Key messages

- Young people with hydrocephalus are dying of complications with their shunts that are not diagnosed
- Shunts may fail after many years without symptoms
- Malfunction of a shunt should be considered with any unexplained symptoms or signs
- Descriptions like "arrested hydrocephalus" or "shunt independent" can be misleading and delay diagnosis
- All patients with spina bifida who have shunts need continuing comprehensive care

the paediatric departments, 13 had their shunt function reviewed by neurosurgeons, 31 in rehabilitation clinics, and 66 had no review of their shunt at all.

Discussion

Hemmer and Bohn stated that few patients with spina bifida who had a shunt inserted for hydrocephalus could at a later stage survive without it and coined the phrase "once a shunt always a shunt."¹ In 1982 there was much discussion about the needs of long term shunting and the possibility of arrested hydrocephalus. Either the removal of a non-functioning shunt or leaving one in situ in patients with "arrested" hydrocephalus became a definite treatment regimen.^{2,4} Our findings support Hemmer and Bohn's original thinking. We have shown that although shunt malfunction occurred most commonly in the first year after insertion, shunts may fail up to 20 years later (table). During this time it may have been assumed that the shunt was not functioning.

As the response rate was 61%, the results may not be fully representative of the whole group. Although 10% refused to participate and 7% were untraced, another 22% did not respond to the letters. This is not too surprising from young people who characteristically have difficulty organising themselves because of their hydrocephalus. Some disabled school leavers become resentful of their condition and need for continuing medical care and are unwilling to complete associated questionnaires.

Functioning shunts cannot be expected to last indefinitely.^{5,6} If blockage of a shunt is acute there are usually the typical symptoms and signs of raised intracranial pressure, and hospital admission is relatively straightforward. Chronic or intermittent malfunction, however, may present with only insidious symptoms, such as changes in behaviour or performance often associated with headaches. Irrespective of the length of time since the last shunt operation if no other cause can be found a referral for further investigation should be made. In hospital if all

basic test results are inconclusive then shunt investigation should be considered. There are many new developments in non-invasive investigation of shunt function,⁷⁻¹⁰ but invasive monitoring (despite the risks this entails)^{11,12} may be the only way to make a definite diagnosis.

We found that all children with spina bifida and hydrocephalus were reviewed routinely by paediatric surgeons and neurosurgeons, who acquire great experience of this unusual group. In adult departments, hospital follow up becomes divided between different specialties, and only 40% of our subjects had regular review which included assessment of shunt function, often with no one taking responsibility for overall care. Therefore the initial decision as to whether symptoms may be related to the shunt may be left to the general practitioner or junior hospital doctor. It is difficult for those with little experience of this condition to make an accurate diagnosis with sufficient confidence to insist on admission to a neurosurgical unit.

Young adult patients with hydrocephalus may die or suffer severe morbidity because malfunction of their shunts is missed. Despite long periods since the last operation, malfunction must be considered seriously as the cause of any unexplained neurological symptoms. It is important for all people with a shunt to control hydrocephalus and chronic neurological problems to have continuing comprehensive care.

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Emergency psychiatric services in England and Wales

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Although few policies guide the local planning of emergency psychiatric services in Britain, service users and their carers frequently express a preference for local teams that can respond quickly to crises.¹ Acute psychiatric services are now usually provided by sector teams for defined geographical catchment areas.² The provision of emergency response as part of

an integrated range of local services has substantial advantages in terms of continuity of care and service accessibility,³ but such care may be difficult to sustain at night and at weekends for a small sector.⁴ We describe how emergency services in England and Wales are currently organised and staffed, comparing patterns of provision outside office hours with those during the day.

Methods and results

We sent questionnaires to the general health manager of the mental health unit in every district in England and Wales (n=199). Reminders and, if necessary, follow up calls were used. We distributed

Local practice in emergency response provision	Usual practice in office hours	Usual practice outside office hours
Assessment of referrals from general practitioners:		
Accident and emergency department	84/167 (50)	108/165 (65)*
Hospital ward	102/168 (61)	110/165 (67)
Specialist psychiatric emergency clinic open	41/167 (25)	12/166 (7)*
Emergency assessments carried out at:		
Community mental health resource centre	73/173 (42)	1/173 (1)
Day hospital or day centre	74/172 (43)	0/172
Sector team staff available for emergency home assessments:	126/173 (73)	7/173 (4)*
Community psychiatric nurse	159/171 (93)	9/171 (5)
Social worker†	142/172 (83)	53/172 (31)
Psychiatrist†	169/171 (99)	107/171 (63)
Multidisciplinary crisis intervention team available for emergency assessments	26/173 (15)	5/173 (3)*
Domiciliary visits under Mental Health Act carried out by:		
Consultant psychiatrist covering whole district	24/172 (14)	149/172 (87)*
Sector consultant psychiatrist	97/172 (56)	8/172 (5)*

*Difference between office hours and out of hours practice significant at $P < 0.01$ level with paired comparison of proportions test.

†Outside statutory duties under Mental Health Act.

briefier questionnaires to all 248 local groups of MIND (the National Association of Mental Health) and all 160 local groups of the National Schizophrenia Fellowship; the questionnaires asked them to rate aspects of their local emergency services on a five point scale and to comment on the greatest strengths and weaknesses of these services.

We obtained completed questionnaires from providers in 173 health districts (87%). Most respondents (100 (58%)) were consultant psychiatrists, and they often also held a managerial role. In 52 (30%) districts a senior manager completed the form, and most other respondents were senior nurses. At least one MIND or National Schizophrenia Fellowship group responded in 155 (78%) districts.

The settings and staff used for emergency assessments in office hours (9 am–5 pm) and at other times are shown in the table. Outside office hours accident and emergency departments and hospital wards are most used for emergency assessments, while home assessment relies on district duty psychiatrists and social workers.

Respondents were also asked open ended questions about the greatest weaknesses of their local emergency services. The three aspects most often identified as greatest weaknesses by providers were poor out of hours service (40/152 (26%)), too few staff (32/152 (21%)), and lack of a crisis intervention team (27/152

(18%)). Voluntary groups identified the greatest weaknesses as difficulty in gaining access to emergency services (60/207 (29%) groups), poor service outside office hours (59/207 (29%)), and no crisis beds outside hospital (35/207 (17%)).

Comment

There are striking differences between psychiatric emergency services provided during and outside office hours. During office hours a wide range of settings are used for emergency assessment and intervention, including community bases such as mental health centres, day hospitals, and day centres. Specialist psychiatric emergency clinics usually open between 9 am and 5 pm on weekdays. Night time services for urgent assessment and treatment rely on accident and emergency departments in general hospitals and the wards of psychiatric hospitals. Community psychiatric nurses and crisis intervention teams are not generally available outside office hours, and sector mental health teams usually take responsibility for emergency cover only 40 hours a week, leaving duty doctors and social workers to provide a service for the remaining 128 hours of each week, generally for a whole district.⁵

Emergency community mental health teams are still in their infancy, and they do not yet go out at night. Purchasers and providers may need to respond to the dissatisfaction expressed by local MIND and National Schizophrenia Fellowship groups, as well as by clinicians and managers, by developing and evaluating service models which provide an effective emergency response at night and at weekends.

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Subarachnoid haemorrhage in first and second degree relatives of patients with subarachnoid haemorrhage

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Aggregation of subarachnoid haemorrhage has been described in numerous families,¹ but whether relatives of patients are at increased risk is unknown. If they are, they might benefit from screening for unruptured intracranial aneurysms since the outcome of subarachnoid haemorrhage is poor and asymptomatic aneurysms can now be repaired with low morbidity and mortality. We therefore studied the cumulative

incidence of subarachnoid haemorrhage among first and second degree relatives of patients with recent haemorrhage.

Subjects, methods, and results

We prospectively collected a series of 163 patients with subarachnoid haemorrhage verified by computed tomography from the University Hospitals of Rotterdam, Utrecht, and Amsterdam, and for every patient we constructed a pedigree including all first and second degree relatives. All these relatives were interviewed by telephone in a standardised manner; they were asked about episodes of subarachnoid haemorrhage, sudden severe headache, stroke, and sudden death. For deceased relatives a next of kin was interviewed about the cause of death. When stroke or any other brain disease was reported, medical records were obtained if available. All histories and medical documents were reviewed according to strict criteria, defined in advance, for the diagnosis of subarachnoid haemorrhage. The Cox proportional hazards model was used to compare the incidence of subarachnoid

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