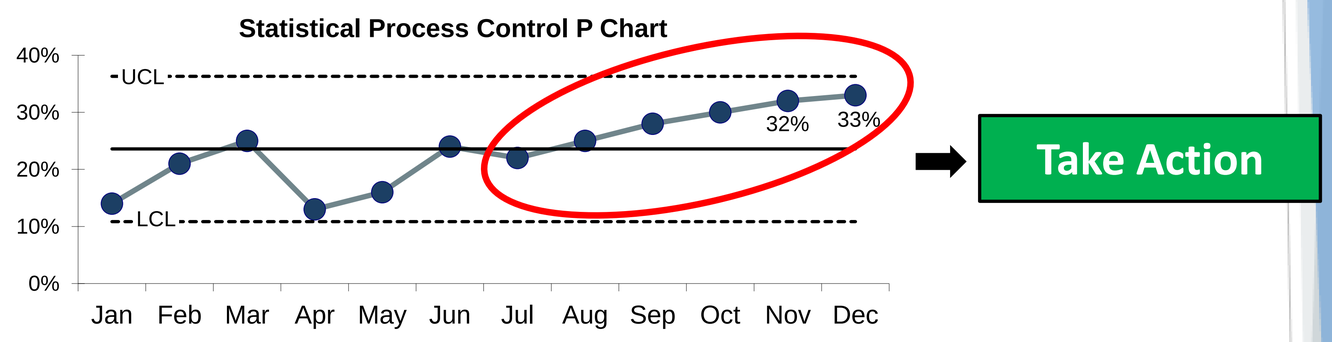
The value for December is within the control limits and although it is an increase of +100% on the previous value, it is not unusual and taking action based on this value could be an overreaction. A large percentage change is not necessarily a signal that requires action.

The SPC chart also shows that using Red, Amber or Green (RAG) ratings can result in values being reported as red, amber or green due to expected variation, potentially leading to overreaction.

2. **Failure to detect (and react if appropriate) to a signal when it is present**

Month	Nov	Dec	Change
Percent	32%	33%	3.1%

➡ **Take No Action?**



➡ **Take Action**

The SPC Chart shows a trend of 6 consecutive increasing points. Using SPC rules based on statistical probability, a trend of 6 increasing or decreasing values is a signal of special cause variation, as this type of pattern is unlikely to occur by chance.

In the example above, this means there is a real change. If this change is in the wrong direction, action should occur now, rather than waiting for the 'target' to be breached.

Examining the percentage change from one month to another does not show this trend, and so there is a failure to detect the signal. Just as large percentage differences do not necessarily indicate signals, small changes do not necessarily imply that a signal is not present.

The value of using Statistical Process Control charts:

Failure to look at data over time and only comparing one time period against another can often result in these two mistakes. The traditional way of comparing a current value to a target or some other previous value does not filter out noise or highlight potential signals.

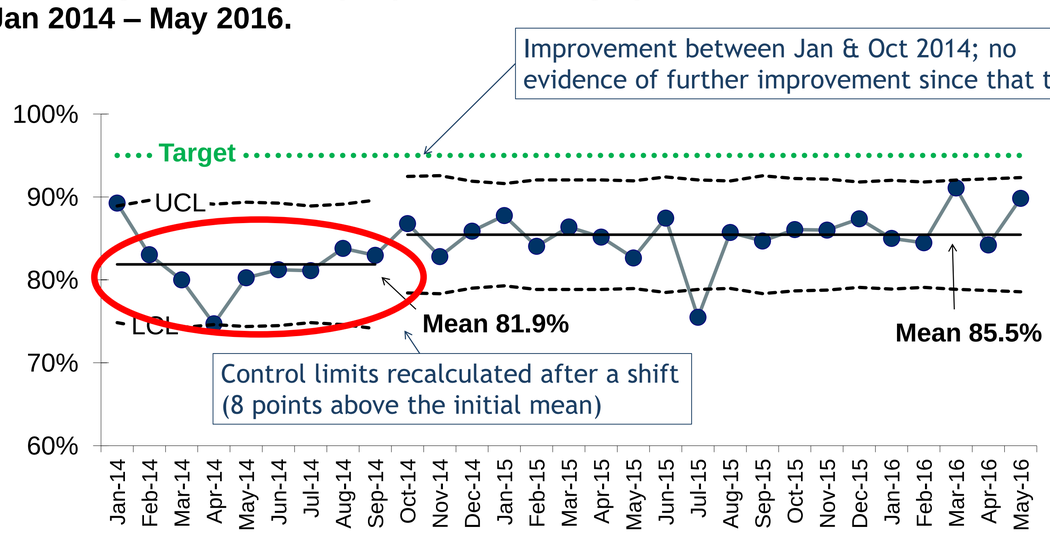
Presenting and analysing data using SPC charts including upper and lower control limits determined by statistical methodology can facilitate greater interpretation and knowledge of the underlying process and can prevent these two common mistakes.

Opportunity to Improve

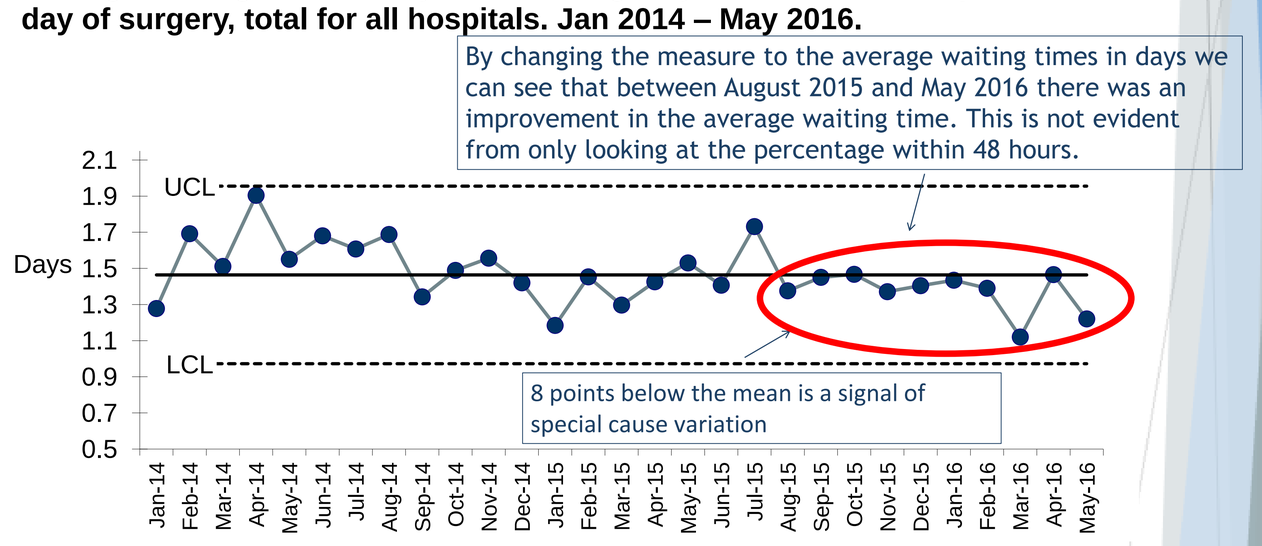
The National Quality Profile, Proof of Concept, presents data at national level in SPC charts displaying the trend over time, and more detailed level data presented in SPC funnel plots to show the variation among organisations. Indicators were described using the ISBAR communication tool, including explanatory text detailing the findings from the analysis of the indicators in SPC charts.

Example from the National Quality Profile:

Percentage of emergency hip fracture surgery carried out within 48 hours. Jan 2014 – May 2016.



Average waiting times in days from emergency admission with hip fracture to day of surgery, total for all hospitals. Jan 2014 – May 2016.



Conclusions: The key benefit of the National Quality Profile is the provision of timely, reliable and comprehensive information that describes the quality of care provided in a way that drives and demonstrates improvement. The National Director of the Quality Improvement Division, and other HSE National Directors and senior managers, are better informed about changes in quality of care by having access to this information.

The next steps will be to evaluate the National Quality Profile and to engage more widely with key stakeholders across the HSE. It is expected that the National Quality Profile will continue to evolve based on feedback and ongoing PDSA cycles.

References

Provost L, Murray S. The Healthcare Data Guide: Learning from Data for Improvement. San Francisco: Jossey-Bass, Publication, 2011

Rocco J Perl, Lloyd P Provost, Sandy K Murray, (BMJ Qual Saf 2011), The run chart; a simple analytical tool for learning from variation in healthcare processes; 20: 46 – 51

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