The RCP stroke audit package in practice

ABSTRACT—This paper describes the use of the Royal College of Physicians 'stroke audit package' in an audit of the care of 156 patients. Recording of history and management compared favourably with that recorded on the RCP database. For a number of items, recording was significantly improved when a locally developed 'checklist', based on the RCP standards, was utilised by trainee medical staff. Benefits of the audit package, and proposed changes in practice, are briefly outlined.

There is widespread concern about the standards of care provided to patients who have had strokes [1,2], and corresponding interest in information on appropriate treatment [3] and procedures for auditing the care provided [4]. The Royal College of Physicians and the UK Stroke Audit Group have developed a 'stroke audit package' [5] which can be used for the latter purpose.

We report here the results of an audit of stroke care by the clinical team in a district general hospital based on the RCP stroke audit package.

The project arose in response to an initiative from a lead purchaser, and the concurrent wish by the provider to develop services for patients with stroke.

Methods

Following the expression of interest by purchaser public health clinicians, a series of discussions and consultant-led meetings was held with a broad range of clinical professionals, including trainee medical staff within the hospital. The Royal College of Physicians stroke audit forms (then available in draft form) were to be used as the basis, with additional information on outcomes and a patient satisfaction survey. The full RCP audit package (including data collection forms and PC database) was purchased when it became available. This report concentrates on that part of the local audit based on the RCP stroke audit package.

Trainee medical staff were to use a checklist (available on request from the authors) as a reminder of the Royal College of Physicians guidelines and a way of summarising information on individual patients, so linking education and audit. The completed checklists were either sent to the clinical audit office or incorporated into the clinical notes, according to the wishes of the individual consultants.

Patient identification

The audit was carried out on patients admitted between 1 June and 31 December 1994 and discharged before 1 March 1995. The list of patients with principal diagnosis of stroke/transient ischaemic attack (TIA)/subarachnoid haemorrhage was obtained largely through the abstracting module of the hospital information support system (HISS). Altogether 156 patients were included in the audit. Patients who died in Accident and Emergency or took their own discharge were excluded. Re-admissions, for continuing care of various kinds, of patients who had previously had strokes, were not included.

Data collection

Patient records (both those on paper and those on the hospital computer system) were checked by an auditor for items included in the RCP package, supplemented with some additional items (age on admission, length of stay, discharge destination and change in capacity to carry out activities of daily living measured by Barthel score change). Most of this information was recorded on audit forms copied from the RCP package. Locally designed forms were used for the local data items. Mental test score (part of the RCP package) was not included as a routine item in the data collection, because this test was not considered appropriate for all patients. A 'clear diagnostic formulation' was marked as having been recorded only if it contained the information identified in the checklist. Almost all of this data collection was carried out by a nurse with a particular interest in the care of stroke patients. Where trainee staff had utilised the checklist (approximately one third of the patient audit sample), the information recorded in the patient record could be complemented with information recorded on the checklist. The auditor's results were then reviewed with the audit analyst, who incorporated them into an EPI INFO database [6] which had been developed to manage the information.

Calculation of percentage of patients for whom items of information according to audit criteria were recorded

The RCP stroke audit form asks a series of questions on documentation of care, to which the possible answers are:
‘Yes’ the information was recorded, or

‘No’ the information was not recorded, or

‘No’ the information was not recorded ‘but’ there was a good reason for not recording it.

Results for each audit item were summarised as:

\[
\text{No. of 'yes' answers} + \text{No. of 'no, but' answers} \times \frac{100}{\text{Total number of answers}}
\]

Results

The mean age of the patients was 73 years (range 21 to 93). Of the 156 patients, 92% were admitted from their own homes and 59% returned there; 139 (89%) had a computed tomography (CT) scan; 37 (24%) died within 30 days of admission; 67/110 (61%) were discharged on aspirin.

Recording of audit items by auditor

The majority of the items listed in the RCP package were checked by the auditor, and recorded on the audit forms. The following items were omitted in individual patients: rate of onset of symptoms, drugs on admission, hydration, continence, CT scan, special investigations, consultant review, neurological deficit review. The following items were omitted by the auditor for two patients: consciousness level, eye movement, power in limbs, communication, trunk control, swallowing, visuospatial function, visual fields, sensory testing, diagnosis, full blood count (FBC), erythrocyte sedimentation rate (ESR), urea and electrolytes (U&E), glucose, electrocardiogram (ECG), information to relatives, and secondary prevention. These 52 omissions out of a total of more than 9,500 items were unlikely to be a significant source of bias.

Five sets of patient notes were reviewed by a public health physician. His audit of the notes (using the RCP stroke audit form) was compared with audit data produced by the nurse who routinely reviewed the notes using the same form. Of the 300 items recorded (60 per patient) only four discrepancies were found. The public health physician also found it much easier to review the notes when the senior house officer caring for the patient had recorded information on a checklist.

Recording of history by clinical team (item 1)

The percentage of patients with appropriate information or clinical history recorded according to audit criteria is shown in Table 1.

Recording of pre-stroke function (item 3)

The information shown in Table 1 for this item came mainly from the nursing record.

Recording of hydration and continence (item 9)

Data summarised in Table 1 are derived from doctors’ recording of these items. In many cases the information was recorded by nurses even if not recorded by a doctor. The auditor commented that information on continence was recorded in the (computer) nursing notes of 73 patients where the doctors had failed to record the information. This raises the clinical recording of continence to 86% of patients. The auditor similarly commented that there was a nursing comment on hydration for 51 patients where the information had not been recorded by the doctor, raising clinical recording to 89%.

Rehabilitation and discharge planning (items 11 and 12)

The information for these items (Table 1) was recorded by doctors, nurses and occupational therapists (OTs) and is therefore a summary of the clinical recording of this information. With the exception of two items (results of multidisciplinary meeting and information given to relatives) compliance was very high.

Checklist

For a number of items, including recording of neck bruits, fundoscopy and swallowing, there was significantly better recording where the checklist was used (Table 2).

Discussion

Use of RCP audit package

The RCP audit package was found to be very helpful in auditing stroke care. Although the approach was modified for local use (for instance omitting the use of formal mental test score) initial discussions on criteria and standards could be shorter and more focused than would otherwise have been the case. It was also found that the package could be used as the basis of an audit of total clinical care, not simply care by physicians.

The RCP computer database was a useful starting point for managing the information obtained in the audit. However, this database would have been too confining to utilise for the entire audit and so a database appropriate for local needs was developed on the free World Health Organization (WHO)/Center for Disease Control (CDC) database software EPI INFO [6].

Compliance with RCP guidelines

History recording and management (Table 1) compared favourably with that recorded on the RCP database for London teaching hospitals. Since the audit reported here was done prospectively, with support from all consultants and the help of a checklist.
Table 1. Recording of information for stroke management (% patients* with appropriate information recorded; all items should have value of 100%—see Methods section)

| Item | % |
|------|---|
| **1. History** | |
| Source of history | 91 |
| Rate of onset of symptoms | 90 |
| Drugs on admission | 90 |
| **2. Risk factors** | |
| Previous stroke or TIA | 79 |
| History of hypertension | 75 |
| History of heart disease | 80 |
| Peripheral vascular disease | 37 |
| History of diabetes | 73 |
| History of hyperlipidaemia | 37 |
| Smoking | 73 |
| Alcohol | 56 |
| **3. Pre-stroke function** | |
| Activities | 97 |
| Use of social services | 98 |
| Employment | 92 |
| **4. General examination** | |
| Pulse rate and rhythm | 96 |
| Blood pressure | 96 |
| Heart sounds | 99 |
| Neck bruits | 58 |
| Peripheral pulses | 30 |
| Fundoscopy | 87 |
| **5. Neurological assessment** | |
| Conscious level recorded | 87 |
| Eye movement recorded | 77 |
| Power in the limbs recorded | 96 |
| Communication recorded | 92 |
| Trunk control or gait | 39 |
| Swallowing | 52 |
| Visuospatial function | 47 |
| Visual fields | 47 |
| Sensory testing | 48 |
| **6. Clinical diagnosis** | |
| Clear diagnostic formulation | 36 |
| **7. Usual baseline investigations** | |
| FBC | 100 |
| ESR/viscosity | 57 |
| U&E | 100 |
| Glucose | 99 |
| ECG | 98 |
| **8. Special investigations** | |
| CT scan | 94 |
| Investigation for rare causes | 97 |
| **9. Immediate management plan** | |
| Hydration | 56 |
| Urinary incontinence | 39 |
| **10. Management during first week** | |
| Consultant review | 99 |
| Review of important deficits | 98 |
| **11. Rehabilitation** | |
| Personal interests | 98 |
| List of patient’s problems | 97 |
| Objectives, or goals of rehabilitation | 92 |
| Re-assessment of functional status | 99 |
| Results of multidisciplinary meeting | 49 |
| Information given to patient and/or relatives | 35 |
| **12. Discharge planning** | |
| Ownership of accommodation | 99 |
| Type of accommodation | 99 |
| Whether living alone or not | 99 |
| Stairs/ground floor/lift | 99 |
| Access to toilet | 93 |
| Whether informal support available | 99 |
| **13. Secondary prevention** | |
| Blood pressure after 4 days | 97 |
| Antihypertensive medication | 97 |
| Long-term aspirin | 94 |
| Long-term anticoagulation | 95 |
| Advice about smoking | 78 |
| Non-invasive carotid imaging | 79 |

*Total of 156 patient records, 52 where information recorded on checklist by physician
Table 2. Benefits of checklist (% patients* with appropriate information recorded; all items should have value of 100%)

| Information on risk factors recorded | Checklist used by physician | Checklist not used | Statistical significance of difference |
|--------------------------------------|-----------------------------|-------------------|-----------------------------------------|
| Info on previous stroke or TIA       | 98%                         | 67%               | p<0.001                                 |
| Info on history of hypertension      | 98%                         | 70%               | p<0.001                                 |
| Info on history of heart disease     | 98%                         | 70%               | p<0.001                                 |
| Info on peripheral vascular disease  | 98%                         | 5%                | p<0.0000001                             |
| Info on history of diabetes          | 98%                         | 60%               | p<0.000001                              |
| Info on hyperlipidaemia              | 98%                         | 4%                | p<0.000001                              |
| Smoking history                      | 91%                         | 64%               | p<0.0005                                |
| Info on alcohol consumption          | 69%                         | 49%               | p<0.05                                  |
| Recording results of general examination |                           |                   |                                         |
| Info on neck bruits recorded         | 81%                         | 45%               | p<0.00001                              |
| Info on peripheral pulses recorded   | 57%                         | 15%               | p<0.000001                             |
| Info on fundoscopy recorded          | 98%                         | 81%               | p<0.01                                  |
| Recording neurological assessment    |                             |                   |                                         |
| Info on eye movement recorded        | 89%                         | 71%               | p<0.05                                  |
| Info on swallowing recorded          | 87%                         | 33%               | p<0.000001                             |
| Info on trunk control recorded       | 63%                         | 26%               | p<0.000002                             |
| Info on visuospatial function recorded | 57%                        | 42%               | NS                                      |
| Info on visual fields recorded       | 56%                         | 43%               | NS                                      |
| Info on sensory testing recorded     | 57%                         | 43%               | NS                                      |
| Usual baseline investigations        |                             |                   |                                         |
| Info on ESR/viscosity recorded       | 56%                         | 57%               | NS                                      |
| Clear diagnostic formulation         | 76%                         | 15%               | p<0.000001                             |
| Immediate management                 |                             |                   |                                         |
| Info on hydration recorded           | 96%                         | 35%               | p<0.000001                             |
| Info on urinary incontinence recorded | 85%                        | 14%               | p<0.000001                             |
| Rehabilitation                       |                             |                   |                                         |
| Results multidisciplinary meeting recorded | 44%                     | 52%               | NS                                      |
| Information to patients or relatives | 74%                         | 60%               | NS                                      |
| Secondary prevention                 |                             |                   |                                         |
| Appropriate advice about smoking     | 91%                         | 71%               | p<0.01                                  |
| Info on non-invasive carotid imaging | 69%                         | 85%               | No benefit                              |

*Total of 156 patient records, 52 where information recorded on checklist by physician

to improve history taking, this might reasonably be expected. There was some evidence that ESR testing improved following consultant review of early audit results (data not shown).

It was encouraging that apparently only 6% of patients included in the audit were discharged not on aspirin and with no recorded contraindication for it. The frequency of aspirin on discharge (61%) was higher than that reported recently [7]. The frequency with which patients continue to take aspirin after discharge is to be audited in collaboration with local general practitioners.

The rather low recording of ‘clear diagnostic formulation’ (item 6, Table 1) reported here may reflect rather stringent local criteria set for this item, though the information required does not obviously go
beyond the criteria set by the RCP. The results on ‘clear diagnostic formulation’ in Table 2 (ie dramatically better with use of checklist) suggest that it is possible to improve clarity with prompting.

Some of the items where there was a substantial discrepancy between local practice (as measured in the audit) and the Royal College of Physicians guidelines are being further investigated. The topic of recording of information given to patients is to be investigated by a multidisciplinary group.

Use of checklist

The use of a checklist was associated with more complete recording of appropriate information (Table 2). Other studies have reported similar improvements [8].

The use of a checklist was considered more practical than a ‘clerking proforma’ and more acceptable to local clinicians. It was pointed out that when patients are admitted it is often not known that they have a stroke, so that it is hard to utilise a clerking proforma efficiently. However, having a checklist to use as an adjunct when clerking a patient was felt to be practical and helpful.

We considered how best to incorporate the benefits provided by the checklist during the audit (Table 2) into routine practice. One consultant wishes such a checklist to be a routine part of the clinical record for his patients. The use of a ‘prompt’ (as a laminated sheet, and/or available on the hospital computer, which is used by all clinical staff for ordering tests and recording information) has also been suggested. A revised, and more abbreviated, checklist, which can be used either as a prompt or as a record for the information, has now been made available on the wards and via the hospital computer system. This modified checklist contains items on referral to rehabilitation staff which reflect standards agreed by stroke multidisciplinary professional development groups which were running at the same time as the stroke audit.

The establishment of a ‘profile of care’ for stroke patients, in which the care is recorded in an auditable form on the hospital computer system has been done for transurethral prostatectomies (Dr J D Anderson, personal communication), is being investigated.

In conclusion, the RCP stroke audit package has been found to be a very useful tool for supporting audit of stroke care. Action has been taken as a result of the audit and further work is being carried out.

Acknowledgements

The authors wish to thank all the local clinicians who helped to take this work forward, particularly Mrs Maeve Groom, Head of Rehabilitation Services, whose establishment of multidisciplinary professional development groups facilitated the development of clinical audit of stroke care, and Dr T N Miller, Clinical Coordinator, General Medicine.

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