

Analysis of NNU Mortality Rates

Background

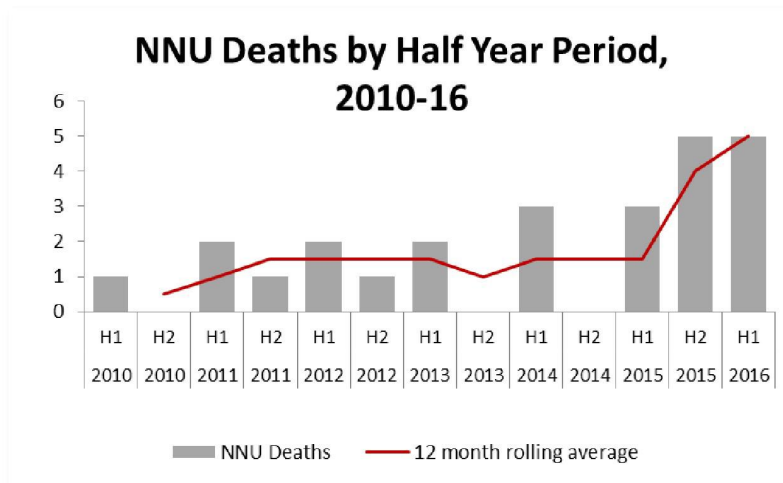
Concerns have been raised by consultants about an apparent increase in mortality rates in the Neonatal Unit. Using the data available from the Badgernet database, this analysis aims to investigate the validity of these concerns.

The analysis has three aims:

1. To review the **level** of any increase in mortality levels in the Neonatal Unit during 2015/16 and whether this represents normal variation or a significant change that breaks with long term trends.
2. To evaluate **activity** levels in the NNU during 2015/16 as a possible contributory factor. Was the unit under more pressure of work during the period?
3. To evaluate certain measures of **acuity** in NNU during 2015/16. Was the condition of neonates admitted to the unit more acute than in previous years?

Step change in NNU deaths compared to long term average

If we look at deaths per half year period, we see a steady mortality rate until H2 2015. The 12 month rolling average shows a sudden increase at this point which continues into the first half of 2016.

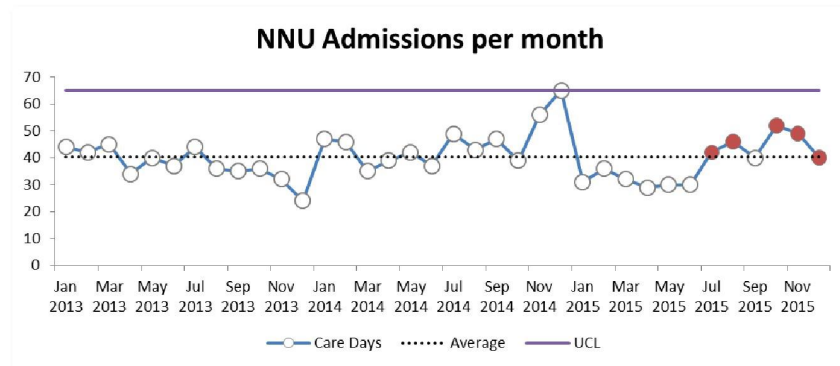


Has the NNU been under more pressure?

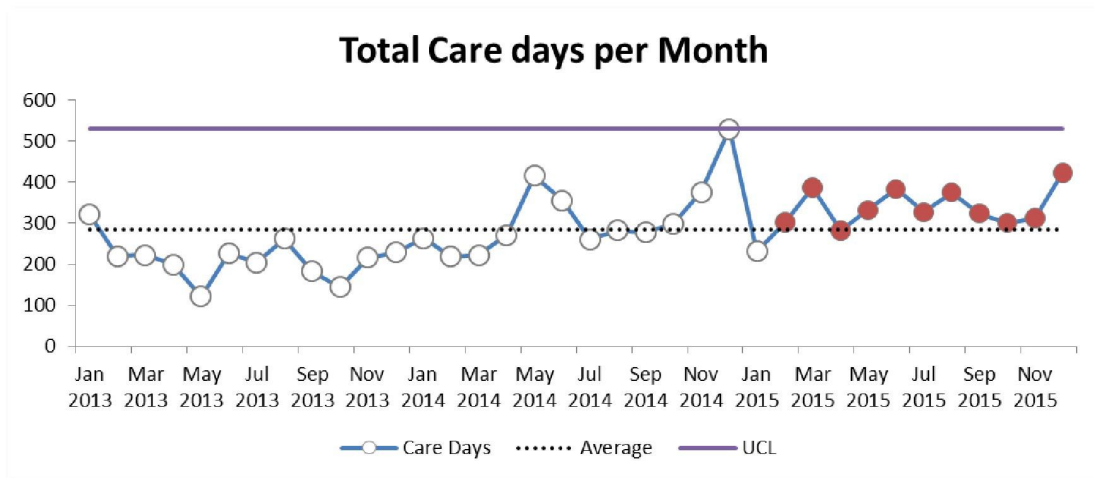
To what extent does the increase in mortality levels reflect a general increase in activity in the NNU? We can get a sense of the pressure of work by looking at monthly admission numbers and Total Care Days per month.

Taking admission numbers first, the graph below shows that over the second half of 2015, the NNU experience higher than average admissions for five out of six months.

Higher admissions may have been a contributing factor but it should be noted that 2014 saw higher admission numbers, including a significant peak in December, without a similar increase in the number of mortalities.



Have total care days per month increased?

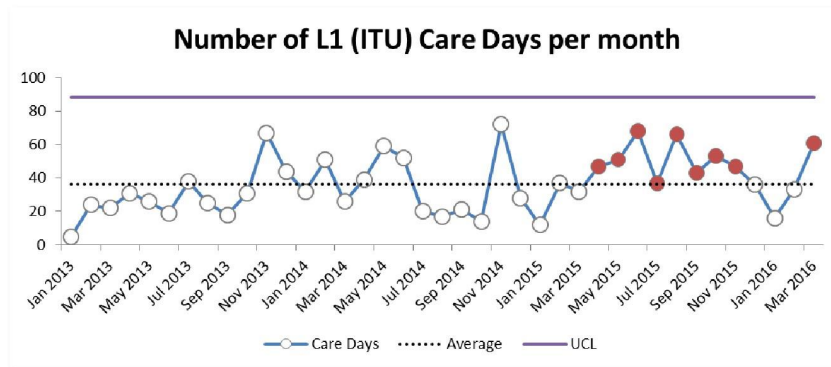


Has acuity increased since June 2015?

It is also possible that the increase in mortality numbers over the period may reflect increased levels of patient acuity.

One measure of this is looking again at Care Days, but specifically at the highest levels of patient Care: Level 1, representing ITU Care Days; and Level 2, representing HDU Care Days.

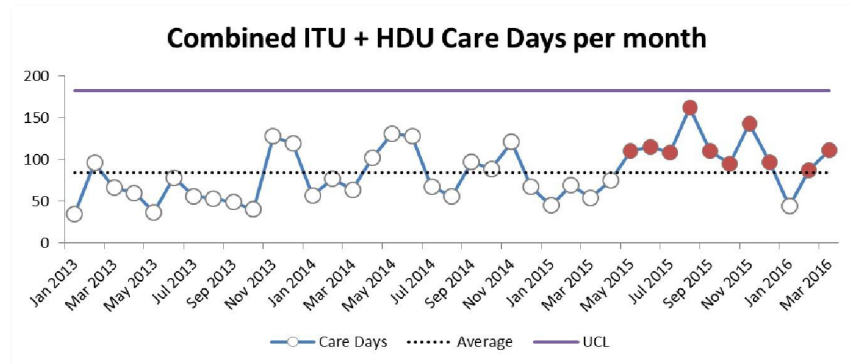
2015/16 shows a sustained increase in the average number of care days at L1. Eight consecutive months are higher than average at L1.



Combined ITU and HDU Care Days

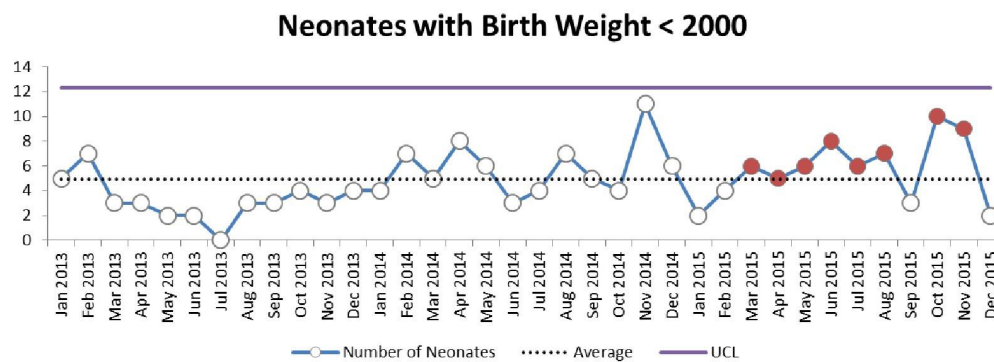
The increase in high acuity care days becomes clear when we combine L1 ITU and L2 HDU days per month. Between May 2015 and March 2016, only one month shows Care Days drop below the long term average.

There have been two and three month fluctuations above the average in previous years, but nothing to match the sustained increase seen after May 2015.



Birth Weight

Another measure of acuity is neonatal birth weight. Monthly figures show that between March and December 2015 there was a higher than average number of babies born in the lowest two categories of weight in all but two months. This would correlate with the increased demand for high level care over the same period.



Staffing Compliance

