The impact of Parkinson’s disease as a comorbid diagnosis

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Abstract

Clinicians, departments and trusts are compared using Hospital Standardised Mortality Ratios. The benchmarking process makes corrections for patients’ past medical histories, using a tool called the Charlson Index of Co-morbidity. Patients with any of 17 conditions receive an adjustment to their expected mortality and length of stay. Although the weighting of these conditions has been altered to take account of advances in medical practice, there have been no conditions added to the list since Charlson’s original paper of 1986. The Charlson Index of Co-morbidity does not make a correction for Parkinson’s disease. We describe evidence of the impact of Parkinson’s disease as a co-morbid condition and recommend that, in future, benchmarking processes should take account of this important and common diagnosis.

Keywords: comorbidity, Parkinson’s disease, benchmarking, hospital standardised mortality ratio, elderly

Introduction

The issues of care quality and mortality levels were brought into the public eye with events at Mid Staffordshire NHS Trust in 2009. Concerns about the trust arose because of higher than expected hospital standardised mortality ratio (HSMR) as recorded by Dr Foster [1]. Standardised mortality ratios are used to benchmark trusts and to assess the standards of care from individual clinicians, although their use for this purpose has come under recent criticism.

This article looks at Parkinson’s disease in particular. The current benchmarking process takes no account of this common condition. We explore whether Parkinson’s disease has an impact on mortality and length of stay, and whether the benchmarking process should be changed.

How are standardised mortality figures derived?

Quality of care provided by hospitals is currently gauged by statistical analysis of data including mortality, length of stay and readmission rates. Those data are adjusted to take into account variables including sex, age, social deprivation and comorbidities. Thirteen years worth of inpatient and day-case data are used to create the mortality indicators and this information is accumulated routinely for administration purposes. The data analysis is performed by the Dr Foster Unit at Imperial College on a specific day each month, and information is gathered in the form of consultant episodes. Patient diagnosis is derived from 56 diagnostic groups, which contribute to 80% of inhospital deaths in England [2]. The HSMR can be calculated as the ratio of observed to expected deaths, multiplied by 100. If the HSMR is greater than 100, mortality levels in the population being studied are higher than would be expected. The HSMR can be marked on a funnel plot and compared with other trusts over a specific time period. A point falling outside control limits leads to the implication that chance alone is not sufficient to explain the variation and hence the care must be inferior [3].

How is the effect of comorbidity calculated?

One of the measures that attempts to make a correction for case-mix differences is comorbidity. A patient with
dementia, who has been admitted to hospital with pneumonia, is likely to be in hospital longer and has a lower chance of recovery than a non-demented patient of the same age.

At present Dr Foster make an adjustment to the expected outcomes for people who have any of 17 conditions in their past medical history. The reason for admission need not be directly connected to the comorbid disease. The process uses a tool called the Charlson Index of comorbidity, based on research carried out by Charlson et al. in 1986.

Their study was split into two parts; a data gathering section, then a testing component. The data collection aspect looked at comorbidities associated with death at 1 year, and these comorbidities were then applied to see if mortality in another group could be predicted by the weighted index of comorbidities. Comorbid conditions such as HIV, heart disease or cancer were assigned a score of 1, 2, 3 or 6, and a sum of the scores was used to create a value that could predict mortality.

When the original paper was written almost 25 years ago, HIV was given the greatest weight but the mortality from that illness has reduced greatly since. Now the weights have been changed due to advances in medical treatments, and illness has reduced greatly since. Now the weights have been changed due to advances in medical treatments, and adjusted based on English data as a result of coding practice changes.

Under the new system, comorbid conditions are given a weighting from −1 to 18, with a maximum total score of 50 (Table 1).

### What are the effects of Parkinson's disease on mortality and length of stay?

From 1983 to 2008, the number of people over 65 in the United Kingdom has increased by 1.5 million, with the fastest rate of growth in those over 85 [4], so an increased incidence of degenerative conditions such as Parkinson's disease can be expected. As the condition progresses, individuals are more likely to be affected by motor symptoms including gait, speech and swallowing difficulties, autonomic symptoms such as sweating, bladder and bowel disturbance and orthostatic hypotension, and neuropsychiatric complications including depression and dementia [5].

Several studies have shown that Parkinson's disease has a direct influence on mortality, admissions to hospital, and the overall cost to healthcare delivery systems. As the prevalence of PD increases these effects will become more evident. The onset of the illness at any age reduces the life expectancy but it is most marked the earlier the onset [6].

Driver et al. showed that patients suffering from Parkinson’s disease had an increased risk of all-cause mortality, even when compared with individuals who had an identical comorbidity score without Parkinson’s disease. This risk was increased irrespective of disease duration, and did not reduce with increasing age at the onset of the condition [7]. Other variables that are important predictors of mortality include depression and dementia [8].

There is evidence that Parkinson’s disease contributes to increased hospital admissions, longer lengths of stay, reductions in the number of people returning to their own home and increases in the numbers admitted to nursing homes, as demonstrated by Woodford and Walker [9]. Parkinson’s disease can also affect the recovery of patients post-operatively. Along with increasing length of hospital stay after surgery, there are significantly increased incidences of bacterial infections, aspiration pneumonia and urinary tract infections [10].

### Why is Parkinson's disease not part of the Charlson Index?

Conditions that did not make it into the original list for index of comorbidity have not been included in any subsequent analysis, leading to the original error being carried forward. The authors of the Charlson paper did recognise that numbers for some conditions were small and recommended further work in larger populations [11]. The study recorded only five patients with Parkinson’s disease in the entire hospital in 1 month, but those patients had a 40% 1 year mortality. It is likely that the diagnosis of Parkinson’s disease is more common than it was in the 1980s. An audit of inpatient Parkinson’s disease medication at our hospital in 2008 identified 59 patients over 3 months using Pharmacy records of treatment alone.

### Conclusions

The early detection of underperforming trusts and individuals is essential for the improvement of services. Equally, it is vital that those that are performing well do not have incorrectly elevated standardised mortality rates. In order to do this it is important that benchmarking tools are used appropriately.

Parkinson’s disease has been shown to significantly affect outcome measures such as mortality and length of stay.
stay for diagnoses that are not directly connected to Parkinson's itself. The original Charlson study reported 40% 1 year mortality for those with the condition but the numbers were low. As the prevalence and recognition of Parkinson's increases, we propose that the benchmarking tools should be redesigned to make an adjustment for Parkinson’s disease.

Key points

- Benchmarking is a widespread integral part of assessing quality of care delivered by clinicians, departments and trusts.
- Parkinson's disease is a common condition with significant effects on morbidity, mortality and length of hospital stay.
- Increasingly clinicians are assessed and compared using processes that do not take into account a condition that could make a major impact on HSMRs.

Conflicts of interest

None declared.

References

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