

International exchange

The Nordic method for quality improvement in general practice

Anders Munck MD GP
Head of Audit Project Odense

Jens Damsgaard MD GP
Audit Project Odense

Dorte Gilså Hansen MD
PhD Student

Lars Bjerrum MD PhD
Senior Researcher, Audit Project Odense

Jens Søndergaard MD GP PhD
Lecturer

Research Unit of General Practice, University of Southern Denmark, Denmark

ABSTRACT

In this paper we report our ten-year experience of a project for quality improvement in general practice in the Nordic countries. The quality improvement initiative is called the Audit Project Odense (APO) method. This has become increasingly popular among general practitioners in the Nordic countries since the early 1990s. APO is an integrated part of the Research Unit of General Practice at the University of Southern Denmark and has established a network of general practitioner (GP) representatives from all Danish counties and all the Nordic countries. The APO method is an easy to use instrument for GPs, which includes registration of their own activities, courses, follow-up and an evaluation. The APO method is suitable for addressing topics that play a central role in the work of GPs. The problem should be frequently occurring – at least 30 times in a two-

four-week period – and it should be possible to elucidate it by means of a special APO registration chart. The major advantage of the APO method is the simplicity of the registration chart used to submit data, and a process that ensures that the quality circle is completed. An important feature of the APO concept is that it is voluntary – which increases motivation, and gives a sense of ownership and individual benefit. Furthermore, the in-depth and varying activities in the APO circle are considered beneficial, and there are several examples of successful APO circles, where the effects may last for several years. Due to the design of the evaluation, however, the evidence of the APO method's effectiveness could be stronger, and further evaluation is still needed.

Keywords: audit, general practice, quality circle

Introduction

Quality improvement according to the Audit Project Odense (APO) method has in recent years become increasingly popular among general practitioners (GPs) in the Nordic countries. APO was launched in 1989 with the objective of creating an effective easy to use instrument for quality improvement in general

practice. The core of the APO method is a quality circle, in which participation is always voluntary. The APO method is a pragmatic concept, in which each quality circle is adapted to the participants, the subject for intervention, and the factors influencing suboptimal clinical practice.

The APO method includes the following components: registration of own activities, follow-up and course activities, and an evaluation based on a final

registration, which takes place one to two years after the start of a given project. In the following the APO method is illustrated with examples from various quality improvement projects.

APO quality development circles

Each APO circle (see Figure 1) runs over a period of one to two years, depending on the nature of the problem, the participants, the chosen strategy for the implementation of changes, as well as the available resources. The first phase in any APO circle is problem identification. On the basis of an idea usually produced by local GPs, a working group is set up to formulate the problem and describe the aim. The working group prepares a first draft for a registration chart (data collection tool) and brief guidelines. The registration chart is pilot-tested and adjusted by the working group. All the participants are invited to a meeting, where they discuss the aim of the APO circle. Shortly after this, the first registration, where GPs submit data, takes place, and data from the registration charts are processed by the APO secretariat. A report is prepared and subsequently discussed at the first follow-up meeting. The participants discuss their own and the total

results, identify quality problems and consider possible barriers and solutions to elimination of the quality problems. The follow-up covering one to two years may comprise workshops, clinical skills courses, reminders and clinical training through exchange visits to relevant hospital departments, as well as interdisciplinary training courses. Each APO project is evaluated through a final registration, where it is examined to what extent the indicated quality problems have been solved. Finally, an evaluation meeting is held, and a report on the outcome is prepared.

Participants

The APO method is widely accepted among Danish GPs and approximately 75% have at some stage participated in the APO circle. This is comparable to other Nordic countries. Other healthcare professionals (e.g. other medical specialists, nurses and physiotherapists) have also participated in APO projects.

Registration

The APO registration chart is a pre-printed A4-size chart (see Figure 2). Besides information about patients' date of birth, there is space for approxi-

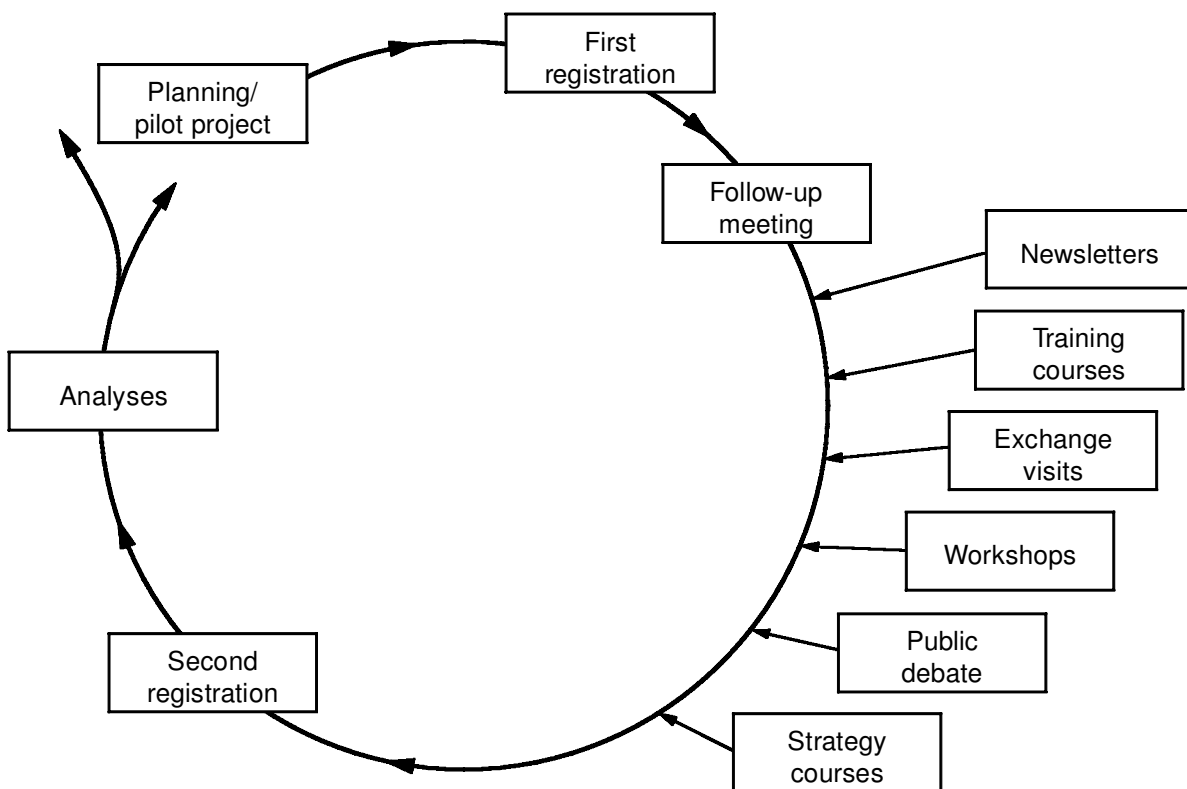


Figure 1 The APO circle

mately 30 variables divided into groups. A minimum of one variable should be ticked within each group. It is also possible to record numerical values. The registration chart is filled in immediately after each patient contact. There are a number of boxes for descriptive questions about the contact form and reason for encounter. The diagnostic and therapeutic procedures and consequences of the consultation are then registered. In many registrations the GP at the end records his subjective assessment of the relevance and course of the consultation. The total registration takes about one minute.

Topics suitable for APO projects

In order for a topic to be suitable for an APO circle, a number of criteria must be met. Firstly the topic needs to play a central role in the work in general practice. Furthermore, it should result in improved quality, the problem should be frequently occurring (minimum 30 times in a two- to four-week period), and it should be possible to elucidate it by means of an APO registration chart.

The APO organisation

APO is an integrated part of the Research Unit of General Practice at the University of Southern Denmark in Odense. The staff comprises the head of the project, who is a GP, researchers, and employees in charge of entering data from the registration charts, statistical analysis and data presentation. APO has established a network of representatives from all Danish counties. This network collects audit ideas locally and facilitates the development of local APO circles, which has been an important driving force in the development of APO. Collaboration between the Nordic countries has also been established, and the other countries now all have centres working according to the APO model.¹

Effect of APO circles

Only one APO circle has been carried out in a randomised, controlled trial, and this did not show any effect on doctors' management of HIV prevention.²

Several non-randomised evaluations of APO circles have, however, been performed, for instance in an audit on respiratory tract infections in the County of Funen (see below), and a project on the same topic in the County of Roskilde, where the effect was evaluated based on register data.^{3,4}

Problems examined using APO circles

Respiratory tract infections in general practice

In 1992, 31 GPs in the County of Funen participated in an APO circle comprising prospective registration of diagnosis and treatment of respiratory tract infections in a three-week period in November. The registration was repeated in 1993 and 1995. After the first registration, guidelines on management of upper respiratory tract infections in general practice were issued. Meetings with a view to discussing practical strategies for implementation of the guidelines were held. Subsequently, newsletters were sent out and courses were arranged for the participants during the summer of 1993, in addition to visits to the Department of Clinical Microbiology at Odense University Hospital. The next registration was carried out in November 1993. No further activities were arranged until the third registration had taken place in November 1995. Control groups comprised 64, 76 and 67 GPs, who participated in only one registration in 1992, 1993 and 1995. The number of antibiotic prescriptions was reduced during the study period, but the control groups had a similar reduction. The ratio between number of prescriptions for narrow-spectrum and broad-spectrum penicillin increased in the intervention period (1.33 in 1992, 1.94 in 1993 and 2.7 in 1995). The change could be seen in cases of acute sinusitis, bronchitis and pneumonia, but not in cases of acute otitis media and acute tonsillitis. The changes obtained from 1992 to 1993 were maintained and increased in the desired direction from 1993 to 1995, despite the fact that the training activities had stopped. The results are summarised in Table 1. Audit on respiratory tract infections has become one of APO's most popular audits and has been repeated every single year since 1992 in one or more counties. It has just been carried out in a Nordic setting with 367 Danish, 68 Norwegian and 100 Swedish doctors, and additional participants from Estonia, Belgium and Spain.

Psychiatric problems in general practice

A total of 184 Danish GPs participated in 1998–2000 in an APO circle with focus on psychiatric problems in general practice. The GPs registered all surgery consultations, telephone consultations, contacts via a third person and drug prescriptions for patients with psychiatric problems. After the first registration it became clear that there were quality problems in the form of frequent prescribing of benzodiazepines. Another problem was the prescribing of the new antidepressants (selective serotonin reuptake inhibitors (SSRIs) and selective noradrenergic reuptake inhibitors (SNRIs)), which were often prescribed on unclear and non-evidence-based indications. There

Table 1 Main results from audit on respiratory tract infections: changes after intervention (1993 and 1995) in the intervention group compared to changes in the control groups

Diagnosis	Antibiotics versus no antibiotics	Penicillin versus other antibiotics
All respiratory infections	No effect ($n = 16160$)	Lasting increase, $P < 0.01$ ($n = 6587$)
Acute otitis media	No effect ($n = 1207$)	No effect ($n = 906$)
Acute sinusitis	Lasting decrease, $P < 0.01$ ($n = 1417$)	Lasting increase, $P < 0.01$ ($n = 1113$)
Acute tonsillitis	No effect ($n = 2021$)	No effect ($n = 1340$)
Bronchitis	No effect ($n = 3004$)	Delayed increase, $P < 0.05$ ($n = 1655$)
Pneumonia	No effect ($n = 1280$)	Lasting increase, $P < 0.01$ ($n = 1081$)

n = number of patients registered

Lasting increase or decrease means that an observed statistically significant change in 1993 was also found two years later

Delayed increase means that no change was observed in 1993, but a statistically significant change was observed in 1995

was intensive training course activity in 1998 and 1999. In 2000 the next registration took place. There was a small but significant reduction in the prescribing of benzodiazepines. The prescribing of new antidepressants was however unchanged. Audit was also carried out in the other Nordic countries, but making comparisons between the countries presented considerable problems.⁵

Development trends and effects derived from APO projects

In recent years APO has carried out several projects, where we have attempted to incorporate the patient perspective by combining the audit registration with patient questionnaires. This approach has been used in projects on prevention of cardiovascular disease, respiratory tract infections and diabetes.⁶ The discussion of the results, which showed varying degrees of agreement between doctors' and patients' views, has been very fruitful for the pedagogical process. Finally, several APO projects have resulted in issuing of evidence-based guidelines for use in general practice on topics like back and shoulder problems, respiratory tract infections, allergies and laboratory medicine.⁷⁻¹⁰

Discussion

The APO method has, in the past decade, been used to a great extent for quality improvement projects in general practice, both in Denmark and in the other Nordic countries. In a qualitative study in connection with an APO circle on allergy, the participating GPs stated in an interview study that as a result of the APO method, they had adopted a more critical attitude and that they had obtained a greater insight

into their professional work. The quality circle has been completed in many projects, and most of these appear to have had positive effects, while one controlled study indicates that the effect lasts for several years.^{3,4} Due to design of the evaluations, however, the evidence supporting an effect of the APO concept is insufficient and there is a need for more rigorous evaluation.

The APO method is based on theories on learning and motivation.^{11,12} Methods for improving GPs' clinical performance should contain elements that break down barriers to behaviour change.^{11,13-15} Every APO circle is therefore adapted to the participating doctors' needs and the chosen problem area. The process of problem identification, preparation and final adjustment of the registration charts is also considered to be motivational, as the participants are involved in decision making. It is also vital that all participation is voluntary, and that the GPs develop a sense of ownership in the individual APO projects.¹⁵ An important factor is to give the individual doctors comparative data about their own practice, which is an important prerequisite for motivation to change practice. The participants tend to be extremely well prepared and motivated at the first follow-up meeting. Partly because they have been forced to think systematically about the topic during the three to four weeks since the registration has taken place, partly because they have to explain/justify their own results, and finally because they have contributed to the total result. Furthermore, it may be important that APO circles take place in a general practice setting and among people with a common reference frame. Assumptions on the importance of these qualities of APO circles are, however, predominantly based on theories, and profound evaluations of the APO method, including the importance of the individual components, are needed.

The amount of time involved in each APO circle could be considered to be a prominent barrier to

participation, as GPs may find it difficult to find the time in their daily work. Participation in APO registrations is, however, not very time-consuming, but the GPs need to set aside time for the subsequent courses.

Conclusions

Based on non-randomised studies as well as theoretical considerations we believe that the APO method is an effective and simple method for quality improvement in general practice, but there is still a need for development and rigorous evaluation of the method.

REFERENCES

- Munck A, Hansen DG, Lindman A *et al.* (1998) A Nordic collaboration on medical audit. *Scandinavian Journal of Primary Health Care* **16**: 2–6.
- Sandbæk A (1996) Referenceprogram og medical audit som metoder til at ændre adfærd hos praktiserende læger. [Reference programme and medical audit as methods for changing behaviour among general practitioners.] PhD Thesis. Odense University.
- Munck A, Gahrn-Hansen B, Słgaard P *et al.* (1999) Long-lasting improvement in general practitioners' prescribing of antibiotics by means of medical audit. *Scandinavian Journal of Primary Health Care* **17**: 185–90.
- Damsgaard JJ, Schæfer K, Michelsen JW *et al.* (2001) Antibiotikabehandling af infektioner i almen praksis. [Antibiotic treatment of infections in general practice.] *Ugeskrift for Læger* **163**: 165–8.
- Hansen DG, Munck AP and Kragstrup J (2002) Methodological problems in comparing audits from the Nordic countries. A critical review of results from audit on Nordic general practitioners' management of patients with psychiatric problems. *Scandinavian Journal of Primary Health Care* **20**: 71–3.
- Bjerrum L, Hamm L, Toft B *et al.* (2002) Do general practitioner and patient agree about the risk factors for ischaemic heart disease? *Scandinavian Journal of Primary Health Care* **20**: 16–21.
- Abom B and Munck A (1996) Ryg, skulder og lvrige bevægeapparat. [Back, shoulder and remaining musculoskeletal system.] *Audit Project Odense*, Odense.
- Gahrn-Hansen B and Munck A (1998) Luftvejsinfektioner. Vejledning til fynske læger om udredning og behandling. [Respiratory tract infections. Guidelines for doctors in Funen about diagnosis and treatment.] *Audit Project Odense*, Odense.
- Dahl R, Abom B and Munck A (1999) Allergiske lidelser. Håndbog om udredning og behandling. [Allergic disorders. Handbook on diagnosis and treatment.] *Audit Project Odense*, Odense.
- Gahrn-Hansen B, Grinsted P, Jørgensen B *et al.* (2001) Laboratoriemedicin i almen praksis. [Laboratory medicine in general practice.] *County of Funen and Audit Project Odense*.
- Grol R (1997) Beliefs and evidence in changing clinical practice. *British Medical Journal* **315**: 418–21.
- Holm HA (1998) Quality issues in continuing medical education. *British Medical Journal* **316**: 621–4.
- Petersen KJ (1999) Efteruddannelse for praktiserende læger – hvad virker? [Continuing medical education – what works?] Efteruddannelsesfonden for Almen Praksis: Copenhagen.
- Słndergaard J (2002) Feedback on general practitioners' prescribing patterns. Two randomised controlled trials on effects of different types of prescriber feedback and an interview study on general practitioners' attitudes to these interventions. PhD Thesis from the University of Southern Denmark. Månedsskrift for Praktisk Lægegerning, Copenhagen.
- Lomas J (1994) Teaching old (and not so old) docs new tricks: effective ways to implement research findings. In: Dunn EV, Norton PG, Stewart M, Tudiver F and Bass MJ (eds) *Disseminating Research/Changing Practice: research methods for primary care*. Sage: Thousand Oaks, CA.

ADDRESS FOR CORRESPONDENCE

Dr Anders Munck, Audit Project Odense, Research Unit of General Practice, University of Southern Denmark, Winslłwparken 19, 5000 Odense C, Denmark. Tel: +45 6550 3025/3030; fax: +45 6591 8296; email: amunck@dadlnet.dk.

Accepted January 2003