

## CURRENT PRACTICE

## Evaluation of appropriateness of paediatric admission

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Rising demand upon limited healthcare resources has led to questioning of the extent to which these are appropriately used. One of the methods used to judge effective and efficient use of services is utilisation review. Utilisation reviews apply defined explicit criteria and/or expert opinion (implicit criteria) to the hospital episode taking account of the process of care, decision making, site, frequency and duration of care. Information is derived from the record or interviews with staff. They have their origin in the US in the 1960s as one attempt to contain rising costs of state funded (Medicare/Medicaid) programmes,<sup>1</sup> and were later used by health insurers.<sup>2</sup> Since 1972, the US government has required monitoring of appropriateness of care and length of stay during admission (concurrent review) by a professional standard review organisation (PSRO).<sup>3</sup> Utilisation reviews include use of protocols for assessment of appropriateness of admission. The best known of these are the adult appropriateness evaluation protocol (AEP) and its derivation for paediatric services: the paediatric appropriateness evaluation protocol (PAEP).<sup>4,5</sup> These protocols rely on criteria independent of diagnosis and are based on levels of care given. They are applied by a trained rater to samples of case notes concurrently or retrospectively. If any one of the many criteria is met for the admission day or day of care, that day is rated appropriate. The delay tool<sup>6</sup> and the intensity-severity-discharge (ISD) protocol for paediatrics<sup>7</sup> are alternative instruments. The delay tool, developed for use in adults, has also been used on paediatric patients.<sup>6,8</sup> It can be used concurrently or retrospectively and attempts to detect, quantify, and assign causes for medically unnecessary hospital days. ISD criteria are based on objective clinical indicators and use of diagnostic and therapeutic services which reflect the need for hospitalisation. The criteria are categorised into organ systems taking account of illness severity or into use of special facilities (paediatric intensive care, special care, neonatal intensive care, or rehabilitation). Also included are measures of patient stability indicating readiness for discharge and consideration of alternative care settings. Although these protocols use objective explicit criteria, they are screening tools rather than being definite arbiters of appropriateness.<sup>9</sup>

Despite different medical culture and practice in Britain, some North American audit methods are being imported into this country. It seems timely therefore to examine how appropriateness of paediatric admission might be assessed.

### Why evaluate appropriateness of a paediatric admission?

In paediatric practice in the UK, admissions have risen considerably while the number of beds has dropped slightly over the past 10–15 years. Substantial reduction of length of stay has increased bed availability augmenting capacity for admissions. Increased bed availability allows greater throughput implying economic gain for a hospital in a market driven system. In the UK, however, with a managed market and budget capping, cost disadvantage may arise if 'overtrading' is not followed by funding to support it. Cost issues are not the only concern in paediatrics as a child should not be admitted to hospital unless this is necessary. Thus the question arises whether the current increase in paediatric admissions is justified. Also in view of constraints imposed on service delivery by limited availability of staff and new technologies, there is a need to review service provision as objectively as possible.

Appropriateness implies that for the child's illness or symptoms, a hospital admission, however brief, was the most suitable way in which to manage the problem at the time taking into account the medical disorders which could be present and needed to be treated or excluded.<sup>10</sup> A hospital will be the place where the necessary nursing and medical staff, equipment, and investigation facilities are concentrated to enable a speedy and flexible response to be made appropriate to a child's actual or potential illness. Such resources are usually concentrated to make best use of them for the population served. While some specialist care can be provided at home especially for chronic illness or recovery from acute problems, it is unrealistic to expect the full range of specialist facilities to be provided there in the early phase of common acute illness. A decision to admit to hospital will involve balancing disadvantages of admission (cross infection, painful and possibly unnecessary procedures, iatrogenic accidents,

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disruption of the family, or separation from family and emotional upset to the child) with the benefits (reduction of risk from the illness, easing of parental concern and anxiety, and an opportunity to enhance parental confidence in management of present and future illness).

Appropriateness of paediatric admission should be assessed for a number of reasons: to justify commitment and provision of resource (financial, facilities, or personnel); to identify inefficient use; to identify the need for and type of alternative configuration of service provision; or, to identify those children who should, but do not, access the service. An 'audit tool' for appropriateness could be used in several ways:

- (1) Aiding clinical judgment in the decision about whether a child should be admitted: an application not likely to be accepted by clinicians.
- (2) Identifying inappropriate use of hospital facilities on a day to day basis and ways of promoting earlier discharge by developing other services. Daily use, however, would be limited by the time required for review. Relevance to clinical practice may be constrained by over simplicity.
- (3) Examining variation in appropriateness levels between units for comparison of differing practice assisting analysis of need and demand and planning of services. Areas where further services might be developed or altered could be identified, such as changes in primary care or provision of facilities for emergency day case assessment, day case surgery or elective investigation.

#### Methods of evaluating appropriateness

Utilisation reviews can use diagnosis based criteria taking account of the medical need for admission and length of stay. In the UK health care resource groups based upon length of stay in regard to diagnosis allow such *profile* analysis but have major limitations for UK paediatric practice as length of stay differs little between minor and complex cases. Tierney *et al* in the USA showed that the collection of simple clinical data may be as good a predictor of inpatient costs as discharge diagnosis related groups.<sup>11</sup> *Implicit criteria* applying a clinician's own judgment to appropriateness of care for individual cases, have been used by MacFaul *et al*<sup>12</sup> and in the British Paediatric Association (BPA) appropriateness of admission study due to report this year. The validity of this technique depends entirely on knowledge, skills, and judgment of the reviewer and may yield weak results in unstructured approaches.<sup>1</sup> *Explicit criteria* may be based on diagnosis or on guidelines for specific categories of patients. However, guidelines are complex instruments, and their establishment into routine clinical practice represents a substantial workload. Explicit criteria can also be independent of diagnosis and based on type and level of care criteria. All these approaches allow retrospective, concurrent, or prospective review.

Any assessment of inappropriateness of care should take account of those children who require care but do not receive it. In the UK, there are opportunities to link hospital activity and utilisation rates with the socioeconomic profile of the population to identify deprived populations who do not appropriately access the service.

#### The PAEP

There is no current available 'gold standard' on which to establish the clinical validity of an audit tool for judgment about whether or not a paediatric admission was appropriate. No tool exists for judging the appropriateness of the *whole* of a paediatric admission relevant for the short length of stay in UK, and the true magnitude of inappropriateness is not known. The PAEP was developed from the adult AEP in the US and has been applied there<sup>4,5</sup> as well as in Australia,<sup>13</sup> Canada,<sup>14-16</sup> and South Africa.<sup>8</sup> The PAEP has 20 criteria for assessment of admission day and 28 for days of care. Meeting one of these criteria rates the day appropriate. The criteria were provided by consensus groups of clinicians. The PAEP was not designed to judge overall admission, nor does it take account of the views of the referring general practitioner or parents. Criteria in the current PAEP manual<sup>17</sup> are based on those published by Kreger and Restuccia,<sup>5</sup> though modified slightly from the original publication. *Admission day* criteria are based on subsets of clinical services representing treatment generally available only in a hospital setting, and on patient condition – either major physiological conditions or signs of acute illness which are sufficiently severe to justify admission to an acute hospital. For *day of care criteria*, the subsets are based on criteria for medical services, nursing or life support or patient condition. Some of the criteria are defined with questionable relevance to clinical practice and others based on pulse, respiratory rates, or laboratory values appear overly rigid taking insufficient account of the state of the child and management of health risks involved at the time. Some of the criteria are shown in table 1 together with our comments.

Derivation of the paediatric criteria from the adult protocol may explain some of the weaknesses and limitations of the PAEP. Some of the criteria also are defined only in terms relevant to American practice such as care in an emergency room: the UK functional equivalent probably being a standard or short stay children's ward rather than an accident and emergency department.

The role of the PAEP in UK practice is uncertain and it has not yet been validated for use in this country, although the current BPA appropriateness of admission study is doing this. A modified form of the PAEP has, however, been applied to 3000 paediatric admissions in one English region by Esmail who found about 10% of admissions to be inappropriate (A Esmail, personal communication).

Table 1 Some examples of the admission and day of care criteria in the PAEP with our comments

Criterion	Comment
(Admission day) criterion of acute confusional state, coma or unresponsiveness or (day of care) criterion of coma – unresponsiveness for at least an hour or acute confusional state.	These criteria are the only ones which appear to apply to a fit and it is not clear whether this applies to all convulsions after which there has been recovery. In our view, a young infant admitted after a first febrile convulsion would be an appropriate admission but admission after a convulsion in a child with epilepsy may not be.
Persistent fever greater than 37.8°C orally or 38.3°C rectally for more than 10 days.	This is an unusual problem in children in this country, yet many febrile children would be appropriately admitted for assessment much earlier in the illness than this.
Any of the following conditions not responding to outpatient (including emergency room) management: seizures, cardiac arrhythmia, bronchial asthma or croup.	This could be interpreted to judge all admissions with asthma or croup as appropriate unless definition of 'not responding' is more precise.
Vital sign monitoring every 2 hours or more often (may include telemetry or bedside cardiac monitor).	In our view monitoring may be equally or more important when carried out less often, and general continual observation by nurses is equally relevant.
IV medications and/or fluid replacement (does not include tube feedings) or in another section parenteral therapy – intermittent or continuous IV fluid with any supplementation (electrolytes, protein, medications).	Establishment of tube feeding, for example, in an infant with cerebral palsy would in our view be an appropriate reason for admission. Equally a child with gastroenteritis admitted to hospital is more likely to have IV fluids given than one equally unwell at home. Thus, an admission might be falsely rated appropriate by this criterion.
Chemotherapeutic agents that require continuous observations for life threatening toxic reaction.	This criterion does not seem to apply to ingestion of substances with a potential for poisoning.
IM antibiotics at least every 8 hours.	An unusual type of practice in UK.
Intermittent or continuous respirator use at least every 8 hours. Or in another section respiratory care – intermittent or continuous respirator use and/or inhalation therapy (with chest physical therapy, intermittent positive pressure breathing) at least three times daily, isoetharine hydrochloride (Bronkosol) with oxygen, Oxyhoods, oxygen tents.	If this includes nebuliser use, then this could be self determining as a criterion for appropriateness as hospitalised children with asthma are more likely to receive nebulisers than at home and over estimation of appropriateness result. This is also likely if nebulised or spacer plus mask therapy is included in this definition. The 1991 PAEP manual is not specific on this point and greater clarity is required.
Close medical monitoring by a doctor at least three times daily (observations must be documented in record).	No definition is given of 'close medical monitoring' other than that it must be on three differing occasions. In our view, a child reviewed by an SHO/registrars in the afternoon after a consultant round in the morning would be appropriately admitted for that day but would not meet the requirement in this criterion. Also the need for observations to be documented in the record creates a problem.
Continuous vital sign monitoring, at least every 30 minutes for at least 4 hours.	It is not clear why this is so prescriptive. For instance, nursing observation of feeding pattern or to determine whether child vomits or has frequent diarrhoea or to see whether a child becomes desaturated during feeding may make a day appropriate.

IM=intramuscular; IV=intravenous; SHO=senior house officer.

### Previous studies on paediatric appropriateness

#### (1) STUDIES USING THE PAEP

The earliest two published were those by Kemper<sup>4</sup> and by Kreger and Restuccia<sup>5</sup> each of whom independently developed a PAEP from the adult protocol (the AEP) to take account of paediatric conditions and the protocols differ slightly. Modified versions of these PAEP were subsequently applied in Australia, Canada, and South Africa in the early 1990s and tables 2 and 3 compare the main results. In each of these studies, the PAEP has been changed slightly and applied to differing groups of patients (mixtures of paediatric medical and surgical, of acute and elective admissions, of secondary and tertiary cases and differing age groups). The studies were mainly based in tertiary centres in which a significant proportion of admissions are elective, which have different levels of appropriateness from emergency cases. Application of the PAEP also differed in regard to day of care or admission and exclusion criteria. Kreger and Restuccia criticised Kemper for including the day of discharge, which is likely to be rated as appropriate on day of care criteria due to doctor and nurse input and in their PAEP the day of discharge is excluded. Medical and surgical cases were evaluated together, although their characteristics and management are so different that they should not be analysed as one sample. Recommendations for use vary: whereas Kreger and Restuccia do not recommend the

use of the PAEP for patients under the age of 6 months, three other studies include this age group.<sup>4 13 15</sup> Gloor *et al* and Kemper found fewer appropriate days with younger patients but Kreger and Restuccia did not report any significant difference. Direct comparison of the studies for appropriateness by length of stay is impossible as each uses different categories.

The studies of the PAEP in North America have reported good interobserver reliability but only Smith *et al* have tested validity,<sup>16</sup> Kemper *et al* used sensitivity and specificity and did not report a validity exercise based on expert panels.<sup>18</sup> Audit tools should firstly have high reliability and, secondly, good levels of validity. Validity indicates whether the instrument measures what it purports to measure, that it looks reasonable, and samples the relevant content. For constructs which are not readily measurable such as appropriateness, validity has usually been sought by use of expert panels. Both reliability and validity can be expressed in terms of correlation coefficients of which the  $\kappa$  coefficient measuring agreement beyond chance is widely used. An agreement of 0.75 or greater is regarded as excellent, between 0.4 and 0.75 as fair, and less than 0.4 as poor.  $\kappa$  Coefficients of between 0.46 and 0.89 for reliability for the PAEP have been reported (see table 3) and Smith *et al* report figures of validity of 0.68 for day of admission and of 0.47 without override and 0.6 with override for day of care. Kreger and Restuccia's instrument was based on validity

Table 2 Previous studies of the PAEP: comparison of samples

Author	Facility	Age range (years)	Age detail	Length of stay	Exclusion criteria	Rater
Kemper (USA) <sup>4</sup>	Secondary and tertiary care	0-18	Mean 7.8 years, 13% under 12 months	Median 7 days	Paediatric ICU, burn unit, psychiatric and eating disorders unit, adult services	Physician, nurse
Kreger <i>et al</i> (USA) <sup>5</sup>	Secondary and tertiary care	2-15	Mean 7.5 years	Mean 4.6 days	All but Medicaid patients	Nurses
Gloor <i>et al</i> (Canada) <sup>15</sup>	Secondary and tertiary care	0-19	25% Under 12 months	-	Paediatrics and neonatal ICU, normal newborns, psychiatric patients	Physicians
Formby <i>et al</i> (Australia) <sup>13</sup>	Secondary and tertiary care	0-13	-	-	Rehabilitation care, mental disorders	Medical coder, physicians
Smith <i>et al</i> (Canada) <sup>16</sup>	Secondary and tertiary care	0.5-18	Mean 6.8 years, median 6 years, 9.4% under 12 months	Mean 5.7; median 3 days	ICU, special care nursery, care by parent unit, psychiatric unit	Physician, nurse
Henley <i>et al</i> (South Africa) <sup>8</sup>	Secondary and tertiary	-	46% Under 12 months, 36% between 1 and 5 years	-	-	-
Kasian <i>et al</i> (Canada) <sup>14</sup>	Secondary and tertiary	0-18	Mean 5.3 years, median 3 years, 23.8% under 12 months	-	Special care, neonatal ICU, normal nursery, paediatric ICU, psychiatric admission	Medical student, certified record analyst

In Britain typically paediatric admissions have a mean age around 3 years, and median in the region of age 1.8 years, length of stay has a mean around 2.5 days and a median of 1 day.  
ICU=intensive care unit.

values for the adult protocol.  $\kappa$  Coefficients depend on and vary with the true prevalence of the factor studied. Assessment of medical and surgical cases together will lead to false estimates of appropriateness and of  $\kappa$  reliability and validity scores as both are likely to be higher when an operation has been performed fulfilling an easily identified criterion compared with assessment of the wide range of problems encountered in acute paediatric practice. A special version of the adult AEP is available for elective surgical admissions.

Most studies allowed an 'override' option to the PAEP criteria, described by Smith *et al* as the ability to 'override the assessment in either direction if the rater considered that the criteria based assessment did not accurately capture the clinical situation'. Utilisation review instruments in general<sup>9</sup> tend to overestimate inappropriateness and use of overrides reduces the levels of inappropriateness by reverting to implicit criteria. They may be misused by inexperienced reviewers and the level of training needed by reviewers is increased.

Apart from validity and reliability, sensitivity and specificity can be used to assess an

instrument. Kemper reported for her instrument a sensitivity of 0.93, that is 93% of inappropriate hospital days were correctly identified as such, but specificity was only 0.78 and thus 22% of hospital days would be judged as inappropriate though they would have been necessary. Overrides used to decrease levels of inappropriateness can increase specificity. Finally Strumwasser *et al* have shown that validity scores depend on the setting and medical culture to which the expert panel belongs: scores being lower when a fee for service instead of a prospective payment panel undertook the exercise.<sup>9</sup> It is also possible that these scores will be higher in a research project rather than routine audit.

Comparison of these studies reveals that no single PAEP standardised instrument has been used, and it is not always clear which version of the PAEP has been used. Gloor *et al*<sup>15</sup> and Kasian *et al*<sup>14</sup> each seem to have based their review on Kemper's version, Smith *et al*,<sup>16</sup> Formby *et al*,<sup>13</sup> and Henley *et al*<sup>8</sup> used Kreger and Restuccia's instrument. Thus the statement of Gloor *et al* that 'the PAEP and the AEP have become a standard means of assessing the

Table 3 Previous studies of the PAEP: comparison of results

Author	Inappropriate admission (days)	Inappropriate days of care	Inappropriate admission days with override	Inappropriate days of care with override	Casemix (all combine surgical+medical)	Inter-rater reliability ( $\kappa$ coefficient)
Kemper (USA) <sup>4</sup>	-	21.4% of 1098	-	-	Medical 68% (for tertiary medical 26.9% IA)	0.74 for days of care
Kreger and Restuccia (USA) <sup>5</sup>	10.5% of 793	13.3% of 648	5.8%	9.4%	-	0.68 for admission day, 0.46 for days of care
Gloor <i>et al</i> (Canada) <sup>15</sup>	-	23.9% of 852	-	-	General paediatrics 29.5% of admissions of which 39% IA	Relies on Kemper values
Formby <i>et al</i> (Australia) <sup>13</sup>	23.8% of 495	19.4% of 211	13.3% of 495	9.9% of 211	-	0.75 for admission day, 0.33 for days of care
Smith <i>et al</i> (Canada) <sup>16</sup>	22.5% of 477	22.1% of 547	-	-	Emergency admission 53% of which 14% IA	0.89 for admission day, 0.77 for days of care
Henley <i>et al</i> (South Africa) <sup>8</sup>	2% of 171	20.5% of 365	Not used	-	Medical includes elective	0.7 for admission day, 0.68 for day of care
Kasian <i>et al</i> (Canada) <sup>14</sup>	-	16.2% of 1327	-	-	Medical 21.3% IA, surgical 9.7% IA	-

IA=inappropriate.

need for acute-care hospitalisation in children and adults' remains debatable. Modifications by the individual groups further complicate comparison. The version used by Smith *et al* in Canada<sup>16</sup> has been applied in the BPA study of appropriateness of admission in three Yorkshire hospitals and is being validated using expert panels. The results will be available in 1996. Formby *et al* allowed greater medical overrides when a sudden deterioration in a patient was possible. They suggested further modifications of the PAEP would be necessary for use in Australia.

Although differences in the versions of the PAEP are small, they can alter the meaning of the criteria. Those using the PAEP must be aware of the different versions used, as well as the limitations and shortcomings of the PAEP, especially if any conclusions are to be based on comparative data.

#### (2) STUDIES ON THE WHOLE OF AN ADMISSION

Early attempts to evaluate the whole of an admission instead of single days were made in the 1970s in the USA based on subjective implicit physicians' criteria and taking account of the views of the parent (mothers were unanimous that the admission was necessary),<sup>19</sup> or also by defining objective criteria.<sup>20</sup>

In the USA in 1990, Soulen *et al* reported an attempt to determine the proportion of potentially avoidable admissions taking account of social factors.<sup>21</sup> This study also tried to identify alternative services which if available, might have led to saved hospital days. A closed ended questionnaire was used, developed by paediatric generalists and specialists. The results were compared with data from the monthly conducted hospital utilisation review. The study identified 166 of 600 medical admissions as potentially avoidable (surgical cases and intensive care were excluded). The majority (138/166) of avoidable admissions were judged suitable for care on a 24 hour short stay ward which implies that they would have been *admitted* in the context of current British practice where at least 50% of admissions are for one day or less. Admission for eight of the 38 social admissions found in the 600 was judged unavoidable but others could have been prevented by provision of outpatient care, home nursing, or transport. The utilisation review found only two out of 600 admissions medically unnecessary. The authors concluded that admissions were necessary in 100% given available resources. They felt, however, that physician judgment was influenced by so many complex, subjective, and discretionary factors that it could not stand alone as a reliable and valid measure of necessity, but on the other hand, suggested caution in using objective criteria alone to categorise hospital use as medically necessary.

In an Australian children's hospital 87.7% of a sample of admissions of under 24 hours were found to be appropriate using criteria partly subjective but largely based on the PAEP.<sup>22</sup>

In the UK, auditing of paediatric admission is a relatively new field. In 1991 Rajaratnam reported a study in Cardiff when two paediatric consultant raters using subjective (implicit) judgment on admission notes found 15% and 20% respectively of 620 admissions (which included elective ones) not to be required and 9% and 3% to be purely social.<sup>23</sup> However, the level of agreement between the raters was poor with a  $\kappa$  coefficient of 0.37. He suggested the need for the assessment of appropriateness to be a routine part of audit of practice. In 1993, MacFaul *et al* reported assessment of appropriateness of paediatric medical admission based on a combination of explicit and implicit criteria using consultant judgment on the discharge of the child.<sup>12</sup> Parent's views were sought, and comparisons made between the consultant's, admitting junior doctor's, and the parent's views. Of 267 consecutive admissions, 19.5% were judged by the consultant on discharge not to be needed.

#### An appropriateness protocol for UK paediatric practice?

The PAEP has a number of drawbacks for use in acute general paediatrics in the UK. It is not clear whether this tool studies what it sets out to do and if it truly reflects inappropriate or appropriateness. Little account seems to have been taken of sensitivity and specificity and the effect of misclassification.<sup>24</sup> No account is taken of whether the admission was regarded by the clinical team as medically necessary. Gloor *et al*<sup>15</sup> and Smith *et al*<sup>16</sup> state that the underlying assumption when applying the PAEP is that the decision made for medical patient care is correct, although that is what the PAEP tries to determine using service rather than diagnostic criteria. In our view, it offers an overly mechanistic approach that is confined to the moment rather than taking into account the potential consequences of the judgment, and despite the use of overrides making some allowance for this drawback, most of the studies express reservations about their use. Soulen *et al* give emphasis to potential overtreatment: '... every admission that is avoided reduced potential morbidity, mortality, and cost created by nosocomial infections and iatrogenic complications'.<sup>21</sup> However, if an admission, which is truly necessary is avoided, potential morbidity and mortality could result outweighing the risk of unnecessary admission. The PAEP user manual acknowledges this,<sup>17</sup> and Smith *et al* state that appropriateness of 100% would be unrealistic.<sup>16</sup> The PAEP and similar instruments may not give sufficient attention to the dynamics of illness especially in acute conditions.

In judging appropriateness, account should be taken of the potential clinical disorders associated with a presenting illness in a child. In acute childhood illness especially in infants and younger children, distinction of a mild from severe illness is often difficult. In the early phase, many conditions present with the same symptom complex, and underestimation of

severity may lead to adverse outcome. Paediatric observation, investigation, and treatment may often be appropriate at the time of admission in what turn out to be minor conditions. The published studies of the PAEP in North America and Australia have mainly been in mixed secondary and tertiary centres where patients were older and length of stay longer than is usually found in UK paediatric practice (see table 1). Thus they have limited relevance to UK practice where at least 80% of paediatric admissions are to secondary care units with over 90% being emergency and over 50% staying for less than 24 hours so that PAEP day of care criteria would not be applicable. For the UK, it may be more relevant to have an audit tool which will assess the appropriateness of the whole of an admission rather than to examine whether the child should be in hospital on any given day. Nevertheless the PAEP is likely to be of value for elective or tertiary paediatric work or for children's surgical admissions – albeit with some modifications. The paediatric ISD criteria<sup>7</sup> appear more clinically relevant than the PAEP: for example, severity of illness criteria include presenting problems. However, application of the ISD appears complicated with, for instance, addition of differing clusters of criteria for different body systems to determine appropriateness. Appropriateness may also be rated if there is an aggregate of marginal criteria. If the criteria, which are applied concurrently before, at, or after admission, are not met additional information may be sought from the physician caring for the child which may then make the admission appropriate. An appeal procedure to a third physician not involved in the care is advised if the caring physician disagrees with the application of the criteria.

Utilisation reviews were developed in the USA on the basis of cost justification and in a different financial culture. However, vindication of resource allocation is equally important in a public funded NHS which needs to make the most efficient and cost effective use of resources. Account should also be taken of the need to minimise disruption and risk to children and families from acute illness, including reduction of emotional and financial stress, and indirect costs such as travel and loss of time from work should be considered. However, whether ambulatory care options are more cost effective than conventional services remains debatable and an audit tool to evaluate this practice would be useful. A short admission to a unit sensitive to the child's and family's needs, could well prove to be the most beneficial and least costly of the various options.

Admissions that would be preventable may be necessary because social circumstances could not be changed at the time. Social remedies are not likely to be immediately achievable, may be costly or unacceptable to a family (for example, putting in a foster mother or nurse overnight),

and not permanent. Such changes also lie outside the healthcare responsibility.

The BPA has received health department funding to develop an appropriateness of admission protocol for evaluation of the whole of an admission. The protocol has been developed using a new approach not modifying an existing tool. It will take account of the presenting problem, clinical state and diagnosis in the child, and also of the social and primary care factors affecting the management of the illness. It aims to be suitable for use in accident and emergency departments or even in primary care. Consensus panels of paediatricians, accident and emergency specialists, and general practitioners have helped to form the criteria and to validate the protocol which should be available for general use early in 1996.

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