phylactic chemotherapy to all patients delivered of a mole.⁸⁻¹¹ Many of the series so far reported probably are not large enough to evaluate the efficiency of this procedure,¹ but the dangers to patients of this prophylaxis is considerable and the cost must be much higher than careful follow-up and treatment of only a selected few. Goldstein asked "Is it justifiable to administer chemotherapy to all patients with molar pregnancy when only about 20 per cent of the total number actually develop life-threatening sequelae, particularly when careful gonadotrophin follow-up permits early selection of those patients who are destined to develop trophoblastic neoplasia."¹²

Radioimmunoassay is a comparatively complex technique, but once established many assays are as easily carried out as a few, particularly with automatic data processing. It would be most efficient if a few centres were geared to give such a service and adequate clerical staffing could be supported. In this region the success of such an arrangement has been apparent and strongly supports the comment, "a case can therefore be made for having some form of centralized follow-up service. . . . It could be arranged for patients to be sent instructions and requisites for urine collections from a central laboratory. The patients would post the specimens to the laboratory, which would in turn send the assay result to the referring clinician and inform the patient when to send in the next specimen. Such a service would aim not to replace follow-up arrangements made locally but to provide the clinician responsible for the patient with supplementary information."¹ Even this understates the position. The information derived from the HCG level is not supplementary it is the central pillar of hydatidiform mole follow-up, and it is the clinical follow-up which is supplementary.

It is intended to extend this laboratory service to any clinician anywhere who wishes to make use of it.

Throughout the time the method was being organized Dr. K. D. Bagshawe and his staff were unfailingly helpful, and this has continued. The co-operation of Dr. Vernon C. Stevens, Ohio State University, Columbus, Ohio, and his staff has been invaluable. Thanks are also due to Mrs. R. Booth and Mrs. J. Marnie for their technical and clerical help. Such work is not possible without the co-operation of clinical colleagues, to all of whom I am grateful. Professor J. Walker by his support and helpful advice throughout the development has made the service possible.

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Outside Europe

Concept of a Paediatric Emergency Ward for the Cities of a Developing Country

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Summary

Children's hospitals in developing countries carry an enormous patient load. Available facilities must be organized to provide essential care for all. At the Red Cross Children's Hospital in Cape Town this has been achieved by the development of an emergency ward attached to the outpatient department. It is suggested that this concept should be applied in large hospitals of other developing countries.

Introduction

Oliver and Fage¹ listed South Africa as the first country on the continent to witness an appreciable movement of rural Africans to urban areas. They dated this phenomenon from the early 1920s, when secondary industries producing for the

local market were first established. The ensuing 50 years have seen this pattern recur in every country in Africa. There are now vast conurbations of people in whom increasing sophistication and the awareness of the advantages of modern treatment have created a demand for hospital care which far exceeds the available facilities. The economic structure of developing countries provides their administrators with a choice—either a limited service of high standard for the fortunate few while the rest are turned away, or the organization of available facilities in such a way that the essentials of adequate care are provided for all who seek it. In Cape Town, at the Red Cross Children's Hospital, the latter course was chosen, and this report indicates the extent to which the aim of essential care for all has been achieved through the concept of an emergency ward.

Case Load

Children who attend the hospital are drawn predominantly from greater Cape Town, which has a population of 1,064,468.

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There are, however, many patients from the towns, villages, and rural areas of the Western Cape where there is scant local provision for the medical care of the indigent. Some patients are referred from as far afield as South West Africa, the Transkei, and the Northern Cape (Fig. 1). During 1957, which was the first full year of operation, 42,127 children were treated in the outpatient department. Subsequently numbers increased steadily, and during 1971 the total approached a quarter of a million (Fig. 2). Throughout this period the number of hospital inpatient beds remained the same, about 120, and only about 2,000 patients can gain admission to the hospital wards each year. Thus provision has had to be made for all those seriously ill and in need of specialist treatment but for whom no hospital bed is available.

FIG. 1—Geographical area from which patients were referred to the emergency ward.

FIG. 2—Trend in outpatient attendances since 1957.

Emergency Ward

The emergency ward is a prefabricated building adjacent to the hospital outpatient department. It is divided by glass partitions into three sections, and there is also a small side room which, when necessary, can house three incubators. Each of the 30 cots is provided with piped oxygen, a cold humidifier, and a drip suspension hook. There is a portable x-ray machine and an adequate supply of oxygen tents. The full laboratory service of the hospital is available to the ward, as are all the other special diagnostic services. An air-conditioning plant makes the atmosphere of the ward tolerable on the hottest day.

The ward is staffed by a senior paediatric consultant, two registrars, and a senior house officer, who is one of five working eight-hour shifts on a round-the-clock roster. The consultant is available throughout the day for urgent consultation and conducts a full ward round at noon each day. The two registrars are on a three-month full-time assignment to the ward as part of a three-year training programme in paediatrics. The eight-hour-shift system for senior house officers ensures that

the doctor on duty is always relatively fresh and equal to the heavy demands of work in the ward.

There are three senior nursing sisters, all experienced in this type of work, assisted by several nurse aids who are untrained but provide willing pairs of hands. A secretary maintains telephone contact with the hospital wards so that as soon as a bed becomes available it can be filled by a child from the emergency ward. On transfer a typed summary of the case notes accompanies the patient.

Each child in the emergency ward must be attended by a responsible adult, usually the mother. She feeds, washes, and changes the child, for nursing staff cannot be spared for these activities. Attractive meals are provided by the hospital kitchen and most mothers welcome the chance to stay with their children while they are acutely ill.

The usual criterion for admission to the emergency ward is that the child is so ill that in the opinion of the attending doctor he would probably die if sent home. The two registrars are responsible for a continual assessment of patients so that those who no longer need the special facilities of the ward are discharged without delay, and vacant hospital beds are filled at once by those in need of admission. In this way maximal use is made of bed space and it is not often necessary to use extra cots.

When patients come from distant country towns the admission criterion is relaxed, and patients referred for special investigations available only at the central hospital may undergo full diagnostic work up during a stay of two or three days in the ward. In this way an effective service can be offered to the patients of doctors in outlying areas, despite the paucity of hospital beds.

During the summer months gastroenteritis is extremely common, and many patients arrive at the outpatient department in a profoundly dehydrated state. These receive intravenous fluids in a separate gastroenteritis unit, which is housed in the same building as the emergency ward but is administered separately. Admissions to the gastroenteritis unit (10,695 in 1971) are not considered in the present study except when the diagnosis of parenteral disease necessitated transfer to the emergency ward. Neonates with gastroenteritis are admitted direct to the emergency ward.

Clinical Material

The commoner diagnoses at the time of admission to the emergency ward in the years 1967, 1970, and 1971 are shown in Table I. Conditions are listed in order of frequency for 1967,

TABLE I—Conditions Most Commonly Treated in Emergency Ward

	1967	1970	1971
All conditions seen:	4,922	5,041	5,132
Pneumonia	1,280	1,038	1,317
Bronchiolitis	675	247	270
Meningitis	666	363	481
Febrile convulsions	155	245	218
Neonatal gastroenteritis	150	295	210
Anaemia	119	58	42
Stridor	115	109	171
Kwashiorkor	113	99	88
Paraffin ingestion	103	12	52
Poisoning	68	101	73
Herpes stomatitis	67	56	44
Marasmus	65	51	60
Tuberculosis	57	72	94
Nephritis	57	129	205
Haemorrhagic disease of newborn	52	14	18
Asthma	52	78	85

and it is seen that while pneumonia remains the commonest diagnosis there are wide variations in the incidence from year to year of some of the other conditions. During 1967 there was a severe epidemic of meningococcal meningitis, which did not recur in subsequent winters. The high incidence of bronchiolitis in that year may have been due to a greater than usual prevalence of respiratory syncytial virus.

The drop in admissions for severe anaemia—children admitted to the emergency ward usually have haemoglobin levels below 5 g/100 ml—may be ascribed to the close attention devoted in recent years to the prevention of iron-deficiency anaemia by the City's child welfare clinics. No explanation can be offered for the wide swing in the admissions for paraffin ingestion. The increase in the number of cases of tuberculosis is depressing. Regrettably house officers must still be taught that a sick African child from the Transkei has tuberculosis until proved otherwise. The sharp increase in the incidence of acute poststreptococcal glomerulonephritis, first evident in 1970 and which continues unabated in 1972, must be due to the prevalence in the community at present of a nephritogenic strain of β -haemolytic streptococcus. The drop in incidence of haemorrhagic disease of the newborn followed the adoption of routine phytomenadione administration to all neonates born in Cape Town, and the cases now seen come from outlying areas where there is no domiciliary midwifery service.

Treatment Regimens

The effective functioning of an emergency ward unit with its rapid patient turnover and changing junior medical staff calls for standardization of treatment for each condition. Standard treatment plans are followed by all doctors working in the ward and individual idiosyncrasies in regard to prescribing are not permitted. This simplifies matters for the nursing staff and for paramedical staff such as the pharmacists. A standard regimen may sometimes be altered if it is felt on the basis of available evidence that a new drug merits a trial. For example, recently hexaprenaline² has been substituted for orciprenaline as the intravenous bronchodilator used in bronchiolitis and status asthmaticus.

Children with pneumonia who have signs of respiratory distress are nursed in oxygen tents fitted with cold humidifiers. In severe hypoxia a face-mask may be used. All patients with a respiratory rate above 60/min. receive fluids by the intravenous route only. This ensures adequate hydration and removes the possibility of inhalation and the aggravation of hypoxia by gastric distension. The drip set is used as a vehicle for the administration of drugs. Penicillin in large doses—usually at least 500,000 units every six hours—is the antibiotic of first choice in most cases of pneumonia and is given to all cases of bronchiolitis in an attempt to prevent secondary bacterial infection. Young infants and those with extensive pneumonia receive intravenous kanamycin or gentamicin in addition to penicillin. When staphylococcal pneumonia is suspected—for instance, after measles or in the presence of a suggestive x-ray picture—cloxacillin is given in addition to penicillin until the bacterial sensitivity is known. Other antibiotics such as the tetracyclines, chloramphenicol, erythromycin, and novobiocin are very seldom prescribed, and little use has been found for the expensive sulphonamide-trimethoprim combination. In addition to the treatment mentioned infants and small children with bronchiolitis receive an initial subcutaneous injection of adrenaline followed by an intravenous infusion of hexaprenaline.

The progress of patients with respiratory disease is monitored clinically, and if deterioration is noted serial blood gas determinations are ordered. A significantly lowered PO_2 and a climbing PCO_2 are indications for transfer to the hospital respiratory intensive care unit. Most patients with respiratory infection show great improvement within the first 24 hours. The tent is removed as soon as signs of respiratory distress diminish. Oral fluids are substituted for the intravenous drip, and where practicable drugs are given by mouth instead of by injection. Children with bronchiolitis spend an average of 36 hours in the ward before being sent home, but many with lobar pneumonia and bronchopneumonia go home sooner. All

are closely followed as outpatients and are returned to the emergency ward if their condition deteriorates. When pneumonia is extensive, large pleural effusions are present, or the child shows no improvement after 12 to 14 hours in the emergency ward every effort is made to find a bed in one of the hospital wards.

During the summer months viral meningitis is common. Bacterial meningitis occurs throughout the year but is more prevalent in winter. Because of dire consequences if antibiotic treatment is not begun soon after the onset of bacterial meningitis all children who have purulent fluid on spinal tap receive intravenous penicillin and chloramphenicol. Two million units of penicillin and chloramphenicol, calculated on a total daily dosage of 80 mg/kg, are given every six hours via a drip needle. While of no value to those children with typical aseptic meningitis this policy does ensure that there is no delay in treating a child with atypical bacterial meningitis. After 48 hours laboratory culture results are available and the child with viral meningitis, who is almost invariably feeling very much better, is discharged. Patients with bacterial meningitis are transferred to one of the hospital wards, where treatment is continued for 14 days.

Every day infants and young children arrive in the outpatient department either having convulsions or in the immediate postictal state. Convulsions are arrested with intravenous diazepam or intramuscular paraldehyde. Many of them have high temperatures, and clinical examination usually shows an infection which is responsible for fever. Tepid sponging and, where practicable, oral paracetamol are used to reduce the temperature. Appropriate treatment for infection is given, and once the child has awakened oral phenobarbitone is given for several weeks. Before discharge arrangements are made for the child to have an E.E.G. at a later date and to be followed up at the neurology clinic.

A similar standard programme of management is followed in each of the other common conditions encountered. Frequent reassessment of each individual case ensures that alterations in a standard regimen can be made when necessary to allow for individual variations in the course of an illness.

Outcome of Emergency Ward Management

A study of the disposal of patients from the emergency ward (Table II) shows that during 1971 two-thirds of the patients admitted seriously ill were allowed to convalesce at home and to attend the outpatient department for follow-up visits.

TABLE II—Disposal of Patients

Admitted to hospital wards	..	..	..	..	..	..	..	1,444
Sent home	..	..	..	..	..	..	..	3,400
Died	..	..	..	..	..	..	..	109
Absconded or transferred to gastroenteritis unit	..	..	..	..	..	..	..	179

In a community where hospital beds for children are readily available all of these patients would have been admitted and would have spent an average of about 10 days in the hospital. The emergency ward ensured that the special equipment and skilled care of a teaching hospital was available to them when needed during the acute phase of illness. Once this need had passed supervised care as an out-patient, though a measure adopted from necessity, was probably not in any way detrimental to the child.

Most of the children were seriously ill, and a mortality of 2.1% is thus not unduly high. It represents only those children who died in the emergency ward and not those who died after transfer to one of the hospital wards.

Comment

The use of an emergency ward in the way outlined attempts to reconcile the need for a high standard of paediatric practice with the economic realities of a developing country. It provides essential care in hospital beds at relatively low cost for large numbers of children who would otherwise go without. It capitalizes on the fact that a child seriously ill one day may be convalescent the next, if given correct treatment. It completely avoids the agony of separation for mother and child at a time when their mutual need for each other is very great. A total of 3,400 children were successfully nursed through the acute phase of illness in the emergency ward at Red Cross Hospital during a time when the total admission to four conventional wards in the hospital numbered about 2,000.

In the fullness of time improved living standards, family planning, the availability of infant welfare services, and pro-

vision of new hospitals will produce in Africa and elsewhere the situation which now exists in the developed countries of the West, where a hospital bed is available for every child who needs one. This state of affairs will not be achieved in the developing countries for several generations, and in the interim it is suggested that the operation of emergency wards along the lines described will lead to the saving of countless lives.

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Christmas Quiz 1972

(Answers on Medical News page 740)

1. In which modern novels do the following somewhat inaccurate medical observations occur?

(a) You should see my fingers . . . Great clubbed things: huge, sallow, heavy nails. I used to have (probably still have) a kind of subacute bacteriological endocarditis, with a special complication. Had it since I was a youngster. It clubbed my fingers, and now and then I get weak, not too often. But the complication is a tendency to myocardial infarction. What that means is that any day I may fall quickly dead, without warning—perhaps before I complete this sentence, perhaps twenty years from now. I've known this since 1919: thirty-five years.

(b) Then Big Harry said to me, "You know, Bobby, I think old Suicides was crazy." He was right, too, because when his family sent for him the man who came explained to Commissioner old Suicides had suffered from a thing called Mechanic's Depressive. "You never had that, did you, Roger?"

(c) When she arrived at the hospital, people rushed to the windows to see what all the noise was. The Cadillac, with both mufflers gone, sounded like a heavy bomber coming in on a wing and a prayer. Valencia turned off the engine, but then she slumped against the steering wheel, and the horn brayed steadily. A doctor and a nurse ran out to find out what the trouble was. Poor Valencia was unconscious, overcome by carbon monoxide. She was a heavenly azure. One hour later she was dead. So it goes.

2. What are?

(a) Barbotage. (b) Barb burns. (c) Worm wobble.

(d) Strawberry stools, (e) Cynanche. (f) Alpenstich. (g) Owl's eye cells.

3. What hazards to health may be associated with?

(a) Holy water. (b) Precatory beans. (c) Margarine. (d) Rice oil. (e) Potatoes. (f) Laxatives containing oxyphenisatin. (g) A popular compound for gastric upsets containing clioquinol.

4. What are?

(a) Madonna fingers. (b) Lazarus complex. (c) Moya-Moya disease. (d) Ulysses syndrome. (e) Hermes syndrome. (f) Ergasteric hepatitis.

5. What animal models of human disease are provided by the following?

(a) Coon hound paralysis. (b) Aleutian disease of mink. (c) Teschen disease of pigs. (d) White Carneau pigeons. (e) White Pekin ducks. (f) Gunn rats.

6. For what are the following doctors or medical students better known?

(a) Mikhail Bulgakov. (b) Doris Bell Ball. (c) Henry Stephens. (d) John Locke. (e) Robert Southey.

7. What are the following?

(a) G syndrome. (b) I-cell disease. (c) CPAP. (d) PAP. (e) Lazy (sick) sinus syndrome. (f) Lazy leucocyte syndrome.

8. See illustrations. Name the following whose anniversaries were celebrated in 1972:

(a) The father of genetics. (b) A German physician who designed the urea concentration test. (c) A doctor-artist who accompanied one of the world's greatest explorers. (d) A South-American-born doctor who turned to calligraphy and designed London Passenger Transport Posters. And the following, whose contributions to medicine were celebrated:

(e) The discoverer of malaria transmission. (f) The discoverer of nitrous oxide.

(a)

(b)

(c)

(d)

(e)

(f)