How to improve practice by means of the Audit Project Odense method

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Introduction

Back in the nineties Oxman *et al.* concluded that "there is no magic bullet for improving the quality of care" (1). Today almost 30 years later the conclusion is still the same, despite a plethora of studies have evaluated the effectiveness of strategies to change healthcare professionals' behaviour and improve patient care. In general, passive dissemination strategies, such as the distribution of educational materials appear largely ineffective, while interventions based on action - such as audit and feedback, educational meetings, educational outreach visits, and reminders - have shown to be more effective (2,3).

Interventions more likely to be successful seem to act through the normalisation process theory constructs that explains implementation mechanisms; coherence (sense making of interventions), cognitive participation (engagement with intervention), collective actions (work done to enable intervention to happen), and reflexive monitoring (cost benefit appraisal) (4). We hereby present the Audit Project Odense (APO) method that seeks to address all the dimensions of the normalisation process theory by self-registration and open discussion of the identified behaviour.

History of the APO method

In the 1970s a simple chart was developed at the Birmingham Research Unit for General Practice, suitable for prospective self-registration of activities in general practice (5). In England many different practice activities were registered by means of this chart, but when the registrations were repeated one year later, hardly any changes had taken place. In the late eighties, four Danish general practitioners (GPs) from the Department of General Practice at Odense University visited the Birmingham department and were taught the basic rules for conducting these practice activity analyses. The APO team refined the English chart and in addition a thorough course activity was offered the participants between the two rounds of registration. In 1989 the APO unit was established and four years later it became part of the Research Unit for General Practice at the University of Southern Denmark (6). The first application of the APO method on acute respiratory

tract infections in 1992-1993 obtained significant intervention results, thereby increasing the interest in the method (7). Since then, the APO method has been used for hundreds of projects targeting multiple topics, settings, and countries.

Characteristics of the APO method

Table 1 provides an overview of the general rules that apply to projects using the APO method. Topics suitable for the method occur frequently – preferably at least thirty times during a four-week period. Audits on very frequent topics can be performed in just one week – or even a single day, however most audits do proceed for three to four weeks. In general, the more patient contacts registered the better results, as many registrations increase the preciseness and allow a higher level of detail.

The registrations are performed on A4 size paper charts with APO's specific layout. The paper instrument is simple, transparent, and easy to transfer between topics and settings. So far, only two projects have offered healthcare professionals to choose between registering electronically or on paper. Simplicity is fundamental since clinical settings usually deal with busy agendas. Typically, a well-designed APO chart can sufficiently uncover a topic via just five to ten ticks per patient contact. Filling in the information required for one patient preferably takes less than one minute.

After the registration period all the information collected is compiled in a report. This report summarises information about patient characteristics (age, gender), symptoms, clinical findings and examinations, diagnoses, and choices of treatment. The variation in performance between the participating healthcare professionals is reported anonymously via ID-number in the various diagrams. In addition, each participant receives individual feedback on own performance.

The results of the audit are conveyed at a follow-up meeting where both participating healthcare professionals, the project team, and experts in the audited topic participate. The overall aim of this meeting is to uncover and evaluate potential quality problems in the health care professionals' management of the topic being investigated. The APO quality circle usually includes a second final

registration - about a year after the first registration - to evaluate to what extend the identified quality problems have been solved.

Strengths and limitations

Munck *et al.* have demonstrated that data registered by means of the APO method are reliable and practically identical to the information collected in the medical records (8). Although APO data have proven valid, findings should be interpreted with caution. Perhaps the most important limitation of data collected by means of the APO method is the lack of external validity. Voluntary participation may reduce generalisability. Strandberg *et al.* found that GPs signing up for an audit tend to have a more rational use of antibiotics, than non-participating GPs (9). Also the Hawthorne effect has to be taken into account, as healthcare professionals might change their behaviour when they know they are being observed.

Most evidence on the effectiveness of the APO methodology is from prospective before-and-after studies. This design has always been considered as a drawback hampering publication in prestigious journals. However, a few randomised clinical trials have confirmed the effect of the APO methodology (10, 11).

Although data collected by means of the APO method is less suitable for estimating disease prevalence, several associations identified in APO data are likely to be generalisable, e.g. associations between patient- or healthcare characteristics and various treatment regimens (12).

The cross-sectional nature of the APO method is another weakness, as data only reflect "a snapshot of the real world". Variables included in the registration chart are lined up expectedly following the consultation process. Theoretically, decisions on treatment(s) are taken after a diagnosis has been established. However, GPs may decide on treatment at the same time as, or even before, making the diagnosis. Afterwards, the GP adjusts the interpretation of findings and make the diagnosis fit the treatment decision. This may lead to a diagnostic misclassification bias.

Ethics

Written informed consent is required from healthcare professionals signing up for an APO audit. Participants agree that both information about themselves, such as for example age, gender, and seniority, and activity data (registrations) are used for both the quality improvement project and appertaining research. Importantly, data are pseudonymised before used for any research activities and individual participants cannot be identified in publications. The method does not allow time for obtaining informed consent from the patients. Thus, it is only permitted to include data in the APO registration chart in which individual patients cannot be identified.

Perspectives

The APO method has proven effective in improving the performance of healthcare professionals. However, a process evaluation would be valuable to obtain more detailed information about how and why the method works - and to generate information about how to improve the method.

So far, most projects applying the APO method have been conducted in the general practice setting, and often only involving the GPs. However, several projects have also engaged other health care professionals such as for example ear-nose-throat specialists, physiotherapists, chiropractors, and practice staff including nurses. Hopefully, the future will bring on more projects involving various types of health care professionals and different settings, such as for example hospital departments, nursing homes, pharmacies, and dental clinics.

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Competing interests

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Criteria no.	Statement
1.	The methodology relies on voluntary participation and a bottom-up approach.
2.	The APO method is most useful for topics in need of quality improvement.
3.	The method is most suitable for a prospective registration of topics frequently occurring in a specific setting, i.e. at least 30 times/registration period.
4.	The registration period should last between one and twenty days depending on the frequency of the topic being investigated.
5.	At most ten main groups and a maximum of 45 variables are used to describe the topic being investigated.
6.	The main groups needs to be lined up in a logic way simulating the way patients are attended in the specific setting. For example in the general practice setting: type of contact, symptoms, examinations, diagnosis, treatment, and assessment.
7.	Preferably a maximum of ten variables per main group. The variables in each group need to be exhaustive (include all possibilities) and exclusive (no overlapping of variables).
8.	The main groups and variables are entered vertically into the APO A4 paper template. The participants fill in one horizontal line for each case. At least one tick per main group is needed. As a general rule only ticks are allowed (no writing).
9.	Data originating from the registration should be able to be used for quality assessment by means of quality indicators.
10.	A short instruction (maximum one page) needs to be provided for all participants. The instruction must specify the registration period, the inclusion and exclusion criteria, and briefly explain the content of each main group. Information about where to return the completed charts is clearly stated.
12.	Importantly, pilot testing needs to be done to ensure that the content of the registration chart is easily understood, and to confirm that enough cases are available.
13.	Registration charts have to be adapted to the reality of the area/country where the audit takes place.
14.	A local contact person needs to be available for questions from the participants.

Table 1. Basic rules for data registration by means of the Audit Project Odense (APO) method