Our findings resemble the secular trends of hip fractures in Finland: their incidence nearly trebled between 1970 and 1993, and the age specific incidences increased in both sexes and in all age groups.⁵ The reasons for the increase in osteoporotic fractures are not known. For hip fractures, the usual explanations are decreased bone mass and density (decreased bone strength) and the increased propensity of elderly people to fall (impaired balance, coordination, reaction time, and muscle strength).⁵ In other words, it has been suggested that elderly people may be less healthy and functionally less capable today than in the past.

If the incidence of fractures continues to increase at the same rate the annual number of first osteoporotic fractures of the proximal humerus in Finland will be about 1000 by the year 2000. However, the largest Finnish age cohorts will reach the average age for osteoporotic fractures of the proximal humerus between the years 2020 and 2030, and thus the number of these

fractures is expected to increase exponentially during this period. Therefore, vigorous preventive measures, such as preventing osteoporosis and falls in elderly people, should be urgently adopted to control the increasing burden of these age related fractures.

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Survey of paramedic skills in the United Kingdom and Channel Islands

Howard K Simpson, Gary B Smith

A national training programme for paramedics was adopted in 1984 on government recommendation.¹ Regional training programmes were established under the auspices of local steering committees, and paramedics throughout Britain were trained in endotracheal intubation, intravenous cannulation, cardiac monitoring and defibrillation, and the use of selected parenteral drugs. Further skills could be introduced on the basis of local need.

We believed that regional variation could not be explained by demographic and infrastructural differences alone. We therefore undertook a national survey of the extended skills currently practised by ambulance paramedics.

Subjects, methods, and results

In April 1995 we sent questionnaires to the chief executives of the 47 ambulance trusts in the United Kingdom and Channel Islands and followed up by telephone calls. The respondents were asked to identify which of 108 extended skills were currently being taught and which were expected to be taught by the end of 1995.

We obtained a 100% response rate after telephone follow up. The average number of skills adopted by paramedic services was 12 (range 9 to 16) for adults and 8 (3 to 11) for children. The box shows the skills supported by all ambulance services, representing the national minimum standard.

All 47 trusts supported adult orotracheal intubation; 41 services permitted its use in children, but only 35 in children under 7 years. One service claimed not to allow bag and mask ventilation of children. Nebulised salbutamol could be given to adults and children by all services, but only 36 measured peak flow rate first.

All services had adopted defibrillation of adults, and 32 also used it for children. Of these 32, two services did not train paramedics to intubate children and in five paramedics could not give fluids or drugs intravenously.

All 47 regions cannulated adults and 44 children, but the age of child and the size of cannulae available varied. Only two regions trained paramedics to use intraosseous needles, and one supported scalp vein cannula-

tion. For volume replacement in adults one region used crystalloid exclusively, three only colloid, and 43 both.

All paramedics were taught to measure blood pressure and the Glasgow coma scale. Thirty three regions also taught trauma scoring and 40 pulse oximetry. Only nine services trained paramedics to interpret 12 lead electrocardiographs.

The mean number of drugs permitted for use was 10 (7 to 13) in adults and 6 (2 to 10) in children. In addition to the drugs listed in the box the most commonly used were adrenaline 1:1000 for anaphylaxis (29), rectal or intravenous diazepam (40), glycerine trinitrate (43), nalbuphine (31), and naloxone (29).

Obstetric and neonatal skills have recently been added to paramedic training. Only 11 services taught the obstetric module, but 12 more expected to include this by 1996. Ergometrine was used in five services (11 more by 1996). Neonatal resuscitation was taught in 39 services (6 more by 1996). Fifteen services permitted neonatal intubation.

Comment

This study confirms the heterogeneity in paramedic services. The skills taught to all paramedics have changed little since the introduction of national training. Some additional skills have been adopted

Skills taught to paramedics in all British ambulance services (April 1995)

Adults:

Oropharyngeal airway
Orotracheal intubation
Bag and mask ventilation
Defibrillation
Peripheral vein cannulation
Adrenaline 1:10 000
Atropine
Glucagon
Lignocaine
Nebulised salbutamol

Children:

Oropharyngeal airway
Nebulised salbutamol

Assessment:

Glasgow coma scale
Blood pressure

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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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Conflict of interest: None.

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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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