Forms of better care
Elizabeth Molyneux & Grace Malenga

The introduction of forms called critical care pathways into the paediatric unit of a hospital in Malawi has strengthened teamwork and helped to increase the efficiency with which resources are employed. They serve the dual function of indicating good management and providing an opportunity to note actions and potential progress.

Guidelines for the treatment of particular diseases have various limitations. Most are written for only one type of carer and thus overlook the need for teamwork. No time scale is included in the sequence of care, and there is no means of evaluation. Outcomes may be measured but the reasons for failure to achieve improvement are not defined. Algorithms formulated and introduced by experts outside the carers’ circle may not be fully evaluated locally, and local carers may not have an opportunity to modify them.

Critical care pathways, also known as integrated care plans or care maps, have been worked out to tackle some of these problems. A critical care pathway is a form serving the dual function of indicating good management and providing a case record on which actions and potential progress are recorded. It is developed jointly by a number of care professionals, gives specific times for interventions, and deals with the decisions and interactions of all members of the team looking after a patient.

Headings taken from a critical care pathway for acute respiratory infections are given in the box. Important observations, treatments, results and discussion with parents are integrated on a single page. The reverse side allows for some reminders of care or doses and provides a place where departures from the proposed course of management can be noted.

Critical care pathways have been developed and introduced on the paediatric wards of the Queen Elizabeth Central Hospital in Blantyre, Malawi. This is a 900-bed teaching hospital, whose paediatric unit, with 220 beds, has an average of 30 admissions and up to 750 outpatients every day. The most common illnesses treated are malaria, diarrhoeal diseases, acute respiratory infections, meningitis, tuberculosis and malnutrition. Difficult obstetric cases are referred to the hospital and there is a large neonatal unit.

**Development and introduction of critical care pathways**

The clinical management group of the hospital’s paediatric unit, comprising doctors and nurses, meets monthly to clarify treatment protocols, solve management problems, and discuss the direction of future clinical developments, and has
Headings used in critical care pathway for acute respiratory infection

The form provides space for the following information to be entered at admission and on subsequent days of treatment (5 days in all).

- **Demographic details**
  - Name
  - Date of birth
  - Sex
  - Date of admission/discharge/death

- **Time**
  - Observations: record by segments
  - Treatment: exact time of administration

- **Treatment**
  - Drugs
    - Crystalline penicillin IM or IV
    - Chloramphenicol IM or IV
    - Cotrimoxazole
  - Fluids (rate/type)
    - IV
    - Oral or nasogastric
  - Oxygen 21/min Y/N
  - Transfusion

- **Observations (+/-)**
  - Alert/Restless/Drowsy
  - Sucking/feeding Y/N
  - Cyanosis Y/N
  - Pale/Grey/Blue/Pink hands
  - Noisy breathing Y/N
  - Nasal flaring Y/N
  - Chest indrawing Y/N

- **Vital signs**
  - Respiratory rate
  - Heart rate
  - SaO₂ readings
  - Blood glucose mmol/l
  - Temperature (°C)
    - >40, 39, 38, 37, <36
  - Daily weight (kg)

- **Investigation results**
  - Packed cell volume %
  - Malaria parasites (*)
  - FBC/Blood culture taken?
  - Chest X-ray done? Y/N
  - Nasopharyngeal aspirate taken? Y/N

- **Parent involvement**
  - Explained to parents

become the local steering group for the development and introduction of critical care pathways. It was agreed that these should be introduced one at a time. The forms were discussed with doctors and nurses outside the group, and all staff were shown how to complete them. A nurse coordinator was appointed to deal with any queries.

Each critical care pathway carries only the most important elements of care. It is designed to be as simple as possible to complete, and incorporates treatments, observations and vital signs. Space is provided for a daily record of discussions with parents on problems and progress. The reverse side includes drug schedules, feeding charts, coma scores or any other facts helpful to the carer.

In the United Kingdom and the USA, critical care pathways are increasingly taking input directly from patients or their parents. Patients who understand the process of care and are involved in decision-making are much more likely to be cooperative than those who receive treatment passively.

All the carers looking after a particular patient use the critical care pathway as a means of directing care and recording any departure from what has been planned. A comparison is thus made between what should happen and what actually happens, and this allows problems to be identified at an early stage and dealt with promptly. The departures or variances should be recorded in a way that enables all carers to identify them without difficulty. Variances may be avoidable or unavoidable, and may be attributable to the patient, a staff member, the health care system or the community. Audit becomes easy if they are filed by case type.
When critical care pathways are being drawn up it is necessary to review current processes in the light of national and international recommended practices. The following questions should be asked.

- What is done and why?
- Could improvements be made?
- Could what is done be achieved more easily and quickly?
- What are the barriers to change?

Each local steering group has to evaluate actual and potential resources, coopt experts, review the literature and decide on goals. A common illness has to be selected for which there is little variation in management and the presentation of which is fairly consistent, and a critical care pathway can then be devised.

In developed countries, critical care pathways have been introduced largely with a view to containing costs. In developing countries, where the health services are almost overwhelmed by the burden of illness, it is vital that all resources are used as efficiently as possible. In these circumstances the use of critical care pathways is a means of receiving recommended care and adapting it to what can best be achieved locally through the empowerment of local carers and the provision of a forum for multidisciplinary cooperation. Successes and problems can be audited and plans can be altered so as to improve the quality of care.

In the Queen Elizabeth Central Hospital, Blantyre, the first critical care pathway to be introduced was a generic neonatal form. Important observations and investigations to be included were suggested by staff of the neonatal unit. The antibiotic commonly used were indicated and their doses were given on the reverse side. Problems with the first draft were identified at weekly meetings. Junior doctors lacking experience in neonatology found the form particularly useful in identifying important observations and suggesting treatments.

Critical care pathways were introduced for malnutrition, tuberculosis and meningitis. One for acute respiratory infections was underused because of difficulties encountered in making a firm diagnosis on admission. A critical care pathway for malaria proved the most difficult to develop, because, with numerous patients on different schedules, the overstretched staff were unable to cope and consequently some injections were missed. After discussion with the nursing staff it was agreed that on the day of admission the times of medication were to be written on the form, but that thereafter the quinine would be administered when all other 12-hourly drugs were given. The delivery of medications became much more consistent as a result of this compromise.

In the malnutrition unit and the tuberculosis ward, audits have been performed on patients’ presentation, progress and outcome. The auditing process has been made simple by the fact that all the children’s hospital stays and outcomes are identically documented. It has also become easy to follow their treatment charts and to detect when medications or treatments have been missed.

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Staff responses

A questionnaire completed by over 80% of medical and nursing staff using the critical care pathways revealed that 76% thought they were helpful and wished to continue using them. Several responders thought they took up too much time, and about half would have liked more training in their use. Departures from critical care pathways were not recorded very well, possibly because of a fear of criticism and a concern that parents might be able to read them. Discussions held in the light of the questionnaire returns led to changes in format which increased the visual impact.

Staff in the intensive care and adult medical wards have asked for critical care pathways. Nurses have asked many more questions about the treatment and laboratory results for children than they did previously. On several occasions they have initiated emergency care, e.g., 50% intravenous glucose for hypoglycaemia, after using critical care pathways for guidance.

The introduction of critical care pathways into the paediatric wards has strengthened the team approach to care and has made those concerned think about what it is important to document for particular illnesses. The critical care pathway for malaria made clinicians aware of how a treatment request, although simple to present, may be impossible for another carer to administer. Audit has become simpler, and critical care pathways can be modified to include questions that an audit wishes to answer.

The results obtained indicate that, with modifications, critical care pathways would be of value in district hospitals. They do not answer all management problems but they have helped us, as a team, to use our resources with increased efficiency.

Critical care pathways should be introduced one at a time. If they all follow the same format or template, each can be rapidly learnt and understood. It is advisable not to print a large number of copies of a critical care pathway initially as several revisions are likely to be required.

It is vital to allocate time for staff training. A nurse coordinator proved invaluable in connection and in bringing carers’ suggestions for improvement to the attention of the steering group.

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