Effective improvement of doctor–patient communication: a randomised controlled trial

Sjoerd Hobma, Paul Ram, Arno Muijtjens, Cees van der Vleuten and Richard Grol

ABSTRACT

Background
Doctor–patient communication is an essential component of general practice. Improvement of GPs' communication patterns is an important target of training programmes. Available studies have so far failed to provide conclusive evidence of the effectiveness of educational interventions to improve doctor–patient communication.

Aim
To examine the effectiveness of a learner-centred approach that focuses on actual needs, to improve GPs' communication with patients.

Design of study
Randomised controlled trial.

Setting
One hundred volunteer GPs in the Netherlands.

Method
The intervention identified individual GPs' deficiencies in communication skills by observing authentic consultations in their own surgery. This performance assessment was followed by structured activities in small group meetings, aimed at remedying the identified shortcomings. Outcomes were measured using videotaped consultations in the GPs' own surgery before and after the intervention. Communication skills were rated using the MAAS-Global, a validated checklist.

Results
The scores in the intervention group demonstrated a significant improvement compared with those of the control group (95% confidence interval = 0.04 to 0.75). The effect size was moderate to large (d-value = 0.66). The level of participation significantly contributed to the effectiveness. Largest improvement was found on patient-centred communication skills.

Conclusion
The approach of structured individual improvement activities based on performance assessment is more effective in improving communication skills than current educational activities.

Keywords
communication; continuing medical education; physician–patient relations; task performance and analysis.

INTRODUCTION

Continuing Medical Education (CME) has changed considerably in the last decade as a result of theories and evidence of the effectiveness of educational activities.[1–4] In the current view, education of practicing physicians is learner-centred, focuses on day-to-day clinical practice and ideally integrates several approaches.[5,6] This approach was adopted rapidly in many countries, even though there is conflicting evidence on its effectiveness.[6–8]

We were particularly interested in the effectiveness of this approach to enhance doctors' communication skills. Doctor–patient communication is a core component of health care and has a strong impact on patient satisfaction and adherence to advice and treatment.[9] A patient-centred approach in particular appears to favour these outcomes positively.[10] Although both doctors and patients put a high value on good communication, performance in day-to-day practice was found wanting.[11] Well-designed studies of the effectiveness of educational interventions to improve communication skills are scarce and demonstrated little benefit.[12–15] We hypothesised that a learner-centred approach, comprising individual performance assessment followed by small group meetings, tailored to doctors' individual needs may be more successful in improving doctor–patient communication than traditional CME approaches. A

***SO Hobma**, GP-researcher; **P Ram**, GP-researcher, **RPTM Grol**, professor of quality in health care, Department of General practice, Centre for Quality of Care Research; **AMM Muijtjens,** statistician; **CPM van der Vleuten**, professor of education, Department of Educational Development and Research, University of Maastricht, Maastricht, The Netherlands.*

Address for correspondence
Dr SO Hobma, GP-researcher, Department of General practice, Centre for Quality of Care Research, University of Maastricht, PO Box 616, 6200 MD Maastricht, The Netherlands. E-mail: sjoerd.hobma@hag.unimaas.nl

Submitted: 13 July 2004; **Editor's response:** 26 January 2005; **final acceptance:** 31 January 2006.

randomised controlled trial was conducted to investigate the effects of such a programme for GPs. We also examined whether the level of participation in the intervention had an effect on the outcome, for example, whether the more active participants achieved better results. The feasibility of the intervention has been described previously.[16]

How this fits in

Doctor–patient communication is an essential component of general practice, and improvement of GPs' communication skills is an important target of training programmes for GPs. Available studies have so far failed to provide conclusive evidence of the effectiveness of educational interventions to improve doctor–patient communication. This study demonstrates that a learner-centred approach focusing on individual GPs' deficiencies in communication skills is more effective than the traditional approach.

METHOD

Subjects

All GPs (n = 1066) in three regions in the south of the Netherlands (Zuidoost Brabant, Noord-Brabant Noordoost, Limburg) received a letter informing them about the study and asking whether they would be interested in participating (November 2001). Subsequently, they were invited to enrol (May 2002). We aimed at a maximum of 100 and a minimum of 80 participants. Power calculations using historical data showed these were sufficient to detect a 10% difference in the MAAS-global score with 80% power and a 5% risk of a type 1 error.[17] The first 100 subscribing GPs enrolled in the study and a questionnaire was used to obtain participants' personal and professional characteristics (for example experience with modern educational methods).

Randomisation

Randomisation was performed after sampling professional characteristics and before baseline measurement. GPs participated individually, but randomisation was done at practice level. Practices were allocated as a whole to either the intervention or the control arm of the study. This was done to avoid the possibility of closely collaborating colleagues, randomised to different arms of the study, benefiting from mutual educational experiences. Practices were stratified by region and experience in working with modern educational methods; these were identified in an expert panel prior to the study as possible effect modifiers. Subsequently balanced randomisation of practices was done. Within strata, practices were allocated to either the intervention or the control condition by the principal researcher and the projects research assistant using the 'allocate random data' option in SPSS.

Educational interventions

Intervention group. The intervention consisted of assessment, selection of global topics for improvement, feedback and revalidation activities. Assessment was the first step to identify aspects of GPs' performances where improvement was likely to be beneficial.[18,19] Three topics were assessed. One of these topics, for example, doctor–patient communication, is the focus of this paper. For each participant two topics for further improvement were selected. This was done by relating assessment results to standards for desired care.[20]

GPs with scores above the standard focused on other topics than communication, but did not drop out of the study. The performance of GPs was assessed by video observation in daily practice.[17] Participants received individual feedback on their assessment results and the selected topics from a GP. These were regional GPs who were invited to participate only for this specific task in the project, and who were trained by the authors. Feedback was given on each participant's mean communication score in relation to the criterion-referenced standard and mean scores of 10–15 colleagues. Also, detailed feedback was on the scores on items and the standards for these items, thus enabling GPs to identify aspects requiring improvement. Within 2 weeks after feedback, a series of three to four small group meetings started. The meetings lasted 2 hours and the groups consisted of four to six participating GPs and a tutor. The tutors were practising regional GPs, without specific expertise in doctor–patient communication, and were prepared with an 8-hour training course in supporting their colleagues' learning process. The training consisted of an introduction in the background and rationale of the intervention and of educational exercises that focused especially on the first two meetings. Participants also received a manual with information about quality improvement, examples, checklists and diagrams to fill out. The manual contained no information about doctor–patient communication. The content of the meetings was the participants' own responsibility. GPs started by defining personal goals for improvement, then analysed barriers to change, developed practice development plans including time schedules, and finally evaluated their results.[14,21,22] Meetings were held within a fixed time frame of 7 months; participants were free to choose the time and place of the meetings. GPs received 2 hours of credits for performance assessment and feedback and 2 hours for each attended meeting.

Control group. The control group was offered existing

written CME material about doctor–patient communication developed by the Dutch College of General Practitioners. It consists of paper cases, questionnaires for self-assessment and information about appropriate performance. No feedback of assessments or small group meetings were involved in this study arm. GPs received 15 hours of credits when they returned the self-assessment questionnaires.

Variables and instruments

Doctor–patient communication. Communication skills were evaluated using videotaped consultations in GPs' own surgeries; the psychometric properties of this procedure have been described earlier.[17] Observation cameras were installed in the consultation and examination room. All consultations were videotaped provided the patient

Box 1. MAAS-Global rating list for consultation skills of doctors addressing doctor–patient communication. Each item is scored on a scale ranging from 0 to 6. For item 2 and 4 the rating 'not applicable' is an additional option.

Communication skills for each separate phase

1. Introduction
- Giving the patient room to tell his story
- General orientation on the reason for visit
- Asking about other reasons for visit

2. Follow-up consultation
- Naming previous complaints, requests for help and management plan
- Asking about adherence to management plan
- Asking about the course of the complaint

3. Request for help
- Naming requests for help, wishes or expectations
- Naming reasons that prompted the patient to come now
- Completing exploring request for help

4. Physical examination
- Instructions to the patient
- Explanation of what is being done
- Treating the patient with care and respect

5. Diagnosis
- Naming findings and diagnosis/hypothesis
- Naming causes or the relation between findings and diagnosis
- Naming prognosis or expected course
- Asking for patient's response

6. Management
- Shared decision-making, discussing alternatives, risks and benefits
- Discussing feasibility and adherence
- Determining who will do what and when
- Asking for patient's response

7. Evaluation of consultation
- General question
- Responding to requests for help
- Perspective for the time being

General communication skills

8. Exploration
- Exploring requests for help, wishes or expectations
- Exploring patient's response to information given within patient's frame of reference
- Responding to non-verbal behaviour and cues

9. Emotions
- Asking about/exploring feelings
- Reflecting feelings (including nature and intensity) sufficiently throughout the entire consultation

10. Information giving
- Announcing, categorising
- In small quantities, concrete explanations
- Understandable language
- Asking whether the patient understands

11. Summarisations
- Content is correct, complete
- Concise, rephrased
- Checking sufficiently throughout the entire consultation

12. Structuring
- Logical sequence of phases
- Balanced division of time
- Announcing (history taking, examination other phases)

13. Empathy
- Concerned, inviting and sincerely empathetic
- In intonation, gesture and eye contact expressing empathy in brief verbal responses

consented. GP observers, who received a 6-hour training, selected eight consultations for each observation period using validated selection criteria.[17] Observers rated communication skills using a validated instrument (MAAS-Global).[23] This instrument includes 12 items on doctor–patient communication in initial consultations, rated on a scale ranging from 0 to 6: items are broadly defined but anchored in detailed rating criteria. A short description of the items is given in Box 1.

GPs were videotaped before and after the intervention period (May 2002 to May 2003). The intervention group received their scores on the first observation as feedback. The control group received feedback after the study was completed. Because of a possible decay effect, the second observation was videotaped 2–6 months after the intervention. For the second observation the observers were blinded regarding the group that participants belonged to, that is, intervention or control group. For the first observation, blinding was not feasible, because limited time was scheduled between assessment and feedback in the intervention group.

Educational activities. The educational activities of participants were monitored using checklists and questionnaires. GPs providing feedback filled out a checklist to ensure that all relevant aspects were discussed. Tutors registered participants' attendance at group meetings. Potential bias by CME activities on doctor–patient communication besides those included in the study was identified by questionnaire.

Statistical analysis

Analyses were performed for item scores and total score. For each participant the pre and post MAAS-Global scores were calculated as the mean of all items over all observations. The item scores were calculated as the means of items over all consultations. The effect of the intervention was analysed by linear regression, using the post score as dependent variable and the pre score and treatment (intervention or control condition) as independent variables. Possible outliers affecting the analyses were identified by means of scatter plots and excluded from analyses. To identify the contribution of the educational intervention in the post score, we calculated the 95% confidence interval (CI) of the treatment effect. Analyses were done as 'intention-to-treat' analyses if data were available: all participants, whether they participated in educational activities on doctor–patient communication or not, were included in the analysis.

The effect size (d-value, a commonly used term to compare the effects of educational interventions) was defined on the basis of the post versus pre scores (post-pre-score) for the participants in the intervention and control group. [24] For the two groups the average and standard deviation of the post-pre-score were calculated. The effect size was obtained by subtracting the average scores for the two groups, and dividing it by the pooled standard deviation.[24]

To check whether participation in the small group meetings influenced the effectiveness, a second regression analysis was performed. As participants with high scores were allocated to other topics in the study, this analysis was performed only for the participants in intervention group that were allocated to the small group meetings on communication. In this analysis, the post score was used as dependent variable, and the pre score and the percentage of meetings attended were used as independent variables.

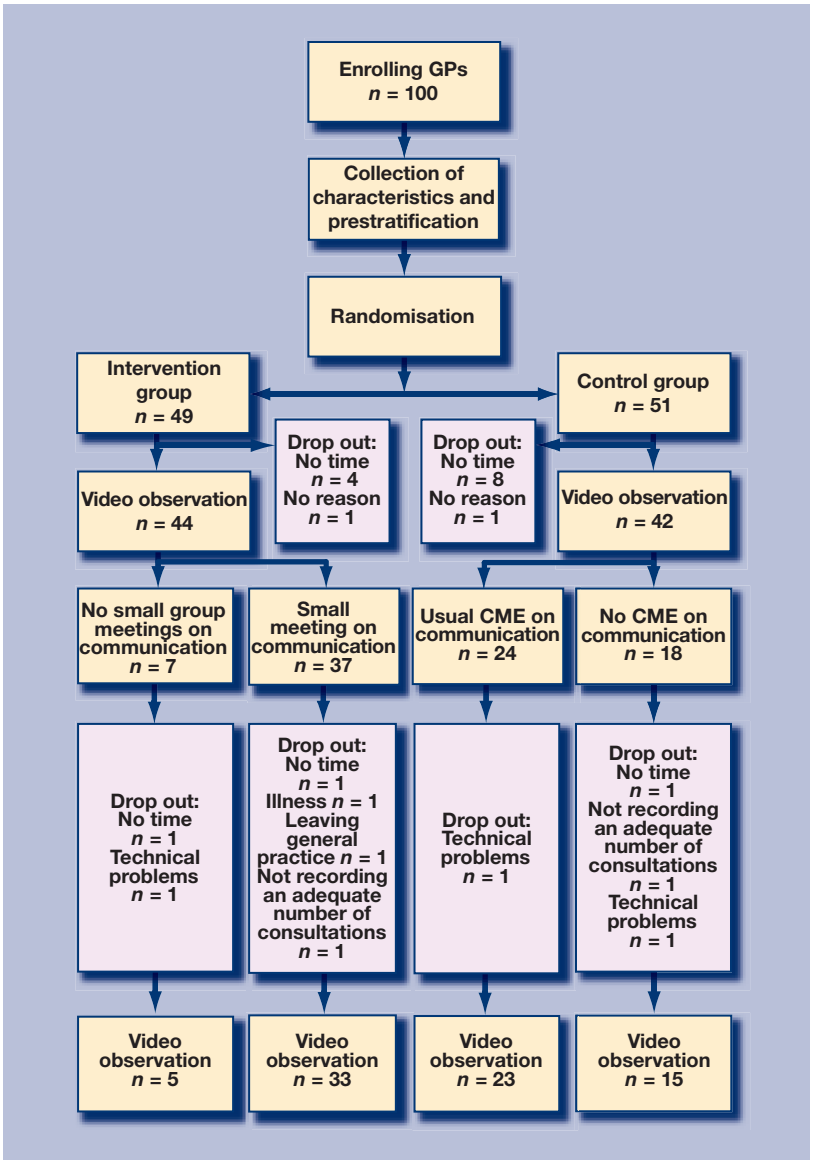

Figure 1. Flow chart of participants in the study and reasons for dropout.

RESULTS

The enrolment questionnaire was returned by 670 GPs (63%); 174 (26%) indicated that they were interested to participate in the study and 100 GPs, representing 87 practices, enrolled. Personal and professional characteristics were obtained; 49 participants were randomised to the intervention arm and 51 to the control arm. Flow of participants in the study and reasons for drop out are given in the Figure 1.

Of the 44 GPs in the intervention arm, 22 were assigned to a programme of four small group meetings about communication skills and 15 to three meetings. The remaining seven GPs did not focus on doctor–patient communication but on other topics. They did not drop out of the study. All participants received feedback according to schedule, except one (reason = no time). Of the 37 GPs, 22 attended all meetings and four GPs did not attend any meeting. The mean number of meetings attended was 2.75. Reasons for non-attendance were: working in solo practice and being unable to attend meetings during office hours (n = 3); and 'not believing that communication training can be effective'(n = 1). Of the GPs in the intervention group, 14 reported CME activities (mean = 4.6 hours; standard deviation [SD] = 2.7) on communication not related to the study.

In the control arm, 16 out of 43 GPs ordered the CME materials and 16 GPs in the control group reported 6.6 hours (SD = 5.4) of CME on doctor–patient communication not related to the study; in total 24 GPs in the control arm of the study were involved in educational activities on doctor–patient communication.

The second observation was completed successfully for 38 GPs in the intervention group and 38 GPs in the control group, and used for analysis. Reasons for not participating in the second observation are given in the flow chart. GPs who did and those who did not complete the study showed no difference in scores on the first series of observed consultations (mean score = 2.35 ± 0.66 versus 2.34 ± 0.69; not significant).

Over 10 000 consultations were recorded, out of which two samples of eight consultations per participant were selected. The selection criteria met in the samples were comparable in both observations and for both groups. The mean total scores and scores on the items of the MAAS-Global are presented in Table 1. No outliers in scores were identified. Regression analysis showed a significant effect of both the treatment and the pre scores. The explained variance (R^2) was 0.10. Participants reported eight items as personal improvement goals, and improvement was seen on five of these (Table 1). The corresponding effect size (d-value) was 0.66, indicating a moderate to large effect.[24]

The effect of participation was analysed by a regression analysis for the participants in the intervention arm allocated to the small group meetings, adding the percentage of meetings attended (attendance) as an independent variable. In this analysis (R^2 = 0.39) the effect of the pre scores (B = 0.73; 95% CI = 0.26 to 1.20) and the effect of the attendance (B = 1.30; 95% CI = 0.57 to 2.04) were found to be significant.

Table 1. Item and total scores of GPs in intervention (n = 38) and control group (n = 38), and the differences in pre and post scores between intervention and control group, the corresponding P-value and the 95% CI of the differences in improvement between both groups.

	Intervention		Control		Difference		
MAAS-Global item scores[a]	Pre ± SD	Post ± SD	Pre ± SD	Post ± SD	Δint - Δcont	*P*	95% CI
Introduction[a]	2.81 ± 0.80	3.11 ± 0.92	3.01 ± 0.81	2.64 ± 0.98	0.67	<0.05	0.09 to 0.95
Request for help[a]	0.85 ± 0.82	1.53 ± 1.14	1.21 ± 1.07	0.69 ± 0.75	1.20	<0.05	0.47 to 1.35
Physical examination	3.24 ± 0.98	3.75 ± 1.13	3.45 ± 0.97	3.75 ± 1.02	0.25		-0.44 to 0.57
Diagnosis	3.08 ± 0.70	3.42 ± 0.99	3.18 ± 1.24	3.14 ± 0.92	0.39		-0.10 to 0.74
Management	2.69 ± 0.89	3.18 ± 1.24	2.94 ± 0.86	3.03 ± 0.98	0.41		-0.27 to 0.74
Evaluation of consultation[a]	1.17 ± 1.00	1.34 ± 1.06	1.28 ± 1.12	0.69 ± 1.04	0.66	<0.05	0.15 to 1.11
Exploration[a]	1.78 ± 0.72	2.14 ± 1.30	1.93 ± 0.90	1.53 ± 1.17	0.77	<0.05	0.16 to 1.23
Emotions[a]	0.83 ± 0.65	0.78 ± 0.90	0.99 ± 0.98	0.39 ± 0.58	0.55	<0.05	0.03 to 0.73
Information giving	2.94 ± 0.82	3.20 ± 0.91	3.28 ± 0.90	3.16 ± 0.82	0.37		-0.29 to 0.51
Summarisations[a]	1.01 ± 0.81	0.99 ± 1.11	1.73 ± 1.23	0.80 ± 0.99	0.90	<0.05	0.30 to 0.72
Structuring[a]	3.22 ± 1.02	3.32 ± 1.11	3.35 ± 0.91	3.41 ± 1.01	0.06		-0.52 to 0.42
Empathy[a]	3.15 ± 1.12	3.87 ± 1.44	3.56 ± 1.21	3.57 ± 1.36	0.68		-0.31 to 1.00
MAAS-Global total scores[a]	2.22 ± 0.54	2.53 ± 0.82	2.48 ± 0.73	2.21 ± 0.72	0.58	<0.05	0.04 to 0.75

[a]*These items were reported by participants as personal improvement goals.*

DISCUSSION

Summary of main findings

The educational approach involving assessment of communication in daily practice and personalised learning activities guided by structured small group work proved to be an effective way of improving doctor–patient communication. The size of the effect was moderate to large. A dose-response effect was seen as the attendance to the intervention significantly contributed to the improvement of the scores. The participants showed most improvement on patient-centred items. This study showed assessment of GPs performance in the real process of care delivery to be an effective first step of an educational programme. GPs considered the assessment outcomes as an acceptable basis for educational activities, and selected aspects of their performance with low scores for improvement. GPs were also found to be capable of drawing up effective personal development plans with support only for the process of change, given the improvement that was seen on the reported improvement goals. The participating GPs had to get used to the approach investigated in this study, as the majority reported having no experience with the methods used in the intervention. We expect that repeated use of the programme may yet enhance its effectiveness.

Strengths and limitations of the study

Participants in the intervention group undertook more study-related activities to improve doctor–patient communication than their colleagues in the control group. This may be interpreted as bias, but in our view it should be regarded as an effect of the intervention, that is, the assessments to drive learning activities. Educational activities not related to the study may have influenced the results, but, as GPs in the control arm attended more of those activities than those in the intervention arm, this only emphasises the effectiveness of the intervention. Selection of randomised groups by attrition may cause bias: although we cannot rule out this effect, no differences in available pre scores were found between those who did and did not drop out of the study.

An unexpected finding is the deterioration of the scores of the control group. As the baseline scores of the control group are very near the post-intervention scores of the intervention group, it may appear that the effects must be attributed to chance, instead of the intervention. Although we have no satisfying explanation for the scores in the control group, we have arguments to attribute the effect to the intervention itself. First, the effects in the intervention group are seen in the participants that actively participated in the small groups. Second, the effects are seen in those items that were reported by participant as goals for improvement. And third, the regression analysis used is the preferred method in case of baseline differences.[25]

The effects of the intervention may be temporary and fade over time. Therefore, we planned the second measurement 2–6 months after the intervention. Whether improvements are permanently embedded in GPs' communication behaviour is still not clear.

Comparison with existing literature

This study provides evidence that supports the current view on continuing professional development, which stresses the importance of learning activities being learner-centred, focused on day-to-day clinical practice and integrating several approaches.[5–8] Convincing evidence on educational interventions that improve the performance on doctor–patient communication towards desired standards is lacking.[12–15] Therefore, the study also provides an approach for learning and improving in practice for those interested in the specific domain of doctor–patient communication.

Implications for future research

The findings of this study cannot easily be generalised to other topics or to the general population of GPs. The participants in our study were not representative as they were motivated to experience this new approach. Effectiveness may be different when GPs are not really interested in this educational method. Also, the assessment method of video observation in daily practice is ideal for this purpose, as it is personalised and performance-based, and yields videotapes that can be used in the small group meetings. Further research will have to shed light on the effectiveness of this approach for other topics, assessment formats and participating doctors. This approach may be implemented as an evidence-based educational approach to support continuing professional in the domain of doctor–patient communication.

Funding body

The study was funded by ZonMw, the Netherlands Organisation for Health Research and Development (project number 1615.0005)

Ethics committee

Approved by the Medical Ethical Committee of the Maastricht Academic Medical Centre (00-172)

Competing interests

The authors have stated that there are none.

REFERENCES

1. Knowles MS. *Self-directed learning. A guide for learners and teachers. Cambridge*: The Adult Education Company, 1975.
2. Davis DA, Thomson MA, Oxman AD, Haynes RB. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 1995; **274(9):** 700–705.
3. Davis D, O'Brien MA, Freemantle N, *et al*. Impact of formal

continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA* 1999; **282(9):** 867–874.

4. Oxman AD, Thomson MA, Davis DA, Haynes RB. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *Can Med Assoc J* 1995; **153(10):** 1423–1431.
5. Thomson O'Brien MA, Freemantle N, Oxman AD, *et al*. Continuing education meetings and workshops: effects on professional practice and health care outcomes [review]. *Cochrane Database Syst Rev* 2001; **(2):** CD003030.
6. Cantillon P, Jones R. Does continuing medical education in general practice make a difference? *BMJ* 1999; **318:** 1276–1279.
7. Peck C, McCall M, McLaren B, Rotem T. Continuing medical education and continuing professional development: international comparisons. *BMJ* 2000; **320:** 432–435.
8. Grol R. Improving the quality of medical care: building bridges among professional pride, payer profit and patient satisfaction. *JAMA* 2001; **286:** 2578–2585.
9. Williams S, Weinman J, Dale J. Doctor–patient communication and patient satisfaction: a review. *Fam Pract* 1998; **15(5):** 480–492.
10. Little P, Everitt H, Williamson I, *et al*. Observational study of effect of patient centredness and positive approach on outcomes of general practice consultations. *BMJ* 2001; **323:** 908–911.
11. Van den Brink Muinen A, Verhaak PF, Bensing JM, *et al*. Doctor–patient communication in different European health care systems: relevance and performance from the patients' perspective. *Patient Educ Couns* 2000; **39(1):** 115–127.
12. Hutchinson L. Evaluating and researching the effectiveness of educational interventions. *BMJ* 1999; **318:** 1267–1269.
13. Torgerson CJ. Educational research and randomised trials. *Med Educ* 2002; **36:** 1002–1003.
14. Hulsman RL, Ros WJ, Winnubst JA, Bensing JM. Teaching clinically experienced physicians communication skills. A review of evaluation studies. *Med Educ* 1999; **33(9):** 655–668.
15. Cegala DJ, Lenzmeier Broz S. Physician communication skills training: a review of theoretical backgrounds, objectives and skills. *Med Educ* 2002; **36(11):** 1004–1016.
16. Hobma S, Ram P, Merode F, *et al*. Feasibility, appreciation and costs of a tailored continuing professional development approach for general practitioners. *Quality in Primary Care* 2004 **12**: 271–278.
17. Ram P, Grol R, Rethans JJ, *et al*. Assessment of general practitioners by video observation of communicative and medical performance in daily practice: issues of validity, reliability and feasibility. *Med Educ* 1999; **33:** 447–454.
18. Tracey JM, Arroll B, Richmond DE, Barham PM. The validity of general practitioners' self assessment of knowledge: cross sectional study. *BMJ* 1997; **315:** 1426–1428.
19. Handfield-Jones RS, Mann KV, Challis ME, *et al*. Linking assessment to learning: a new route to quality assurance in medical practice. *Med Educ* 2002; **36(10):** 949–958.
20. Hobma S, Ram P, Muijtjens AMM, *et al*. Setting a Standard for performance assessment of doctor–patient communication in general practice. *Med Educ* 2004; **38(12):** 1244–1252.
21. Berwick DM. A primer on leading the improvement of systems. *BMJ* 1996; **312:** 619–622.
22. Batalden PB, Stoltz PK. A framework for the continual improvement of health care: building and applying professional and improvement knowledge to test changes in daily work. *Jt Comm J Qual Improv* 1993; **19(10):** 424–447.
23. Van Thiel J, Ram P, Dalen J. Maas-Global Manual. Maastricht: Maastricht University; 2003. http://www.hag.unimaas.nl/Maas-Global_2000/index.htm (23 Jun 2006).
24. Colliver JA. Effectiveness of problem-based learning curricula: research and theory. *Acad Med* 2000; **75(3):** 259–266.
25. Vickers AJ, Altman DG. Analysing controlled trials with baseline and follow up measurements. *BMJ* 2001; **323:** 1123–1124.