After 18 Weeks?

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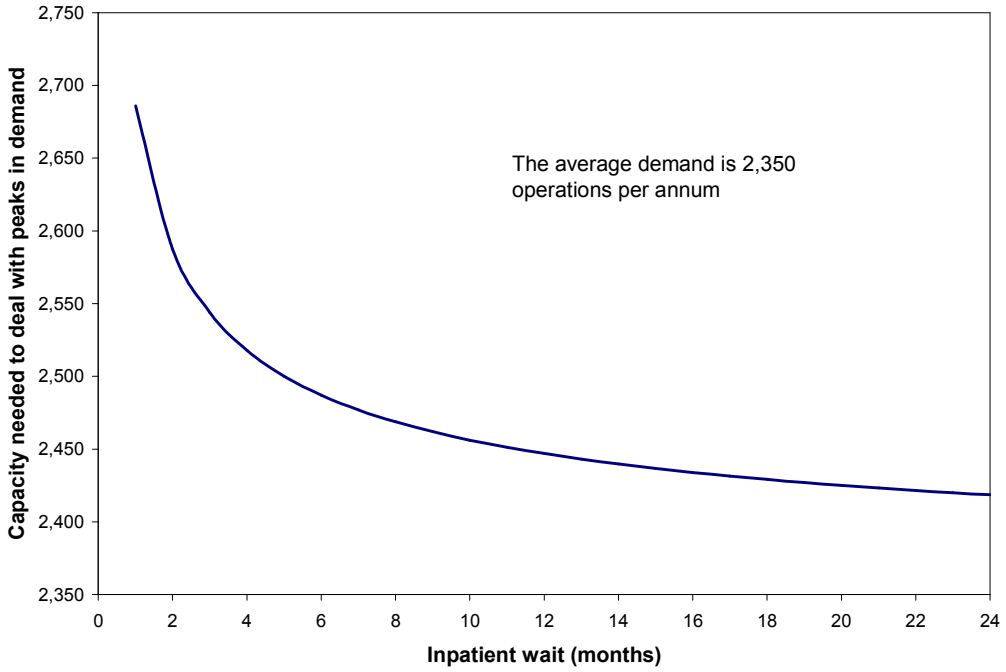
With the achievement of the 18 weeks target in the UK many may be thinking that they can reduce capacity and make cost savings. Is this a reasonable expectation or is it bizarrely possible that it was easier to get to 18 weeks than to maintain it? The explanation of this apparent conundrum lies in the variability associated with demand. Most people would be comfortable with the fact that the variation associated with high volume demand should be lower than for infrequent or low volume demand situations.

The mathematical description of this relationship is given by Poisson statistics. A key relationship defined by Poisson statistics is that the standard deviation (a measure of the variation around the average) is always equal to the square root of the average. By reducing the maximum waiting time that a patient has to wait our demand in the period gets smaller and smaller because we are sub-dividing the bigger annual demand.

Figure 1: Excess capacity required to deliver a guarantee wait as the maximum waiting time reduces.



The available capacity to cope with the peaks in demand due to statistical variation therefore increases in an exponential manner. In such situations the effective available capacity needs to become increasingly greater than the annual average demand in

order to cope with the peaks in demand. Figure 1 gives an example applicable to a medium size specialty.

This figure illustrates an exceedingly pertinent point. The increment in capacity needed to guarantee the maximum waiting time does not change by a large amount between a two year maximum wait and a six month maximum wait, i.e. the equivalent annual capacity only increases by 69.

However for maximum waiting times less than six months the exponential relationship becomes exceedingly important such that at a 1 month maximum waiting time the equivalent annual capacity has had to increase from 2,419 at a 2 year maximum wait up to 2,686 for a one month maximum wait, an increase of 267.

Of even greater relevance is that at a 1 month maximum inpatient wait the equivalent annual capacity is 336 higher than the average! This represents a 14% premium on capacity. The implications to smaller specialties should be apparent.

So how does this relate to the difficulty or otherwise of maintaining 18 weeks. Basically, the temporary capacity margin required by most Trusts to achieve 18 weeks has only been of the order of 3% to 5% above baseline demand. This is considerably lower than the 14% margin shown in the example. So we conclude that indeed it is far easier to get to 18 weeks than it will be to maintain the target.

The above relationship has a profound effect on the cost of delivering care and on capacity planning in general. It is too expensive to provide the capacity surplus implied by the relationship. It is operationally difficult to meet the challenge via increased flexibility since outpatient clinics, etc are fixed as are most theatre lists. The most cost effective solution is to start the year with a small capacity margin and allow the peaks and troughs to offset one another. Corrective action can then be made as necessary. This approach implies knowledge of any seasonal patterns in demand which will be discussed in the next article in this series.