almost universally, while others have gained favour in only a few regions. The greatest inconsistency is in paediatric life support. Cardiac arrest in children is usually secondary to hypoxia or hypovolaemia² yet some regions teach paediatric defibrillation in preference to airway, ventilatory, and venous access skills. No national standards exist, and we recommend that achieving national uniformity in airway, ventilation, and fluid resuscitation skills should be a priority.

Few prehospital skills have been formally evaluated in the United Kingdom in terms of cost and patient outcome, and debate surrounds even basic skills.^{3,4} Differences between regions could be used to advantage in future studies by providing control groups. The results of such studies could then be used to decide which skills paramedics should be taught. Formal research is needed

to evaluate training costs, retention and use of skills, and patient outcome. More urgently, a national authority is needed to coordinate research and implement the results throughout the paramedic service.

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Visual acuity testing in schools: what needs to be done

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Measurement of visual acuity is performed in schools to identify children with amblyopia and unilateral or bilateral refractive errors. The report of a joint working party recommended that children with visual acuity of 6/12 or worse in either eye should be referred for orthoptic assessment.¹ The report specified that visual acuity should be measured in a quiet room by a trained school nurse using a properly illuminated Snellen chart at six metres. The British Standards Institute specifies a uniform external illumination of at least 480 lux.² We performed a study to investigate whether visual acuity measurements in schools are carried out to these specifications and to compare the visual acuity measured in schools with that done in the orthoptic department.

Methods and results

A random sample of 45 schools served by nine school nurses were selected for study. The visual acuity measurements by these nurses were assessed in the orthoptic department. In each school the premises where the examination was performed were noted, the external illumination falling on the measurement chart measured with a photometer, and the distance between the chart and the child measured. Information on 80 consecutive referrals was obtained from records in the orthoptic department.

In the orthoptic department only 8% of the measurements done by the school nurses differed from those done by the orthoptists. In the schools the mean distance for visual acuity measurement was found to be 590 cm (range 510-670, SD 32.5). Twenty three of the schools satisfied the minimum required illumination, but 18 were partially dependent on variable natural light from a window. The visual acuity measurements were done within one room in 20 schools: in most others measurements were performed in a room extending into a corridor, but in some they were done in corridors, dining halls, or playgrounds. Only one school had a consistently well illuminated room free from distraction during measurement.

The mean age of the 80 children referred to the orthoptic department was 6.14 years (range 4.75-11.42, SD 1.3): 43% of eyes referred with 6/12 or worse visual acuity had at least 6/9 vision when measured in the orthoptic department (table 1).

Table 1—Number of line differences between visual acuity measurements done in orthoptic department compared with those done in schools for 80 referred children (160 eyes)

Findings in orthoptic department	No (%)
2 Lines worse	6 (4)
1 Line worse	18 (11)
Equal	32 (20)
1 Line better	67 (42)
2 Lines better	24 (15)
3 Lines better	9 (5.5)
4 Lines better	4 (2.5)

Comment

Visual acuity measurement satisfies Cochrane and Holland's criteria for a screening test. When a standard protocol exists visual acuity measurements are 87% repeatable with less than one line difference between two measurements.³ Our findings show, however, that measurements in schools do not conform to the standard protocol. The distance at which the visual acuity chart was used varied by up to 1.6 metres; only 11% of the 45 schools consistently had enough illumination regardless of weather conditions; and only one had the facilities to satisfy all the conditions under which visual acuity testing should be undertaken.

This discrepancy between the visual acuity measurements in schools and the measurements which were done under the specified criteria in the orthoptic department presumably contributed to the referral of the 25 eyes (43%) which were subsequently found to have normal visual acuity. In another study Ingram *et al* found that 41% of children referred to their service had normal visual acuity.⁴ These findings suggest that the specificity of visual acuity measurement as a screening test for identifying children with amblyopia and refractive errors is reduced because in most schools it is not performed under standardised conditions, leading to unnecessary referrals.

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