Accuracy of Centrally Recorded OPCS Codes for Vascular Surgery in the United Kingdom


ⅠRoyal Berkshire Hospital, Reading, ⅡSt James's University Hospital, Leeds, ⅢNorth Staffordshire Hospital, Stoke, ⅣEast Glamorgan Hospital, South Wales and ⅤRoyal Bournemouth Hospital, Bournemouth, U.K.

Aim: centrally recorded OPCS codes are based upon strict returns. The aim of this study is to determine the accuracy of this system with regard to vascular surgery.

Methods: prospectively recorded audit data for vascular and endovascular procedures were compared with those obtained from the Department of Health and Welsh Office. Five U.K. hospitals were involved in the study. Data were obtained for the twelve months, 1 April 1994-30 March 1995 (these being the most up to date figures available)

Results: the total number of arterial reconstructions based on audit data was 1082. Those recorded by the OPCS codes were 743. This represents a discrepancy of -31.3% (range for the five hospitals -13.1% to -63.8%). When examining specific codes similar discrepancies were seen. For example, in one hospital 38 AAA repairs were carried out but only two were centrally recorded. However, examination of ICD9 codes (relating to hospital admissions) for that hospital showed that 38 patients with AAA were admitted. A similar wide variation was seen when examining iliac and superficial femoral artery endovascular procedures. Despite the discrepancies of audit and OPCS data, the codes for reconstructions did reflect relative workload of the different hospitals.

Conclusion: this study shows that there is a marked underestimate of vascular workload when comparing central recorded data with that obtained from local audit. Marked variation is seen in the accuracy of data submitted from different hospitals.

Introduction

The purpose of International Classification of Disease (ICD) and Office of Population Censuses and Surveys (OPCS) codes is to support and facilitate health care service management. To achieve this, data collected must be accurate. Codes allow a statistical analysis of diseases and procedures. They are also used to define Healthcare Resource Groups (HRGs) which influence NHS contracting mechanisms. HRGs are being used as a "benchmark" comparing efficiency of hospitals on a national basis. These figures are also being used to determine the training availability to specialist registrars.

Precise details of data collection will vary from hospital to hospital. However, the principle is to base ICD or OPCS codes on discharge summaries. Some hospitals extract data directly from case notes. In the event that data are not available from the discharge summary, then casenotes are examined or the relevant doctor contacted. If it is still impossible to obtain sufficient information, then the NHS Centre for Coding and Classification (NHSCCC), at Loughborough is contacted. This process is known as terming and defines Read codes. Once sufficient data are obtained ICD and OPCS codes are established by referral to the appropriate code books. Codes are then entered into the Patient Administration Database from which contract allocations, HRGs and pricing are all carried out on a monthly basis. Data are submitted to the Department of Health or Welsh Office on a quarterly basis.

Clearly, there are several steps where errors can occur. The aim of this study is to determine the accuracy of this system with regard to vascular procedures in five hospitals in the U.K.

Methods

The five hospitals participating in the study were the Royal Berkshire Hospital, Reading, St James’s University Hospital, Leeds, North Staffordshire Hospital,
Table 1. Accuracy of recorded codes for arterial reconstruction. The percentage difference is audit-code x 100%. A negative value indicates an underestimate by the code, a positive value an overestimate.

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Abdominal aortic aneurysm</th>
<th>Femoral artery reconstruction</th>
<th>Total reconstructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code L18,19</td>
<td>%Difference</td>
<td>Code L59</td>
</tr>
<tr>
<td>1</td>
<td>34</td>
<td>31</td>
<td>-8</td>
</tr>
<tr>
<td>2</td>
<td>46</td>
<td>27</td>
<td>-41.3</td>
</tr>
<tr>
<td>3</td>
<td>81</td>
<td>54</td>
<td>-33</td>
</tr>
<tr>
<td>4</td>
<td>38</td>
<td>2</td>
<td>-95</td>
</tr>
<tr>
<td>5</td>
<td>113</td>
<td>114</td>
<td>+0.9</td>
</tr>
<tr>
<td>Total</td>
<td>312</td>
<td>228</td>
<td>-26.9</td>
</tr>
</tbody>
</table>

Table 2. Accuracy of recorded codes for percutaneous transluminal angioplasty.

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Iliac angioplasty</th>
<th>Femoral angioplasty</th>
<th>Total angioplasties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code L54.1</td>
<td>Code L63.1</td>
<td>Audit Code</td>
</tr>
<tr>
<td></td>
<td>%Difference</td>
<td>%Difference</td>
<td>%Difference</td>
</tr>
<tr>
<td>1</td>
<td>57</td>
<td>38</td>
<td>-33.3</td>
</tr>
<tr>
<td>2</td>
<td>112</td>
<td>5</td>
<td>-95</td>
</tr>
<tr>
<td>3</td>
<td>61</td>
<td>29</td>
<td>-52</td>
</tr>
<tr>
<td>4</td>
<td>64</td>
<td>6</td>
<td>-77.7</td>
</tr>
<tr>
<td>5</td>
<td>49</td>
<td>18</td>
<td>-63.2</td>
</tr>
<tr>
<td>Total</td>
<td>306</td>
<td>96</td>
<td>-68.6</td>
</tr>
</tbody>
</table>

Results

Table 1 shows the comparison of audit and OPCS codes for total abdominal aortic aneurysm (AAA) repair, femoral artery reconstruction (this includes femorofemoral cross over grafts and femoropopliteal and distal bypasses) and total reconstructions. Table 2 shows data for iliac, femoral and total percutaneous transluminal angioplasty (PTA).

Reconstruction

A total of 1082 reconstructions were noted from the audit data. This compares with 743 for OPCS codes, an error of -31.3%. The range of errors for the five hospitals varied from -13.1 to -63.8. In none was there a recorded overestimate of operations performed. Figure 1 shows audit versus code for each hospital. It can be seen that despite the errors the codes reflect the relative number of reconstructions carried out in each hospital (correlation coefficient 0.9400, p<0.017).

Examination of the data for total AAA and femoral reconstructions (Table 1) shows that, in all but one instance, there is an underestimate of work carried out. Anomalies were identified. For example, in hospital 4, whilst 38 AAA repairs were carried out, only two were recorded on OPCS data. However, examination...
Accuracy of Centrally Recorded OPCS Codes for Vascular Surgery in the United Kingdom

The present study demonstrates variable accuracy between different hospitals and between types of procedure carried out in those hospitals. For example, reporting of endovascular procedures was far less accurate than that for operations. Surprisingly, the reporting of specific codes for AAA (L18, L19) was less accurate than for the rather less specific code L59 relating to femoral artery reconstruction. We have also identified some anomalies in reporting with some procedures being "credited" to adjacent hospitals.

Percutaneous transluminal angioplasty

There were 838 PTAs identified by audit, but only 351 were recorded by OPCS code. This represents an overall error for the five hospitals of ~58%.

There was a wider range of errors for endovascular compared with reconstruction data (~1.9–98%). Furthermore, as Fig. 2 shows the relative number of procedures carried out in each hospital was not reflected by the codes (correlation coefficient 0.2240, \( p = 0.717 \)). Anomalies were again identified. In hospital 2 angioplasties at the time of the study were being carried out by non-vascular radiologists. Also, recorded codes for hospital 4 seem to have been "credited" to an adjacent hospital. Codes recorded that 53 angioplasties were carried out in that hospital despite the fact that there were no facilities there for angioplasty and none were performed. In fact patients had been transferred to hospital 4 to have the procedure performed and then returned to the adjacent hospital.

Discussion

As long ago as 1980 it was reported that ICD and OPCS codes produced by Hospital Activity Analysis were 20% inaccurate.\(^6\) This related to general surgery but the position with regard to surgical subspecialties is no better. In plastic surgery it was found that agreement between coders only occurred in about 60% of both diagnostic and procedure codes.\(^7\) This disagreement was even more pronounced when a patient had more than one diagnosis or operative procedure. These coding errors may account for some of the apparent differences in HRGs identified between different vascular units.\(^8\)

The present study demonstrates variable accuracy between different hospitals and between types of procedure carried out in those hospitals. For example, reporting of endovascular procedures was far less accurate than that for operations. Surprisingly, the reporting of specific codes for AAA (L18, L19) was less accurate than for the rather less specific code L59 relating to femoral artery reconstruction. We have also identified some anomalies in reporting with some procedures being "credited" to adjacent hospitals.

Codes have also been used by vascular surgeons to examine changes in vascular practice with time and to compare activity between different areas.\(^9\)–\(^12\) Little information exists as to the validity of data obtained. Tuns et al. (1991) studying vascular activity in Maryland suggested that coding may "slightly underestimate" the numbers of lower limb angioplasties being carried out.\(^13\) On the other hand, Mattes et al. (1997) found that coding overestimated the numbers of bypass grafts carried out in Western Australia.\(^14\) Using OPCS data to compare operative procedures between different regions is probably valid, since our study shows that the data for reconstruction reflects the different numbers of procedures being performed in different hospitals. OPCS codes for AAA repair and femoral artery reconstruction, recorded in one hospital over 5 years, though inaccurate by about 10%, nevertheless reflected fairly accurately the trend of what was actually happening.\(^15\)

It is clear from our study that OPCS codes considerably underestimate the actual amount of vascular activity being carried out. Endovascular procedures are less well documented than surgical reconstructions. Furthermore, there is marked variation in accuracy of recording between different hospitals. Since contracts depend upon HRGs, which in turn depend upon coding, costing can only be accurately carried out if the codes are correct. Differences in HRGs between hospitals may be as a result of inefficient coding rather than inefficient clinical management.

National reporting of vascular procedures is carried out in some countries. For example, the Swedish Vascular Registry (Swedvasc), which serves as a national audit, has also been shown to have benefit in terms of decision making.\(^16\) U.K. vascular surgeons need to follow this example. Not only will this produce accurate figures of vascular workload, but also where
obvious errors are encountered with centrally recorded codes these can be refuted.

References

1. Read JD, Sanderson HF, Drennan TM. Termung, encoding and grouping. Medinfo 1995; 56-59
5. International Classification of diseases 9th Edition

Accepted 29 April 1998