Research Letters

Review of a rapid geriatric medical assessment model based in emergency department

SIR—The rates of emergency department (ED) presentation (12–21%) [1–4] and subsequent hospitalisation (32–55%) [5–7] of elderly patients are higher than the general population and rising [4,7]. In a 3-year follow-up study, the rate of hospitalisation rose from 32 to 46% [8].

Emergency physicians report that it is difficult to manage elderly patients compared to a younger age group and that they consume more ED time and resources [9]. Reasons may include a typical or non-specific presentation of illness and social/functional related problems masking underlying medical conditions [9–11]. Prevalent cognitive impairment (a reported 26%) [12] and functional status are regularly overlooked in elderly ED presenters [12,13]. This may contribute to the high subsequent admission rate in elderly patients discharged from ED [14].

To address concerns about emergency care of older patients; in 2002, the New South Wales (NSW) Department of Health provided funding for Aged Care Service Emergency Teams (ASET) whose principal role was to improve the care of elderly ED presenters. Team composition was at the discretion of the health service provider.

Various models of ED-based geriatric assessment have been described, including a geriatric ED consult service [15]; nurse-led ED intervention [16]; and post-discharge review [17,18]. However, there was a scarcity of published literature on physician-led ED assessment teams [15–18]. Therefore, in this study, we reviewed a unique physician-led ASET service in which elderly patients were reassessed by a geriatric team, having been initially assessed by ED as suitable for discharge.

Description of service and aims of the study

Bankstown-Lidcombe hospital is a 454-bed teaching hospital in the Sydney South West Area Health Service. ASET was established at the hospital in 2003 with the main objectives of reducing missed diagnoses and preventing inappropriate discharge or re-presentation of elderly ED attendees. ASET comprises of an on-call senior geriatrician supervising a Geriatric Medicine trainee based solely in ED. The operating hours are 10 a.m. to 6 p.m. during weekdays and 10 a.m. to 4 p.m. during weekends. The service is supported by on-site nursing and an allied health team comprising of a physiotherapist, occupational therapist and social worker.

Post-discharge follow-up facilities include falls, memory and general outpatient clinics. An electronic database was set up at service inception.

Potential elderly discharges (aged ≥70 years) who fulfil pre-specified criteria, as shown below, are referred to ASET by ED staff. Elderly patients identified as requiring admissions by ED are referred directly to relevant on-call specialities, and are therefore outside the scope of ASET.

Criteria for ASET referral

(two out of five required to trigger referral)

1. Multiple health problems or more than three regular medications.
2. History of falls or fall-related injury.
3. More than three presentations to ED in the last six months.
4. Problems with memory.
5. Patient or carer reports recent functional or behavioural change.

Our study objectives were to review discordant cases—elderly patients deemed for discharge by ED but subsequently admitted following ASET review. These cases were examined with regard to clinical outcomes. ASET contribution was also reviewed with respect to assessment of cognitive, functional and mobility status.

Methods

Design
ASET electronic database was used to identify all patients encountered during the period 1 January 2004 to 30 April 2006. Discordant cases were identified and their medical records interrogated with respect to the objectives set out.

Data collection
Data collected included patient’s age, gender, languages spoken, medical co-morbidities, admission principal diagnoses, care categories and discharge destinations. In addition, documentation by ED and ASET was interrogated for differences in recording of patients’ cognitive, functional and mobility status. Additional medical problems identified by ASET were noted. The seniority of ED staff involved in each case was also recorded.

To avoid observational bias, the data collector was a trainee in Geriatric Medicine with no involvement in the service. To ensure uniformity of the data collection process, a random 30 sets of notes were counter-checked by two independent geriatricians to ensure accuracy and consistency of
interpretation of the clinical notes by the trainee. A consensus method was used in difficult cases by the geriatricians.

Statistical analysis
Data was analysed using SPSS version 14.0 (California, USA). McNemar’s test was used for comparison of two variables on matched pairs of subjects and chi-square was applied for comparison of groups. Data are expressed as per cent; mean ± SD for normative data; or average and range for non-normal variables. Two-sided p-value of <0.05 was considered statistically significant.

Results
For the designated period, 1680 referrals were made to ASET. One hundred and three (6.1%) were identified as discordant cases.

Demographics
The average age of the cohort was 83 (±6.5) years; 72% were female. Eighty-seven per cent had English as first language. The three most commonly reported co-morbidities were hypertension (56%), osteoporosis (38%) and ischaemic heart disease (37%).

ED staff assessment
Fifty per cent of the discordant cases were assessed by junior medical officers (JMO) alone; 36% by career medical officers (CMO), 13% by JMO in discussion with senior medical staff and 1% by staff specialist alone.

Analysis of the discordant cases
ASET staff was more likely than ED to document functional, cognitive and mobility impairment, either new or worsening (Table 1). In 65 cases (63.1%), ASET identified additional acute medical problems in referred patients. These additional diagnoses were identified irrespective of the seniority of the initial ED reviewer (Table 2).

The main diagnoses responsible for admission collectively, were fractures (14%); complicated urinary tract infections (13%), cardiovascular disorders (15%), neurological diseases (16%), delirium (8%) and adverse drug reactions (6%).

The average length of hospital stay (LOS) was 14.6 days (range, 1–51 days). As many as 84 (81.5%) patients were admitted for acute care; 19 (18.5%) required sub-acute care, i.e. needing admission for predominantly functional impairment; 84% of patients were discharged to their usual residence and 15% required new residential care. One patient died.

Discussion
Our study showed that a physician-led ASET can complement and improve the current ED-based system of evaluating elderly patients, providing a more comprehensive medical assessment incorporating patients’ cognitive, mobility and functional status, and preventing inappropriate discharges.

It has been reported that elderly patients admitted from ED have a higher mortality if not seen by a senior consultant on admission [11]. In our study, 50% of the discordant cases were seen by a JMO alone with an additional 13% of cases discussed with a senior colleague. A separate audit of 48 random cases of elderly discharges from our ED prior to the establishment of ASET showed that 83% of discharged patients seen by JMO were discussed with, but not reviewed by, senior ED staff (unpublished data).

McNemar’s test was used to compare parallel variables measured on the same group.

Table 1. Documentation and assessment of patient presentations by emergency staff and ASET

<table>
<thead>
<tr>
<th></th>
<th>ED staff</th>
<th>ASET</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation of pre-morbid:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional impairment</td>
<td>49 (48)</td>
<td>68 (66)</td>
<td>0.03</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>30 (29)</td>
<td>73 (71)</td>
<td>0.00</td>
</tr>
<tr>
<td>Mobility impairment</td>
<td>46 (45)</td>
<td>85 (83)</td>
<td>0.00</td>
</tr>
</tbody>
</table>

| Documentation and assessment at presentation for: |          |      |          |
| Functional impairment | 1 (1)     | 36 (36) | 0.00     |
| Cognitive impairment  | 22 (21)   | 70 (68) | 0.00     |
| Mobility impairment   | 9 (9)     | 52 (51) | 0.00     |

* McNemar’s test was used to compare parallel variables measured on the same group.

Table 2. Additional diagnosis offered by ASET

<table>
<thead>
<tr>
<th>ED staff designation</th>
<th>Total number of patients seen by ED staff</th>
<th>The number and % of patients who had additional diagnosis offered by ASET*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff specialist</td>
<td>1</td>
<td>1(100)</td>
</tr>
<tr>
<td>CMO</td>
<td>37</td>
<td>24(65)</td>
</tr>
<tr>
<td>JMO with discussion</td>
<td>13</td>
<td>7(34)</td>
</tr>
<tr>
<td>with senior staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JMO</td>
<td>52</td>
<td>33(63)</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>65(63)</td>
</tr>
</tbody>
</table>

* Pearson Chi-square 1.11, P = 0.773.

JMO, junior medical officers; CMO, career medical officers; ASET, Aged Care Service Emergency Team; ED, emergency department.

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A comprehensive geriatric assessment and detection review. However, these were not the aims of our study. The detection of new functional impairment in elderly ED presenters is crucial as this often heralds an underlying medical problem that may not be immediately apparent to physicians without experience in Geriatric medicine [2, 19]. Patients with nebulous presentations labelled as 'home care impossible' [10] or 'lack of community support' [11] by primary care physicians or ED, had acute medical problems identified in 51 to 85% of cases [10, 11]. This is consistent with our cohort, 81.5% of whom required acute medical care. The severity of their problems is reflected by their 15-day LOS and significant medical issues such as fractures and delirium. Furthermore, elderly patients with functional impairment in the absence of acute medical exacerbation may still require admission for rehabilitation and coordination of community support. This is reflected in the 18.5% of admissions for sub-acute care in our study.

ASET was able to prevent 6.1% of inappropriate discharges from ED. With no reports of similar services, there is no comparable data in the current literature. However, given the severity of the diagnoses for the discordant cases, it is implicit that there was a qualitative improvement in patient care.

With an average of 4850 patients (aged ≥70) presenting to Bankstown ED during ASET working hours annually (unpublished data), approximately 15% of these patients were referred to ASET. The other 85% were excluded by ASET referral criteria—predominantly elderly discharges with simple socio-medical issues less likely to benefit from a comprehensive geriatric review, and those assessed by ED as requiring admission.

Limitations in our study include the fact that we audited only those patients who were subsequently admitted from ED. There are likely to be other cases where an additional medical diagnosis was made and treated, but still allowing the patient to be discharged safely. Furthermore, we did not follow up those patients who were discharged after ASET review. However, these were not the aims of our study.

Conclusions

ED presentation of the ailing elderly patient is often complex and atypical and can be enhanced by physician-led on-site specialised geriatric review. Further study may help delineate if ASET reduces subsequent morbidity, mortality and representation of elderly patients discharged from ED.

Key points

- A comprehensive geriatric assessment and detection of new cognitive or functional impairment is crucial to clinical management of the elderly patient in an Emergency Department (ED).
- New cognitive and functional impairment is often associated with underlying acute medical problems, which may present atypically.
- This may not be appreciated by junior ED medical officers with limited geriatrics experience, resulting in inappropriate and unsafe discharges.
- A physician-led Aged Care Service Emergency Team can improve assessment and delivery of care to elderly patients in ED.
- It can also act as a valuable support for junior ED staff, offering guidance and training in the management of geriatric patients.

References

Age and opioid analgesia in an acute hospital population

SIR—Achieving effective pain control in elderly patients is complicated by difficult pain assessment, co-existing diseases, concurrent medications, increased risk of adverse events and age-associated changes in pharmacokinetics and pharmacodynamics [1]. Pain in older people is often unrecognised and untreated as they may understate pain [2]. Cognitive impairment, depression, altered pain perception [3, 4] and altered response to analgesia may limit pain management in old age [5]. Concerns about opioid-related adverse events may influence opioid prescribing patterns and restrict escalation of opioid doses for analgesia [2, 6]. Similar factors may limit the administration of opioids by nursing staff to older patients [7].

Use of lower opioid doses in older patients has been documented [8–10] and may be partially attributed to pharmacological changes in old age. Ageing is associated with reduction of first-pass metabolism, impaired hepatic drug clearance, reduced renal elimination of drugs and their metabolites [11], and with a decrease in µ-opioid receptor density and higher receptor affinities [12]. Factors contributing to the quality of opioid analgesia in older acute hospital inpatients are not well described. The aim of this cross-sectional study was to assess the association of age with the utilisation, efficacy and safety of opioid analgesia in a teaching hospital in Sydney, Australia.

Methods

Subjects

Participants were patients admitted to acute geriatric medicine, orthopaedic and oncology wards and were prescribed opioids at the Royal North Shore Hospital (RNSH), a Sydney teaching hospital, between June and September 2006. Patients were excluded if they had severe cognitive or hearing impairment, did not speak English, were younger than 18 or refused to participate. The study was approved by the Human Research Ethics Committee (HREC) of Northern Sydney Central Coast Area Health, Australia. Written informed consent was obtained from all patients and/or their legal representatives.

Data collection

A cross-sectional survey was performed on day 2 or day 3 of the patient’s admission. A standardised questionnaire was designed to collect data from interviews with patients, their medication charts and medical notes. Data included demographics, medical history, admission diagnoses, total number of medications; and for each opioid drug, generic name, dose, frequency and prescription pattern (regular or as needed; prn).

Pain intensity was assessed using patients’ self-report rated visual analogue scale (VAS); 0 mm (no pain) to 100 mm (worst pain) [13]. The numerical rating scale (NRS) was used in patients unable to complete VAS: 0 (no pain relief), ‘no pain relief’, ‘moderate pain relief’ and ‘complete pain relief’ [13]. ‘No pain relief’ and ‘moderate pain relief’ were classified as incomplete pain relief.

Dosages of different opioids were calculated as parenteral morphine equivalents according to equianalgesic dose tables obtained from the Australian Medicines Handbook [15]. The accuracy of parenteral morphine equivalent estimates may vary with inter-individual differences [16, 17]. For each patient, a prescribed daily dose (PDD) was the sum of the total regular and maximum prn opioid doses prescribed in 24 h. Received daily dose (RDD) was calculated by adding the doses of regular and prn opioids received in 24 h.