discharge policies and allowing a two day turn around for each bed, the estimated bed usage for head injuries is seven per million; 15% are for children.

It is not yet possible to estimate the number of neurosurgical beds per million which should be used for head injury, as distinct from those which actually are. The new Glasgow policy has been only partially successful in reducing avoidable deaths and disability; further improvements may require the transfer of even more patients at a stage when their injury still appears to be relatively mild. Such additional patients will be likely to increase only the number of patients who stay briefly in the neurosurgical unit. Determining the optimum transfer rate will entail balancing the risks in different types of patients with the numbers in different risk categories. Studies aimed at identifying these are in progress. The present Glasgow policy results in the transfer of still only 7-8% of patients with head injuries admitted to primary surgical wards; the optimum may be as many as 10-12%.

The extra beds that some neurosurgical units will require in order to provide adequate standards of care for head injuries may not call for extra regional resources. Evidence is emerging that too many patients are currently being admitted to primary surgical wards after mild head injuries,[13] and that revised admission policies can reduce this number by as much as half.[14] Some of the resources thus released could be reallocated to provide more beds in regional neurosurgical units for the care of head injured patients.

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Clinical Topics

The behaviour, development, and health of the young child: implications for care

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Abstract

Children with recurrent physical illnesses such as infections of the ears and chest are more likely than average to have developmental and behavioural disorders as well. Specialist skills are needed for the assessment and management of these disorders; the belief that "the child will grow out of it" is rarely correct. Any reorganisation of the child health services should take account of the need for children with developmental and behavioural disorders to be treated within the community by doctors and other health workers with the appropriate skills.

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Introduction

Discussion of the planning and development of the best possible health service for children in Britain and other countries often neglects the clinical issues. A recent study of the use of child health clinics[1] (apart from its lack of any epidemiological validity) was depressingly traditional in its approach and failed to review adequately the neurodevelopmental or behavioural aspects of the children or to link the findings to the children's present health. All aspects of a child's health must be reviewed if an adequate understanding of needs is to be achieved, and account should be taken of what children and their mothers perceive as their needs. The rates of general practitioner consultation for the 0-4 year old population are equalled only by those for patients over 65,[2] but most of these consultations are for the so called "minor" illnesses of childhood—namely, coughs, colds, and infections of the chest and ears. Certainly parents may come ostensibly with these problems when their real anxieties are about some other issue, but in our studies they rarely consulted their general practitioners formally about a developmental or behavioural problem (fewer than 5% of consultations). The purpose of this paper is to review some of the information that has led to a broadening of our view of the

health needs of young children, to present some complementary data of our own, and to make some comments about child health services.

Developmental paediatrics

Developmental paediatrics has emerged as a major change in our ideas about the health care of young children in the past 30 years. Two of the prominent early British workers in the field, Illingworth and Sheridan, were much concerned with the description of normal standards of development and ways in which that development was best assessed. Perhaps this had the unfortunate effect of over-emphasising what is called "screening" the young child; in fact, the prime aim of those two workers was seeing that "normal" and "abnormal" children were identified and competently assessed so that abnormal children might get help with their problems. Indeed, the traditional "developmental examination" is a rather peculiar mixture of assessment of the functions that develop during the early years of life, of which the assessment must vary as the child matures (motor development, and the acquisition of speech and language), and the functions that are nearly, if not fully, developed at birth (hearing and vision), for which special methods of assessment are needed because of the child's inability to cooperate with standard adult tests.

Follow up studies are now available to show us the consequences of delayed or abnormal development in young children. For example, Fundundis *et al* followed up 3 year old children with delayed speech and language and found a poorer educational attainment (measured, for example, by the Schonell reading test) by these children at 7.[3] Richman *et al* produced similar findings.[4]

Studies of this type emphasise that developmental disorders persist and that it is rarely safe for a doctor to say "he will grow out of it." While it is true that the child who at 3 has a delay in speech and language will probably be talking by 5, that is not the end of his troubles; he is highly likely to be in difficulties with reading at school within two or three years and more likely to be a child with a behaviour disorder. Characteristically developmental disorders show different symptoms at different ages.

Social and emotional development

Though Freud emphasised the importance of the early childhood years, only in the past 20 or 30 years has a proper study begun of the social and emotional development of the young child. Now, however, we have a great deal of information about the way in which young children form social relationships with the adults who take care of them, usually their mothers and fathers. These have been massively reviewed by Bowlby in his three large volumes,[5-7] and the best shorter account is still probably that by Schaffer.[8] Klaus *et al* were to the fore in showing the ill effects on children of separation of mother and child in hospital maternity units,[9] while Bowlby drew attention to the dangers of separating mother and child during admission to hospital in the early years. The sinister effects of neglecting these aspects of child development are becoming evident now in studies of child abuse: in some studies children who have been in special baby units are overrepresented among children subsequently abused. Again, it is only recently that detailed studies have been made of behavioural problems in preschool children.[4] Haggerty showed that the child who is "stressed" by life events develops infection while other children exposed to the same infective agents remain well.[10]

Quite clearly one potent source of stress for the young child could be inadequacies in the care given by the adult who looks after him. Measurement of the competence of care given is difficult and often highly subjective, but some studies have now looked at the relation between a mother's psychological state and the child's behaviour and development, since clearly a mother who is depressed is likely to be less effective than a mother who is not. Brown and Harris found a high prevalence of depression in mothers of young children.[11] Findings from such studies have been confirmed by others and related to various aspects of the environment such as poor housing and family finances.[12]

Our own studies

In 1974-5 we set up a study with the late Jack Tizard trying to look at the health needs of young children. Detailed accounts have been published,[13-16] and we only briefly relate the data here. Two populations of children in an inner urban area were identified and reviewed at seven ages: 6 weeks, 6 months, 1 year, 18 months, and 2, 3, and 4½ years. At each age over 97% of the children within the study areas were seen, and the study continued throughout a five year period (table I). This allowed us to collect cross sectional data on the children in the area over these five years and also allowed us to draw some conclusions about longitudinal trends within a child population. The data were obtained both by asking parents standard questions about their children's health and developmental and behavioural problems and by systematic examination of the children.

TABLE I—*Attendances for routine examinations in Camden and Westminster from 1974 to mid-1979*

	No of children attending examination at:						
	1½ months	6 months	12 months	18 months	2 years	3 years	4½ years
No of children due to be seen	306	281	237	231	252	281	229
No (%) actually seen	306 (100)	279 (99)	234 (99)	223 (96)	246 (98)	276 (98)	225 (98)

Physical illness in the child—Parents were asked how many visits they had made to the general practitioner or the hospital since their previous review. The most common cause for a visit to the general practitioner was coughs and colds. Table II shows the proportions of children with respiratory illness as reported by their mothers. Mothers reporting children with lots of coughs and colds are sometimes said simply to be more anxious than others, but clinically there is no doubt that some children do have lots of "runny noses." There are also strong correlations between these infections of the upper respiratory tract and otitis media and infections of the lower respiratory tract, which would suggest that the mothers' reports of frequent coughs and colds are true. Although we were dependent on historical reports for our knowledge of some of these events, we confirmed that what each mother told us was also recorded in the general practitioner's notes, and while there must be some doubt on occasions about the accuracy of the diagnosis of lower respiratory tract infections, the prevalences we report are similar to those found in other studies.[17]

TABLE II—*History of respiratory illness in different age groups (figures are numbers (%) of children)*

	Age group (years)			
	0–1	1–2	2–3	3–4½
Infection of upper respiratory tract > once a month	38 (14)	39 (14)	53 (16)	25 (9)
Infection of lower respiratory tract at least once in past year	36 (13)	28 (10)	36 (11)	25 (9)
Otitis media at least once in past year	41 (15)	45 (16)	49 (15)	66 (24)
Total	274	280	329	274

Developmental disorders—On examination we found a few children with evidence that suggested that they might later be categorised as clumsy, and some with visual and hearing disorders, but by far the most common developmental disorder was abnormal development of speech and language. This is hardly surprising, as language is arguably the most complex function that has to develop during the early years of life, involving as it does maturational changes in the central nervous system and complex interactions with the child's social environment. Table III sets out the proportions of children with abnormal speech and language at different ages. Because of the importance of this finding we took steps to assess the validity of our examinations by a study in which two psychologists examined the children blind to our assessment. This study showed that (at least at 3 years) our assessments were accurate.[18]

Behavioural problems—At all ages some mothers reported to us problems with their young children, and we present here only a summary of these. Night waking was the most common and most serious problem in the younger child, while in the older preschool

child temper tantrums and difficulty in management were commonly reported (table IV). Clearly all behaviour is in part an interaction between the child and his family, but the data we present are based on the mother's perception of the difficulties she was having with the child.

TABLE III—*Proportions of children with abnormal speech and language (figures are numbers (%) of children)*

	Age		
	2 years	3 years	4½ years
Possibly abnormal	50 (17)	38 (12)	19 (7)
Definitely abnormal	14 (5)	25 (8)	13 (5)
Total	296	323	269

TABLE IV—*Proportions of children with common behaviour problems (figures are numbers (%) of children)*

	Age					
	6 months	1 years	18 months	2 years	3 years	4½ years
Night waking:						
4 or more nights a week	43 (13)	43 (21)	43 (17)	45 (15)	40 (12)	28 (10)
2–3 nights a week	20 (6)	17 (6)	25 (9)	18 (6)	30 (9)	17 (6)
Temper tantrums*:						
3 or more a day				18 (6)	17 (5)	6 (2)
Nearly every day				39 (13)	43 (13)	25 (9)
Often very difficult to manage*				15 (5)	26 (8)	19 (7)
Total	531	278	251	302	331	278

*Recorded only at age of 2 and over.

TABLE V—*History of ear infection in children with normal and abnormal speech and language development (figures are numbers (%) of children)*

	Speech at 2 years		Speech at 3 years	
	Normal	Abnormal	Normal	Abnormal
No ear infection in previous year	282 (85)	12 (67)	257 (86)	18 (72)
Ear infections at least once in previous year	49 (15)	6 (33)	45 (14)	7 (28)
Total	331	18	300	25

Significance of difference between groups with normal and abnormal speech: at 2 years $\chi^2 = 4{\cdot}41$, df = 1, $p < 0{\cdot}05$; at 3 years NS.

TABLE VI—*History of illness of upper respiratory tract in children with temper tantrums (figures are numbers (%) of children)*

Frequency of respiratory illness	Age		
	2 years	3 years	4½ years
Tantrums less than daily			
Once a month or less	216 (90)	234 (87)	223 (92)
More than once a month	25 (10)	34 (13)	20 (8)
Total	241	268	243
Tantrums at least once a day			
Once a month or less	39 (70)	41 (69)	26 (87)
More than once a month	17 (30)	18 (31)	4 (13)
Total	57	59	30
Significance	$p < 0{\cdot}001$	$p < 0{\cdot}002$	NS

Relation between these findings—There is an intimate relation between physical illness, developmental delays, and behavioural problems, and this was confirmed in our study. We illustrate this with just two examples. Table V shows the relation between ear infections and delayed speech and language. While the relation at 3 years was not significant, a child who had had recent ear infection(s) was twice as likely to have speech and language delay as a child who had not; it hardly needs a study with larger numbers to show the potential importance of such a relation. (Predictably, by 4½, when speech and language have developed in most children, the relation was no longer significant.) Children with colds were much more likely to have temper tantrums (table VI); there were several similar relations in our data. We found a strong relation between speech and language delay and children with behaviour problems (table VII). This replicated findings by Richman and her colleagues.[4]

TABLE VII—*Relation between speech and language and behaviour problems* (figures are numbers (%) of children)*

	Speech and language			Significance
	Normal	Possibly abnormal	Definitely abnormal	
	At age 2			
Parents' view:				
No problem (n = 263)	215 (82)	43 (16)	5 (2)	$p < 0{\cdot}001$
Behavioural problem (n = 33)	18 (55)	7 (21)	8 (24)	
Doctor's view:				
No problem (n = 264)	219 (83)	41 (16)	4 (1)	
Behavioural problem:				
Mild (n = 21)	12 (75)	5 (24)	4 (19)	$p < 0{\cdot}001$
Moderate (n = 9)	1 (11)	2 (22)	6 (67)	
	At age 3			
Parents' view:				
No problem (n = 275)	219 (80)	35 (13)	21 (7)	
Behaviour problem (n = 48)	41 (85)	3 (6)	4 (8)	
Doctor's view:				
No problem (n = 269)	221 (82)	30 (11)	18 (7)	
Behaviour problem:				
Mild (n = 40)	31 (78)	4 (10)	5 (12)	$p < 0{\cdot}001$
Moderate or severe (n = 14)	8 (57)	4 (29)	2 (14)	

*Details of assessment of behaviour given by Jenkins *et al.*[14]

Implications for child health services

What are the implications for development of the child health services? In our view specialist knowledge is needed to handle a child with delayed speech and language or a child with complex behaviour problems. General practitioners have a wide knowledge of the health needs of all ages within the population and are also in a good position to assess the influence of family, environmental, and social factors on their young patients. Nevertheless, we doubt whether they can encompass the enormous range of "paediatric" information now available and, indeed, now needed for a satisfactory and comprehensive service to the child with delay in speech and language or a behavioural problem.

The problems presented by these preschool children call for a rather different type of service from the present one. Children with these disorders should not be referred to a hospital outpatient department because the disorders reflect an interaction between the child and his social and physical environment. If disorders of this kind are to be fully understood and alleviated treatment must be given in the community, and a specialist service needs to be applied closely to the primary health service for children. We would endorse the recommendations of a recent conference on community medicine[19] that any career structure for community health services must provide for those who wish to achieve the status of consultant paediatricians, although we would have preferred the term "consultant *community* paediatrician." We have ourselves emphasised the training needs of such doctors.[20] We have always believed that the existing services in Britain give a unique opportunity to see that these needs are met. Other countries recognise that such a service is required: in North America the Ambulatory Paediatric Association attempts to meet this need, while Kohler recently reviewed similar developments within Europe.[21]

Different patterns of practice may and should develop in rural and urban areas, and special efforts are needed to provide services for the worst off members of society.[22] The nurses' role will also vary from rural to urban areas. In cities we favour the continued geographic organisation of health visitors so that

children not registered with a local general practitioner do not fall through the net.

Arguments about services tend to be conducted without regard to the complexity of the clinical problems presented by the preschool child. Similar considerations arise with the health needs of the schoolchild. "Educational medicine," which we see as the school age branch of community paediatrics and concerned with such problems as children with reading retardation or the so called hyperactive child, needs to develop alongside a better primary care service for the schoolchild. The logic of strengthening and expanding "community paediatrics" seems to us to be inescapable.

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Thirty years on: examination performance and career success of the 1950-1 intake of Cambridge medical students

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Abstract

The relation between preclinical tripos and clinical examination results and subsequent career success of 188 medical graduates of Cambridge University was measured using five indicators of success. A generally positive relation was found, but this was not specific enough to make accurate individual predictions. Present levels of appointment were more closely related to clinical than preclinical results. No support was found for the local assertion that "2.1s" do better than "firsts" in clinical medicine. Since undergraduate examination results seem to be inaccurate predictors of later performance they should not be used as the principal evidence in making selection decisions.

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Introduction

Undergraduate examination results figure prominently in subsequent job selection procedures, and it is generally tacitly assumed that there is a positive correlation between examination performance, medical competence, and career success. Unfortunately, recent reports on medical education offer little to support or contradict such a view. Those follow up studies that have been conducted largely concern the subject of specialty choice[1 2] or location of practice,[3 4] sometimes in respect of a particular group of graduates (for example, women).[5] Some reports are limited to the relation in performance within medical school between preclinical and clinical examination success.[6 7] One study followed up the careers of a particular group of scholars but did not contrast them with those of other students.[8]

Two reports in the United Kingdom related overall success during the undergraduate course to early postgraduate experience. One reported a close association between student success and the ability to obtain subsequent posts in teaching hospitals; academic record and broad career choice were also related.[9] The other report showed that undergraduate examination success was related to the possession of a higher qualification at a point four and a half years after graduation.[10] A report from the United States found a generally low positive relation between measures of undergraduate performance and ratings in the first postgraduate year.[11]

In no report has the undergraduate examination performance of a representative student group been related to overall career success. Thus, in view of the paucity of evidence available, and particularly in the light of Hudson's general findings of poor