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Identifying inefficiency: Why do costs differ from one hospital to another?

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Summary

With NHS funding becoming tighter it is imperative to identify inefficient practice. We have a robust method to compare hospital costs based on analysis of every patient treated. We are able to determine what factors drive differences in costs between patients and across hospitals and we can identify high cost hospitals that need to take action.

Introduction

We can secure better value for money in the hospital sector by identifying and eliminating inefficient practice. Crude indicators, such as the Reference Cost Index, suggest that inefficiency is widespread. But such indicators suffer two drawbacks:

- Apparent 'inefficiency' may be due to a failure to account adequately for such things as patient complexity.
- Labelling a hospital as inefficient is not the same as identifying the source of the problem – is inefficiency across the board or limited to specific areas of operation?

Our recent research addresses both drawbacks. We take account of patient complexity by analysing the characteristics of each patient admitted to hospital, and we focus our attention on care provided to specific types of patients. Here we summarise our research into obstetrics departments and diabetes patients.

Data

Our analysis is based on the Hospital Episode Statistics (HES), which contain details about every patient admitted to English hospitals. We identify the cost for each patient by linking their HES record to the Reference Cost information compiled by their hospital.

In our obstetrics study, we assess the costs for almost 1 million patients admitted to 136 obstetrics departments. Figure 1 shows 136 vertical sets of points, made up of the costs for patients in each department. There is considerable variation in costs among obstetrics patients.

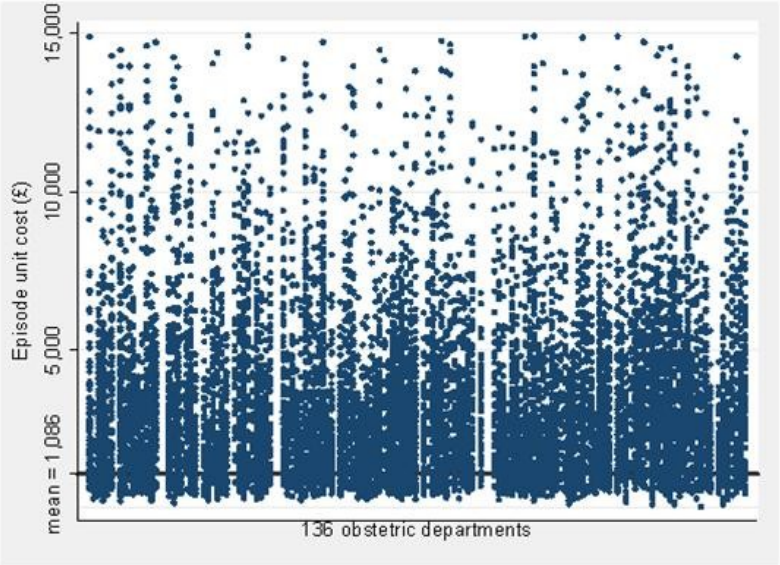

Figure 1: Patient costs by obstetrics department

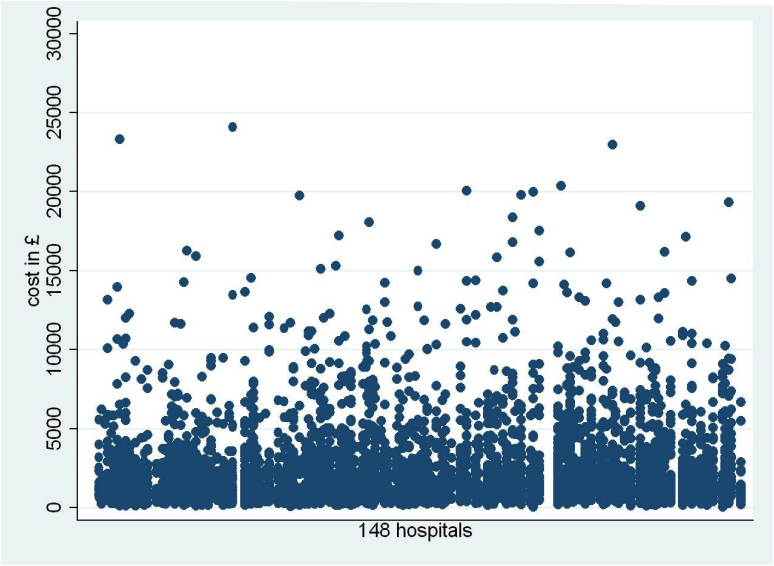

Figure 2: Costs for diabetes patients by hospital

Figure 2 plots costs for more than 31,000 patients admitted to 148 hospitals with a primary diagnosis of diabetes. Again, there is wide variation in the cost of treating diabetes.

We explore why this variation arises – are higher costs explained by patient characteristics or are they due to the hospital where they were treated?

Why do some patients have higher costs than others?

Healthcare Resource Groups (HRGs), which are used as the basis for paying hospitals, are supposed to be 'resource homogeneous' – patients in the same HRG should have the same cost. Our analysis shows that HRGs explain most of the variation in costs among obstetrics and diabetes patients. This suggests that they are a sound basis for setting tariffs.

But HRGs are not perfect. We use HES data to consider other diagnostic characteristics of patients that might explain their costs. We also account for infections and in-hospital deaths and, in the obstetrics study, for birth weight and still-births, all of which may be indicators of quality.

Over and above their HRG, costs for obstetrics patients are higher if they had pre-eclampsia, eclampsia, diabetes, suffered an infection, or came from more deprived communities. Costs are lower if the patient had an abortion or suffered perineal laceration.

The influence of diagnostic characteristics on costs is greater for obstetrics patients with long lengths of stay. This demonstrates the need for an additional 'outlier' payment on top of the standard tariff for long-stay patients.

Over and above their HRG, the cost of treating diabetes is higher for patients transferred between hospitals, for those who have an infection or complications of the feet or lower limbs, and for those who die in hospital.

Are costs higher in some hospitals than others?

After accounting for the characteristics of their patients, some obstetrics departments still have higher costs than others. Why is this? We find that:

- Costs for obstetrics departments are lower in hospitals with separate neonatology units, probably because more expensive neonatal care is provided there rather than in the obstetrics department.
- There is some evidence that costs are lower in larger departments, but not substantially so.
- Costs are higher in departments that face higher staffing costs, which is recognised by the Market Forces Factor.

- While premiums to insure against clinical negligence claims help explain the cost per birth, they do not explain why costs differ among departments. This implies that premiums are similar across departments.

Most of the variation in the cost of treating diabetes patients is due to their characteristics not to the hospital in which they are treated. Even though hospitals manage diabetes in different specialties this has limited impact on the costs of care. Variation in costs across hospitals is explained by differences in the staffing costs they face.

Which obstetrics departments are most expensive?

Once we have taken account of differences in patient characteristics and in staffing costs, we rank obstetrics departments according to their average costs. Figure 3 shows this ranking together with 95% confidence intervals.

We assess whether ranking is sensitive to consideration of all obstetrics patients, only long-stay patients, or just maternity patients. The same departments are consistently identified as having the lowest and highest costs. Five obstetrics departments are routinely among the ten most expensive whatever sample of patients is considered.

On average, patients in these departments cost at least £550 more than the national average. In one department costs are more than £900 more than the national average.

It could be that these departments have simply made mistakes in allocating costs to obstetrics, which would be quite easy to rectify. But it does suggest that these hospitals do not scrutinise their costs, and are likely to have a limited understanding of the relationship between their costs and their income.

If the problem is not one of cost allocation, the sources of higher costs may be more fundamental, with an on-site review required to reveal their nature. It is beholden upon such departments to act because they will be losing money and should make efforts to bring their costs in line with the national tariff.

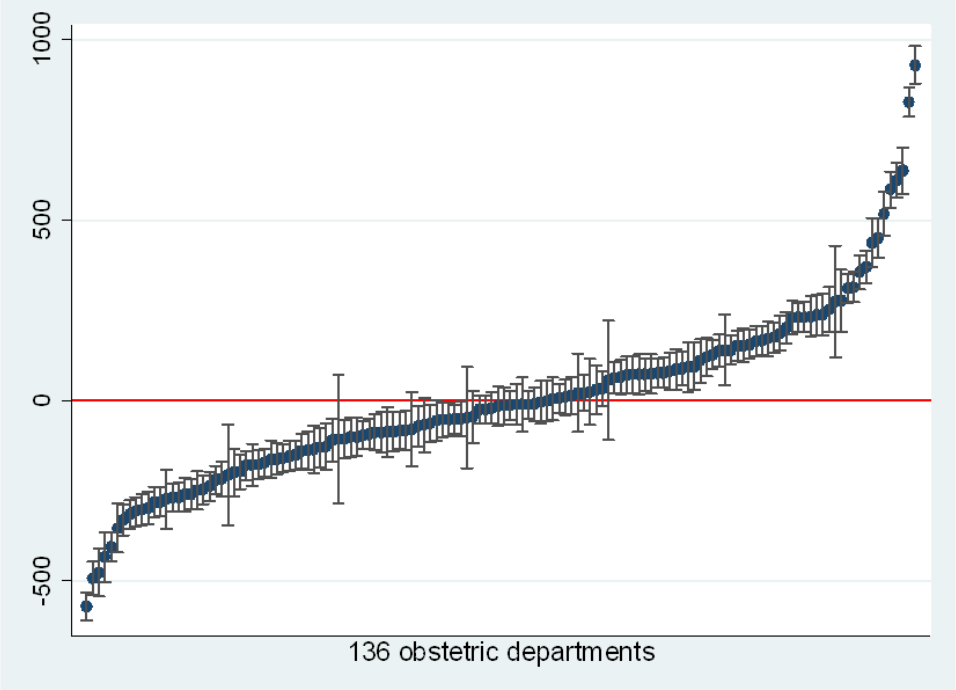

Figure 3: Ranking of obstetrics departments (0 = national average)

Conclusions

HRGs do a good job in explaining why costs vary from one patient to another. Version 4 HRGs is expected to offer further improvements.

Even so, there are other patient characteristics over and above their HRG that explain costs.

These characteristics are particularly important in explaining the costs of long-stay patients. This demonstrates the need for additional payments for patients who stay beyond their HRG trimpoint.

Infections are expensive, raising the cost of diabetes care by some £150-£200 and of obstetrics by £185-£250. Costs are £300 higher if a maternity patient suffers infection. This is considerable given that the tariff is around £850 for a normal delivery. Improved infection control should both improve patient care and reduce costs.

After taking account of patient characteristics and geographical differences in staffing costs, there is little variation among hospitals in the costs of treating patients admitted because of their diabetes.

In contrast, there is considerable variation in costs among obstetrics departments. This variation in costs is not explained by the type of patients treated, staffing costs or insurance premiums.

Obstetrics departments identified as having high costs should take steps to rectify matters.

For further information:

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http://www.york.ac.uk/inst/che/

Full details of the research are available here:

Laudicella M, Olsen KR, Street A. What explains variation in the costs of treating patients in English obstetrics specialties? CHE Research Paper 49; 2009.
http://www.york.ac.uk/inst/che/pdf/rp49.pdf

Kristensen T, Laudicella M, Ejersted C, Street A. Cost variation in diabetes care delivered in English hospitals. Paper presented at the Health Economic Study Group Meeting, Sheffield 22-24 July 2009.

Acknowledgements

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