

ally, the quality of care suffers. The need for change is acute. The government needs to adopt flexible approaches to the delivery of health care. For instance, some clinics could be held in the evenings. Allied medical staff, who are currently underused, could share greater responsibility.

We believe that direct regulation by the government of the quality of care is impractical. Rules are easier to make than to enforce. The existing medical bodies need to play a larger part. For a start, they could issue realistic guidelines on standard practice, which could serve as a bridge between local realities and recommendations by the World Health Organisation, which often seem distant. Professional registration could be made time limited and renewal contingent on a system of continuing medical education credits. In India, for instance, existing state run health insurance schemes currently restricted to state employees could be expanded with the help of the private sector. The concept of "managed care" could also be explored.²

The impending changes in the Indian Consumers Act 1986 should, we hope, stimulate the growth of patient advocacy groups.³ It would be best, however, for the medical profession to reform itself.

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Chest infections in African children

Respiratory rate poor predictor of hypoxaemia

EDITOR,—F E Onyango and colleagues investigated hypoxaemia in 256 Kenyan children with acute respiratory infections attending a referral hospital in Nairobi (altitude 1670 m), 151 (59%) of whom were found to be hypoxaemic (arterial oxygen saturation $\leq 90\%$ determined by pulse oximetry).¹ A respiratory rate of $\geq 60/\text{min}$ was the single best clinical predictor of hypoxaemia in children aged 12 months or more, while in children aged 3-11 months a respiratory rate $\geq 70/\text{min}$, grunting, and retractions were the best independent clinical predictors of hypoxaemia.

We have investigated children aged under 5 years with features of pneumonia attending a health centre and mobile clinics in a rural area of

the Gambia (altitude $< 200\text{ m}$). Investigations included examination of a thick blood film for malaria parasites, chest radiography, and pulse oximetry.

Over the 10 months August 1990 to May 1991 oxygen saturation was recorded for 1033 children who satisfied the World Health Organisation's criteria for a diagnosis of pneumonia (cough or difficulty breathing and indrawing or a raised respiratory rate ($\geq 60/\text{min}$ at age < 2 months; $\geq 50/\text{min}$ at age 2-11 months; $\geq 40/\text{min}$ at age ≥ 12 months).² An oxygen saturation of $\leq 90\%$ was recorded for 105 (10.2%) of these children. The table shows the value of a raised respiratory rate as a clinical predictor of hypoxaemia. Among children aged ≥ 12 months a respiratory rate $\geq 60/\text{min}$ had a positive predictive value of only 12%, although the accuracy (70%) was the same as that found by Onyango and colleagues. Among children aged 3-11 months a respiratory rate of $\geq 70/\text{min}$, although significantly associated with hypoxaemia, had a positive predictive value of only 27%, while the accuracy (83%) was greater than that found by Onyango and colleagues.

Children with malaria often present with symptoms and signs suggestive of an acute lower respiratory infection,³ including a raised respiratory rate which is only partly attributable to fever.⁴ The high prevalence of malaria and infections other than acute lower respiratory infection among children satisfying the World Health Organisation's criteria for pneumonia, the lower altitude, and the fact that our patients were not attending a referral hospital may have contributed to the lower incidence of hypoxaemia in our study.

Our observations indicate that, in clinical settings similar to those we describe, the respiratory rate alone may not be an appropriate guide to the use of oxygen, particularly if supplies are limited.

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Clinical signs unreliable

EDITOR,—F E Onyango and colleagues studied the detection of hypoxaemia clinically in children with acute lower respiratory infection and the place of oxygen in its management in developing countries.¹ We wish, however, to make some comments

relating to the utility of identifying clinical signs that suggest hypoxaemia.

The clinical signs were assessed by one medical observer, but we have reservations about how these signs might be interpreted by different observers. This is particularly important because of variations among health workers with only basic observational and interpretative skills, which is the usual level of training of most health workers in developing countries.

The agreement among independent observers on respiratory signs in children is notoriously variable. A previous study that used the κ statistic (often used in comparisons of clinical observations) for respiratory rate and chest retractions found agreements of 0.38 and 0.25 respectively.² Such studies indicate that even among well trained observers with a consensus on signs of importance there is only 50% agreement. This lack of reproducibility of respiratory signs limits the reliability of any model that predicts hypoxaemia based on clinical signs.

It would also be of interest to view the results of the study in terms of the definitions of mild and moderate pneumonia as advocated by the World Health Organisation. The management of moderate pneumonia, which is distinguished by the presence of indrawing, requires inpatient care, as would any use of oxygen. It would be useful to study those children assessed under the World Health Organisation's criteria as having moderate pneumonia who are hypoxaemic.

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Treating drug addicts in police custody

EDITOR,—Keith J B Rix's letter regarding opiate addicts and forensic medical examiners is misleading.¹ Most police surgeons prefer not to prescribe methadone for detainees in police stations, but they seek no ban. Whether methadone should be given prophylactically to addicts routinely in police stations as recommended by a Department of Health working party is controversial. This, not the Grimsby convictions, prompted a symposium in January organised by the section of clinical forensic medicine of the Royal Society of Medicine and the Association of Police Surgeons, a serious attempt to explore the differing views of the forensic medical examiners and the psychiatrists, who, like Rix, are highly critical of the reserve in which methadone is held.

Rix is experienced in the treatment of addicts in prisons, but there is the world of difference between treating addicts where continuing care and adequate supervision are possible and treating them in busy police stations, where they may be attended by different doctors at different times, and where how much, when, and what they have taken in the way of drugs can rarely be verified. If a safer drug can be effectively substituted for one which is potentially dangerous this should be done; there are several drugs safer than methadone. At the recent symposium a psychiatrist admitted that dihydrocodeine was just as effective in relieving the malaise of withdrawal. Forensic medical

Raised respiratory rate as clinical predictor of hypoxaemia among 1033 Gambian children satisfying the World Health Organisation's clinical criteria for pneumonia

| Respiratory rate (/min) | Total No | No hypoxaemic | Sensitivity (%) | Specificity (%) | Positive predictive value (%) | Accuracy (%) |
|--|----------|---------------|-----------------|-----------------|-------------------------------|--------------|
| <i>Age < 3 months</i> | | | | | | |
| ≥ 60 | 101 | 18 | | | | |
| ≥ 70 | 65 | 11 | 61 | 35 | 17 | 40 |
| | 29 | 7 | 39 | 73 | 24 | 67 |
| <i>Age 3-11 months</i> | | | | | | |
| ≥ 60 | 380 | 41 | | | | |
| ≥ 70 | 157 | 24 | 59 | 61* | 15 | 61 |
| | 51 | 14 | 34 | 89** | 27 | 83 |
| <i>Age ≥ 12 months</i> | | | | | | |
| ≥ 60 | 552 | 46 | | | | |
| ≥ 70 | 157 | 19 | 41 | 73 | 12 | 70 |
| | 38 | 6 | 13 | 94 | 16 | 87 |

χ^2 test: * $p < 0.05$, ** $p < 0.001$.