

## Theory of harm 1: Local competition

### Introduction

1. This appendix relates to theory of harm 1 and sets out our analysis to date of local competition between hospitals. We first identify hospitals of potential concern by using weighted average market shares as well as catchment area analysis and fascia counts (hospitals of the same hospital group counted as one fascia). We then examine if there is a relationship between local competition and self-pay prices, ie whether less competition leads to higher prices. Finally, we describe what further analysis we have carried out to date for London.
2. More technical explanation are provided in the annexes:
  - Annex 1 sets out the methodology we have used on weighted market shares and catchment areas/fascia counts.
  - Annex 2 gives a fuller account of 'LOCI', a concentration measure which is the basis of our use of weighted market shares.
  - Annex 3 sets out our work so far on price concentration analysis (PCA) which examines the relationship between local competition and self-pay prices.

### Hospitals of potential concern

3. We first set out our methodology and then our initial findings.

### Methodology

4. We have undertaken a quantitative assessment of competition in local areas to create filters for the purpose of identifying hospitals that are located in the more concentrated areas. These hospitals are referred to as 'hospitals of potential concern' and will be subject to further investigation. We have used two approaches to measuring concentration and to construct the filters:
  - (a) weighted average market shares (by patient admissions and revenue) which is similar to LOCI; and
  - (b) catchment areas and fascia counts—a hospital's fascia count is computed by summing the number of competitors that lie within the hospital's catchment area; a competitor is defined as one or more hospitals/PPUs that belong to the same rival operator; hospitals belonging to the same hospital group do not compete with each other. We have calculated catchment areas around each hospital where the catchment area is determined by the distance travelled by 80 per cent of the hospital's patients.<sup>1</sup> Most hospitals have a catchment area between 10 and 25 miles.
5. We recognize that there are limitations with these approaches, particularly with catchment areas/fascia counts, and we will be considering these limitations further.

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<sup>1</sup> The CC and OFT have used catchment areas based on an 80 per cent distribution in a number of their inquiries.

6. Our analysis has focused on:
- (a) 215 general private hospitals and PPUs providing inpatient care<sup>2</sup> and active in one or more of the 16 specialties,<sup>3</sup> and
  - (b) 126 general and specialized private hospitals and PPUs providing oncology, where this could be analysed separately.<sup>4</sup>
7. Based on our survey evidence, we have not included NHS hospitals in our fascia count. 68 per cent of self-pay patients considered having their treatment on the NHS, 31 per cent did not. The respective proportions for PMI patients were 19 per cent and 80 per cent.<sup>5</sup> When asked which other hospital they would have used if the hospital they did use was not available, 67 per cent of self-pay patients said they would have used another private hospital or PPU (85 per cent when unallocated answers are allocated) and 12 per cent said they would have used an NHS hospital (15 per cent when unallocated answers are allocated). In response to the same question, 76 per cent of PMI patients said they would have used another private hospital or PPU (96 per cent when unallocated answers are allocated) and 3 per cent said they would have used an NHS hospital (4 per cent when unallocated answers are allocated).<sup>6</sup> The competitive interaction between private hospitals/PPUs and NHS hospitals could be different in London, due to the presence of highly specialized/high acuity private and NHS hospitals (see paragraph 19).
8. We have identified as hospitals of potential concern:
- those with a weighted average market share, by patient numbers and revenue, of 40 per cent or higher (which corresponds to a LOCI measure lower than 0.6); and
  - those that face one or no competing fascia in their catchment area.

We have not yet formed any firm view on the most appropriate levels for these thresholds.

### ***Initial results***

9. We have found 147 hospitals of potential concern.<sup>7</sup> Our weighted average market share approach identified 122 hospitals of potential concern (116 based on shares using number of patients and a further 6 based on revenue share) and our fascia count approach identified an additional 25 hospitals of potential concern (19 based on our 16 specialties and a further 6 based on oncology).
10. Following this filtering process we will carry out more detailed examination of the hospitals of potential concern identified. We may then find that we have no local competition concerns about some of these hospitals.

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<sup>2</sup> All private general hospitals with inpatient care owned by BMI, HCA, Nuffield, Ramsay and Spire; 19 of the largest other private general hospitals with inpatient care (including Aspen and Circle); all general PPUs with inpatient care managed by BMI, HCA, Ramsay and East Kent Medical Services; the 40 largest general PPUs with inpatient care by revenue across the UK.

<sup>3</sup> Obstetrics and gynaecology, General surgery, Trauma and orthopaedics, Anaesthetics, Urology, Gastroenterology, Ophthalmology, Otolaryngology, Dermatology, Plastic surgery, Cardiology, General medicine, Neurology, Oral and maxillofacial surgery, Rheumatology, Clinical radiology.

<sup>4</sup> Oncology was grouped with the other specialties for the weighted average market shares and the catchment area delineation but was analysed separately from the 16 other specialties in the fascia count.

<sup>5</sup> Source: B2, Patients Survey.

<sup>6</sup> Source: D6, Patients Survey.

<sup>7</sup> Some of the identified hospitals of potential concern will be in the same geographic areas (eg pairs of hospitals each with one competing fascia will, in some cases, be located near to one another).

11. There may be pockets of market power for some hospitals that have not been identified by this methodology (eg for particular specialties or services). As explained in paragraph 19, this may apply in particular to (central) London.
12. There may be two broad categories of adverse effects as a result of local market power: those at the local level and those at the hospital operator level. Adverse effects at the local level could be higher prices for self-pay patients and/or lower service quality for all patients. Adverse effects at the hospital operator level could be higher prices for insured patients. The analysis of the latter is discussed under theory of harm 3.

### **Relationship between local competition and self-pay prices (PCA)**

13. We first set out our methodology and then our preliminary findings. These are subject to a number of robustness and sensitivity tests which are yet to be carried out and, depending on the results of these tests, our findings might change.

### **Methodology**

14. We have used prices for self-pay inpatients only. Our price measure, which we call the 'episode price', is the total price paid by a patient for hospital services during a single visit to hospital. It excludes consultant fees and, in so far as possible, ancillary items such as food. Our hospital-specific data covers the five large private hospital groups—BMI, HCA, Spire, Ramsey and Nuffield.
15. Our pricing analysis is carried out on eight treatments.<sup>8</sup> Our treatments cover five specialties, and two of our chosen treatments (cataract surgery (C7122) and hip replacement (W3712)) were included in the OFT's seven indicator treatments. Our eight chosen treatments are the top eight by patient visits in our cleaned self-pay hospital data set. They account for about 68 per cent of the data by patient visits and about 43 per cent by revenue. We will further explore whether these treatments are representative of self-pay patients.
16. As in our local competition analysis, we have used two measures of concentration—weighted average market shares and fascia counts. We have used a single fixed catchment area for all hospitals but we have split this into three bands—9 miles, 17 miles and 26 miles. The catchment areas and the weighted average market shares are based on insured, and not self-pay, data. In the regression using shares, we have used 'one minus the weighted average market shares', which we refer to as LOCI.
17. Our work to date has used one regression incorporating data from all hospital groups and all eight focal treatments, which produces one estimate of the average relationship between price and concentration. The dependent variable is the episode price per patient. We have used four groups of control variables, ie to account for factors other than competition, which may influence prices. These are:
  - (a) dummy variables for year, hospital group, treatment;
  - (b) patient age, patient gender, patient stay length (number of nights);

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<sup>8</sup> Hip replacement (W3712), knee replacement (W4210), gastric banding (G3080), prostate resection (M6530), removal of gallbladder (J1830), rhinoplasty following trauma (E0260), inguinal hernia surgery (T2000) and cataract surgery (C7122). The codes in brackets are the CCSD codes.

- (c) hospital average direct costs; and
- (d) dummy variables for geographic area of hospital.

### **Initial results**

18. We have found a statistically significant relationship between self-pay price and concentration, indicating that self-pay prices are expected to be, on average, higher in more concentrated local markets. This is based on the regression using weighted average market shares as the concentration measure. These results are subject to further analysis and tests, which means that our findings could change. However, our work to date may provide an indication of the possible impact on self-pay prices of changes in local market concentration—for example, increases in the LOCI of around 0.20 (which can be thought of as two equally-sized hospitals being replaced with three equally-sized hospitals) may result in an average decrease of around 5 per cent in self-pay prices.

### **Further work on London**

19. Our local analysis has identified some hospitals of potential concern in London. However, we are concerned that it may not fully capture the extent of any competition problems in London, possibly due to some specificities of the London area, eg different set of specialities and services offered (high acuity/tertiary treatments), heterogeneity across hospitals and patients travelling from areas of the UK which are outside London.
20. As a starting point, we have looked at each hospital operator's profile in terms of its share of theatres (as a proxy for capacity), intensive care units, patient admissions and revenue (in total and by certain specialities) among hospitals located in Greater and central London. These shares provide an indication of the relative size of each operator established in the London area.<sup>9</sup>
21. This preliminary analysis shows that in Greater London a small number of private hospital groups and PPUs account for a large share of the number of theatres.<sup>10</sup> The number is smaller in central London. The same picture emerges with regard to the number of hospitals with ICU at critical levels 2 and 3 serving private patients. There are fewer hospitals with ICU at critical level 3 than critical level 2 serving private patients in central London than in Greater London. In terms of shares of patient admissions and revenue, PPUs have much smaller shares than private hospitals.
22. This analysis also shows that HCA is the largest competitor operating in the London area, particularly in terms of shares of patient admissions and revenue, and if central London is considered. HCA appears to be particularly strong in a number of specialities, including, for example, cardiology, gastroenterology, oncology and radiology.

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<sup>9</sup>These shares should not be interpreted as market shares, to the extent that we have not defined the boundaries of Greater London or central London as geographic markets.

<sup>10</sup>In the case of PPUs, theatres at the NHS hospital are used mainly for NHS patients, so the shares by theatres held by PPUs are overestimated. This is reflected in the much lower PPU shares of patient admissions/revenue.