Improving general practitioner clinical records with a quality assurance minimal intervention

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SUMMARY

Background. *Although good medical records have been associated with good care, there is considerable room for their improvement in general practice.*

Aim. *To improve the quality of general practice medical records at minimal cost.*

Method. *A total of 150 randomly sampled general practitioners (GPs) in suburban Brisbane, Australia, were randomized in a controlled trial to receive or not receive an intervention . The intervention consisted of 6 to 12 one-hour monthly meetings when the pairs of GPs assessed samples of each other's medical records using a 12-item instrument. This was developed previously by a process of consensus of general practice teachers. Mean scores of 10 medical records selected at random from before the intervention started and one year later were compared.*

Results. *After the intervention, the increase in the total score (for which the maximum possible was 18) for the intervention GPs (from a baseline of 11.5 to 12.3) was not significantly greater than for the controls (from 11.4 to 11.7). Legibility and being able to determine the doctor's assessment of the consultation were significantly improved. The post-intervention increase of 1.06 (9.3%) of the total scores of the 47% of intervention GPs who complied with the intervention was significantly greater than that for the controls.*

Conclusion. *The quality assurance activity improved some components of the quality of GPs' clinical records. However, the improvement was small, and the search for activities for Australian GPs that demonstrate an improvement in the quality of their practice must continue.*

Keywords: medical records; randomized controlled trial; intervention; Australia.

Introduction

CONSIDERABLE attention has been focused on the quality of Australian general practice. Among several recent events, the Australian government commissioned the setting of standards of care in general practice through the Royal Australian College of General Practitioners (RACGP),[1] with a view to setting in place accreditation processes so that the quality of general practice improves. One section addresses medical records.[1]

Good medical records have been associated with good care,[2–7] although it has not always been possible to demonstrate this,[8] and excessive concern with records may be at the expense of other important aspects of care.[9] If it is not possible for a general practitioner (GP) to easily ascertain from the records or from memory what chronic illness or psychosocial problems the patient has, or what preventive measures have been undertaken, it will be difficult to manage the patient well.[10,11] Patient records also act as an *aide-mémoire* important in the consultation process (reminding the doctor about details from the last visit), as well as communicating from doctor to doctor in group practices, which account for 70% of Australian general practice.[12] High-quality patient records are necessary for medicolegal reasons as well.[13] However, the clinical record is an area of general practice in which there is considerable room for improvement.[14,15] We have confirmed this in Australia from an earlier analysis of a random sample of records that form part of this study.[16]

What can GPs do to improve the quality of their clinical records? As some of the deficiencies can be laid at the door of poorly structured records,[17,18] solutions could involve replacing the current records with a system that has better layout (such as the RACGP 'college record' system based on the Weed layout[17]) or computerizing them. However, these options are expensive in terms of both money and effort. We wondered whether concentrating on improvements within existing record systems might be effective. Incorporating such an exercise into a quality assurance activity, such as was recently required for vocational registration in Australian general practice,[19] might prove to be an attractive proposition for GPs.

Although there are many factors that could act as barriers to this form of improvement in quality,[20] studies have shown that a review process addressing the quality of medical records is acceptable,[21] may improve the quality of care in a hospital outpatient setting,[22] and may be one of several factors doing so in general practice.[7] There may be other educational advantages of audits of this kind.[23] Accordingly, we evaluated an intervention that was sufficiently inexpensive and time-efficient to allow GPs to be able to incorporate it into their normal routine.

Methods

The methods have been described elsewhere.[16] Briefly, 150 Brisbane GPs were divided into groups of about 10, by locality, to facilitate recruitment. Each group was randomized into one of two arms and recruited to an enrolment meeting. Those in the arm randomized to receive the intervention were introduced to the intention of the prime object of the study to improve record quality with an inexpensive and time-efficient intervention. They were asked to consent to allow records to be sampled to collect data for this purpose as well as secondarily for a morbidity study. The remaining GPs were recruited into a descriptive study in which they were asked to consent to their records being sampled primarily to validate a morbidity and therapeutics study externally

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Table 1. The intervention and assessment instrument for record quality, baseline mean percentage of records that attained the standards determined by it, and the changes after one year of intervention, for the control general practitioners, those randomized to receive the intervention, and the subgroup of the latter who reported undergoing the intervention (confidence intervals in brackets).

The intervention and assessment instrument	Weighting factor	Control		Intervention		*P* value[b]	GPs who underwent intervention[a]		*P* value[b]
		Baseline (*n*=778)	After one year (*n*=775)	Baseline (*n*=715)	After one year (*n*=715)		Baseline (*n*=338)	After one year (*n*=339)	
		Percentage of records that met the standard					Percentage of records that met the standard		
Format									
For the following is the:									
1. Writing legible? (are at least four out of five words easily read?)	2	77 (65, 89)	76 (64, 88)	79 (68, 90)	85 (75, 95)	0.02	79 (72, 86)	86 (80, 92)	0.01
2. Information concise? (are four of five words necessary?)	2	97 (97, 97)	97 (97, 97)	97 (97, 97)	99 (99, 99)	0.17	98 (98, 98)	99 (99, 99)	0.20
3 Information easy to find?	2	17 (14, 20)	21 (17, 25)	20 (17, 25)	22 (18, 26)	0.76	16 (13, 19)	25 (21, 29)	0.22
Health summary									
Is there an up-to-date summary section with a record of the following:									
4. Date of birth?	1	94 (92, 96)	97 (95, 99)	95 (93, 97)	98 (97, 99)	0.89	95 (93, 97)	98 (97, 99)	0.64
5. Previous medical history?	1	34 (32, 36)	40 (38, 42)	33 (31, 35)	39 (37, 41)	0.95	36 (34, 38)	42 (40, 44)	0.98
6. Family history?	1	12 (19, 15)	14 (11, 17)	12 (9, 15)	12 (9, 15)	0.49	11 (8, 14)	15 (11, 19)	0.59
7. Allergies?	1	37 (34, 40)	45 (42, 48)	29 (26, 32)	42 (39, 45)	0.17	30 (37, 33)	46 (43, 49)	0.09
8. Alcohol and/or tobacco use?	1	31 (29, 33)	33 (31, 35)	31 (29, 33)	38 (36, 40)	0.13	32 (30, 34)	39 (37, 41)	0.18
9. Immunization status?	1	92 (90, 94)	91 (89, 93)	91 (89, 93)	92 (90, 94)	0.71	92 (91, 93)	90 (88, 92)	0.46
Progress notes									
For this episode of care, can you identify the:									
10. Reasons(s) for the consultation	2	79 (77, 81)	78 (76, 30)	80 (78, 82)	84 (82, 86)	0.08	74 (76, 80)	84 (82, 86)	0.02
11. Doctor's assessment?	2	77 (73, 81)	77 (73, 81)	80 (76, 84)	86 (83, 89)	0.03	76 (75, 83)	85 (82, 88)	0.04
12. Patient management?	2	74 (70, 78)	75 (71, 79)	77 (73, 81)	79 (75, 83)	0381	74 (70, 78)	80 (76, 84)	0.17
Weighted total (out of a maximun of 18)	18	11.4 (10.8,12.0)	11.7 (11.1,12.3)	11.5 (11.0,12.1)	12.3 (11.7,12.8)	0.08	11.4 (10.8,12.1)	12.5 (11.8,13.2)	0.01

Adjusted for cluster sampling. The unit of analysis was the patient record. [a]General practitioners in the intervention arm who indicated they undertook six or more meetings out of the 12 scheduled. [b]Significance of intervention effect: testing H_o:$\beta = 0$, where β is the regression parameter for the interaction between group (control or intervention), and time (baseline or after one year), after adjusting for both main effects.

(which has been reported separately)[24] and secondarily to estimate the quality of medical records. These GPs were less aware of any specific interest in the quality of medical records and were therefore suitable to act as controls for this study. General practitioners from either arm who did not attend the local recruitment meeting were recruited by one of us subsequently (CDM or PA) by telephone.

Sampling of records for measurement of their quality

In both arms of the study, the GPs provided consent for randomly sampled medical records to be copied. One of us (EA) came to the practice at a mutually convenient time with a portable photocopier to sample the records of 10 chronologically consecutive patients who attended the consenting GP after a random, predetermined, earlier time (to minimize any observation effect). Only the page including the selected consultation and any summary section was copied. Words that might identify the patient or GP were cut out of the copy to the satisfaction of the GP before being provided with a random number and stored. Another sample of 10 records from each consenting GP was copied similarly one year later.

Intervention

Intervention GPs were paired by convenience and negotiation. We asked pairs to meet every month over one year, at a place and time of their choice, to determine and discuss the quality of copies of 10 of each other's records. These were sampled in the previous month in the same way as those for measurement of their quality. An evaluation instrument, described below, was provided.

The measurement and intervention instrument

The instrument was developed at two earlier meetings. A Delphi process of 86 general practice teachers and trainers were presented with an analysis of 236 records (taken from a pilot GP outside our main sample).[16] Twelve elements of quality of clinical records were derived and weighted (Table 1). The instrument was used both as an assessment tool by the GPs during the intervention meetings and to measure the outcome.

Scoring the records

A group of four final-year medical students scored record quality when sampling was complete, blinded to the GPs' group allocation. They started scoring the records after test–retest and inter-observer reliability trials of training records showed a positive correlation of 75% between each element of each questionnaire after assessing 45 test records. The records consisted of 10 sampled from before and 10 after the intervention period from each GP. This number was chosen to enable at least 7% differences between intervention and control groups to be detected with 80% power when tested at the 5% significance level (after taking into account the cluster design of the sample). Reliability-testing records (duplicates of 20 scored by each student and 10 scored twice by each student) were distributed among the sample.

Use of the intervention

A questionnaire was administered to 67 GPs in the intervention arm (five were away at this time), of which 58 were returned: a response rate of 87%. From this, we were able to determine those who reported attending six or more meetings with their partner and, thereby, report the results of those who participated in the intervention.

Analysis

We assessed the reliability of the students' record scoring using Cronbach's alpha.[25] The percentage of records (with 95% confidence intervals) for each of the assessment instruments that met the required standard was calculated. The intervention effect was assessed by considering the significance of the regression parameter estimate for the interaction between the study group (control/intervention) and time (baseline/one year later), after adjusting for both main effects. Logistic regression was used for each of the 12 binomially distributed assessment instruments, and linear regression was used for the weighted total patient record score.

To accommodate the cluster design of the study (with GPs being the cluster unit), the analysis was conducted using a statistical package[26] that specifically allows for the correlation between patient records from the same GP and the increase in variance associated with this type of study design.

Ethics

Ethical clearance for the project was obtained from a social and behavioural ethics committee of the University of Queensland.

Results

Response rate

A total of 307 GPs in 30 groups (with 22 groups of 10 GPs, six groups of 11 GPs, and one each of nine and 12 GPs) were approached initially. We recruited 46% of those GPs randomized into the intervention arm and 51% into the control arm.[16] Out of those recruited, 81% were male, 26% were solo practitioners, and 58% had graduated 15 years ago or earlier.

Record-scoring reliability

The overall reliability between students was 0.86; it was high (>0.9%) for eight questions but low (<0.55) for two (questions 10 and 11). Overall within-student reliability was also high (0.84), very high for eight questions (0.95), although lower (<0.7) for two (questions 11 and 12).

Comparison between the control and the intervention arms

The records of the intervention arm scored higher than those of the control arm by an insignificant amount before recruitment. None of the individual elements of the records were significantly different between control and intervention arms (Table 1). After the intervention, the overall score of the control GPs increased by 0.25 (2.2%) to 11.7, and by 0.76 (6.5%) to 12.3 for the intervention GPs. The difference between the increases in the control and intervention arms was not significant.

Two elements of the quality of the medical records in the control arm decreased over the intervention period, three remained the same, and seven improved. In contrast, all the elements in the intervention arm improved over the intervention period. In general, those elements that were initially of poorest quality underwent the greatest increase, particularly the recording of allergies, alcohol and tobacco use, details of previous medical history, and ease of finding information within the records. However, the recording of family history (for which most records failed to reach the standard at baseline) improved little, while legibility and the quality of the three elements of the progress notes (for which most records attained the standard at baseline) improved considerably, particularly in the intervention arm. Differences in the changes between control and intervention from baseline were significant for increased legibility and being able to determine the reason for the encounter.

Comparison between control GPs and those who participated in the intervention

The results of the subgroup of GPs in the intervention group who complied with the intervention were compared with the controls by omitting the data of those, or whose partner, reported attending less than six of the proposed 12 meetings (Table 1). For these 34 GPs, there was a greater improvement of 1.06 (9.3%) from pre- to post-intervention scores overall, which was significantly different from the control improvement. The improvement took place among all questions except one (recording of immunization status), in which there was a deterioration. The differences in the improvements over the controls were significant for legibility and the ability to determine the reason for the consultation from the records.

Discussion

It was not unexpected that the recruitment levels were relatively low. Allowing outsiders to examine one's medical records may have felt threatening for the GPs in either arm of the study. They may have been more disinclined to participate in the intervention arm because of the time and effort required. The positive effect on the recruitment rates of the new requirements for quality assurance (QA) 'points' in a scheme administered by the RACGP, which taking part in the study attracted, is unlikely to have been large.[27] It is likely, therefore, that the GPs who participated were not representative of all Australian GPs, but that the study selected out those more comfortable with the idea of outsiders examining their records, as well as those in the intervention arm prepared to engage in a quality assurance intervention.

The study design is unusual and deserves comment. We ran two complementary studies side by side so that we could obtain controls in whom the effect of being studied was minimized.

The lower reliability of questions 10, 11, and 12 of the instrument (being able to identify the reason for the consultation, the doctor's assessment, and patient management) is not perhaps surprising when one considers that these items are the most subjective measures of the quality of the records.

The trend for improvement in the quality of the clinical records was associated with the intervention. The improvement was more pronounced among those who actually undertook the intervention compared with those randomized to be offered it (in an intention-to-intervene analysis), among whom it was significantly greater. We cannot conclude that this improvement was a result of the intervention, as it is possible that it represents a bias related to compliance: perhaps the external interest on medical records alone was enough to stimulate a greater improvement among those who were more compliant with the intervention. Part of the greater improvement in some elements of lowest baseline quality may represent either a regression to the mean effect or a greater potential for improvement. Conversely, a 'ceiling effect' (that is, little room for improvement) might explain the lack of improvement in those items that scored well initially (particularly conciseness of information, the recording of dates of birth, and the recording of immunization status).

The improvement in record quality appeared to be specific. Thus, there was not simply an increase in the material recorded — the trend was for an increase in the conciseness of the records in the intervention group.

The overall improvement was of about half a point (for those randomized to receive the intervention) and one point out of a total of 18 (for those who actually undertook the intervention). This would be difficult to translate into an improvement in the quality of patient care.[28] On the other hand, we can offer GPs an activity that is associated with a subsequent small improvement in the quality of their records. The intervention was one to which nearly half the randomly selected GPs were able to be recruited. It was not expensive compared with changing the structure of the records, and the literature suggests there may be other benefits[23] that we did not measure.

It is still difficult to find activities that demonstrate an improvement in the quality of general practice in Australia.[19] Achieving this should become a high priority in any new strategies introduced by the profession or the government.

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Denis Pereira Gray, President of the RCGP, and Jonathan Regan, Campden Publishing, pick out the winners of the Members' Reference Book 1997/98 Prize Winners Draw

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The following prizes were won by the listed winners:

Ellman DS90 Radiosurgery Equipment: Dr GE Griffiths; *Heartstream Defibrillator:* Dr A Rughani; *Omron Blood Pressure Monitors and Obesity Cuffs:* Dr T O'Leary, Dr LJ Coleman, Dr DM Ravetto, Dr TA Devereux, Dr RD Proctor, Dr G Schrecker, Dr DW MacLean, Dr RE Hope-Simpson, Dr AM Clark, Dr P Robert-Smythe, Dr K Cobban, Dr KF Sellens, Dr WKN Brown, Dr B Wooley, Dr EDJ McLeod, Dr CJ Packham. *LifeArt CD Bundle:* Dr DR Frampton; *£500 CD voucher:* Dr DA Lumb; *£500 towards accommodation and registration fees at College Spring Meeting:* Dr IB Craighed, Dr RA Toller.