

Attending rounds on in-patient units: differences between medical and non-medical services

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Summary. The objective of this cross-sectional observational study was to quantify communication patterns between teachers and trainees on in-patient attending ward rounds and assess trainees' perceptions of the effectiveness of teaching interactions. Sixty-nine in-patient ward rounds on medical and non-medical teaching services at a university hospital and its affiliated VA Medical Center were studied. Teaching rounds were observed and audiotaped, and trained raters coded verbal interchange for its location, speaker identity and topic of the exchange. One to three days following the teaching rounds, residents and students were interviewed and completed a questionnaire concerning recollections of the content of the session. Medical rounds lasted a mean of 90 minutes, while non-medical rounds averaged 38 minutes. Medical teams spent more time than non-medical teams on case presentations and discussions of diseases not directly related to patient care. Both groups averaged approximately 10 minutes directly interacting with patients, and equal times were spent speaking by the teacher and trainees. The role of postgraduate year 1 residents and medical students primarily was to recite details of patients' clinical condition. Twenty-nine per cent of trainees were unable to recall a specific teaching point from rounds when interviewed 1–3 days later. Duration and content of in-patient rounds differed on

medical and non-medical services. For both, discourse tended to be hierarchical, with those at different training levels adhering to specific roles. Bedside patient interactions were limited. The content recalled by students and house staff suggests that new, more effective educational paradigms are needed.

Key words: teaching/*methods; *education, medical, undergraduate; clinical competence; recall; physician-patient relations

Introduction

Attending rounds in hospital wards are a setting during which teachers, students and residents discuss the care of in-patients. The sessions function to accomplish patient care, teaching and administrative tasks (Reuler *et al.* 1980). Although these meetings are perceived to be an important teaching arena, little objective information is available concerning their activities or outcomes (Payson & Barchas 1965; Yonke 1975; Maxwell *et al.* 1983; Medio *et al.* 1984; Shulman *et al.* 1992). Ongoing changes in internal medicine training require shifting residents' time commitments from the hospital to the out-patient setting (Schroeder 1988). Surgical services often have operating room duties that constrain in-patient rounds, and their experience may provide insights to guide that restructuring.

We performed an observational study of ward rounds on in-patient services. Our objective was to obtain descriptive information and compare the behaviours of teacher and housestaff on medical and non-medical services. We also measured learners' attitudes and recalled content.

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We hoped that findings might direct reorganizing medical ward rounds, without compromising patient care or the trainees' educational experience.

Methods

We observed ward rounds on internal medicine and non-medical (general surgical and obstetrics and gynaecological) services at the Oregon Health Sciences University Medical Center and the Portland Veterans Affairs Medical Center during 4 weeks in August 1989. For this study, ward rounds were defined as a scheduled activity involving a specified team of teachers and trainees who were responsible for a group of in-patients. In general, each service followed a standardized format with the ward team (students and house staff) meeting with a supervising physician at prearranged times daily or every other day. The medical teams consisted of a resident, two interns and two medical students. Non-medical services generally included two residents, an intern and two medical students. The majority of taped sessions followed a night of being on call. Rather than record multiple sessions by a few teachers or ward teams, we captured multiple teams during the study interval, and no teams were evaluated more than twice.

Data were collected by three medical students, following training in time-based observational techniques. The data collection instrument allowed simultaneous recording of location, speaker and activity (Table 1). Observers were given written category definitions, and they practised auditing videotaped rounds, which were reviewed and debriefed by the authors.

Prior to data collection, the three observers simultaneously assessed encounters, reviewing their ratings and discussing any variance in categorization until agreement was achieved. Observers used digital watches, noted the duration of each activity and rounded to the nearest minute. Rounds also were audiotaped, and observers listened to tapes to confirm their initial audits.

For each round, we computed and summed the total time spent according to activity, speaker and location of rounds. For these categorical variables, 'rounds' were the unit of analysis, rather than the number of patients discussed. Surgical and obstetrics and gynaecology rounds followed similar formats and were not significantly different on the assessed dimensions. Accordingly, those data were combined as non-medical rounds. Interrater reliability showed no significant differences between raters for elapsed times in each category (by paired *t*-tests).

Students and house staff participants were contacted 1–3 days following rounds and oriented to the session of interest. Each individual was asked to complete a questionnaire and interviewed by a student coder. The questionnaire used open-ended questions derived from instruments for assessing teaching (Stritter & Baker 1982; Glenn *et al.* 1984; Skeff 1986; Weinholtz *et al.* 1986b). The interviewer did not provide specific clues to the round's recorded content or activities. Respondents were asked their perception of the usefulness of going to the bedside, as well as what activities were most and least productive for learning. They were asked to recall any teaching points or 'take home lessons' discussed during rounds. We used *t*-tests and

Table 1. Categories of activities used for ward rounds rating form

(1)	Case presentations
(2)	Presenting patient data (updating)
(3)	Discussion of patients' social issues
(4)	Discussion of patients' illnesses (aetiology, differential diagnosis, prognosis, diagnostic procedures)
(5)	Discussion of patients' management
(6)	Bedside patient interactions (data gathering, demonstrating, providing information to patient)
(7)	Discussion of other disease topics
(8)	Discussion of non-medical issues (current events, personal issues)
(9)	Other activities

analyses of variance for comparison between services and between training levels respectively.

Results

A total of 69 ward round encounters were assessed (44 medical, 19 surgical and 6 obstetrics and gynaecology). Medical rounds were longer (90 ± 36 minutes) (mean \pm SD) than non-medical rounds (38 ± 20 minutes) ($P < 0.001$). The distribution of time spent on different activities for medical and non-medical rounds is depicted in Fig. 1. Disease discussion, presenting data and discussion of patient care were all longer on the medical service.

Although the absolute duration of speaking on medical rounds was longer, the percentage of rounds during which attending doctors spoke was similar on both services (Fig. 2). Interns' contributions primarily were case presentations. On both medical and non-medical teams, students spoke infrequently and were usually involved in presenting patient-related data.

The locations of rounds varied between services. Medical rounds were primarily conducted in the class-room (78% of the total time),

with 13 per cent of the time in the hall or other locations. Nine minutes (9% of the total time) was spent at the bedside. Non-medical teams spent more time at the bedside (22 minutes, 57% of the total time) than medical teams. However, the activity record indicated that for both services, the total bedside time directly interacting with patients was similar. The non-medical teams conducted activities other than interviewing or examining patients while at the bedside (c.g. changing dressings, discussing diseases, examining drains, etc. [34% of the total time]). Additionally, non-medical teams sent 42% of the time in the hall and 1% in the class-room or other settings.

We obtained participant data from approximately a third of observed sessions, and the majority of house staff and students surveyed were on the medical service (61 medical versus 12 non-medical). Because of our limited ability to interview non-medical participants, descriptive data are presented only for medical teams. Among respondents, 51% were third- or fourth-year medical students, and the remainder were house officers. For each encounter which was sampled, an average of four learners were ass-

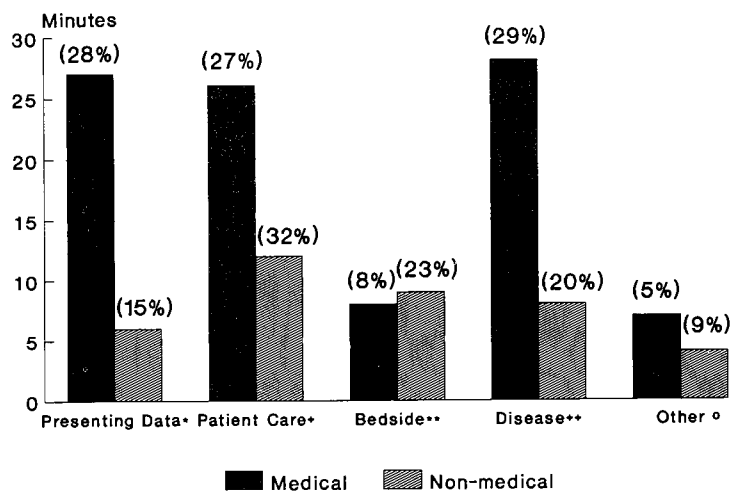


Figure 1. Duration of ward round activities for medical and non-medical rounds. The bars indicate the absolute durations of the activities, and their relative percentages (of the total rounds) are in parentheses at the top of each column. *Presenting patient data = case presentations and updating (codes 1 and 2, Table 1); +Patient care = discussion of patients' illnesses and management (codes 4 and 5, Table 1); **Bedside = direct patient interactions (code 6, Table 1); ++Disease = discussion of diseases not directly relevant to patient care (code 7, Table 1); °Other = activity codes 3, 8 and 9, Table 1.

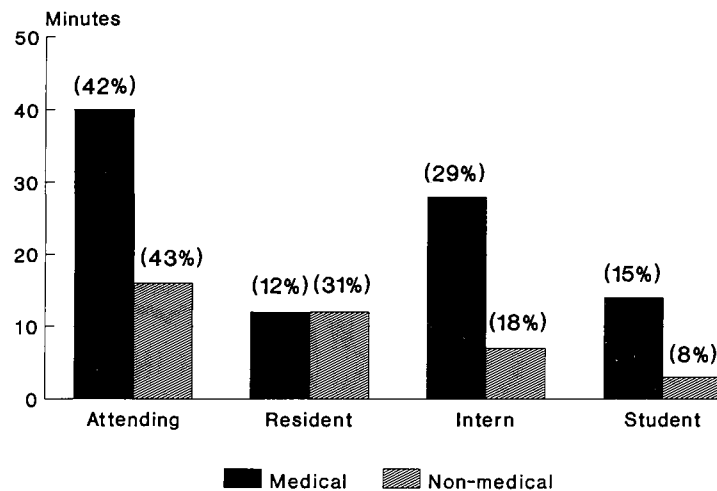


Figure 2. Duration of speaking by participants for medical and non-medical rounds. The bars indicate the absolute duration, and the relative percentages (of the total rounds) are in parentheses at the top of each column.

essed. Trainees responded to an open-ended question concerning their recollections, and responses were categorized as something specific remembered, a vague response or nothing specific remembered. Overall, 71% of trainees could recall something which they had learned on rounds, while 29% could not remember anything or gave a vague response. These data did not differ among training levels.

The activities that trainees found most productive for learning varied greatly, no single response predominated, and no differences were seen among training levels. When asked about least productive activities, 25% of answers could be generalized as things which interfered with expeditious round completion (e.g. rounds lasting too long, too detailed discussions). Because a prior report indicated trainees prefer case presentations away from the bedside (Wang-Chang *et al.* 1989), we asked, 'What is your opinion of going to the bedside?'. We found that a minority of trainees (15%) found the bedside an overall negative experience, and no difference in response was seen among training levels.

Discussion

Our findings provide a description of the content of ward rounds on medical and non-medical services. Prior assessments of rounds and partici-

pants' ratings of rounds have demonstrated this complexity of the teaching situation. Variables, such as the setting, activities and a learner's level, have all been associated with educational outcomes (Weinholtz *et al.* 1986a; Wang-Chang *et al.* 1989). The dimensions assessed in this study were selected to detect differences in the process of medical and non-medical rounds.

Medical rounds' were primarily a class-room activity, results similar to those reported by Miller *et al.* (1992) for rounds on a paediatric service. These investigators noted 63% of rounds occurred in the conference room, with 11% of time spent at the bedside. We found that, although residents and students did not oppose going to the bedside, medical rounds had limited time in this setting. The bedside has been advocated as an important learning site (Linfors & Nelson 1980; Mazzaferri 1986). When surveyed, both attending doctors and residents preferred approximately 30% of rounds at the bedside (Kroenke *et al.* 1990). However, the previously reported trainee adversity to bedside case presentations (Wang-Chang *et al.* 1989) is evidence for using bedside time for focused teaching. Students and house staff have indicated their preference for reviewing physical diagnosis skills at the bedside, while other activities (e.g. repeating data gathering and questioning students), were not felt to be useful (Mattern *et al.*

1983; Weinholtz *et al.* 1986). Location of rounds differed on medical and non-medical services. Non-medical ward rounds were more dynamic encounters, with the majority of time spent standing in the hall or at the bedside.

A third of medical ward rounds were spent in didactic presentations not directly related to patient care. Ward interviews indicate that medical teachers have a repertoire of mini-talks which can be inserted into rounds (Irby 1992), and our results suggest didactic presentations were a significant component of these sessions. Despite recent guidelines that emphasize the need for interactive rounds (McLeod 1986; Weinholtz 1987; Kroenke 1992; Miller *et al.* 1992), our data are similar to both recent observations (Osborn & Whitman 1991; Miller *et al.* 1992) and those from 15 years ago (Foley *et al.* 1979). Students' evaluations of teachers indicate that particular behaviours may facilitate learning, and actively involving students consistently was an important teacher attribute (Stritter *et al.* 1975; Irby & Rakestraw 1981; Irby *et al.* 1991). We found that medical students generally played a passive role on both medical and non-medical services, a finding noted in other observational studies (Foley *et al.* 1979).

Our ability to identify the educational value of different activities was limited, and ward rounds also have patient care and administrative objectives, outcomes which we did not assess. In addition, trainees' learning was not evaluated by questions specific to the recorded content of rounds nor were skills or attitudes evaluated. Despite those limitations, we were surprised that over a quarter of trainees could not remember anything specific discussed during rounds, when questioned 1–3 days after the session. Although medical ward rounds may be more 'interactive' than a lecture, speaking by teachers predominated. Research in other settings has documented the modest retention of didactic content (Russell *et al.* 1984). Others observing rounds have noted the predominance of didactic verbal knowledge and suggested that rounds' current structure may be obsolete (Shulman *et al.* 1992). Further recognition that, despite teachers' investment in teaching, limited learning may occur underscores the need for new educational formats and teacher development programmes (Medio *et al.* 1984; Skeff *et al.* 1992).

The structure of medical ward rounds reflects tradition, rather than experimentation with the impact of different structures on educational and patient care objectives. Although our data were gathered at one training programme, the findings are consistent with prior research on medical attending rounds (Payson & Barchas 1965; Foley *et al.* 1979; Miller *et al.* 1992). Undergraduate medical education has made progress towards adopting new techniques which better address adult learners' needs (Brookfield 1987; Kaufman *et al.* 1989), yet the construct of medical ward teaching has remained static over the last 20 years. New educational strategies and a shift towards ambulatory experiences are forces to alter in-patient teaching and foster the development and testing of new paradigms.

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References

- Brookfield S.D. (1987) *Understanding and Facilitating Adult Learning*. Jossey-Bass, San Francisco.
- Foley R., Smilansky J. & Yonke A. (1979) Teacher-student interaction in a medical clerkship. *Journal of Medical Education* **54**, 622–6.
- Glenn J.K., Reid J.C., Mahaffy J. & Shurtleff H. (1984) Teaching behaviours in the attending-resident interactions. *Journal of Family Practice* **18**, 297–304.
- Irby D. & Rakestraw P. (1981) Evaluating clinical teaching in interns. *Journal of Medical Education* **56**, 181–6.
- Irby D.M., Ramsey P.G., Gillmore G.M. & Schaad D. (1991) Characteristics of effective clinical teachers of ambulatory care medicine. *Academic Medicine* **66**, 54–5.
- Irby D.M. (1992) How attending physicians make institutional decisions when conducting teaching rounds. *Academic Medicine* **67**, 630–8.
- Kaufman A., Mennin S., Waterman R., *et al.* (1989) The New Mexico Experiment: educational innovation and institutional change. *Academic Medicine* **64**, 285–94.

- Kronke K., Simmons J.D., Copley J.B. & Smith C. (1990) Attending rounds: a survey of physician attitudes. *Journal of General Internal Medicine* **5**, 279–83.
- Kronke K. (1992) Attending rounds: guidelines for teaching on the wards. *Journal of General Internal Medicine* **7**, 68–75.
- Linfors E.W. & Neelon F.A. (1980) The case for bedside rounds. *New England Journal of Medicine* **303**, 1230–3.
- McLeod P.J. (1986) A successful formula for ward rounds. *Canadian Medical Association Journal* **134**, 902–4.
- Mattern W.D., Weinholtz D. & Friedman C.P. (1983) The attending physician as teacher. *New England Journal of Medicine* **308**, 1129–32.
- Maxwell J.A., Cohen R.M. & Reinhard J.D. (1983) A qualitative study of teaching rounds in a department of medicine. *RIME Proceedings* **22**, 192–7.
- Mazzaferri E.L. (1986) Bedside teaching in the preparation of physicians for the 21st century. *Archives of Internal Medicine* **146**, 1912.
- Medio F.J., Reinhard J.D., Maxwell J.A. & Cohen R.M. (1984) Improving teaching rounds—action research in medical education. *RIME Proceedings* **23**, 283–8.
- Miller M., Greenc H.L., Baier M. & Nowlin S. (1992) An observational study of attending rounds. *Journal of General Internal Medicine* **7**, 646–8.
- Osborn L.M. & Whitman N. (1991) *Ward Attending: The Forty Day Month*. Department of Family and Preventive Medicine, Salt Lake City, Utah.
- Payson H.E. & Barchas J.D. (1985) A time study of medical teaching rounds. *New England Journal of Medicine* **273**, 1468–71.
- Reuler J.B., Girard D.E. & Nardone D.A. (1980) The attending physician: privileges and pitfalls. *Journal of the American Medical Association* **243**, 235–6.
- Russell I., Hendricson W. & Herbert R. (1984) Effects of lecture information density on medical student achievement. *Journal of Medical Education* **59**, 881–9.
- Schroeder S.A. (1988) Expanding the site of clinical education: moving beyond the hospital walls. *Journal of General Internal Medicine* **3**, S5–S14.
- Shulman R., Wilkerson L. & Goldman D.A. (1992) Multiple realities. Teaching rounds in an inpatient pediatric service. *American Journal of Diseases of Children* **146**, 55–60.
- Skeff K.M. (1986) Evaluation of the seminar method to improve clinical teaching. *Journal of General Internal Medicine* **1**, 315–22.
- Skeff K.M., Stratos G., Berman J. & Bergen M.R. (1992) Improving clinical teaching: evaluation of a national dissemination program. *Archives of Internal Medicine* **152**, 1156–61.
- Stritter F.T., Herin J.D. & Grimes D.A. (1975) Clinical teaching reexamined. *Journal of Medical Education* **60**, 876–82.
- Stritter F.T. & Baker R.M. (1982) Resident preferences for the clinical teaching of ambulatory care. *Journal of Medical Education* **57**, 33–41.
- Wang-Chang R.M., Barhas G.P., Sigmann P., Riendl P.A. & Young M.J. (1989) Bedside case presentations: why patients like them but learners don't. *Journal of General Internal Medicine* **4**, 284–7.
- Weinholtz D., Albainese M., Zeitler R., Everett G. & Shymansky J. (1986a) Effective attending physician teaching: the correlation of observed instructional activities and learner rating of teacher effectiveness. *RIME Proceeding* **25**, 273–8.
- Weinholtz D., Everett G., Albainese M. & Shymansky J. (1986b) The attending round observation system. *Evaluation of Health Professional* **9**, 75–89.
- Weinholtz D. (1987) *Teaching During Attending Rounds*. Office of Consultation of Research in Medical Education. University of Iowa; Iowa City, Iowa.
- Yonke A.M. (1975) The art and science of clinical teaching. *Medical Education* **12**, 86–90.

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