UC Irvine
UC Irvine Previously Published Works

Title
Resident doctors' understanding of their roles as clinical teachers.

Permalink
https://escholarship.org/uc/item/1018738c

Journal
Medical education, 39(2)

ISSN
0308-0110

Authors
Morrison, Elizabeth H
Shapiro, Johanna F
Harthill, Miriam

Publication Date
2005-02-01

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

Resident doctors' understanding of their roles as clinical teachers

Elizabeth H Morrison, Johanna F Shapiro & Miriam Harthill

INTRODUCTION Limited data illuminate how resident doctors view their important roles as teachers, supervisors and role models. Analysing qualitative data about resident teachers' self-perceptions can offer helpful insights.

METHODS One year after a randomised trial of a residents-as-teachers curriculum at a university medical centre, we invited its 23 resident participants to participate in semistructured interviews. We interviewed 21 third year residents from internal medicine, family medicine and paediatrics, including 12 intervention residents who had been randomly assigned to receive a 13-hour teacher training programme and 9 control residents who had received no training. We used grounded theory techniques. Two investigators independently content-analysed the transcribed interviews for emerging themes and we then developed a schema for a third investigator to code the transcripts.

RESULTS Three key themes consistently emerged: *enthusiasm for teaching* (current and future), *learner-centredness*, and *self-knowledge* about teaching. Compared with control residents, the intervention residents expressed greater enthusiasm for teaching, more learner-centred and empathic approaches, and a richer understanding of teaching principles and skills. Most intervention residents wanted to continue teaching during and after training. Fewer control residents enjoyed their current teaching, and fewer still wanted to teach in the future. The control residents seemed easily frustrated by time constraints and they often expressed cynicism and blame toward learners.

DISCUSSION One year after participating in a randomised trial of a residents-as-teachers curriculum, generalist residents revealed fairly consistent perceptions of their teaching roles. Teacher training may offer residents lasting benefits, including improved teaching skills and satisfaction.

KEYWORDS education, medical, undergraduate/ *standards; clinical clerkships/standards; teachers/ psychology; physician's role; physicians/education.

*Medical Education 2005; **39**: 137–144*
doi:10.1111/j.1365-2929.2004.02063.x

Department of Family Medicine, University of California, Irvine College of Medicine, California, USA

Correspondence: Elizabeth H Morrison MD, MSEd, Associate Professor of Clinical Family Medicine, Director of Research, Department of Family Medicine, University of California, Irvine College of Medicine, 101 City Drive South, Building 200, Suite 512, Route 81, Orange, California 92868-3298, USA. Tel: 00 1 714 456 5171; Fax: 00 1 714 456 7984; E-mail: ehmorris@uci.edu

INTRODUCTION

Key professional organisations[1,2] have recently emphasised the importance of resident doctors as teachers and role models who impart critical professional values to both students and peers. The intense distress that some resident teachers report experiencing while balancing multiple clinical and teaching demands[3] may alter their ability to supervise learners safely and effectively.[4] Although many residency programmes now offer their residents teaching skills improvement programmes,[5,6] we do not know how such programmes may affect residents' roles as teachers, clinical supervisors and role models.

Resident teachers' self-identity

Limited evidence sheds light on resident teachers' self-identity in these inter-related roles. The few published studies reporting semistructured interviews and focus groups suggest that residents need training in teaching and supervisory skills.[3,7–9] Qualitative

Overview

What is already known on this subject

Outstanding faculty preceptors have often developed a positive self-image as teachers.

What this study adds

One year after undergoing a 13-hour teacher training programme in a randomised trial, 12 intervention group residents expressed more *enthusiasm for teaching*, more *learner-centred* approaches, and a richer *self-awareness* of teaching principles.

Nine former control group residents who had received no training tended not to enjoy teaching, nor to plan to teach after residency. They often expressed cynicism toward students.

Teacher training may offer lasting benefits to resident doctors, including improved teaching skills and satisfaction.

Suggestions for further research

Research should explore whether trained resident teachers retain benefits after residency.

research has studied faculty development in more depth,[10,11] revealing that outstanding faculty preceptors have developed a confident self-image as teachers.[12] Beyond surveys, comparatively little research has explored how teaching skills training may affect residents' understanding of themselves as teachers.[3] Because prior data are so limited, grounded theory analysis[13] – in which theoretical constructs are inductively discovered and 'grounded' in carefully observed data – can offer helpful new insights to inform further qualitative and quantitative research.

Educational context

In 2001–02, faculty at the University of California, Irvine College of Medicine (UCI) conducted a pilot randomised, controlled trial called 'Bringing Education and Service Together' (BEST), which involved a longitudinal residents-as-teachers curriculum. A total of 23 second year residents (13 in internal medicine, 5 in family medicine, and 5 in paediatrics) enrolled in this study, for which the quantitative results have been published elsewhere.[14]

In August of 2001, all residents in this trial underwent a 3·5-hour objective structured teaching examination (OSTE).[15] Those residents randomly assigned to the intervention group ($n = 13$) subsequently participated in a 13-hour teaching skills curriculum that occurred during noon conference sessions approximately every 2 weeks. In small-group classes, the intervention residents practised teaching, received individualised feedback, and participated in group discussions and brief mini-lectures. The control residents ($n = 10$) received no instruction, but at the post-test OSTE taken by all residents in February 2002, control residents received the syllabus and published text[16] used in BEST.

The study's objectives

This interdisciplinary study used in-depth, semi-structured interviews to explore how residents understood their teaching roles 1 year after participating in the pilot randomised trial. We were interested in understanding similarities or differences in how resident graduates from the BEST study intervention and control groups might view their roles as current and future teachers. In this manner, we aimed to gain a richer understanding of how teacher training might help residents become more skilled and enthusiastic teachers during and after residency.

METHODS

Participants

We offered participation in this study to all 23 generalist residents who had participated in the BEST randomised trial in 2001–02.[14] A total of 21 residents (11 women and 10 men) agreed to participate in interviews: 12 intervention residents (6 from medicine, 4 from family medicine, 2 from paediatrics) and 9 control residents (5 from medicine, 3 from paediatrics, 1 from family medicine). Of the 23 residents who had participated in the randomised trial in 2001–02, only 2 residents (1 intervention and 1 control, both from internal medicine) did not respond to requests to schedule an interview. At the time of the interviews, all participating residents were in their third year of training in a university-based health system. All residents in both study groups, and

indeed all of their classmates who did not volunteer for the BEST study, were expected to supervise medical students and junior residents throughout their second and third years of residency training.

Data collection

Using well described techniques,[17] 1 investigator (EHM) conducted a semistructured interview with each participating resident between November 2002 and February 2003. Each interview lasted 20–30 minutes and followed an open-ended question set that covered the types of teaching the resident had carried out since the BEST study ended in February of 2002, what he or she had enjoyed or had not enjoyed about teaching since then, how BEST may have affected the resident's teaching, and the resident's postgraduation plans, including any interest in future teaching. We audio-taped and transcribed each interview.

Data analysis

The 21 recorded interviews created 157 pages of transcribed text for analysis. With commonly used techniques for content analysis[18] informed by grounded theory,[13] 2 authors (EHM and JFS) used structured summary forms to analyse each transcript independently, identifying key and frequently expressed themes from the participants' speech. One author (JFS), who was blinded to the residents' randomisation, reviewed only masked transcripts that omitted any information about the residents' study groups. In research group meetings, we resolved minor discrepancies in the initial content analyses. We used connections between emerging major and minor themes from the annotated transcripts to derive a conceptual coding schema for further elucidating relationships between themes. A third investigator (MH) used this schema to code the transcripts. The principal investigator coded every other transcript with the same schema, ensuring good thematic agreement. Data from both study groups reached theoretical saturation in that the final interviews did not introduce new themes or concepts.

RESULTS

We identified 3 major (and 6 minor) thematic categories from the interviews (Table 1):

1 Enthusiasm for teaching:
   - current teaching: enjoyment versus frustration;
   - future teaching: interest versus lack of interest.
2 Learner-centredness:
   - exploration of learners' needs versus rigidity of teaching;
   - empathy or altruism versus cynicism or learner blame.
3 Self-knowledge:
   - self-awareness versus lack of insight about own teaching;
   - richness versus limitation of understanding about teaching principles and skills.

Enthusiasm for teaching

All residents from the intervention group, and some from the control group, stated that they generally enjoyed their current teaching roles. Residents liked getting positive feedback from learners, 'impart[ing] information to other people' (intervention resident O), 'being able to see them apply what I taught them' (intervention resident E), and the 'interaction/bond' with learners (intervention resident P). A few mentioned teachers who served as mentors.

When asked about challenges, many residents complained that 'time constraints' made teaching difficult and frustrating at times, especially when competing clinical demands left little time for supervision and teaching:

> 'We … had gotten over 20 admissions on a call night. and … I literally have to tell them, you know, what the patient is – I can't even give them the opportunity for a differential diagnosis – and what the orders should be.' [Control resident I)

Although residents from both groups expressed the opinion that teaching could be challenging at times, the sense of frustration was much clearer in the control group, often directed toward learners whom residents perceived to lack interest in learning:

> 'I just don't seem to have patience to really work with students or other residents who don't want to learn. When I used to … if I met resistance, I just kept trying to figure out ways around it, tried to get them interested in what I'm trying to say. Now, if they're not interested in it, I sometimes just get up and walk away.' (Control resident C)

Most control residents expressed only lukewarm interest in teaching after finishing training:

Table 1 Major results of semistructured interviews

	Intervention residents (n = 12)	**Control residents (n = 9)**
Enthusiasm for teaching		
Current teaching: enjoyment versus frustration	Most enjoy their current teaching roles 'I love to teach' (Intervention resident W) 'I really like doing it ... [It's] invigorating and exciting…' (Intervention resident H)	Some enjoy teaching, but more do not enjoy teaching 'It's a pain in the butt' (Control resident U) 'Frustrating...' (Control resident S)
Future teaching: interest versus lack of interest	Most express interest in teaching after training 'My goal is to be in academia' (Intervention resident L)	A few want to teach, but most lack clear interest 'If there is a good office that does not have students or residents, that's fine, too' (Control resident F)
Learner-centredness		
Exploration of learners' needs versus rigidity of teaching	Often teach by questioning, tailoring teaching to learners' individual needs 'Now I actually ask them what they know prior to starting teaching them' (Intervention resident P) 'And now I … do more assessing what they want to learn. Before, it would be more centred on me' (Intervention resident A)	Usually do not explore learners' individual needs 'I was not enjoying [teaching] much … because of time constraints... But with the fourth year [students] it was fun [just] to throw little blurbs, little pearls out... and you can't do that with less experienced students' (Control resident C)
Empathy or altruism versus cynicism or learner blame	Often show empathy or altruism toward learners '…just being able to ... help somebody else get through [what] I had gone through…' (Intervention resident O)	Tend to express more cynicism or blame 'My fourth year student, he's ... kind of a slack-off...' (Control resident S)
Self-knowledge		
Self-awareness versus lack of insight about own teaching	Reveal awareness of own strengths and learning needs as teachers 'My greatest fault is I tend to ... become tangential' (Intervention resident L)	Demonstrate less insight into their own strengths and learning needs as teachers 'Sometimes [how to teach] is constantly hard to grasp' (Control resident R)
Richness versus limitation of understanding about teaching principles/skills	Show deeper, enriched understanding of teaching concepts (including process in addition to content) 'I'm more able to define the [teachable] moment' (Intervention resident B) 'I need to break it down into steps, give … background' (Intervention resident O)	Show less understanding of principles/skills for teaching (usually focusing on content) 'Giving them something that they can take home with them. Not, um, concrete objects, but, um, something for their head' (Control resident K)

'I'm not … into academic teaching.' (Control resident S)

Although numerous residents in both groups were to begin fellowships in 2003–04, as is typical in our institution's medicine and paediatrics residency programmes, some chose subspecialty training because of clinical interests rather than teaching interests. With few exceptions, even the control residents who enjoyed current teaching remained 'on the fence' about (e.g. control resident M) or frankly uninterested in future teaching. In contrast, most intervention residents expressed clear interest in teaching after completing training, whether in a full-time or volunteer capacity:

'I definitely want to stay connected with the academic setting and possibly have students rotate at my office with me.' (Intervention resident H)

'My goal is to be in academia. I want to stay in an academic position. I enjoy the dynamics.' (Intervention resident L)

Learner-centredness

The residents demonstrated varying degrees of a construct we labelled *learner-centredness,* a focus on learners' needs that characterises outstanding teachers.[19–21] All intervention residents manifested some degree of learner-centredness in their self-described teaching styles after the BEST study:

'…before, I would kind of try and pick an idea, pick a topic that I thought would be important to the learner, and just go for it. And now, I probably try to do more assessing what they want to learn... Before, it would be more centred on me and what I was teaching … versus kind of assessing the knowledge base of the learner.' (Intervention resident A)

Although some control residents taught quite enthusiastically, they tended to describe rigidity in their teaching, rather than an exploratory, learner-centred style. A typical control resident summarised his teaching as 'just passing it down, just passing on good information':

'I give them the little mini-lectures about anaemia or diabetes or something. I go over their patients with them … and teach them what their patients are about.' (Control resident K)

An intervention resident described her own pre-curricular approach as:

'...throwing pearls at them and hop[ing] they stuck.' (Intervention resident H)

Others mirrored these specific terms of 'throwing' teaching 'at' learners (e.g. control resident C), implying distance between teacher and learner as well as stylistic rigidity.

A particularly interesting aspect of learner- or teacher-centredness was the tension between paired constructs we labelled *empathy or altruism* and *cynicism or learner blame*. Although overtly derogatory speech was rare, the control residents tended to blame learners for problematic teacher–learner interactions, often categorising students as 'unenthusiastic' or 'uninterested' (e.g. control resident M). As 1 control resident said of a struggling intern:

'I had to sit down with him for a half an hour, so I kind of gave him a good shaking!' (Control resident D)

Another described her inpatient service:

'We have some outside residents that rotate with us, um, and … often times there often is not an interest level, um, or … they can't really absorb the information ... I feel that I'm saying things that I've already said and that they are not listening well.' (Control resident I)

As a group, the intervention residents took more responsibility for resolving communication failures with their learners.

Residents in both groups expressed empathy toward learners:

'I know I was at the same place that, um, the student was right now.' (Control resident S)

'…a lot of times people, um, interns feel like, ''Well, I'm just an intern,'' or, ''I'm just a student.'' We should at least try and let them have their own idea.' (Intervention resident N)

Altruism was also common among both groups of resident teachers:

'I feel good in that respect, too … helping other people out.' (Control resident D)

For some control residents, however, altruism seemed more burdensome than rewarding, perhaps because teaching itself was less enjoyable or efficient:

'It's so much easier to, um, to just ... do all your notes, ignore the students, ignore the interns, and just tell 'em what we're going to do, um, and then just go back to your day ... and you'll be able to go home a lot sooner! … Uh, so it just kind of takes a little bit of selflessness, in terms of, like … in self-sacrificing, I guess you'd say.' (Control resident U)

Self-knowledge as a teacher

Among numerous intervention residents, we noted self-awareness of strengths and learning needs as teachers:

'I knew I was more aware of how I was changing my approach...' (Intervention resident E)

'I think that, um, before, I used to just kind of answer their questions that they had, or offer little pearls here and there. Whereas now, with every encounter, I try to be very specific and ask them to commit...' (Intervention resident H)

The intervention residents also showed a more comprehensive understanding of the various teaching principles and techniques they had learned. Most displayed a detailed, process-based understanding:

'...[of] knowing different ways of teaching.' (Intervention resident A)

'I think I'm a lot more aware of teachable moments, um, and ... knowing that I can take just 2 minutes of time and do some useful, meaningful teaching … I apply the whole orienting module a lot … We try to do a little bit of, like, formal didactic teaching … also one-on-one, reading progress notes together or coming up with a plan for admissions … reviewing a recent physical or, um, a fair number of procedures…' (Intervention resident E)

'How do we fit the teaching moment into a 5- or 10-minute period? Not everything can be an hour lecture.' (Intervention resident L)

A broader understanding of teaching helped 1 intervention resident overcome the anxiety of needing 'to know pretty much everything':

'I tell them, ''Well, I don't know. Why don't we both look it up and we can come together, see what we both find? If you find something different than I found, then we can just talk about it and learn from each other.''' (Intervention resident P)

While a few control residents showed a similar process-oriented understanding of teaching, most characterised teaching as primarily a 1-way transmission of content ('throwing little blurbs, little pearls out' to learners [control resident C]). Without teacher training, some residents tried to improve their skills by watching other teachers, while others resisted further improvement:

'I look at [how] other people teach me and see which way I like and I kind of use my own technique.' (Control resident S)

'You like teaching, or you don't like it, and if you do like it, then you kind of already have your own way of teaching … I don't think that you are going to be able to entirely change the person's way of teaching.' (Control resident K)

In the course of reviewing these 3 major themes in each masked transcript, the investigator who was blinded to the residents' randomisation correctly guessed the study groups for all intervention residents, and for all but 2 especially enthusiastic control residents.

DISCUSSION

In this interdisciplinary series of semistructured interviews, 21 third year residents in 4 university-affiliated generalist residencies revealed a broad range of ideas about their teaching roles 1 year after participating in a randomised trial of a residents-as-teachers curriculum. Compared with the control group residents, most residents who had been randomly assigned to receive 13 hours of teacher training expressed greater enthusiasm for teaching (both during and after residency), more learner-centred approaches to teaching, and a much richer understanding of clinical teaching principles and skills. Most intervention residents wanted to continue teaching during and after training. Fewer control residents enjoyed their current teaching, and fewer still wanted to teach in the future. The control residents seemed easily frustrated by time constraints, perhaps because their limited teaching skills hampered efficient instruction and encouraged blaming learners before exploring their individual needs.

We noted robust differences between trained and untrained resident teachers. Thematic categories carried across specialties. The present qualitative data also matched the previously reported quantitative results of the BEST pilot study, in which the BEST intervention group showed a 22·4% improvement in OSTE scores after their 13-hour teaching skills curriculum, a highly significant change not seen in the control group.[14] Although the residents' 'real life' teaching experiences outside of the teacher training programme may also have influenced their self-identity as teachers, we believe the interview data suggest that learning to teach may offer residents lasting benefits.

While the modest variation within our study groups suggests adequate sampling, it also deserves explanation within our overall theory. Our blinded investigator, for instance, misidentified 2 control residents as having participated in the teaching skills training. One possibility is that our thematic categories may be flawed. Alternatively, the outstanding control teachers may represent the possibility that, in any residency programme, individual residents may independently develop enthusiasm and skill for teaching apart from formal teacher training. One could argue in any case that residency programmes should consistently require residents-as-teachers instruction rather than leaving residents' teaching skills to be a haphazard outcome of chance, personality or prior experience.

Our findings support those of other studies in which residents have positively evaluated various teacher training efforts.[22,23] Our results also correlate with the research literature on exemplary clinical teachers.[11,20,24–27] The participating residents praised qualities that characterise outstanding health professions teachers, including powerful mentoring,[28] humanistic and student-centred approaches,[21] and enthusiasm, organisation and clarity.[29] The 'learner-centredness' we observed among some of our trained residents reflects higher education research on teachers' conceptions of teaching,[30] exemplified by certain dimensions that Samuelowicz and Bain[19] have described: content as 'student-controlled' rather than 'teacher-controlled', and teaching as 'two-way co-operation' that accounts for students' preconceptions rather than 'one-way transmission'.

Readers should note the limitations of this study. While qualitative researchers usually select study participants using purposeful rather than random sampling,[31] we chose to sample graduates of a randomised trial of a residents-as-teachers programme in order to capture their unique perceptions following teacher training. Our sample comprised a small group of volunteers and included only generalist residents from 1 university system, who may not reflect the perspectives of residents elsewhere. Selection biases might thereby have affected our results (because the residents self-selected to train at an academic medical centre and also to enrol in a teacher training study), although it is unclear whether such biases would tend to increase or decrease differences between the study groups. Two of the 3 investigators (including the interviewer) were not blinded to the random assignment of the residents, which may also have altered our findings.

Limitations notwithstanding, we believe that this study adds to the clinical teaching literature by offering detailed qualitative data about how graduates of a randomised residents-as-teachers trial understood their current and future roles as clinical teachers. As other research also suggests,[32] residents-as-teachers training may be able to create lasting benefits, boosting residents' skills and enthusiasm for teaching during and after postgraduate training. It remains to be seen whether trained resident teachers retain benefits after residency. We plan to continue following the teaching activities of the residents we interviewed. Other qualitative and quantitative research on resident doctors as teachers is also much needed. As such research enriches our understanding of how resident doctors can best fulfil their important roles as current and future medical teachers, it will greatly benefit medical education at both the graduate and undergraduate levels.

Contributors: EHM secured the funding, helped design the study, conducted the interviews, participated in the data analysis, and wrote the first draft of the paper. JFS and MH helped design the study and participated in the data analysis and writing of the paper.

Acknowledgements: the authors thank John R Boker PhD and Carole M Warde MD, MSEd, for their academic contributions; Dolores Medina-Sasina for data assistance, and all of the BEST study residents.
Funding: this research was supported by the Robert Wood Johnson Foundation Generalist Physician Faculty Scholars Program, the Tamkin Foundation, and HRSA Residency Training in Primary Care (Grant no. 22 HP00006-01).
Conflicts of interest: none.
Ethical approval: the study was approved by UCI's Human Subjects Committee.

REFERENCES

1 Liaison Committee on Medical Education. *Functions and Structure of a Medical School: Accreditation and the Liaison Committee on Medical Education, Standards for the Accreditation of Medical Education Programs Leading to the MD Degree.* Washington, Chicago: Association of American Medical Colleges and the American Medical Association 2000.
2 Core Curriculum Working Group, Group on Educational Affairs/Section for Graduate Medical Education, Group on Resident Affairs, Organization of Resident Representatives. *Graduate Medical Education Core Curriculum.* Washington: Association of American Medical Colleges 2000.
3 Yedidia MJ, Schwartz MD, Hirschkorn C, Lipkin M. The conflicting roles of medical residents. *J Gen Intern Med* 1995;**10**:615–23.
4 Goode LD, Clancy CM, Kimball HR, Meyer G, Eisenberg JM. When is 'good enough'? The role and responsibility of physicians to improve patient safety. *Acad Med* 2002;**77**:947–52.
5 Morrison EH, Friedland JA, Boker J, Rucker L, Hollingshead J, Murata P. Residents-as-teachers training in US residency programs and offices of graduate medical education. *Acad Med* 2001;**76** (Suppl):1–4.
6 Bing-You RG, Tooker J. Teaching skills improvement programmes in US internal medicine residencies. *Med Educ* 1993;**27**:259–65.
7 Rotenberg BW, Woodhouse RA, Gilbart M, Hutchison CR. A needs assessment of surgical residents as teachers. *Can J Surg* 2000;**43**:295–300.
8 Busari JO, Prince KJ, Scherpbier AJ, van der Vleuten CP, Essed GG. How residents perceive their teaching role in the clinical setting: a qualitative study. *Med Teach* 2002;**24**:57–61.
9 Morrison EH, Hollingshead J, Hubbell FA, Hitchcock MA, Rucker L, Prislin MD. Reach out and teach someone: generalist residents' needs for teaching skills development. *Fam Med* 2002;**34**:445–50.
10 Irby DM. How attending physicians make instructional decisions when conducting teaching rounds. *Acad Med* 1992;**67**:630–8.
11 Loftus TH, McLeod PJ, Snell LS. Faculty perceptions of effective ambulatory care teaching. *J Gen Intern Med* 1993;**8**:575–7.
12 Stone S, Ellers B, Holmes D, Orgren R, Qualters D, Thompson J. Identifying oneself as a teacher: the perceptions of preceptors. *Med Educ* 2002;**36**: 180–5.
13 Strauss A, Corbin J. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks, California: Sage Publications 1998.
14 Morrison EH, Rucker L, Boker JR *et al.* A pilot randomized, controlled trial of a longitudinal residents-as-teachers curriculum. *Acad Med* 2003;**78**:722–9.
15 Morrison EH, Boker JR, Hollingshead J, Prislin MD, Hitchcock MA, Litzelman DK. Reliability and validity of an objective structured teaching examination for generalist resident teachers. *Acad Med* 2002;**77** (Suppl):29–32.
16 Schwenk TL, Whitman N. *Residents as Teachers: a Guide to Educational Practice.* Salt Lake City, Utah: Department of Family and Preventive Medicine, University of Utah School of Medicine 1993.
17 Guba EG, Lincoln YS. *Effective Evaluation.* San Francisco: Jossey-Bass 1985.
18 Miles MB, Huberman AM. *Qualitative Data Analysis: an Expanded Sourcebook.* Thousand Oaks, California: Sage 1994.
19 Samuelowicz K, Bain JD. Conceptions of teaching held by academic teachers. *Higher Educ* 1992;**24**:93–111.
20 Jacobson MD. Effective and ineffective behavior of teachers of nursing as determined by their students. *Nurs Res* 1966;**15**:218–24.
21 Stritter FT, Hain JD, Grimes DA. Clinical teaching reexamined. *J Med Educ* 1975;**50**:876–82.
22 DaRosa DA. Residents as teachers: evaluating programs and performance. In: Edwards JC, Friedland JA, Bing-You R, eds. *Residents' Teaching Skills.* New York: Springer 2002;100–14.
23 Snell L, Tallett S, Haist S *et al.* A review of the evaluation of clinical teaching: new perspectives and challenges. *Med Educ* 2000;**34**:862–70.
24 Gjerde CL, Coble RJ. Resident and faculty perceptions of effective clinical teaching in family practice. *J Fam Pract* 1982;**14**:323–7.
25 Anderson DC, Harris IB, Allen S *et al.* Comparing students' feedback about clinical instruction with their performances. *Acad Med* 1991;**66**:29–34.
26 Ullian JA, Bland CJ, Simpson DE. An alternative approach to defining the role of the clinical teacher. *Acad Med* 1994;**69**:832–8.
27 Skeff KM, Stratos GA, Mygdal W *et al.* Faculty development: a resource for clinical teachers. *J Gen Intern Med* 1997;**12** (Suppl):56–63.
28 Hitchcock MA, Bland CJ, Hekelman FP, Blumenthal MG. Professional networks: the influence of colleagues on the academic success of faculty. *Acad Med* 1995;**70**:1108–16.
29 Irby DM. Clinical teacher effectiveness in medicine. *J Med Educ* 1978;**53**:808–15.
30 Dunkin MJ, Precians RP. Award-winning university teachers' concepts of teaching. *Higher Educ* 1992;**24**:483–502.
31 Devers KJ, Frankel RM. Study design in qualitative research – 2: sampling and data collection strategies. *Educ Health* 2000;**13**:63–271.
32 Edwards JC, Friedland JA, Bing-You R. *Residents' Teaching Skills.* New York: Springer 2002.

Received 27 June 2003; editorial comments to authors 22 August 2003, 29 October 2003; accepted for publication 12 December 2003