



Registered Charity
No 273876

BRITISH ASSOCIATION FOR EMERGENCY MEDICINE

Churchill House
3rd Floor, 35 Red Lion Square
London, WC1R 4SG
United Kingdom

Tel: +44 (0)20 7404 1999 Fax: +44 (0)20 7067 1267

Email: baem@emergencymedicine.uk.net Web: www.emergencymed.org.uk

CLINICAL EFFECTIVENESS COMMITTEE IMPLEMENTING THE GALASKO REPORT ON HEAD INJURY CARE Implications for Emergency Departments

Introduction

In June 1999 the Royal College of Surgeons published the Report of the Working Party on the Management of Patients with Head Injuries under the Chairmanship of Professor Galasko (*Ref 1*).

The Working Party proposed that part of the care of head injured patients currently undertaken by general or orthopaedic surgeons be transferred to Emergency Medicine (EM) and that other aspects of care, particularly neurosciences, should be greatly enhanced and improved.

These recommendations have major implications for the organisation and funding of Emergency Departments (EDs) and the Report generated considerable concern and controversy within the specialty of Emergency Medicine.

Although the Report stressed that its recommendations could not be implemented unless the necessary funding were made available, a number of departments have been put under pressure to assume responsibility for the care of these patients without additional resources.

The Clinical Effectiveness Committee of the British Association for Emergency Medicine (BAEM) was therefore asked to determine the requirements for a department to run the service envisaged by the Royal College Report. This document was first published in June 2000 and revised in January 2005 to reflect the changes which have taken place in the last five years and in particular the publication of the NICE Guideline in 2003.

- *Dr Stephen Nash* BAEM Clinical Effectiveness Committee: *Chairman*
Consultant in Emergency Medicine: *Princess Royal University Hospital*
- *Mr Ian Swann* *Consultant in Emergency Medicine:* *Glasgow Royal Infirmary*
- *Mr Andres Martin* *Consultant in Emergency Medicine:* *Royal Free Hospital, London*
- *Mr Andrew Volans* *Consultant in Emergency Medicine:* *Scarborough Hospital*
- *Mr J Banerjee* *Consultant in Emergency Medicine:* *Leicester Royal Infirmary*
- *Ms J Bayley* *Specialist Registrar in EM:* *Bristol Royal Infirmary*

Executive Summary

Summary of resource requirements for a medium sized ED (40,000–70,000 total annual new attendances) to adopt responsibility for the first 48 hours of in patient care of head injured patients:

- Minimum of 6 wte Consultants to run an effective ED or a minimum of 4 wte to cover the rota for the head injury service
- 3 - 5 programmed activities (Direct Clinical Care) a week of senior medical time on the ward and for ward related clinical work
- Consultants should have appropriate training in the in-patient and out-patient management of the head injured patient
- 2 or more medical staff on site at all times one of whom has middle grade experience
- 4-6 observation beds - preferably within a 6-10 bed ED facility
- 2 qualified nurses experienced in neurological observation and head injury care at all times in addition to the ED complement
- 24 hour CT scanning
- 24 hour on-call radiologist
- Telemetry links with on-call neurosurgeon
- Adequate neurosurgical beds - ITU, observation, post-op and rehab wards
- Liaison meetings involving ED, neurosciences, anaesthetics and radiology with joint production and updating of local procedures and policies
- Good quality comprehensive discharge planning advice and appropriate follow up
- 4-5 clinic slots a week involving 3-4 hours of specialist nurse time and 2 hours of senior medical time
- Access to a neuro-rehabilitation and clinical psychology service linked to the clinic
- One day training for all medical and nursing staff, repeated at least every 3-5 years
- One session of image interpretation training for ED medical staff
- 4–6 weeks off-service secondment for specialist trainees, which is specifically designed to meet their needs

The financial implications for an individual department will obviously depend on the current level of service and thus the gap between this and the service envisaged.

Note

1. Even if there were an immediate financial injection into a head injury service there would be major problems with:
 - Inpatient ED beds
 - Sufficient senior EM staff
 - Their commitment to this service
 - Shortages of trained nurses
 2. There are even greater shortfalls in current neuroscience provision.
 3. There are also significant shortfalls in Clinical Psychology services.
-

Data sources

This document is based on:

- Data from the comprehensive head injury service operated at the Glasgow Royal Infirmary by Mr Ian Swann
- A survey of the current level of provision of head injury services by EDs in the UK carried out by Mr Swann (*Ref 2*)
- Detailed data from members of the Clinical Effectiveness Committee relating to their own departments
- The views of the members of the BAEM Council and Regional Committees

Assumptions made

Data are based on compliance with current Head Injury guidelines (*Ref 3, 4*). The implications of the Report for neurosurgical departments are outside the expertise of this Association and are recognised but not addressed in detail.

We have not attempted to put detailed monetary costs against most of the requirements. Such costs will depend to some extent on local circumstances. It is important that calculated costs are reasonable and supported by evidence. In particular incremental costing is appropriate and costs cannot be calculated on the basis of setting up a complete stand-alone service de novo.

Head injury workload

An ED with 50,000 new attendances a year can expect approximately the following annual head injury workload, though there will be some variation with local demographics:

Patients requiring resuscitation from an isolated head injury:	20
Patients with serious injuries in addition to a head injury:	10
Patients requiring neurosurgery:	10
Patients requiring admission for over 48 hours but not requiring surgery:	40
Patients requiring admission for less than 48 hours:	400
Patients requiring CT scan:	130
Patients who can be discharged from the department:	3,000

The requirements of each of these groups are discussed.

Patients requiring resuscitation

Resuscitation of patients with serious head injuries is universally agreed to be the responsibility of the ED and this aspect of care is unaffected by the report. Resuscitation should ideally be carried out entirely by EM staff but this is not possible for most units particularly out of hours. All EDs should have:

- Adequate back up by experienced anaesthetists
- Invasive monitoring equipment
- Full emergency imaging provision
- Good transfer facilities and protocols

Patients with multiple injuries

This remains a difficult group. It has not proved feasible in the UK for all patients with major head injuries to be admitted direct to hospitals with neurosurgery on site and life-threatening chest and abdominal injuries often have to be dealt with at a receiving hospital without such facilities. Conversely there are still neurosurgical facilities without adequate support from orthopaedics, paediatrics, plastics etc. Current trends in centralisation of paediatrics is also a compounding factor of concern.

Care is currently provided for this group of patients in the ED though many feel that such care could be improved and arguments could be made for investment in enhanced trauma team provision, faster and more flexible emergency imaging, better transfer equipment and increased staffing.

All units receiving such patients are already obliged to have emergency CT head scans. Close links need to be set up with senior neurosurgical staff and image transfer facilities provided.

It may be appropriate on occasions for surgeons to travel to the patient in which case they should bring a complete surgical team and equipment. The resource implications of this are the responsibility of neurosurgical units.

Patients requiring neurosurgery

Such patients are currently resuscitated and transferred to a neurosurgical unit and would not impose any additional demands on the ED following implementation of the RCS Report.

However, many are at present transferred back for in-patient surgical care at the originating hospital after surgery or if the decision to operate is reversed. It would not be acceptable for patients to be transferred back to ED care.

The RCS Report suggests that such patients should complete their care in the Neuroscience Unit, but there are already frequent bed shortages in such units and substantial expansion would be required if units were to retain post-operative patients as envisaged and complete their rehabilitation.

Patients requiring admission for longer than 48 hours but not requiring surgery

The Report envisages that these patients would be admitted direct to Neuroscience units or transferred there at 48 hours if still unfit for discharge. This does not always happen and such patients are sometimes inappropriately placed in General Hospital wards or ITUs for their continuing care and rehabilitation.

Experience suggests that most such patients could be identified at presentation and transferred immediately. Many will be in the group requiring initial resuscitation and most will clearly require more intensive care than is available in an ED observation ward.

A small number of patients admitted initially by the ED will make good but slow progress such that they would be more easily managed by a prolonged stay under EM care than by transfer. Many units will also see substantial numbers of patients with alcohol, drug and social problems underlying their head injury and these patients will often require stays in excess of 48 hours for detoxification, social support, etc.

Patients with stays in excess of a week are likely to require formal rehabilitation and this cannot be provided by EDs. Such patients should be transferred direct to rehabilitation facilities rather than to an acute neurosurgical unit. There might be a local scope to manage these patients on stroke unit or a neurology ward while awaiting neuro-rehabilitation as the latter services are scarce.

Patients requiring admission for less than 48 hours

This is the group that would be most radically affected by implementation of the RCS Report and that causes most concern to EDs in terms of resource requirements.

Approximately a third of EDs currently care for at least some of this group of patients (*Ref 2*).

Bed requirements (for department with 50,000 new attenders)

Of the 400 patients in this group 80% could be discharged within 24 hours.

As noted above, a few of the rest would, in practice, still be unfit for discharge at 48 hours but would not be felt to justify transfer to a Neurosurgical Unit. Current short-stay facilities demonstrate considerably more flexibility in lengths of stay than those specified by their written policies and stays of up to a week may be justified in a few cases.

Estimated requirements are therefore:

320 patients x 1 bed day+
70 patients x 2 bed days+
10 patients x 4 bed days
= 500 bed days per year

On average two beds a day would therefore be occupied and an observation facility of 4 beds would provide sufficient flexibility for peak demand.

The smallest number of beds which is cost effective to staff is 6-8. Larger departments could therefore run a dedicated unit but most would have two options:

- Include head injury observation beds in a larger short stay facility accommodating other patients such as minor overdoses or short stay elderly patients, recovery from sedation requiring procedures etc.
- Utilise ring-fenced beds within in-patient facilities.

A general short stay ward is felt to be preferable because:

- Many departments already have such a facility
- Research has shown it to be a useful and cost-effective contribution to EM work (*Ref 5*)
- EM nursing staff would be committed to such patients and are comfortable with nursing a wide range of problems
- There would be more continuity of care as the patients would remain under the care of the ED Medical and Nursing staff, in a short stay unit that is co-located or near to the ED.

Imaging requirements

A CT scanner is required close to the ED observation ward with links - preferably by telemetry - to the Regional Neurosurgical Unit.

1–2 CT scans per week would be required on ward patients after admission who deteriorate or are a cause for concern though with a lower threshold for early CT scanning in EDs the likelihood of patients deteriorating suddenly on a ward should diminish (*Ref 3, 4*) Experience suggests that few scans would be required from a follow-up clinic.

Other facilities

Full monitoring facilities are required for all patients.

Facilities of in-patient standard are needed for patients and relatives (e.g. toilets, meals, bed space etc).

Private/secure facilities are needed for agitated or disturbed patients, intoxicated patients, patients in police custody etc.

Staffing

Nursing

Assuming a unit of 8 beds a minimum of 3 staff would be required on day shifts and 2 at night. There should always be two fully qualified staff. Some cover from the main department could be provided for breaks but an establishment of 10 is estimated to be necessary.

In some existing units these staff are separate to the ED, in others they are completely integrated with the rest of the ED nursing staff. The former allows them to develop greater expertise while the latter provides more flexibility for cover.

Medical

There needs to be on-call consultant cover for the ward at all times, though this would largely be for advice, and experience in existing units suggests that out-of-hours attendance would rarely be necessary providing there is 24 hour middle grade cover. Local CT scan protocols for CT requesting by middle grade staff should be in place to avoid delays requesting scans and taking staff away from caring for the patients during the resuscitation phase.

There would need to be one or preferably two ward rounds a day, 7 days a week, at least one of them by a consultant. This requires at least four consultants sharing a time commitment of 16-28 hours per week.

Where non-EM consultants (orthopaedic/surgery etc) contribute to existing ED rotas it is assumed that they would have appropriate skills and interests to undertake this aspect of ED work too.

Appropriately trained and experienced Associate Specialists can take part in consultant rotas and middle grade staff could undertake the second ward round of the day.

Routine cover of the ward could be by junior medical staff provided:

- They are NOT single handed in the department
- They are well trained with clear protocols
- They have easy access to the on-call consultant
- They have good nursing support
- They have easy access to CT scans following consultation

Other

Security staff have been valued by existing units and are recommended, at least in inner city departments.

There should be daily visits by Social Services, Physiotherapy and OT staff.

Support from alcohol advisory services and CPNs are necessary for efficient discharge of this and other groups of patients treated in the short stay facility.

Patients requiring CT scans

These will vary in urgency but facilities and a designated on-call radiologist must be available at ALL times, including lunch-time, weekends and bank holidays when *some departments* currently have more difficulty than at night. Radiologists should be on call during the day by pager so that they are easily accessible.

CT scanners must:

- Be readily accessible from the ED
- Be suitable for patients undergoing resuscitation

Current CT costs are estimated at £40 by day and £100 out of hours. It is anticipated that an increased rate of CT scanning following the publication of the NICE guidelines will reduce the need for some admissions and reduce the length of stay for some patients and be cost-effective.

Patients who can be discharged from the ED

Again this group of patients is already the responsibility of the ED and their assessment, investigation, written advice sheets etc fall within ED budgets.

Better discharge advice, information and self-help resources would be of value (*Ref 3, 4*).

Paediatric head injuries

Reliable figures on this group are not available. The proportion of paediatric patients varies widely between departments but averages 15-20%. Children would be expected to form a higher proportion of the short admission and discharge groups but where admission is required, especially for serious injuries, facilities and expertise are particularly limited. Few, if any, general EDs would be able or willing to take on in-patient responsibility for children and the RCS Report envisages that children with head injuries will be cared for by paediatricians. Their willingness and ability to do this must be question. Paediatricians would benefit from input from their EM colleagues for the first 48 hours. In units with dedicated Consultants in Paediatric EM, which are slowly increasing in number, this might be easier to organize. After the first 48 hours it might be appropriate for Paediatricians to manage these patients provided they are willing to do so and receive appropriate training.

Follow-up provision

One of the most controversial suggestions of the RCS Report is that all patients attending hospital with a head injury should be followed up, though it does not specifically envisage this being done by the ED.

Injuries sufficiently severe to have required admission to a Neurosurgical Unit would be followed up by specialised rehabilitation staff attached to the unit. This seems entirely reasonable - though not currently available.

It is suggested in the report that all patients discharged from the ED should be reviewed by GPs but does not provide convincing evidence of the value of this in terms of pick-up rates or effective available treatment. In addition the costs are substantial. Detailed printed information on discharge would reassure many patients that and telephone follow up by a nurse specialist would be more useful. The nurse could then triage the minority of patients who need follow up to their GP or Neurosurgical Outpatients.

In relation to patients discharged after short-term ED care the report makes vague references to "local arrangements" and "specialist nurse practitioners". It is not entirely clear whether the ED would be expected to provide follow up for these patients and again the benefits of follow up are not quantified. No attempt has therefore been made to cost a range of options.

Follow up of all attendances

3000 follow up appointments = 60 per week or a minimum of 10 hours out-patient time. Assuming at least the 30% DNA rate experienced in a more highly selected group in Glasgow this would still amount to 6-7 hours a week i.e. two fully staffed out-patient clinic sessions.

Delegating the service to GPs would result in a more manageable 2-3 patients per month per GP but it would equally dilute experience in their care to an extent that would probably render the service of little value.

Follow up of all admitted patients

400 patients = 6 per week. With a further visit rate of about 25% (found necessary in existing units) 10 slots per week should be sufficient, corresponding to one clinic per week.

Follow-up of selected patients

There are published criteria for patients who have a sufficient risk of long term complications after head injury to warrant routine follow up e.g. patients with skull fractures and those with Post Traumatic Amnesia of more than one hour. There should also be access to early follow up for any symptomatic patient, many of whom will need only reassurance.

Current practice varies widely. It is estimated that 3% of discharged patients currently return in Glasgow because of symptoms but medico-legal experience suggests that many symptomatic patients do not currently seek help. Bromley review approximately 10 patients a week but less than 50% are symptomatic. Currently in North Cumbria with the ED at Carlisle seeing around 35,000 patients there are on an average 6 patients attending the head injury clinic every week. This is delivered between the ED and Neuro-rehabilitation.

Accurate assessment of need is therefore difficult. 100 patients or 200 attendances a year is felt to be a reasonable estimate.

Much of the initial assessment of such out-patients and the provision of routine advice could be carried out by specialist nurses (c.f. asthma, diabetes etc). Medical input is estimated at 1 session per fortnight, though this would need to be at senior level.

Only a small proportion of these patients need specialised neuropsychiatric assessment or care. A single neuropsychologist could probably support this aspect of care across a region.

Training

All staff undertaking head injury care would need to demonstrate that they were appropriately qualified and for most that would mean undergoing training. This would need to include both doctors and nurses.

One day courses have been held twice a year in Scotland since June 2000 and the latest course was held in Sheffield (see programme Appendix 1). Most courses have been multidisciplinary with a predominance of nursing staff. There is some preliminary reading required and usually about 32 learners have attended at fairly modest cost - estimated £30-£60 per person. These could be "cascaded" along the lines of existing life support courses.

All higher specialist trainees would need to undertake a neurosciences secondment and this would need to involve exposure to aspects of head injury care other than acute neurosurgery which is the current emphasis. Experience in a busy short-stay facility handling significant numbers of head-injured patients would be desirable.

Medical staff should be able to examine skull x-rays and CT scans and recognise most significant abnormalities, though all images should be reported urgently by a radiologist. Basic competence can be acquired in 3-4 hours training. Refresher training could involve occasional seminars or repetition at least every 3-5 years of the basic course.

References

1. Royal College of Surgeons of England. Report of the Working Party on the Management of Patients with Head Injuries. London: The College; 1999
2. Swann I J, Walker A. Who Cares for the Head Injured Patient Now? *EMJ* 2001;18:352-357
3. Scottish Intercollegiate Guidelines Network. Early Management of Patients with a Head Injury; August 2000
4. National Institute for Clinical Excellence Head injury triage, assessment, investigation and early management of head injury in infants, children and adults: Clinical Guideline 4 June 2003 ISBN1-84257-306-3
5. Cooke M W, Higgins J, Kidd P. Use of emergency observation and assessment wards: a systematic literature review *EMJ* Mar 2003; 20: 138-142)

January 2005
Review - January 2007

THE MANAGEMENT OF HEAD INJURIES IN NON-NEUROSURGICAL UNITS

One-Day Practical Workshop

08.45	Registration	
09.00	Introduction	10 mins
09.10	Immediate care, assessment and resuscitation	30 mins
09.40	Recognising mild head injury	30 mins
10.10	SIGN guidelines for investigation and admission	30 mins
10.40	Coffee	
11.10	Neurological observation	30 mins
11.30	Neurosurgical referral	30 mins
12.00	Follow-up and rehabilitation	30 mins
12.30	Lunch and exhibition	
13.30	Discussion groups and skill stations (choose 5 out of 6)	30 mins each station
	The ED/ward interface - admit or discharge	
	Neurological assessment, charting, referral, difficult patients	
	Discharge planning, follow-up and rehabilitation	
	Children - assessment made easy	
	Radiology - interpretation of radiographs and CT scans	
	Quiz (compulsory)	
16.00	Feedback and summary	20 mins
16.20	Depart	

Pre-course reading material to include extracts from SIGN and ABC of Head Injury
Pre-course MCQ