

Paediatric training for family doctors: principals and practice

C Melville,¹ D Wall² & J Anderson³

Background There is controversy as to how best to train general practitioners for the paediatric challenges they will meet in practice, in particular what should be included in training, what should be left out and how long should it last?

Subjects and methods All 615 general practice principals referring to 6 hospitals were surveyed (40% response rate).

Setting West Midlands region of England.

Study design Postal questionnaire.

Statistics Quantitative and qualitative assessment of responses. Quantitative responses were analysed by hospital, decade of qualification, and duration of paediatric training. Qualitative responses were analysed using grounded theory.

Results Satisfaction with training was directly related to its duration, with low levels of satisfaction for less than 6 months paediatrics, moderate levels for 6–11 months, and high levels with 12 months or more. The most important item of training was recognition of the sick

child. Acute and chronic paediatrics was generally well covered. Psychosocial aspects, public health and immunisation were poorly addressed. Neonatal resuscitation and first day checks were seen as relevant, but neonatal intensive care was not.

Conclusions At least 6 months of paediatrics is necessary for GPs in training, but longer paediatric exposure further increases their satisfaction with training. GPs have a biopsychosocial rather than biomedical approach to their child patients, suggesting potential benefits from a greater emphasis on psychosocial and public health aspects at the expense of neonatal intensive care. Recognition of the sick child is essential, and acute and chronic organic illness should be covered in breadth. Possible future models for GP training in paediatrics are discussed.

Keywords Paediatrics/*education; physicians, family/education; education, medical/methods; quality of health care; questionnaires.

Medical Education 2002;36:449–455

Introduction

The past 20 years have seen considerable changes in the paediatric training of general practitioners. The role of the GP in the management of paediatric patients has evolved with the advent of practice-based child health surveillance and the developing role of specialist nurse practitioners. This has had a considerable impact on School and Community Child Health services, which have in turn redefined their roles.

The Royal College of General Practitioners has published a paediatric syllabus for Vocational Training

Scheme trainees, developed using a modified Delphi process^{1,2} and subsequently published as a pamphlet.³ This document outlines training within five domains: human development; health and diseases; human behaviour; medicine and society; and practice organisation. Within each there are between 3 and 45 individual items of learning specified. The document envisages that training in paediatrics will take place in four environments: junior hospital posts, community health services, teaching practices and day or half-day release courses. It is non-prescriptive as to the balance of training, recognising that flexible use of local resources is required.

The establishment of training schemes has usually resulted in at least 6 months' experience in paediatrics, rather than the previous *ad hoc* exposure of variable duration. Most schemes include 2 years in hospital and a year as a GP registrar before the taking up of a final partnership. Traditionally, paediatric training has been hospital-based. VTS organisers are now questioning

¹Chairman, Partners in Paediatrics Education Group, Keele University, UK

²Deputy Postgraduate Dean, West Midlands Deanery, UK

³Donald Court Fellow, Royal College of Paediatrics and Child Health, UK

Correspondence C Melville, Senior Lecturer in Paediatrics, Academic Department of Paediatrics, City General, Stoke-on-Trent, UK. E-mail: mea02@keele.ac.uk

Key learning points

Satisfaction with paediatric training increased with duration.

Recognition of the sick child, acute and chronic paediatric topics are well covered.

Psychosocial and public health training is frequently inadequate.

Both formal and informal teaching are valued.

Possible models for improving paediatric training for GP trainees are discussed.

whether the best or most appropriate training is delivered in this way. Regular inspections by the RCGP take place on a 4-yearly basis to coincide with visits from the RCPCCH to ensure quality of the educational process. This includes a review of internal formal and informal teaching programmes and interviewing of all grades of staff, followed by verbal feedback and a written report with recommendations for improvements.

A perennial training issue has been optimising the exposure of trainees to the type of patients they will meet in their future practice.⁴⁻⁶ This impinges on the related issue of the interaction between the location and quality of training.⁷ Another has been the allocation of adequate time to the training process while maximising the quality of service delivery.⁸ A further issue is coping with the developing role of GPs in child health surveillance.⁹⁻¹² The role of teaching methods has also been examined.¹³⁻¹⁴

What is less clear is the relative priority for trainees (and trainers) of individual elements within paediatric training. In the USA a survey of family medicine programme directors suggested the care of normal newborns (93%) and general ambulatory care (99%) were the two main priorities.¹⁵ In the UK, a survey of GP trainees and newly qualified principals highlighted the inadequacy of training in relation to child abuse, outpatient clinics and surveillance.¹⁶ The RCGP syllabus is silent on this point, though mention is made of 45 specific diseases and symptom complexes in the section on disease.

Given the limited duration of paediatric training, it is essential to prioritise the training time and to match problems faced by GPs in the field. We therefore carried out a survey of GP principals to try to establish the answers to two questions:

1. How long should paediatric training be for GPs?
2. What are their training priorities within this time?

Subjects and methods

Given the detailed nature of the RCPCCH syllabus it seemed unreasonable to expect busy practising GPs to rate each individual item of it in a questionnaire. We initially pre-piloted an abbreviated version, using 4 GPs who could be relied upon for their forthright views. Modifications were made before the pilot questionnaire was circulated to all 160 GPs referring to a single DGH in central England. This indicated that the response rate was likely to be low (around 40%). For this reason, circulation was extended to a much larger sample. This allowed us to examine the single and multiple cohort results for internal consistency. The final version was therefore circulated to all 618 GPs (160 Stafford, 205 Burton, 67 Shrewsbury, 26 Macclesfield, 160 Wolverhampton) in the West Midlands referring to five nearby hospitals.

The final questionnaire is available from the authors. This covered some general information about the GPs themselves and their clinical experience; their personal and training priorities in relation to broad categories of generic and paediatric subjects; and which topics had been inadequately covered in their own training. Priorities were allocated using a 5-point modified Likert scale, ranging from 1 (inessential, nice to know) to 5 (essential, need to know). Overall training was rated on a 5-point scale from 1 to 5 (very poor, poor, adequate, good or excellent). Respondents were also asked to tick a box to indicate that their own training in a particular category was inadequate. The categories were chosen to represent broad areas of paediatrics: acute neonatal, chronic neonatal, recognition of the sick child, acute general, chronic general, surgical, psychological/psychiatric, social, child health surveillance and immunisation. There was space for feedback as free text comments and in relation to open questions about positive and negative aspects of their paediatric training.

Statistics

The results were collated and analysed using SPSS 9.0 for Windows. Comparison of group characteristics is given in Table 1. Non-parametric tests for homogeneity were performed prior to combining data from hospitals. No significant differences between returns for each hospital were found with respect to decade of graduation, whether graduation was from UK or abroad, categorised length of paediatric training, categorised percentage of time spent with children and satisfaction with training. The results from all hospitals were therefore aggregated for subsequent analysis.

Table 1 Comparison of median values of key characteristics of responses between different hospitals

Hospital	A	B	C	D	E
Number of responses	58	60	16	30	61
Number of partners in practice	5	5	5	4	3.5
% practice time spent with children	25	20	20	20	20
Years as GP principal	12	15	14	14	12
Length paediatric training (months)	6	6	6	6	6
Training quality (max 5)	3	3	4	3	3

Since most of the data was categorical or ordinal, significance testing used Chi-squared, Kruskal Wallance or Kendall's tau *b*-tests as appropriate.

Two of the authors (CM and DW) independently analysed the qualitative data to construct models of how GPs perceived training. CM imported comments into Nvivo qualitative analysis software. Items were coded, then emerging themes were aggregated into interim themes. These were then iteratively aggregated into final themes. DW hand coded the comments to cross-check the findings.

Results

Quantitative

After finding no significant differences on homogeneity testing, the results from all hospitals were combined. Two hundred and thirty responses were returned (40%). Thirty-four percent were from GPs in practices with 3 or less partners, 56% with 4–6, and 10% with > 6 partners. Fifty-six percent were from GPs based in town, 34% semi-rural, 8% in country practices and 2% a combination. Respondents had been GP principals for a median 13.5 years (SD 7.6), and the median year of qualification was 1979 (IQR 1973–86). Eighty-one percent of responses were from UK graduates, 15% from non-UK, with 4% non-responders. Thirty-five percent of non-UK graduates were single-handed compared with 7% of UK graduates.

The median reported consultation time with children was 20% (IQR 15–30), while the median PGEA reportedly spent on paediatrics was 10% (IQR 5–15).

Table 2 Table of reported training satisfaction with duration of training, showing a clear gradient in favour of longer training. Absolute numbers (percentages in brackets). $P < 0.0001$ by Kendall's tau *b*-testing

	Very Poor	Poor	Average	Good	Excellent
< 6 months	3 (11)	14 (50)	9 (32)	12 (7)	
6–11 months	4 (3)	14 (10)	59 (40)	53 (36)	18 (12)
> 11 months		4 (10)	11 (28)	13 (33)	12 (30)

Seventy-three percent received their paediatric training exclusively in hospital, 6% exclusively in the community, and 11% in both locations (11% non-responders). 18% had had < 6 months paediatric training, 63% 6–12 months, 19% more than 12 months. Similar proportions had been reported in the pilot study.

Three percent rated their overall paediatric training very poor, 15% poor, 37% adequate, 32% good, 14% excellent. There was no significant trend in this assessment between different hospitals.

None who received < 6 months of paediatric training felt their training was excellent, 7% felt it was good, and 61% felt it was poor or very poor. Forty-eight percent who received 6–11 months' training felt it was good or excellent, compared with 63% who received 12 months or more (Table 2). This trend was highly significant (Kendall's tau-b 5.38, $P < 0.0001$).

There were no significant trends in training need differences between those training in UK vs. non-UK graduates, but responses from the latter group made up only 15% of the total responses (data not shown).

There has been no change in the overall satisfaction of GPs with their paediatric training, with cohorts who graduated in the 1960s, 1970s, 1980s and 1990s reporting similar levels of satisfaction. The variation in training quality has also reduced, with less reporting poor or excellent training. Reported adequacy of training versus topic priority are shown in Table 3.

We examined training dissatisfaction in relation to topics within paediatrics, with the significance explored using Chi-squared testing (Table 4). Dissatisfaction with training overall was particularly associated with perceived deficits in training in chronic, social and psychiatric/psychological areas.

Qualitative

The two major themes that emerged from the analysis of comments were the importance of balanced relevant experience coupled to supportive teaching.

Experience

Sub-themes that emerged were the importance of balanced broad-based training, grounding in handling

Table 3 Reported importance rating and quality of coverage of topics

Topic	Proportion reporting inadequate training	Mean priority (Max 5)
Acute paediatrics	0.07	4.72
Recognition of sick child	0.09	4.87
Chronic paediatrics	0.13	4.55
Early neonatal disease	0.22	2.45
Immunisation	0.21	3.96
Surgical	0.23	3.69
Public health	0.24	3.65
Late neonatal disease	0.29	2.65
Psychology/psychiatry	0.41	3.82
Social	0.46	3.89

Table 4 Associations between dissatisfaction with training overall with specific topics

Topic	Chi-squared	P-value
Surgical	2.9	0.57
Acute paediatrics	6.2	0.18
Recognition of the sick child	7.2	0.13
Early neonatal	8.7	0.07
Public health	11.3	0.024
Late neonatal	17.9	0.001
Immunisation	18.2	0.001
Chronic paediatrics	21.7	< 0.0001
Social	22.1	< 0.0001
Psychiatric/psychological	36.0	< 0.0001

children, and the importance of common or severe illnesses.

Balanced and relevant to GP

This could be best achieved with broad exposure to children and their problems. Examples of successful experience tended to be from DGHs where training was highly organised. However, satisfied customers also came from teaching hospitals with balanced rotations, A & E departments, and community-based training.

The most common complaint was excessive exposure to neonatology, particularly neonatal intensive care. Neonatal first day checks were seen as relevant, and some GPs appreciated the confidence given by handling sick neonates.

Paediatric grounding

The recognition that children are not small adults, and that special skills and knowledge are necessary in

dealing with them came out through many comments.

Many appreciated the chance to develop confidence in handling children and to develop skills in promoting rapport with them. Developing the ability to distinguish normal from abnormal was highly valued. The ability to handle anxious parents and their questions was seen as crucial.

Some commented on the importance of prescribing for children. Others that multi-agency working was a key element of managing some children. The judgement of whom to refer was also commented on.

Disease areas

The following related to the disease domains mentioned in the questionnaire, and include illustrative comments.

Recognition of the sick child

This was seen as an essential part of training.

Acute paediatrics

In addition to minor A & E type problems, acute presentations of illness and the febrile child were mentioned, together with the ability to identify significant surgical problems should they occur.

Chronic paediatrics

Asthma, diabetes and terminal care were the topics mentioned most frequently.

Neonatology

Most comments about neonatology were negative. It was perceived as being generally irrelevant for GP trainees, particularly neonatal intensive care, though some were prepared to tolerate small doses to fulfil service commitments. Neonatal resuscitation and the first day check were seen as relevant.

Psychosocial

This area was the commonest source of dissatisfaction amongst respondents.

Teaching

There was a rich response about what GPs found useful in their Paediatric teaching. Most commonly mentioned was a supportive learning environment, particularly one where questions were encouraged, where good team working was in evidence, and where there was a balance between supervision and responsibility.

'An interested Consultant Paediatrician who spontaneously viewed teaching as an integral to the welfare of this department'

Particularly valued was evidence of a good primary-secondary care interface.

'Increasing confidence in dealing with ill children under supervision gave excellent foundation'

'Paediatric outpatients with experienced and supportive consultant'

'GP orientated consultant previously a GP'

Formal teaching

Some mentioned formal teaching positively, with a wide range of teaching methods being mentioned by different individuals as being successful. The topics specifically mentioned as useful were Dermatology, ENT, Child protection, Child Psychiatry and Child Health Surveillance.

Methods of teaching referred to as useful were exam revision (DCH), PGEA, small group teaching, lectures, child health surveillance courses and 'training courses'. There were three comments about identification of training needs:

'The awareness of consultants of my intention to be a GP and attempts at guiding training to relevant areas'

Of interest was the value placed on non-consultant training. For example, many mentioned middle grades and nursing staff positively:

'Experienced nurses passed on a lot of advice'

'Weekly training on relevant topics by the Senior Registrar'

Informal teaching

Five environments were specifically mentioned as valuable: shadowing, outpatients, and ward rounds, reading and primary-secondary liaison. Most of these were mentioned in the context of continuing professional development.

Discussion

We have conducted an extensive questionnaire survey of practising GPs to examine their perceptions of paediatric training. There were three findings. Firstly, there was a 'dose-response curve' between duration of training and overall satisfaction with it. Secondly, respondents gave the highest priority to

recognition of the sick child, acute and chronic paediatrics (largely met). And thirdly, there was a high priority given to psychosocial and public health issues (largely unmet). Topic coverage therefore parallels closely the training syllabus produced by the RCGP, but this study adds data on the perceived relevance of different areas to practising GP principals. The study therefore has significant implications for the planning of paediatric training for general practice.

The response rate of 40% was disappointing but may reflect the delegation of the task of responding to one partner in a practice. To counteract this we circulated the questionnaire to a large number of GPs from a large geographical area. Trend analysis suggested there were no significant differences between the findings of the five groups of GPs studied, suggesting that the results can be generalised. Kirkpatrick level one evaluation of educational programmes has inherent weaknesses.¹⁷ However, the consistency of the findings across both place and time suggest that the broad results have some reliability.

There was widespread dissatisfaction with training if its duration was less than 6 months. This is an important finding given that in 1995 29.1% of GP trainees did not receive paediatric training, as measured by the percentage of certificates issued by the Joint Committee on Postgraduate Training for General Practice to doctors who submitted experience in paediatrics.³ The majority of GPs were satisfied with 6 months of training, but there continued to be educational benefit beyond this point. This suggests that current GP paediatric training duration is adequate, but that availability an increased duration training would be desirable.

The highly significant trend in the satisfaction with training and its duration suggests that learning remains largely experiential. This may also explain the lack of perceived improvement in training by cohort. However, it may be argued that increased formal training has made up for the reduction in direct clinical exposure that has occurred through improved rotas and reduced working hours.

The major training priorities were remarkably consistent across the whole survey. Recognition of the sick child, acute and chronic paediatrics are the highest priorities for GPs. Interestingly, psychosocial paediatrics and immunisation were next, with a strong association between inadequate training in these subjects and overall dissatisfaction with training. This suggests that the top three topics are already adequately covered, but that the latter are poorly dealt with. There was a much lower personal priority given to acute neonatal problems, though these were slightly more highly rated in terms of training priority. This may

suggest a recognition that some neonates may need to be tolerated to cover the service needs of the unit providing the training.

These findings also suggest that GPs in the field are implicitly aware of the limitations of the biomedical model of illness, and are intuitively reaching for a more holistic model, such as the biopsychosocial one of Engel.¹⁸

The vast majority of training currently takes place in the hospital setting. Given the experiential nature of paediatric training outlined above, innovative ways to provide a better balance for training need to be found. Intensive care aspects of neonatology could certainly be reduced, though care of the normal neonate, resuscitation and first day check need to be retained. The difficulty is how to do this without compromising the quality of acute paediatric care, with many DGH paediatric departments dependent on VTS schemes for the staffing of SHO posts. The issue of attendance at paediatric outpatient clinics may be difficult to arrange, particularly given current rotas and the constant demands of the acute service.

The central importance of clinical experience is clear. The implicit message is that the provision of declarative knowledge (knowing that...) and procedural knowledge (knowing how...) are insufficient on their own. They must be supplemented by sufficient clinical experience to allow their conditional application (knowing when...) This gives the learner the ability to transfer their understanding to novel situations. The corollary is that shortening of training cannot be made up by training courses, such as a child health surveillance course, unless this includes a considerable proportion of 'hands on' activity. Alternatively, there may be scope for innovative teaching methods that maximise experiential learning, such as task- or portfolio-based learning. These would require careful evaluation for effectiveness before any attempts were made to reduce training duration below 6 months.

If training duration is restricted to 6 months then innovative solutions need to be found to address these training deficiencies. A possible option might be that SHO posts can be developed that involve 3 months' acute paediatrics, then 3 months' community with hospital on call. However, this may compromise acute training and hospital service delivery. Alternatively, acute paediatric training could be supplemented by a significant number 'protected' scheduled sessions in community clinics, for example in the child development centre, immunisation clinic, 'behavioural problems' clinic, or the enuresis/ encopresis clinic, as has been recommended by previous authors.¹⁹ A caveat would be that appropriate supervision was available for

these sessions, not easily provided given the disseminated nature of community working.

It might also be desirable that an option to extend training beyond 6 months be available for those GP trainees who wish to develop a 'special interest' in children, in a similar way to a US scheme previously reported.²⁰ The second 6 months would be community-based, though it might retain an on call commitment. This might be recognised by membership of a 'paediatric list', with the entry criteria being one year of appropriate Paediatric experience and passing of the DCH examination. In larger practices, they could become an educational resource and an 'internal filter' before referral to the local consultant paediatrician or hospital.

Many authors have remarked on the overlap between many aspects of paediatrics and general practice: the patient in relation to social factors, and the general nature of problems seen in contrast to the organ-based specialities.²¹⁻²⁴ Increased collaboration regarding training seems long overdue, given the current zeitgeist of seamless care between primary and secondary services and the trend towards community-orientated and community-based education at undergraduate levels.

Acknowledgements

Thanks to Peter Jones (Keele University) for help on data analysis; to members of the Partners in Paediatrics Education Group for circulating the questionnaire (Penny Dison, Azhar Mansoor, Ian Spillman, John Brice), and to Helen Willmore and Nikki Marshall for invaluable secretarial support.

Funding

There was no external funding for this project.

Contributors

CM conceived the study and developed the original questionnaire, which was critiqued by DW. CM supervised data collection and analysis and drafted the paper. DW confirmed the qualitative findings. JA provided valuable insights throughout the project, and all three authors contributed to the final draft.

References

- 1 Anonymous. The paediatric training required by the general practitioner. A report by a Joint Working Party of the British Paediatric Association and the Royal College of General Practitioners. *J R Coll General Prac* 1976;26:128-36.

- 2 Anonymous. The care of children. From the Royal College of General Practitioners. *J R Coll General Pract* 1978;**28**:553–6.
- 3 Royal College of General Practitioners. *The Paediatric Component of vocational training for General Practice. RCGP & RCPCH guidance*. London: RCGP; 1997.
- 4 Brody MR, Tasem WM, Reisman M. The training of family practice residents on a pediatric service. *J Med Educ* 1978;**53**:512–4.
- 5 Mutgi AB, Akpunonu BE, Federman DJ. Other approaches to primary care training. *Ann Intern Med* 1994;**121**:153.
- 6 Cross TJ Jr. Other approaches to primary care training. *Ann Intern Med* 1994;**121**:153.
- 7 Irigoyen MM, Kurth RJ, Schmidt HJ. Learning primary care in medical school: does specialty or geographic location of the teaching site make a difference? *Am. J Med* 1999;**106**:561–4.
- 8 Merenstein JH. Whose residents are they, anyway? *Fam Med* 1994;**26**:140.
- 9 Wilmot JF. Preparation for paediatric surveillance. A survey of trainee general practitioners. *Practitioner* 1984;**228**:975–7.
- 10 Goodhart LC. General practitioner training needs for child health surveillance. *Arch Dis Child* 1991;**66**:728–30.
- 11 Baird G & Hall DM. Developmental paediatrics in primary care: what should we teach? *BMJ* 1985;**291**:583–6.
- 12 Houston HL, Reilly TA, Bryant GM. Measuring the educational needs of doctors for training in child health surveillance. *Med Teach* 1991;**13**:363–8.
- 13 Ross AH, Rodriguez LP. Small-group critique of management of acute pediatric problems in family practice. *Pediatrics* 1973;**51**:480–4.
- 14 Donald AG, Farquhar JW, Gilleghan JD. An experiment in training in child care for general practitioners. *J R Coll General Pract* 1979;**29**:641–3.
- 15 Rabinowitz HK, Hervada AR. Pediatric training in family medicine residency programs. *J Fam. Prac* 1980;**11**:575–9.
- 16 Polnay L, Pringle M. General practitioner training in paediatrics in the Trent region. *BMJ*. 1989;**298**:1434–6.
- 17 Hutchinson L. Evaluating and researching the effectiveness of educational interventions. *BMJ* 1999;**318**:1267–9.
- 18 Engel G. The need for a new medical model: a challenge for biomedicine. *Science* 1997;**196**:129–36.
- 19 Blair M, Horn N, Polnay L. GP use of hospital and community-based paediatric services in Nottingham. *Public Health* 1997;**111**:97–100.
- 20 Onady G. A community collaborative practice experience between medical paediatrics and family practice. *Am J Med* 1997;**102**: 441–8.
- 21 Henry S. Family practice and pediatrics: can their common boundary be defined? *Can Med J* 1979;**121**:639–40.
- 22 Noble J, Bithoney W, MacDonald P, Thane M, Dickinson J, Guyatt G, Bauchner H, Hardt E, Heffernan J, Eskew A. The core content of a generalist curriculum for general internal medicine, family practice, and pediatrics. *J Gen Intern Med* 1994;**9**:S31–42.
- 23 Schatz IJ, Realini JP, Charney E. Family practice, internal medicine, and pediatrics as partners in the education of generalists. *Acad Med* 1996;**71**:35–9.
- 24 Camp BW, Gitterman B, Headley R, Ball V. Pediatric residency as preparation for primary care practice. *Arch Pediatr Adolesc Med* 1997;**151**:78–83.

Received 4 May 2001; editorial comments to authors 24 July 2001, 18 October 2001; accepted for publication 27 November 2001