Canadian Agency for Drugs and Technologies in Health

Agence canadienne des médicaments et des technologies de la santé

OPTIMAL THERAPY REPORT

COMPUS

November 2008

Audit and Feedback on Prescribing Practices: A Guide for Decision Makers in Canada

Supporting Informed Decisions

À l'appui des décisions éclairées

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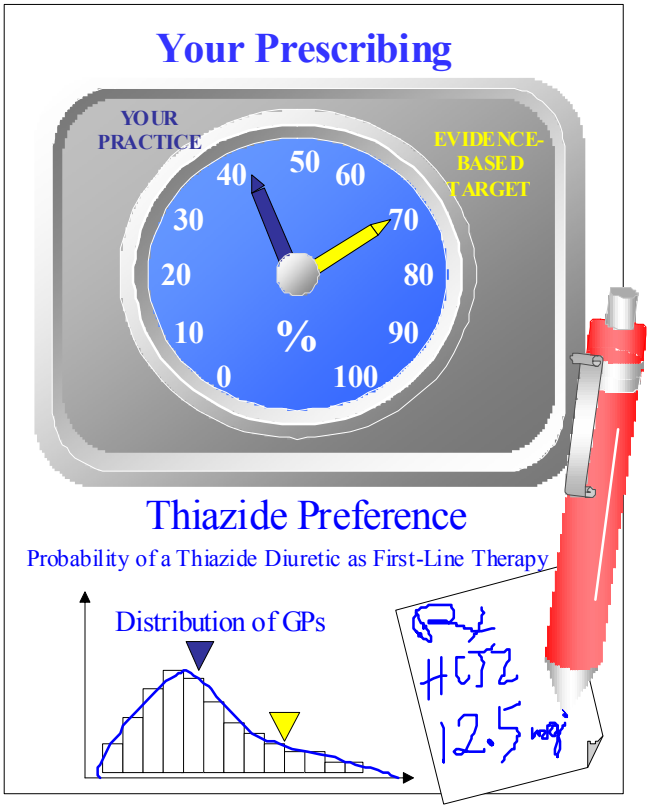

This cover illustration represents an early graphic of the prescribing portrait used to give individualized prescribing feedback to BC physicians as part of the BC EQIP (Education for Quality Improvement of Patient care) program. The first initiative in this province-wide audit and feedback program was designed to reinforce the prescribing of thiazides as first choice in drug therapy for patients with hypertension.

Made possible through funding from Health Canada.

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1 INTRODUCTION

In March 2004, the Canadian Optimal Medication Prescribing and Utilization Service (COMPUS) was launched by the Canadian Coordinating Office for Health Technology Assessment (CCOHTA) — now the Canadian Agency for Drugs and Technologies in Health (CADTH) — as a service to federal, provincial, and territorial jurisdictions and other stakeholders. COMPUS is a nationally coordinated program funded by Health Canada.

The goal of COMPUS is to optimize drug-related health outcomes and cost-effective use of drugs by identifying and promoting optimal drug prescribing and use. Where possible, COMPUS builds on existing applicable Canadian and international initiatives and research. COMPUS goals are achieved through three main approaches:

- identifying evidence-based optimal therapy in prescribing and use of specific drugs
- identifying gaps in clinical practice, then proposing evidence-based interventions to address these gaps, and
- supporting the implementation of these interventions.

Direction and advice are provided to COMPUS through various channels, including the following:

- The COMPUS Advisory Committee (CAC) includes representatives from the federal, provincial, and territorial health ministries and related health organizations.
- The COMPUS Expert Review Committee (CERC) members are listed on page ii of this document. The mandate of CERC is advisory in nature and is to provide recommendations and advice to the COMPUS Directorate at CADTH on assigned topics that relate to the identification, evaluation, and promotion of best practices in the prescribing and use of drugs across Canada.
- Stakeholder feedback.

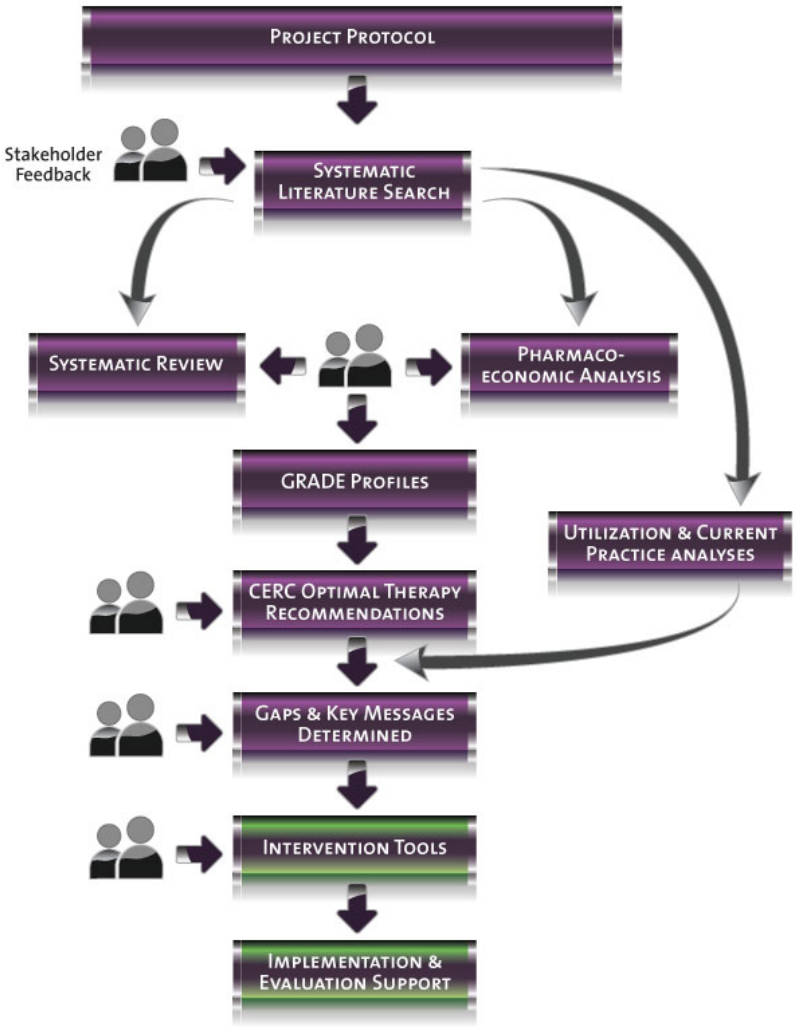
COMPUS Topics

CAC has identified proton pump inhibitors and management of diabetes mellitus as being a priority areas for optimal practice initiatives based on the following criteria:

- large deviations from optimal utilization (overuse or underuse)
- size of patient populations
- impact on health outcomes and cost-effectiveness
- benefit to multiple jurisdictions
- measurable outcomes
- potential to effect change in prescribing and use.

2 OVERVIEW OF AUDIT AND FEEDBACK PROJECT

This diagram (right) illustrates the implementation of optimal drug therapy and evaluation steps in the COMPUS process. Implementation of supporting interventions occurs at the jurisdictional levels.



Evidence-based intervention tools are available for use by those interested in optimal prescribing and use of drugs, including academic detailing services; continuing education programs; and health professional associations.

Support is provided by COMPUS to assist with the implementation of these evidence-based interventions.

COMPUS contracted DPF Research Inc. to develop a generic audit and feedback guide. The guide provides information on the choices that exist for an audit and feedback intervention involving physician prescribing. It also outlines the necessary steps for the creation of an audit and feedback program on prescribing, and the issues that should be considered before embarking on the development of any audit and feedback intervention.

Audit and feedback may be defined as:

> *"...any summary of clinical performance of health care over a specified period of time. The summary may also have included recommendations for clinical action. The information may have been obtained from medical records, computerized databases, or observations from patients."*[1]

Anyone considering using audit and feedback techniques to improve prescribing practice would benefit by examining the most recent Cochrane meta-analysis of 118 audit and feedback studies: Audit and feedback: effects on professional practice and health care outcomes (2006). The authors, Jamtvedt et al., concluded that:

> *"Audit and feedback can be effective in improving professional practice. When it is effective, the effects are generally small to moderate. The relative effectiveness of audit and feedback is likely to be greater when baseline adherence to recommended practice is low and when feedback is delivered more intensively."*[2]

3 WHAT CHOICES OF TOOLS EXIST FOR AUDIT AND FEEDBACK?

There is a broad spectrum of approaches to audit and feedback ranging from labour-intensive chart reviews to automated analyses of central administrative databases. Before the computer era, audit and feedback was done only by hand and paper via chart reviews, tallies of practice decisions, and comparison with guidelines. This is still the main approach used in self-audit programs offered by the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada for continuing professional development credits. For example, physicians may be asked to spend two to four hours reviewing five to ten patient charts with a particular diagnosis and completing a single-sided, self-audit form for each chart involving five to 20 questions; plus, an audit summary chart that enables self-feedback, including a question on what the physician has decided to do differently in future.

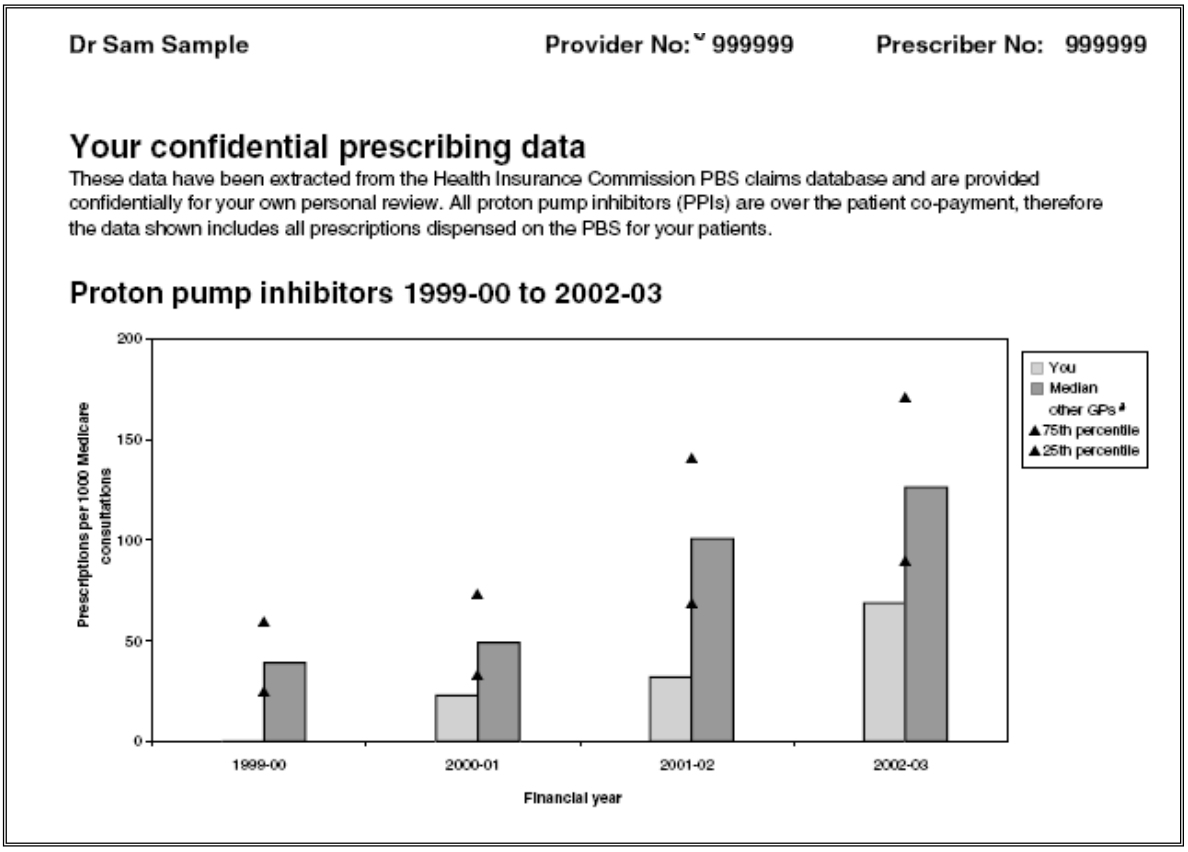
With the advent of electronic medical records, the data gathering and summarization processes can be automated and instantaneous. With the centralization of electronic medical data, a single data process can produce audit and feedback information for all clinicians covered by the database. In Canada, where centralized drug databases have been available to researchers for many years, data for audits on prescribing behaviours are typically produced by a central analytic program, leaving the prescribers only the tasks of reading and possibly discussing the results. This particular approach will be emphasized in this decision guide. The application of this guide to a British Columbia case study is examined in Appendix A. Much greater use and sophistication of automated audit and feedback will become possible as data from electronic medical records can be centralized using technology that preserves data privacy.
To illustrate the range of audit and feedback prescribing mechanisms, the following examples are presented from Australia, New Zealand, Denmark, and British Columbia.

Australia

Individual data approaches to prescribing audits and their feedback are extensively used by the National Prescribing Service (NPS) in Australia. The NPS runs a program of volunteer clinical audits three to four times a year and physicians receive enrolment forms by mail as part of a Prescribing Practice Review. The Prescribing Practice Review contains important key messages on the drug therapy in question, as well as background information to support quality prescribing. These audits are one of the education and quality assurance activities provided to Australian physicians by NPS and can be done individually or used in group activities and workshops. The audits provide personalized prescribing feedback and qualify as an activity for the Quality Prescribing Initiative (QPI) of the Practice Incentives Program (PIP). (See Appendix B.) Specifically, physicians can receive practice improvement credits for periodically doing their own “clinical audits” of 20 patients. The physician fills in the machine-readable form for each patient and sends the forms to the NPS for analysis and feedback. (See an example for hypertension in Appendix D or at: http://www.nps.org.au/resources/Clinical_Audits/hypertension_2004.pdf.)

For an example of how the National Prescribing Service supplies individual physicians with their audited prescribing records on the prescribing of Proton Pump Inhibitors, see Figure 1.

Figure 1: Sample audit and feedback form (full document in Appendix B)



(From: National Prescribing Service Ltd (NPS). NPS Prescribing Practice Review 25. *Proton Pump Inhibitors: too much of a good thing?* Sydney: NPS; 2004)

New Zealand

As part of the Clinical Practice Education Program at Pegasus Health – a general practice group in Christchurch, New Zealand – physicians receive quarterly feedback on the volume of prescriptions per 100 adult patients compared to the average of the physician's peer comparator group. (See Figure 2.)

Graphs show the volume of prescriptions per practitioner (data shown in red) and the Pegasus group (shown in blue). Beside each graph are the actual total volumes and costs compared to the average of the comparative peer group for the same time period.

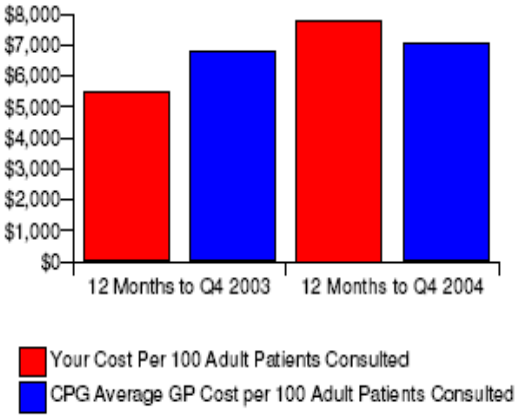
To see the complete report, see Appendix C.

As well, Pegasus provides quarterly data on the top ten prescribed drugs based on cost that each physician prescribed for the preceding 12 months. The top two drugs in this example are found in Figure 3.

Figure 2: Individualized quarterly prescribing report (full document in Appendix C)

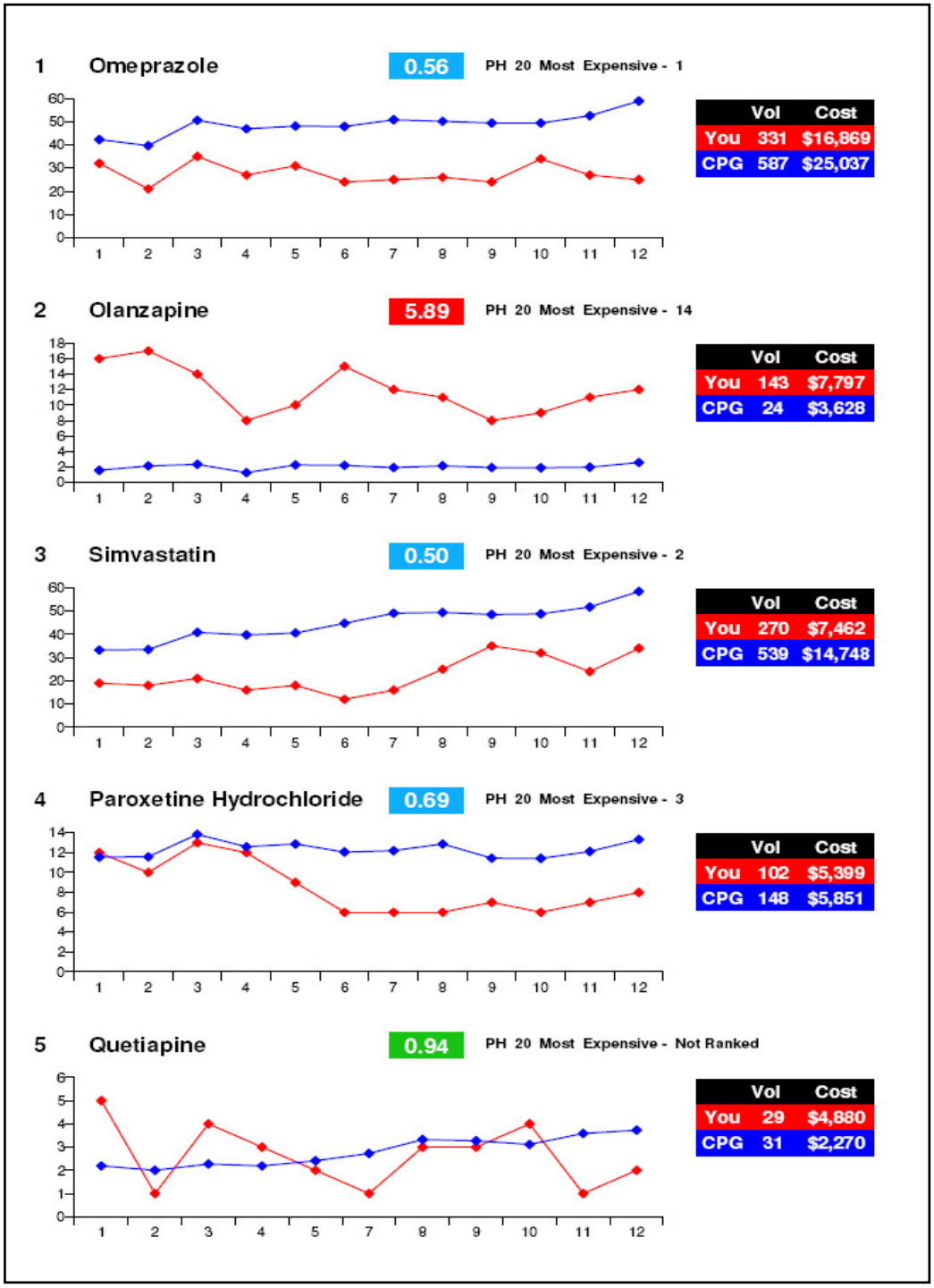
This report is intended to provide you with details of your pharmaceutical utilisation for the year Jan 04 to Dec 04, compared with the previous year and your comparative peer group (CPG).*

1. Cost per 100 adult patient comparison - Years ended Dec 03 and Dec 04.



(From: *Individualized Quarterly Prescribing Report*. Christchurch (New Zealand): Pegasus Health Ltd; December 2004)

Figure 3: Individualized quarterly feedback on the top 10 prescribed drugs based on cost (only top five drugs shown below)

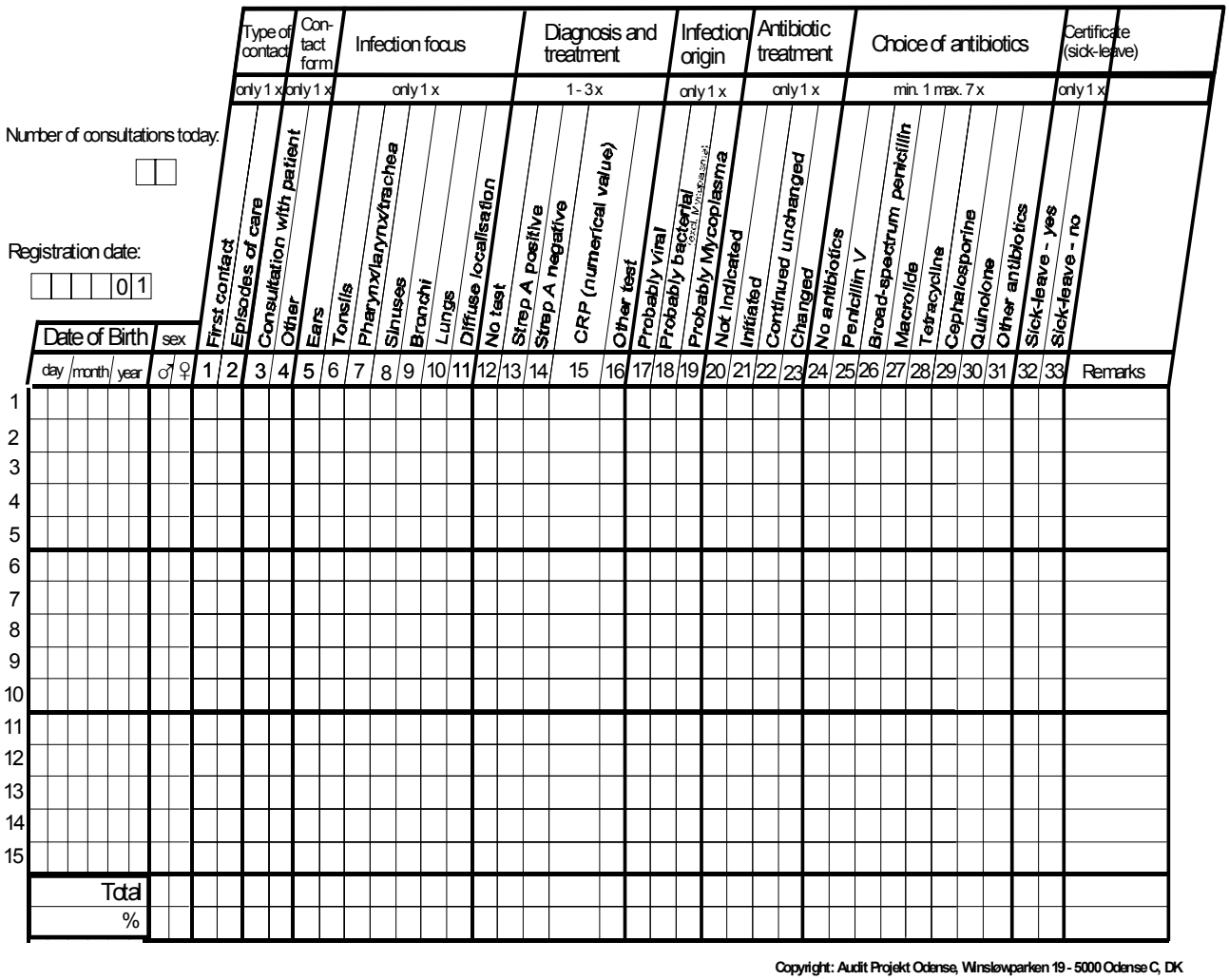


(From: *Individualized Quarterly Prescribing Report*, Christchurch (New Zealand): Pegasus Health Ltd; December 2004)

Denmark

One of the simplest and most inexpensive approaches to audit and feedback was developed at the Research Unit of General Practice at the University of Southern Denmark. An initial meeting with physicians produced an audit form comprising a row of checkboxes for each consecutive patient with a certain diagnosis related to respiratory infections where the treatment is likely to be an antibiotic. (See Figure 4.)

Figure 4: Self-audit form used by the Research Unit of General Practice at the University of Southern Denmark



AUDIT: Respiratory Infections in General Practice — 2001

Number of consultations today: ☐☐

Registration date: ☐☐☐☐01

Type of contact: only 1 x — First contact; Episodes of care
Con-tact form: only 1 x — Consultation with patient; Other
Infection focus: only 1 x — Ears; Tonsils; Pharynx/larynx/trachea; Sinuses; Bronchi; Lungs; Diffuse localisation
Diagnosis and treatment: 1 - 3 x — No test; Strep A positive; Strep A negative; CRP (numerical value); Other test
Infection origin: only 1 x — Probably viral; Probably bacterial; Probably Mycoplasma
Antibiotic treatment: only 1 x — Not indicated; Initiated; Continued unchanged; Changed
Choice of antibiotics: min. 1 max. 7 x — No antibiotics; Penicillin V; Broad-spectrum penicillin; Macrolide; Tetracycline; Cephalosporine; Quinolone; Other antibiotics
Certificate (sick-leave): only 1 x — Sick-leave - yes; Sick-leave - no

	Date of Birth (day / month / year)	sex ♂/♀	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Remarks
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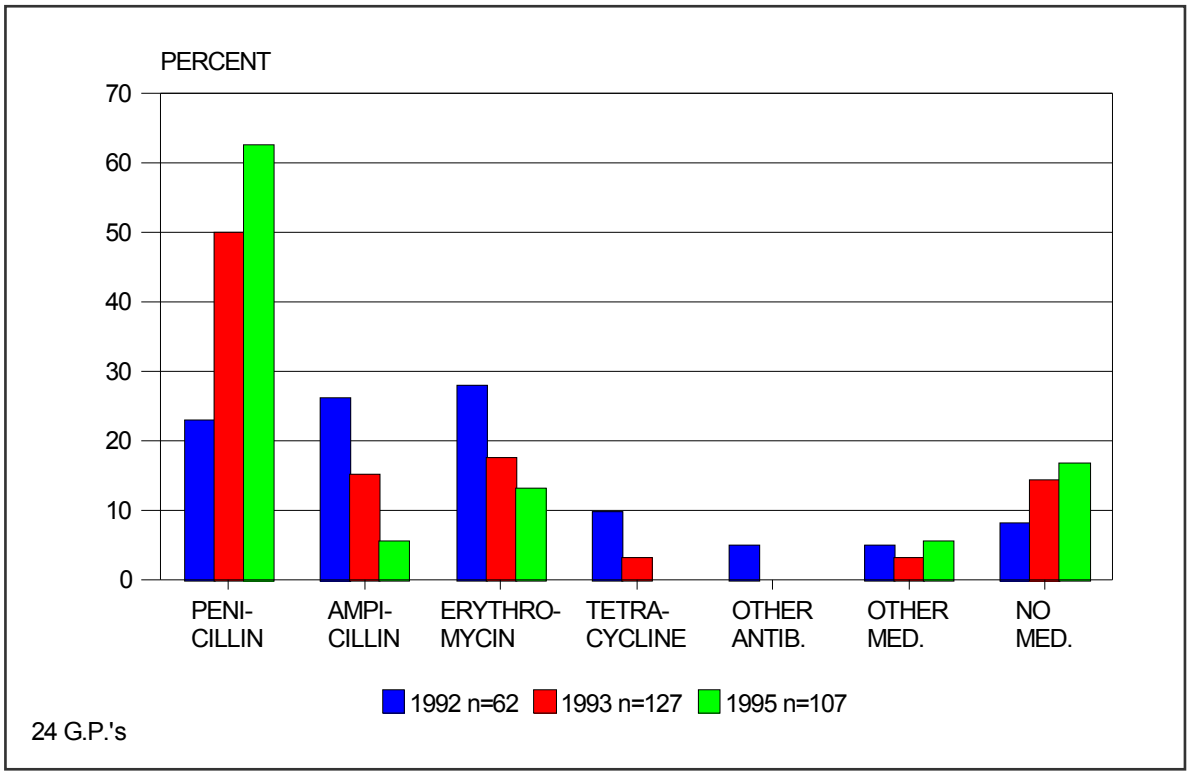
(From: Research Unit of General Practice. Self-audit form. Odense (DK): University of Southern Denmark; 2001.)

The physicians used the forms for four to six weeks and submitted them to the coordinating office where the data were entered and analyzed. Information contained in the following bar charts (Figure 5) was given to physicians in daylong small-group sessions, for which the physicians were reimbursed.

Figure 5: Feedback of prescribing of antibiotics, Research Unit of General Practice at the University of Southern Denmark

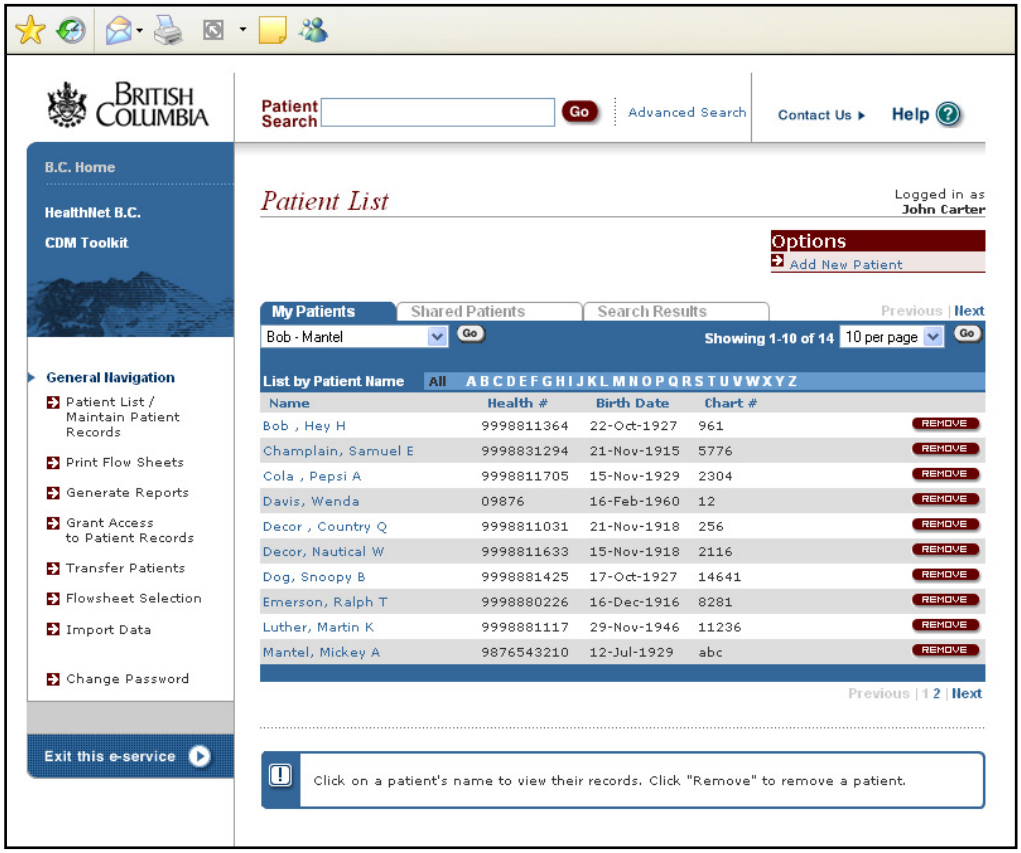


(From: Research Unit of General Practice. *Feedback of prescribing of antibiotics.* Odense (DK): University of Southern Denmark.)

British Columbia

Similar to the Danish approach, but designed to eventually serve the entire province of British Columbia, is an on-line Chronic Disease Management (CDM) Toolkit (Figure 6). The toolkit is aimed to cover all diabetic patients in a practice, not just a sample of patients. Some initial data were supplied by the Ministry of Health, but most were entered by physicians or their medical office assistants. Automated audit and feedback was embedded in the toolkit, permitting physicians to see their performance without anyone else seeing it. Coordinators of the CDM Collaborative could see only the collective performance of the entire group of participating physicians. In more computerized settings, audit and feedback can be programmed into local electronic medical record systems requiring no extra data collection or central analysis. The vision in British Columbia is for electronic medical record systems in general practice to upload data to the CDM Toolkit so that ongoing individual audit and feedback is fully automated and confidential, but group performance can be monitored over time.

Figure 6: British Columbia Ministry of Health on-line Chronic Disease Management Toolkit



(From: *CDM Toolkit*, Victoria (BC): BC Ministry of Health, Chronic Disease Management Initiative; 2008. Available from: https://cdme1.moh.hnet.bc.ca/ (accessed 2008 Sept 11)).

4 WHAT STEPS ARE INVOLVED IN CREATING AN AUDIT AND FEEDBACK PROGRAM ON PRESCRIBING?

The rest of this document outlines a series of steps a provincial drug plan could take. The steps are presented as low-, medium-, and high-resource options under the heading of 14 decision-based questions. The 14 questions address the drug plan decision maker's overall question, "What options have we?" or, more specifically, "What worked elsewhere?" The answers depend on local context and capacity, and a variety of logistical considerations.

The questions are grouped into four stages, as follows:

A. Environmental Scan: Local Context and Capacity

- Who needs to be involved?
- Are there off-the-shelf solutions?
- What barriers can we expect?
- How can we develop the material and the messages?

B. Choice of Audit Tools, and Feedback Methods and Channels

- What are the cost implications?
- What are the anticipated reactions of the recipients?
- What are the data considerations?
- What is the most effective format to use?
- How will the feedback be packaged and delivered?

C. Implementation

- How can you field-test the intervention?
- How will you maintain privacy and confidentiality?
- How will you implement the intervention?

D. Summative Evaluation

- How will you determine the impact on prescribing?
- How will you determine if the users are satisfied?

A) Environmental Scan: Local Context and Capacity

Environmental scans are conducted to assess the capacity and inclination for using audit and feedback techniques. Some organizations may have the capacity to do large-scale, database-intensive audit-and-feedback programs and others may need to use more limited methods.

1. *Who needs to be involved?* Who should look at COMPUS tools and methods for audit and feedback?

It is important to identify, perhaps through key-informant interviews, whether or not the local organization has the capacity and inclination to produce audit tools and feedback methods. There is a spectrum across which relevant decision-makers who would be involved in producing such materials can be consulted. Options include:

- Low cost: The leadership in the provincial drug program consults internally and determines that they have the capacity to conduct an audit and feedback program.
- Moderate cost: Telephone interviews of key informants, such as staff involved in analyzing drug databases, can be conducted.
- Higher cost: Structured face-to-face meetings could be held among groups involved in establishing, approving, or vetting the tools for audit and feedback.

2. *Are there off-the-shelf solutions?* In your region, are there existing tools and methods of audit and feedback that currently provide professional feedback to health professionals? Should the proposed new tools for feedback on prescribing use the same or similar tools, methods, and channels of dissemination, or should a different approach be used?

It is important to consider existing tools, methods, and channels. If consistency is desirable, what modifications might be needed to achieve consistency?

Options include:

- Low cost: A member of an existing audit and feedback or evaluation committee reviews the *Audit and Feedback on Prescribing Practices: A Guide for Decision Makers in Canada* and proposes how existing tools, methods, and channels could be adapted for prescribing feedback.
- Moderate cost: A separate committee is established to decide on the best approach to conducting audit and feedback. The committee can research from local evaluators what feedback projects were done in the past, and their key success factors.
- Higher cost: Audit and feedback mechanisms could be imported from other jurisdictions and adapted to your jurisdiction. This may involve more expensive outside consultation, travel costs, and so on, as well as the efforts needed to adapt these mechanisms to your jurisdiction.

3. ***What barriers can we expect?*** **What are anticipated logistical obstacles such as data access, privacy impact assessment, and organizational cooperation? How can we include local stakeholders and other interested parties?**

Options include:

- Low cost: Ask the provincial drug plan staff members or other agencies who conduct educational programs on prescribing for health professionals.
- Moderate cost: Conduct interviews with stakeholders and evaluators involved in data access/privacy impact assessment to determine the critical path for carrying out the audit and feedback.
- Higher cost: Conduct focus groups with stakeholders and evaluators, and test-pilot a series of plausible audit-and-feedback scenarios before finalizing a plan.

4. ***How can we develop the material and the messages?*** **This might also be called a "gap analysis", determining the gap or discrepancy between evidence and practice. What ingredients determine decisions about messages?**

This involves determining both the nature and strength of the evidence and the quality of current practices. It is this "gap" between best evidence and current prescribing practice which is the focus of the audit.

a. What is the evidence?

Options include:

- Low cost: Use effective evidence-based messages that have been vetted and produced by a trusted group (such as COMPUS).
- Moderate cost: Adapt evidence-based messages from other groups and reshape this material based on your own local practice or policy considerations. This may involve interviews with key local stakeholders, local committees, and policymakers.
- Higher cost: Develop evidence-based materials on your own with a committee of experts skilled in the production of such materials. (The committee would need to include experts in clinical medicine, epidemiology, pharmacology, and continuing medical education, as well as drug benefit policy makers.)

b) What are current practices?

Options include:

- Low cost: Evaluate local drug use data to determine averages; conduct a range of interviews with local practitioners to determine decision making in the therapeutic area being targeted.
- Moderate cost: Analyze trends in prescribing to determine individual practices on a subset of volunteer physicians; carry out a larger-scale and more systematic survey of practitioners to determine, in depth, current practices.
- Higher cost: Conduct an intensive database analysis of the prescribing trends in question. Conduct focus groups with local practitioners (pharmacists and physicians) to determine decision making in the therapeutic area being targeted.

B) Choice of Audit Tools, and Feedback Methods and Channels

1. *What are the cost implications?* How much should be spent on tools and feedback, given the anticipated health or financial benefits from the desired changes in prescribing?

Conduct a rough "ex ante" cost-effectiveness assessment, based on existing systematic reviews of dissemination literature, to guide spending on dissemination of audit tools.

Options include:

- Low cost: The leadership of the provincial drug program or other agency establishes a budget and decides that the audit program will proceed according to the limits of that budget.
- Moderate cost: Staff of education programs are interviewed about their costs, and extrapolations are made to the audit and feedback program.
- Higher cost: Face-to-face discussions are conducted to decide on the scale of the project and the appropriate budget to carry out audit and feedback.

2. *What are the anticipated reactions of the recipients?* What are prescribers' likely reactions to self-audit tools? How can we determine how prescribers will respond to the material and the main messages?

Options include:

- Low cost: Conduct interviews with trusted local physicians in active practice.
- Moderate cost: Carry out several focus groups with ordinary prescribers to determine the range of likely reactions to the proposed audit-and-feedback program.
- Higher cost: Conduct a series of "key informant" interviews with opinion leaders in the area, as well as a representative sample of prescribers.

3. *What are the data considerations?* What data are available to portray prescribers' patterns of prescribing? How can that data be used to make good indicators of prescribing quality?

This is about determining the sources of data and questions around how that data will be accessed, analyzed, and presented back to physicians. There are a number of considerations (including determining which of these variables to take into account and whether or not that data can be extracted and analyzed): numerators, denominators, prescription visits, first dispensings, new patients, new users, stopping, starting and switching, cumulative incidence, preference, ratios versus differences, and others.

Options include:

- Low cost: easily found data.
- Moderate cost: easily developed data.
- Higher cost: extensive pharmacoepidemiologic data access and analysis.

4. ***What is the most effective format to use?*** **How can those indicators be best displayed in the actual feedback or "prescribing portrait"?**

These questions are about determining the best way to display the various pieces of information in the feedback phase. The format should include considerations of graphs (bar charts of absolute frequencies instead of ratios and differences, absolute versus relative values, etc.), positive prescribing messages versus negative, how to treat the cost information downplayed, use of recognizable "trademarks" and their distinctive formats, logos and endorsements, use of colour, methods of display, readability, references, and so on.

Options include:

- Low cost: Replicate existing materials/formats.
- Moderate cost: Adapt existing materials/formats and test with individual prescribers and trusted local physicians.
- Higher cost: Develop, from scratch, materials and formats – perhaps with the aid of public relations specialists and graphic artists – to optimize the impact of the materials and test possible formats in focus groups with the end-users.

5. ***How will the feedback be packaged and delivered?*** **What might be included in the packaging of the portraits? Will feedback be part of a larger initiative involving face-to-face interactions, such as academic detailing or small-group learning? Will feedback be individualized or will it be group data?**

Options include:

- Low cost: Use existing audit and feedback packaging and delivery methods.
- Moderate cost: Develop and test the proposed methods in focus groups with physicians.
- Higher cost: Carry out surveys of physicians to determine the shape of the packaging and delivery methods.

C) Implementation

1. ***How can you field-test the intervention?*** **How do prescribers and educators respond to draft tools and proposed methods of feedback?**

Methods used to respond to draft interventions include focus groups/interviews, plus pre-testing dissemination with brief surveys tailored to the mode of dissemination.

Options include:

- Low cost: Have more interviews with a few trusted physicians in active practice.
- Moderate cost: Have more focus groups with ordinary prescribers.
- Higher cost: Have more interviews with a representative sample of prescribers.

2. ***How will you maintain privacy and confidentiality?***

Options include:

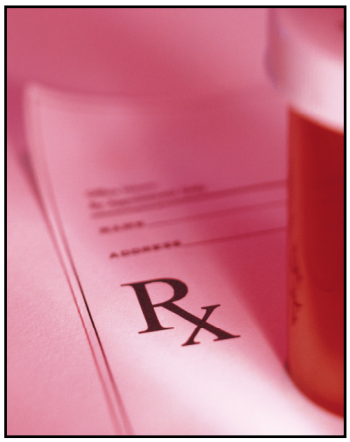
- Low cost: Follow proven protocols of other similar or identical interventions.
- Moderate cost: Conduct interviews with privacy impact assessors to determine the range of options. Possibly adapt other protocols of similar or identical interventions in your jurisdiction.
- Higher cost: Develop and test a range of methods to maintain privacy and confidentiality. Consider replicating or adapting methods from outside your jurisdiction.

3. ***How will you implement the intervention?*** **How will you attract attention when portraits are disseminated? What other implementation issues will need to be considered (other policies, concurrent initiatives, etc.) that may affect the implementation?**

Options include:

- Low cost: Conduct the intervention by mail only. Ensure there are multiple logos (partnering organizations) represented. Use colour printing.
- Moderate cost: Carry out a coordinated fax and mail program.
- Higher cost: Employ fax, mail, and telephone call-backs. Employ professional motivators and possibly financial incentives.

D) Summative Evaluation



1. ***How will you determine the impact on prescribing?*** **Among registrants, what was the impact on prescribing?**

Options include:

- Low cost: Conduct qualitative interviews with prescribers.
- Moderate cost: Conduct database analysis and times-series epidemiologic analysis to control for as many confounders as possible.
- Higher cost: Produce anonymous "portraits of change" showing individual physicians' changes in prescribing.

2. ***How will you determine if the users are satisfied?*** **In retrospect, how do the prescribers and educators rate the usability and impact of the tools?**

Options include:

- Low-cost surveys: Interviews with a convenience sample of disseminators, clinicians, and patients or fax-back surveys of one to three questions for clinicians.
- Moderate-cost: representative telephone interviews with clinicians. Schedule paid telephone interviews with prescribers to discuss the printed materials.
- Higher-cost: observations of actual use in group meetings. Observe clinicians reviewing the materials and discussing quality improvement.

5 REFERENCES

1. *Professional intervention: audit and feedback*. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2008. Available: http://www.cadth.ca/index.php/en/compus/optimal-ther-resources/interventions/intervention?id=7 (accessed 2008 Sep 11).

2. Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2006;(2):CD000259.

APPENDIX A: BRITISH COLUMBIA CASE STUDY WITH LESSONS LEARNED

In 2008, a program was launched in British Columbia called Education for Quality Improvement of Patent care (EQIP). The centerpiece of the program was a series of confidential "prescribing portraits" mailed to physicians in coded sealed envelopes. The portraits provide feedback on individual practices and their carefully selected, evidence-based prescribing practices, such as prescription of thiazides for first-line treatment of hypertension.

The portraits are intended for self-assessment, not audit by another party. Indeed, the processes for producing and distributing the anonymous coded portraits have been designed specifically so that they cannot be used by the Ministry of Health to audit individual prescribers' performances. Does EQIP fit the definition of an audit-and-feedback program? It might better be named a confidential feedback-for-self-assessment program, yet EQIP fits COMPUS's working definition of audit and feedback, and offers lessons for decision makers in other jurisdictions who are considering doing audit and feedback.

This case study of EQIP will serve to generate insights and lessons for others who plan to do audit and feedback. The British Columbia case study is presented in two parts.

1. We first present a series of 14 "lessons learned" from EQIP. These lessons act as a summary of the key points when applying the audit and feedback decision guide to EQIP.

2. In each category of the outline, the points are illustrated with a longer narrative of EQIP's experience, as follows:
   A) Environmental Scan: Local Context and Capacity
   B) Choice of Audit Tools, and Feedback Methods and Channels
   C) Implementation
   D) Summative Evaluation

Lessons Learned from British Columbia's Education for Quality Improvement of Patient Care (EQIP)

Lesson 1: Developing an audit and feedback program is likely to be more costly and long-term than envisioned initially. A long-term commitment is required by researchers who are experienced not only with the data, but also with educational initiatives for physicians, as well as testing proposals in focus groups. If starting from scratch, an audit is more expensive than feedback because learning how to use the drug databases to produce prescribing portraits can be very time-consuming. If a research group already knows the drug databases well, feedback soon becomes more expensive than the audit process if the aim is to reach all physicians.

Lesson 2: The choice of committee to oversee audit and feedback, and what assumptions it operates on, is likely to influence the impact of the program. Ways to help physicians be proactive by linking messages to specific patient charts will probably increase the program's impact.

Lesson 3: An audit and feedback program using central databases is likely to be preceded by approximately one year of applications and reviews by diverse committees.

Lesson 4: Targeting audit and feedback to discrepancies between evidence and practice requires interaction between two processes: the distillation of key messages from the evidence, and the collection and analysis of data on current practice. Expected messages guide data analyses, the results of which often produce modifications of messages, which in turn lead to modified data analyses and potentially further modifications of messages.

Lesson 5: Although economies of scale are likely to emerge in the long-run, the cost per topic of starting with a pilot project in an existing network of physicians who are willing to sign consent forms is likely to be lower than the cost per topic for starting the same initiative on a province-wide basis. The source of the additional costs is the need to create procedures for sending feedback to physicians who have not volunteered and the processes for obtaining approvals for those procedures.

Lesson 6: The cost of focus groups and multiple revisions of draft portraits appears to be worthwhile, judging from physicians' confusion and negative feelings about the earliest drafts compared with physicians' interest and positive feelings about subsequent drafts.

Lesson 7: Researchers who have worked for years with drug dispensing databases will have little difficulty producing robust measures to serve both the purposes of audit and feedback, and the need for impact measurement. Analysts who are new to drug data are likely to choose measures that are contaminated by too much confusing data.

Lesson 8: If the only incentive for physicians to look at a prescribing portrait is to satisfy their curiosity and to learn something interesting, it is necessary to spend time and money on good representation of the data, embedded in a colourful display of simple vignettes and short messages.

Lesson 9: If the portrait is sealed in an envelope for privacy, the packaging of portraits determines physicians' first impressions. If the packaging is not interesting, physicians may never open the sealed envelope containing their portrait. Therefore, no matter how intriguing the portraits themselves may be, the packaging must be attractive.

Lesson 10: Although physicians express scepticism of cost-containment programs, they are very interested to know more about drug prices. The messages that drug programs want physicians to reconsider are likely to be messages that pertain to large numbers of patients. These are messages that physicians are likely to have heard often before. Therefore, new clinical evidence and interesting packaging are needed.

Lesson 11: It is possible, and probably essential, to produce and disseminate portraits using methods that ensure the physician is the only person who sees the portrait while knowing whose prescribing it portrays.

Lesson 12: To gain the interest of physicians in prescribing portraits—given the enormous volume of mail they typically receive—may require innovative ways to capture their attention. Using incentives would need to be guided by local customs and precedents to separate what is regarded as attractive versus gimmicky or improper.

Lesson 13: Researchers and decision-makers should understand each other's viewpoints when agreeing on methods for impact assessment. Impact evaluation of a single audit-and-feedback intervention need not be as rigorous as a publishable scientific study, because it is unlikely that a decision to continue or discontinue the program will rest on just a few interventions. On the other hand, if decision makers are willing to make a small investment in design – specifically, a designed-delay trial – they can enable the researchers to produce a rigorous publishable impact evaluation by aggregating over multiple interventions.

Lesson 14: A successful audit and feedback program not only completes the "Study" stage of the "Plan-Do-Study-Act" cycle of quality improvement. It also stimulates the all-important final step – "Act." That step entails that the organization reflects on impact evaluation data and qualitative assessments, that it contemplates itself as a system, and that it asks what it should do differently in the next cycle.

Education for Quality Improvement in Patient Care (EQIP): British Columbia Case Study

A) Environmental Scan: Local Context and Capacity

1. *Who needs to be involved?* Who should look at COMPUS tools and methods for audit and feedback?

It is important to identify, perhaps through key-informant interviews, whether or not the local organization has the capacity and inclination to produce audit tools and feedback methods. There is a spectrum across which relevant decision-makers who would be involved in producing such materials can be consulted.

Some options might include:

- Low cost: The leadership in the provincial drug program consults internally and determines that they have the capacity to conduct an audit and feedback program.
- Moderate cost: Telephone interviews of key informants, such as staff involved in analyzing drug databases, can be conducted.
- Higher cost: Structured face-to-face meetings could be held among groups involved in establishing, approving, or vetting the tools for audit and feedback.

Option a (low cost) – In British Columbia (BC), the idea of producing individual prescribing statistics (audit) and mailing them to physicians (feedback) has been discussed for many years, but was not implemented until 2008. Directors of the provincial drug plan, PharmaCare, judged that it would be a major project requiring highly qualified outside assistance. It was understood that a profound understanding of drug claims databases would be required to produce good snapshots of individual prescribing, as well as a substantial investment of time to frame those snapshots into evidence-based messages that would motivate change.

Option b (moderate cost) – The impetus to begin work on prescribing feedback came from BC researchers who had been working with PharmaCare databases for some years. They obtained grants during which time PharmaCare initially was a relatively passive partner rather than a co-initiator.

Option c (higher cost) – Several years after the researchers had completed pilot projects and feasibility studies, the director of PharmaCare decided that a full-fledged program should be developed. This history is described in detail, in the next section.

Lesson 1: Developing an audit and feedback program is likely to be more costly and long-term than envisioned initially. A long-term commitment is required by researchers who are experienced not only with the data, but also with educational initiatives for physicians, as well as testing proposals in focus groups. If starting from scratch, an audit is more expensive than feedback because learning how to use the drug databases to produce prescribing portraits can be very time-consuming. If a research group already knows the drug databases well, feedback soon becomes more expensive than the audit process if the aim is to reach all physicians

2. ***Are there off-the-shelf solutions?*** **In your region, are there existing tools and methods of audit and feedback that currently provide professional feedback to health professionals? Should the proposed new tools for feedback on prescribing use the same or similar tools, methods, and channels of dissemination, or should a different approach be used?**

It is important to consider existing tools, methods, and channels. If consistency is desirable, what modifications might be needed to achieve consistency?

Options include:

- Low cost: A member of an existing audit and feedback or evaluation committee reviews the *Audit and Feedback on Prescribing Practices: A Guide for Decision Makers in Canada* and proposes how existing tools, methods, and channels could be adapted for prescribing feedback.
- Moderate cost: A separate committee is established to decide on the best approach to conducting audit and feedback. The committee can research from local evaluators what feedback projects were done in the past and their key success factors.
- Higher cost: Audit and feedback mechanisms could be imported from other jurisdictions and adapted to your jurisdiction. This may involve more expensive outside consultation, travel costs, and so on, as well as the efforts needed to adapt these mechanisms to your jurisdiction.

Feedback programs coexisting with EQIP – In BC, production of annual practice profiles and their dissemination to physicians has existed for over a decade and is not integrated with the production of clinical practice guidelines and their dissemination to physicians. The first program is overseen by the Patterns of Practice Committee, the second is conducted by the Guidelines and Protocols Advisory Committee (GPAC) – both joint committees of the Ministry of Health and BC Medical Association.

EQIP is overseen by a third joint committee of those two organizations. The researchers who initiated EQIP were influenced by evidence that complex guidelines have relatively little measurable short-term impact. In contrast, there is solid evidence that audit and feedback methods and evidence-based printed messages for promoting behavioral change are effective. If the two are packaged together, they are likely to be mutually reinforcing. Furthermore, EQIP assumes that social motivators (e.g., peer recognition or indirect financial incentives) are needed to capture the attention of physicians and persuade them to consider changing their behaviours to better comply with best practices.

These differences in assumptions have been sufficient to justify EQIP's separate existence from GPAC. Liaisons between both GPAC and producers of the annual practice profiles were established at the start of EQIP. There was never any suggestion that EQIP was duplicating the work of another committee or program, nor that EQIP should be subsumed under another initiative.

In other provinces or territories, if the production of the annual practice profiles is integrated with the production and dissemination of clinical practice guidelines, it might be more appropriate to initiate audit and feedback on prescribing within that existing integrated approach, rather than starting a separate initiative like EQIP. Other contexts in which an audit and feedback system might be initiated include an "academic detailing" program, a chronic disease management program, or a program of self-audit practice using chart reviews.

Audits of patient-records versus practice statistics versus program performance – Like many audit-and-feedback programs, EQIP provides physicians with statistical data describing care to a group of patients in one practice, which we refer to as "practice audit". This differs from "chart audit" or "patient-record audit," which focus on individual patients.

The most intensive form of individual patient-record audit is a case review by a committee that might examine detailed information from a patient's chart, as well as new data provided by clinicians, especially for a decision. This kind of audit is now beginning to be used for approving reimbursements for very expensive medications or biologics.

A much less costly form of auditing individual cases is to give physicians a list of their patients' personal health numbers, plus tools for them to do self-audits of the patients' charts. Physicians who have electronic medical records (EMRs) can generate their own lists for self-audit of charts.

Such EMR systems also can generate "practice self-audits", i.e. statistical reports that describe the practice population as a whole, or some subgroups. Such a practice self-audit can then trigger self-audit of individual patients' charts, enabling the physician to take immediate steps, such as recording a note to change the patient's medication during the next visit or sending the patient a follow-up letter.

EQIP uses central administrative databases as if they were local EMR databases and produces portraits for practice self-audits. The challenge for physicians who are surprised to see their portraits deviating from evidence is to locate the charts of their patients and take steps to change their practice. Therefore, one method of enhancing practice self-audit is to supply physicians with a list of patients' personal health numbers relevant to the topic of the practice audit. This is done in Nova Scotia as part of academic detailing.

In a chronic disease management (CDM) initiative in BC (a separate initiative that preceded EQIP), individual patient-record audit was made possible through a web-based "CDM Toolkit". Using central administrative databases, a registry of patients with potential diabetes was created and these patients' personal health numbers were put in the CDM Toolkit, accessible only to physicians responsible for the majority of their care. Physicians who participated in the CDM program were able to use the Toolkit to guide their self-audits of individual patients' charts. Physicians or their medical office assistants entered data on the additional care given to those patients for diabetes, into the Toolkit Statistical data on all additional care done by *the whole group* of participating practices was assembled from the Toolkit and fed back to all participating physicians as feedback on the CDM Collaborative as a whole. We refer to this as "program audit".

This illustrates the differences between individual patient-record audit, practice audit, and program audit. Likewise, feedback can involve information concerning individual patients, or only practice statistics, or just program statistics. Individual "patient-record" audit and feedback is likely to have the biggest impact on patient care, but also likely to be much more costly because of the need to create processes that preserve data privacy. One form of individual patient-record audit and feedback is instantaneous reminders and alerts in electronic records or electronic prescribing systems. The practice of supplying physicians with lists of patient numbers relevant to academic detailing in Nova Scotia can be viewed as a non-instantaneous reminder-and-alert system using central administrative databases rather than local EMRs.

Lesson 2: The choice of committee to oversee audit and feedback, and what assumptions it operates on, is likely to influence the impact of the program. Ways to help physicians be proactive by linking messages to specific patient charts will probably increase the program's impact.

3. *What barriers can we expect?* What are anticipated logistical obstacles such as data access, privacy impact assessment, and organizational cooperation? How can we include local stakeholders and other interested parties?

Options include:

- Low cost: Ask the provincial drug plan staff members or other agencies who conduct educational programs on prescribing for health professionals.
- Moderate cost: Conduct interviews with stakeholders and evaluators involved in data access/privacy impact assessment to determine the critical path for carrying out the audit and feedback.
- Higher cost: Conduct focus groups with stakeholders and evaluators, and test-pilot a series of plausible audit-and-feedback scenarios before finalizing a plan.

Overcoming Logistical Obstacles – In BC, the use of centralized administrative databases has become more cumbersome in recent years due to new rules and procedures for protection of data privacy. As mentioned previously, it has been important to involve external researchers in developing prescribing portraits and measuring impacts for EQIP. However, data access procedures for external researchers took longer because of having to obtain approvals.

Additional delays arise from the use of rigorous methods for evaluation. University researchers must obtain their university ethics committees' approval of protocols. For EQIP, those delays took place in parallel with data access delays, resulting in no net additional delay.

An unexpectedly long delay for EQIP was the writing and approval of a privacy impact assessment (PIA), which entailed meticulous descriptions, with multiple revisions, of procedures for protecting data privacy and ensuring data security, as subsequently described in detail, in this appendix. The PIA, although laborious, did result in the addition of several steps that improved protection of data privacy and security.

Delays to obtain data access and approval of the PIA can be put to good use. Instead of EQIP's working-group consensus processes being hurried and pre-testing of materials in focus groups cut short, there was plenty of time (more than one year) to develop high-quality graphics and messages for the prescribing portraits. The downside of stretching the portrait development process over a year is that evidence can change and new drugs can be added to the drug class, so that the draft portrait may need more revisions.

Data access and privacy protections may need to be more elaborate if feedback on individual patients is planned. In some cases, sending physicians lists of patients is very simple. For example, providing data back to physicians from their medical services billings can be straightforward because it involves returning data straight back from where it came. There are relatively few data privacy issues involved in returning data to people who supplied it.

In contrast, feeding back data on prescribing via a different route from which it was collected involves a triangular relationship. For example:

- prescriptions go from physicians to pharmacies

- claims data go from pharmacies to the drug plan
- portraits go from the drug plan to the prescriber.

Such triangular flow requires greater protections and rules. In the subsequent section on Implementation in this appendix, procedures are described for producing and disseminating portraits so that physicians are the only ones to see their portraits while knowing whom they refer to. (Data analysts can see individual portraits, but they are identified only by codes.)

Obtaining Support of Professional Organizations and Agencies – In addition to establishing procedures for data privacy protection, it is necessary to collect endorsements and reviews by various professional organizations and agencies. EQIP is co-sponsored by the Ministry of Health, the BC Medical Association, and the UBC Faculty of Medicine's Division of Continuing Professional Development and Knowledge Translation. EQIP was also reviewed by the ethics committee of the College of Physicians and Surgeons of BC and by the PharmaNet Committee of the College of Pharmacists of BC. The covering letter to physicians also states that EQIP has been reviewed by human studies ethics committees at UBC and the University of Victoria. The total duration from initiation of the contract until approval of the first mailing was two years. This could have been done in one year if the full number of applications and scope of reviews had been understood by the contract managers and researchers in advance.

Lesson 3: An audit and feedback program using central databases is likely to be preceded by approximately one year of applications and reviews by diverse committees.

4. *How can we develop the material and the messages?* This might also be called a "gap analysis", determining the gap or discrepancy between evidence and practice. What ingredients determine decisions about messages?

This involves determining both the nature and strength of the evidence and the quality of current practices. It is this "gap" between best evidence and current prescribing practice which is the focus of the audit.

The aim of audit and feedback is to change practice. If there is no discrepancy between evidence and practice, there is no need for audit and feedback. However, in the absence of *need*, there may still be benefit from sometimes providing audit and feedback when practice conforms with evidence and the messages tell a good story ("You are doing a good job"). Prescribers' confidence in the quality of audit data and of the consensus process for feedback messages may grow, as a result.

a) What is the evidence?

- EQIP seeks to take advantage of existing recent reviews, particularly those produced by COMPUS. Further review of evidence and consensus development is very costly. As physicians do not trust any single source of evidence, it is desirable to list multiple authoritative sources of evidence.
- It is time-consuming to reconcile different summaries of evidence. For example, the Guidelines and Protocols Advisory Committee created a new guideline on cardiovascular disease prevention at the same time as EQIP was working on prescribing

portraits for antihypertensives and statins. The EQIP working group recognized a trade-off between credibility and accuracy. It chose to quote the new guideline on cardiovascular disease prevention rather than develop another independent assessment of the evidence, even if there was a suspicion that another assessment would result in slightly different wording. EQIP's prescribing portraits need to be credible to BC physicians and, therefore, should be consistent with other messages physicians are hearing from the Ministry of Health and the BC Medical Association.

b) What are current practices?

- EQIP has used data from PharmaNet, the provincial pharmacy information system covering all the dispensing of prescription drugs from community pharmacies, to assess current patterns of prescribing. For example, it was hypothesized that many patients take two doses of proton pump inhibitors (PPIs) per day and that a very large number of patients are chronic users of PPIs. Analysis of provincial data using "defined daily doses" (DDD) showed that two doses of PPIs per day was rare. Also, among starters of PPIs, less than 10% continued more than one year. Further analyses are planned to determine where PPI prescribing can be most improved. Provincial patterns and prescribing of PPIs are influenced by insurance coverage rules. These may need to be clarified, as well as information on any proposed changes in rules for insurance coverage the coming year.
- Information on current prescribing practices should also be obtained by word-of-mouth from interviews and focus groups with prescribers. For example, EQIP learned of the new trend among general practitioners to prescribe two antihypertensives to new patients – both hydrochlorothiazide and another more expensive antihypertensive – from focus groups before it was seen in the PharmaNet data. Also, the frequency that physicians recommend that patients use non-prescription gastric acid suppression drugs before they use a PPI cannot be seen from the PharmaNet data, but can be obtained from physician interviews.

Dr. Jeremy Grimshaw, Canada Research Chair in Health Knowledge Transfer and Uptake, stresses that understanding of clinicians' thinking is important before attempting a program of behaviour change rooted in evidence. For certain drugs, the clinicians know the evidence well, but have quite different reasons for not adhering to evidence-based guidelines. For example, it may be the difficulty of weaning patients off a medication that is the obstacle. In such cases, the clinicians may have no need for more knowledge of the drugs, but, rather, have need for useful tips and knowledge of successful methods for managing patients.

Lesson 4: Targeting audit and feedback to discrepancies between evidence and practice requires interaction between two processes: the distillation of key messages from the evidence, and the collection and analysis of data on current practice. Expected messages guide data analyses, the results of which often produce modifications of messages, which in turn lead to modified data analyses and potentially further modifications of messages.

B) Choice of Audit Tools, and Feedback Methods and Channels

1. *What are the cost implications?* How much should be spent on tools and feedback, given the anticipated health or financial benefits from the desired changes in prescribing?

Conduct a rough "ex ante" cost-effectiveness assessment, based on existing systematic reviews of dissemination literature, to guide spending on dissemination of audit tools.

Options include:

- Low cost: The leadership of the provincial drug program or other agency establishes a budget and decides that the audit program will proceed according to the limits of that budget.
- Moderate cost: Staff of education programs are interviewed about their costs, and extrapolations are made to the audit and feedback program.
- Higher cost: Face-to-face discussions to decide on the scale of the project and the appropriate budget to carry out audit and feedback.

An estimate of the average cost per topic in the Better Prescribing Project (BPP) is approximately $90,000, based on the fact that four topics were covered within a budget of $350,000. The estimated cost per topic in EQIP ($250,000) is more than double that of the BPP. About half the cost of EQIP is for the Working Group meetings, whereas BPP was run by a few investigators and a small research staff. As well, the number of physicians in BPP was one-tenth the number who will participate in EQIP.

It is estimated that the annual cost of EQIP ($350,000) will be recovered if, on average, one quarter (i.e., 1,000) of BC's general practitioners prescribe hydrochlorothiazide ($15 per year) instead of an expensive antihypertensive ($400 per year) to just one more patient per year who is covered by PharmaCare. Therefore, it is expected that EQIP will pay for itself. However, EQIP's actual costs and savings will need to be measured accurately to justify continuation of EQIP funding. For this reason, EQIP materials will be sent to half the general practitioners in BC, while the other half serves as a randomized control group.

Lesson 5: Although economies of scale are likely to emerge in the long-run, the cost per topic of starting with a pilot project in an existing network of physicians who are willing to sign consent forms is likely to be lower than the cost per topic for starting the same initiative on a province-wide basis. The source of the additional costs is the need to create procedures for sending feedback to physicians who have not volunteered and the processes for obtaining approvals for those procedures.

2. *What are the anticipated reactions of the recipients?* What are prescribers' likely reactions to self-audit tools? How can we determine how prescribers will respond to the material and the main messages?

Options include:

- Low cost: Conduct interviews with trusted local physicians in active practice.
- Moderate cost: Carry out several focus groups with ordinary prescribers to determine the range of likely reactions to the proposed audit and feedback program.
- Higher cost: Conduct a series of "key informant" interviews with opinion leaders in the area, as well as a representative sample of prescribers.

Gradual increase in intensity of qualitative evaluation – EQIP's strategy is to do the low cost, moderate cost, and higher cost options, in sequence. When a draft portrait is beginning to make sense to the most influential clinicians on the Working Group, the Implementation Team tests it by one-on-one interviews with trusted physicians. When a later draft achieves a consensus of support in the Working Group, then it is tested in two focus groups comprising six to ten physicians who are not predisposed to favouring EQIP. Usually the focus groups yield further ideas for improvements, which are further modified by the Working Group. A final draft portrait is sent out to half the general practitioners (the other half serving as controls). During the "registration period" of one to two months after the mailing of the draft, telephone interviews are conducted with 20 to 30 physicians on their reactions to the portraits. If there is a pattern among responses suggesting further need for improvement, there is still time to modify the portrait format before individualized versions are produced.

EQIP focus groups were highly informative – A challenge for authors of portraits is to recognize and deal with the conflict between frontline physicians' advice about portraits ("Keep it simple") and their stories about patients ("The issues are complicated"). A constant tension exists between the desire to simplify and the desire to be exact; e.g., by dividing data into multiple subgroups by diagnoses. The EQIP Working Group tends to ask for greater detail, whereas, in focus groups, general practitioners tend to ask for the portraits to be simplified.

A compromise was reached in EQIP: initial communications to all physicians are simpler, even to the point of being too simplistic. For physicians who register for EQIP and request more detailed information, it is proposed that more detailed portraits be made available with multiple subgroups. These may be disseminated by a secure website rather than by mail.

In EQIP focus groups, a vocal minority of physicians was concerned about their prescribing portraits being potentially used for judgmental audits with potentially punitive consequences. Therefore, it was decided to supply portraits anonymously, sealed in coded envelopes with prominent assurances that the portraits were only for the purposes of self-audit.

EQIP focus groups revealed that physicians experience anxiety about comparison of their individual practice with other practices. Physicians know that practices vary in their mixes of patients. In focus groups, it is common for older physicians to say, "My patients are sicker."

Indeed, older doctors have older, sicker patients because their patients age with them; that is why long-established practices generally have older patients. New practices generally have younger patients. When physicians say, "My patients are sicker," they may not be sicker than an average practice, but their practice populations are generally sicker than they were 10 years ago.

In EQIP, it was decided to tone down comparisons with other practices and the provincial average and, instead, to compare prescribing patterns with "evidence-based practice." Another reason for not designing the prescribing portraits as a comparison of the individual physicians prescribing with a group average is that physicians' first concerns would be whether or not they are an outlier or within the range of "normalcy." If physicians see that the majority of their colleagues also deviate from "evidence-based practice," they are likely to be less influenced by the evidence-based message.

If there is a discrepancy between an individual physician's practice and evidence-based practice, then that physician is likely to question the accuracy or the meaning of the data describing his or her practice. But if the data are simple to understand, then it is harder to imagine mistakes being made in their

production; the data, therefore, are easier to trust and harder to dismiss as erroneous. If data are simple and show a discrepancy between individual practice and evidence-based practice, the conflict can be resolved by questioning the evidence or changing practice. Physicians with the largest discrepancies, who need to make the largest changes to practice, will probably choose to question the evidence. Some, but not all, will take steps to answer their own questions by updating their knowledge of the evidence. For these physicians, a précis of recent reviews of the evidence is enclosed in the portrait envelope.

Lesson 6: The cost of focus groups and multiple revisions of draft portraits appears to be worthwhile, judging from physicians' confusion and negative feelings about the earliest drafts compared with physicians' interest and positive feelings about subsequent drafts.

3. *What are the data considerations?* What data are available to portray prescribers' patterns of prescribing? How can that data be used to make good indicators of prescribing quality?

This is about determining the sources of data and questions around how that data will be accessed, analyzed, and presented back to physicians. There are a number of considerations (including determining which of these variables to take into account and whether or not that data can be extracted and analyzed): numerators, denominators, prescription visits, first dispensings, new patients, new users, stopping, starting and switching, cumulative incidence, preference, ratios versus differences, and others. Options include:

- Low cost: easily found data.
- Moderate cost: easily developed data
- Higher cost: extensive pharmacoepidemiologic data access and analysis.

Scope of Data Available – The ability to measure prescribing patterns constrains the choice of messages in EQIP's prescribing portraits. For example, now that histamine-$_2$ receptor antagonists (H_2RAs) are sold without prescription, it is not possible to measure the total number of patients who have tried H_2RAs before starting PPIs, nor the proportion of PPI stoppers who switched to H_2RAs. Similarly, in provinces where the drug plan has access only to drug data from seniors and the poor, messages in the prescribing portraits may need to be restricted to recommendations concerning prescribing to those subpopulations.

Trade-off between Measurability of Impacts and Simplicity of Portrait Data – Ideally, the data in the portrait is exactly the same as the data in the impact assessment. For example, EQIP's first portrait displays the fraction of patients receiving hydrochlorothiazide among patients receiving an antihypertensive for first-line therapy. The main message on the portrait urges physicians to increase that fraction. The main measure of impact will be the change in that fraction. Therefore, it is desirable to consider the measurability of impacts as part of the criteria for choosing a measure to portray the quality of prescribing.

Lesson 7: Researchers who have worked for years with drug dispensing databases will have little difficulty producing robust measures to serve both the purposes of audit and feedback, and the need for impact measurement. Analysts who are new to drug data are likely to choose measures that are contaminated by too much confusing data.

4. *What is the most effective format to use?* How can those indicators be best displayed in the actual feedback or "prescribing portrait"?

These questions are about determining the best way to display the various pieces of information in the feedback phase. The format should include considerations of graphs (bar charts of absolute frequencies instead of ratios and differences, absolute versus relative values, etc.), positive prescribing messages versus negative, how to treat the cost information downplayed, use of recognizable "trademarks" and their distinctive formats, logos and endorsements, use of colour, methods of display, readability, references, and so on.

- Low cost: Replicate existing materials/formats.
- Moderate cost: Adapt existing materials/formats and test with individual prescribers and trusted local physicians.
- Higher cost: Develop, from scratch, materials and formats – perhaps with the aid of public relations specialists and graphic artists – to optimize the impact of the materials and test possible formats in focus groups with the end-users.

Format of EQIP prescribing portraits – After a year of Working Group meetings and multiple interviews and focus groups, a popular format for the portrait emerged. An 11-by-17-inches sheet is folded to make four sides of 8.5-by-11 inches. On one side of the sheet is printed a standard image – identical on all portraits – forming pages 1 and 4 when the sheet is folded. Page 1 displays a figure showing prescribing by all physicians, plus short vignettes on hypothetical patients who illustrate the areas of inconsistency between evidence and common practice. Prominent on Page 1 are the logos of the co-sponsors: the Ministry of Health, the BC Medical Association, and the UBC Faculty of Medicine's Division of Continuing Professional Development and Knowledge Translation. On page 4 are take-home messages with nuggets of evidence and references.

On the other side of the sheet, forming pages 2 and 3 when folded, is an individual portrait of each physician's prescribing using figures and tables. Focus groups have shown that physicians prefer histograms. However, for visual variety and for certain types of data, pie charts or line graphs are sometimes used. Page 2 is limited to displays of the physician's prescribing frequencies, with evidence messages in "speech bubbles". Cost data are restricted to Page 3.

Lesson 8: If the only incentive for physicians to look at a prescribing portrait is to satisfy their curiosity and to learn something interesting, it is necessary to spend time and money on good representation of the data, embedded in a colourful display of simple vignettes and short messages.

5. *How will the feedback be packaged and delivered?* What might be included in the packaging of the portraits? Will feedback be part of a larger initiative involving face-to-face interactions, such as academic detailing or small-group learning? Will feedback be individualized or will it be group data?

Options include:

- Low cost: Use existing audit-and-feedback packaging and delivery methods.
- Moderate cost: Develop and test the proposed methods in focus groups with physicians.
- Higher cost: Carry out surveys of physicians to determine the shape of the packaging and delivery methods.

Option b (moderate cost) – EQIP developed a set of materials for packaging the portraits. These included:

- A succinct letter of invitation with a registration form on the back. A great deal of effort was required to write it concisely enough to be readable, yet informative enough to satisfy multiple purposes, including the requirements of the university human studies ethics committee.
- An attractive illustration of relative drug prices expressed in terms of annual costs.
- A colourful sealed envelope containing the prescribing portrait. Printed on the envelope is an illustration of how data privacy is protected by two streams of activity carried out by two separate teams.
- Inside the envelope, besides the portrait, is a sheet of additional evidence.

The benefits from having the endorsements of the Ministry of Health and the BC Medical Association, and their logos on EQIP portraits and packaging, are not without costs. Higher standards of graphics and writing are needed, as well as additional approvals from the government branches that supervise quality control of communications.

Lesson 9: If the portrait is sealed in an envelope for privacy, the packaging of portraits determines physicians' first impressions. If the packaging is not interesting, physicians may never open the sealed envelope containing their portrait. Therefore, no matter how intriguing the portraits themselves may be, the packaging must be attractive.

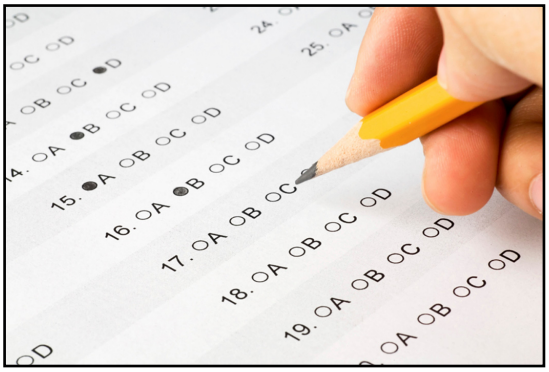
C) Implementation

1. *How can you field-test the intervention?* How do prescribers and educators respond to draft tools and proposed methods of feedback?

Methods used to respond to draft interventions include focus groups/ interviews, plus pre-testing dissemination with brief surveys tailored to the mode of dissemination.

Options include:

- Low cost: More interviews with a few trusted physicians in active practice.
- Moderate cost: More focus groups with ordinary prescribers.
- Higher cost: More interviews with a representative sample of prescribers.



Option a (low cost) – EQIP has a "clinical lead" – a senior family physician in full-time practice with many years of experience on policy committees and, as it happens, a first degree in pharmacy. Monthly meetings with him provide a low-cost reality check for any new feature of the portraits. He has signed a consent form authorizing EQIP to show him his prescribing portrait and discuss it with him without it being made anonymous.

Option b (moderate cost) – In focus groups in the 1990s, it was evident that most physicians were not interested in the prices of medications unless they could use that knowledge to save money for their own patients. In the 2000s, the prices of common drugs rose and government drug plans passed on much of the price-driven cost-increases to patients. Therefore, physicians can now save their patients

considerable sums by knowing prices. Recent focus groups and interviews with physicians suggest they are more interested in relative prices of drugs than they were in the 1990s.

Focus groups provided an important brake on the tendency of the EQIP Working Group and Implementation Team to make the portraits too detailed. A physician who attends a focus group and is paid for the time, and has the stimulation of colleagues with which to look at a draft portrait, is in the most receptive frame of mind. Any subtle sign of resistance to the information is a red flag for a problem. The focus groups found that early drafts of EQIP portraits were too detailed. For example, comparison with averages in other practices required double the number of cells in the tables. The EQIP Working Group agreed to greatly restrict such comparisons and, instead, just focus on the individual physician's practices compared with expectations based on evidence.

Option c (higher cost) – Telephone interviews with individual physicians in their offices are more representative of the circumstances in which physicians will be examining their portraits than are focus groups. For many, it will be near the end of the day when physicians are tired. They do not have the benefit of other physicians present to stimulate their interest and add insights. Therefore, information in the portrait will need to be easy to absorb.

Telephone interviews soon after physicians have seen their individual portraits will provide insights that interviews concerning draft portraits are unable to provide. These include explanatory comments such as, "These data include patients who were started by specialists. I am uncomfortable with overriding the advice of a specialist."

Lesson 10: Although physicians express scepticism of cost-containment programs, they are very interested to know more about drug prices. The messages that drug programs want physicians to reconsider, and make renewed efforts to apply, are likely to be messages that pertain to large numbers of patients. These are messages that physicians are likely to have heard often before. Therefore, new clinical evidence and interesting packaging are needed.

2. *How will you maintain privacy and confidentiality?*

Options include:

- Low cost: Follow proven protocols of other similar or identical interventions.
- Moderate cost: Conduct interviews with privacy impact assessors to determine the range of options. Possibly adapt other protocols of similar or identical interventions in your jurisdiction.
- Higher cost: Develop and test a range of methods to maintain privacy and confidentiality. Consider replicating or adapting methods from outside your jurisdiction.

De-identified data – EQIP uses Ministry databases to create a confidential portrait of a physician's prescribing practices. Data analysts access the databases through a "view", a portal created especially for EQIP in which patients' and physicians' identification numbers are replaced by numbers unique to EQIP. The new physician identification numbers are also unique to each intervention. They are called "physician-portrait-code numbers", and are printed on the portraits. In this way, all information is de-identified prior to use and is linked to physician addresses after the portraits are sealed.

All patient data in the portrait are made anonymous and aggregated such that it is impossible to identify any particular patient. Even when the number of patients is small (e.g., in the fictional draft portrait, the

number of patients who received a combination product was counted as one), this reveals nothing about who that patient was or any other information about the user of the combination product.

The portraits are produced en masse by a computer program written and tested by a separate group of analysts in a different location from the EQIP Implementation Team. The portraits are sealed in an envelope coded with the physician-portrait-code number. This method of preserving confidentiality is called the "envelope scheme". An illustration of the envelope scheme is printed on the back of the portrait-envelope itself so that physicians understand the confidentiality method at the moment they are opening the envelope. The portraits are printed by a different printing agency from the printing agency that produces the invitation letters and envelopes with physician names and addresses.

Neither the EQIP Implementation Team nor employees of the Ministry of Health see individual physician or patient data. Printed portraits incorporating these data are sealed in envelopes coded with the physician-portrait-code numbers. The coded portrait-envelopes are stuffed by hand into addressed envelopes on Ministry of Health premises, using a crosswalk file of names and physician-portrait-code numbers.

Before the individualized portrait is sent out, a draft portrait is mailed to all physicians in the early mailing group. By way of a fax-back form, physicians are given the option to decline to receive their confidential individualized portraits. Practitioner names and addresses are collected by the same fax-back form for those who enter the draw, register for an interview, or request additional educational materials.

Physicians choosing to opt out of the program have a flag inserted in the de-identified database indicating they have withdrawn. This prevents them from receiving a second mailing. Those who request additional information on home blood pressure monitors also have a flag inserted in the de-identified database, indicating they have expressed special interest in the materials. They may be sent more detailed portraits at a later date if the Working Group confirms this option.

Lesson 11: It is possible, and probably essential, to produce and disseminate portraits using methods that ensure the physician is the only person who sees the portrait while knowing whose prescribing it portrays.

3. *How will you implement the intervention?* How will you attract attention when portraits are disseminated? What other implementation issues will need to be considered (other policies, concurrent initiatives, etc.) that may affect the implementation?

Options include:

- Low cost: Conduct the intervention by mail only. Ensure there are multiple logos (partnering organizations) represented. Use colour printing. Offer incentives for participation.
- Moderate cost: Carry out a coordinated fax and mail program. Offer incentives for participation.
- Higher cost: Employ fax, mail, and telephone call-backs. Employ professional motivators and possibly financial incentives.

In pilot projects preceding EQIP, 20% of general practitioners agreed to do paid telephone interviews when the invitation letter was from the College of Family Physicians of BC, whereas only 8% agreed when the letter was from a researcher at the University of Victoria. Those pilot studies also suggested there was a slightly better response from a faxed invitation than a mailed invitation accompanied by a

package of colourful materials. This may be simply because junk mail exceeds the volume of junk faxes in physician offices, or because medical offices are organized around high-priority faxes.

Focus groups with medical office assistants revealed that the word "study" has a negative connotation – "time-consuming with no benefit to your patients." The drug industry frequently invites physicians to participate in "studies". On the other hand, participating in a "pilot program" endorsed by the Medical Association was viewed quite positively, especially if it requires almost no extra time.

EQIP was launched with a letter to all general practitioners from the President of the BC Medical Association. It did not contain a sample portrait, so as not to contaminate the control group of delayed communities. Similarly, the College of Pharmacists of BC sent out an announcement to community pharmacists. In the latter case, the announcement was only sent to pharmacies in the early communities because it contained a sample portrait.

When the BC Medical Association mails opinion surveys to physicians, it routinely offers them entry into a draw for a small number of prizes, such as the cost of attending a conference. The EQIP Working Group chose, as a prize for registration in EQIP, free attendance at the two-day Annual Drug Therapy Course sponsored by the University of British Columbia (UBC). The draws also included chances to win one of 50 home blood pressure monitors and Framingham risk calculators.

EQIP is a program of the Division of Continuing Professional Development and Knowledge Translation at UBC's medical school. Therefore, EQIP has considered providing registrants with the opportunity to request a Continuing Medical Education (CME) credit for participating in EQIP. However, the opportunity for a CME credit is not much of a draw for physicians, because they have many other opportunities for CME credits. Nevertheless, there will be a minority of physicians who feel they have insufficient time to take advantage of other CME offerings; these physicians will appreciate that their time spent on EQIP is respected as part of CME, and that EQIP's content has been endorsed by a CME review.

It is necessary to check what other educational initiatives or related programs are being implemented by the government or medical association at the same time. EQIP echoed messages from a guideline on cardiovascular disease prevention mailed out two months before EQIP's first mailing. Another joint initiative by the Ministry of Health and the BC Medical Association at the same time as EQIP was coming into being was a package of incentives for primary care. EQIP was also to have some rewards for savings that were described as "reinvestments of savings in patient care." However, a small amount of controversy about the primary care incentive package spilled over to EQIP, and resulted in the decision that EQIP avoid the complexities of financial motivators in its inaugural period.

Lesson 12: To gain the interest of physicians in prescribing portraits—given the enormous volume of mail they typically receive—may require innovative ways to capture their attention. Using incentives would need to be guided by local customs and precedents to separate what is regarded as attractive versus gimmicky or improper.

D) Summative Evaluation

1. *How will you determine the impact on prescribing?* Among registrants, what was the impact on prescribing?

Options include:

- Low cost: Conduct qualitative interviews with prescribers;
- Moderate cost: Conduct database analysis and times-series epidemiologic analysis to control for as many confounders as possible.
- Higher cost: Produce anonymous "portraits of change" showing individual physicians' changes in prescribing.

Quantitative analysis of impacts – As indicated in Section 7 under the heading of Implementation in this guide, EQIP's impact analyses use prescription drug databases to measure changes in prescribers' preferences. "Preference" is the conditional probability of prescribing a particular drug in a class, given that any drug in that class was prescribed. The preference ratio or preference difference is calculated for exposed versus unexposed physicians.

EQIP's impact evaluation is modelled on BC's ongoing Therapeutics Letter trial in which each Letter since its inception in 1994 has been delayed by approximately three months in a randomized control group of remote communities (Figure 1, 1a). A meta-analysis across 12 Letters (Figure 2) indicated a 30% shift in prescribing preferences in the desired direction among subsets of patients in which the shifts were most likely to be seen (e.g. new patients).

Figure 1: Delays in receipt of *Therapeutics Letters* and related academic detailing

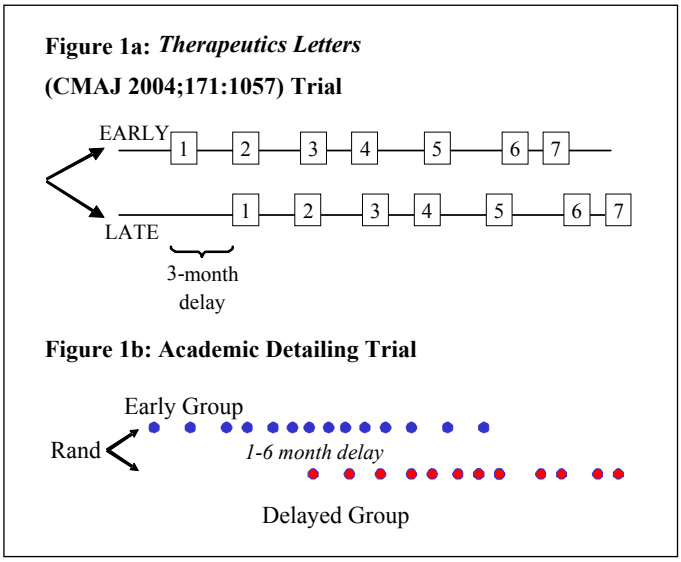
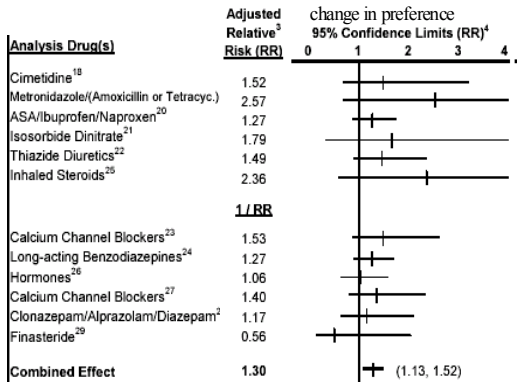


Figure 2: Analysis of *Therapeutics Letter* trial



Designed-delay trials – EQIP interventions are delayed six to 12 months in a randomized delayed control group (half the communities in the province). The duration of delay in the control group is not determined solely by the researchers based on statistical power, but is determined pragmatically by negotiation with decision-makers (the EQIP Working Group) based on a balance between statistical and logistical considerations. This type of pragmatic evaluation has been termed a Designed Delay Trial (DDT).

In EQIP, BC communities were paired by size and geography and each pair was randomized to Early versus Delayed. All participating physicians receive EQIP's first mailing for each topic, but physicians in the Delayed group receive them after six to 12 months. In this delay period of six to 12 months, the Early physicians are exposed to EQIP portraits while the Delayed-control physicians are not exposed. The duration of EQIP delays is influenced by the magnitude of the impacts. If the impact is lower than hoped, there is a longer delay before extending it to the Delayed group, so as to measure EQIP's impact more accurately.

EQIP's overall impact is measured by comparing changes in prescribing preferences in the delay period among all physicians in the Early communities with all physicians in the Delayed communities using controlled time-series analyses. EQIP's potential for greater impact if more physicians participated because of incentives is assessed by subgroup analyses that compare registrants in the Early communities with registrants in the Delayed communities.

Lesson 13: Researchers and decision-makers should understand each other's viewpoints when agreeing on methods for impact assessment. Impact evaluation of a single audit-and-feedback intervention need not be as rigorous as a publishable scientific study, because it is unlikely that a decision to continue or discontinue the program will rest on just a few interventions. On the other hand, if decision makers are willing to make a small investment in design – specifically, a designed-delay trial – they can enable the researchers to produce a rigorous publishable impact evaluation by aggregating over multiple interventions.

2. ***How will you determine if the users are satisfied?*** **In retrospect, how do the prescribers and educators rate the usability and impact of the tools?**

Options include:

- Low-cost surveys: Interviews with a convenience sample of disseminators, clinicians and patients or fax-back survey of one to three questions for clinicians.
- Moderate-cost: Representative telephone interviews with clinicians. Schedule paid telephone interviews with prescribers to discuss the printed materials.
- Higher-cost: observations of actual use in group meetings. Observe clinicians reviewing the materials and discussing quality improvement.

Qualitative analysis – EQIP conducts telephone interviews with a sample of physicians to assess how they use the portraits and what the impediments are to changing their prescribing. Perhaps more important than assembling lists of critiques of past portraits is to collect ideas for developing the tools and their packaging so that physicians will want to utilize them more in future.

By the time EQIP's first portrait was mailed, so much time and money had been invested in the processes, formats and content, that it seemed a shame physicians might look at each portrait only once, and for just a moment or two. Attention began to shift to the possibility of annual updates. However, it would be expensive to mail an ever-growing set of portraits. Therefore, EQIP is exploring the possibility of making annual updates available on a secure web-server such as the CDM Toolkit. New portraits would continue to be distributed by mail.

At some point, the question will need to be asked how audit and feedback can be better integrated into other programs of quality improvement, such as CDM or electronic medical records (EMR) adoption, with or without incentives.

Lesson 14: A successful audit and feedback program not only completes the "Study" stage of the "Plan-Do-Study-Act" cycle of quality improvement. It also stimulates the all-important final step – "Act." That step entails that the organization reflects on impact evaluation data and qualitative assessments, that it contemplates itself as a system, and that it asks what it should do differently in the next cycle.

APPENDIX B

29 April 2004

000001
Dr Sam Sample
99 Sample Street
SAMPLETOWN NSW 0000

No. 25
Proton pump inhibitors: too much of a good thing?

Dear Dr Sample

Proton pump inhibitors (PPIs) are very effective and well tolerated drugs for common symptoms and this is reflected in the high usage of this class. PPI prescribing increased rapidly following the removal of the PBS authority restriction in 2001, and continues to rise. The growing cost of use—over the 12 months to June 2003, we spent $320 million on PPIs, 20% more than the preceding year[1]—highlights the need for us to consider whether our increasing prescribing of these drugs translates into greater benefits for patients.

In this *Prescribing Practice Review (PPR)*, we look at the evidence for the benefits of PPIs in the initial and ongoing management of gastro-oesophageal reflux disease (GORD) and dyspepsia. The focus is on tailoring maintenance therapy to clinical needs, selecting a PPI and judicious use of *Helicobacter pylori* eradication therapy.

Establish the need for ongoing PPI therapy in each patient
Once the goals of initial therapy are achieved (for example, symptom resolution or *H. pylori* eradication and ulcer healing), many people can either cease or reduce their use of PPIs.

Decrease PPI use to low doses or intermittent, symptom-driven therapy once GORD symptoms are controlled
Symptom control can often be maintained with less intensive therapy.

All PPIs are very effective in controlling GORD symptoms and are clinically equivalent in most patients
Differences in efficacy between the PPIs are small and of debatable clinical significance.

Consider testing for and treating *H. pylori* in people with uninvestigated dyspepsia or who are using PPIs long term
Several guidelines now suggest *H. pylori* eradication for these groups, although further evidence is needed to confirm benefits.

For more information, see *NPS News 33*. You may also like to participate in the clinical audit, *Review of proton pump inhibitor prescribing*; see inside for enrolment details.

Yours sincerely,

Steve Phillips.

Dr Stephen Phillips
Chair, NPS Board

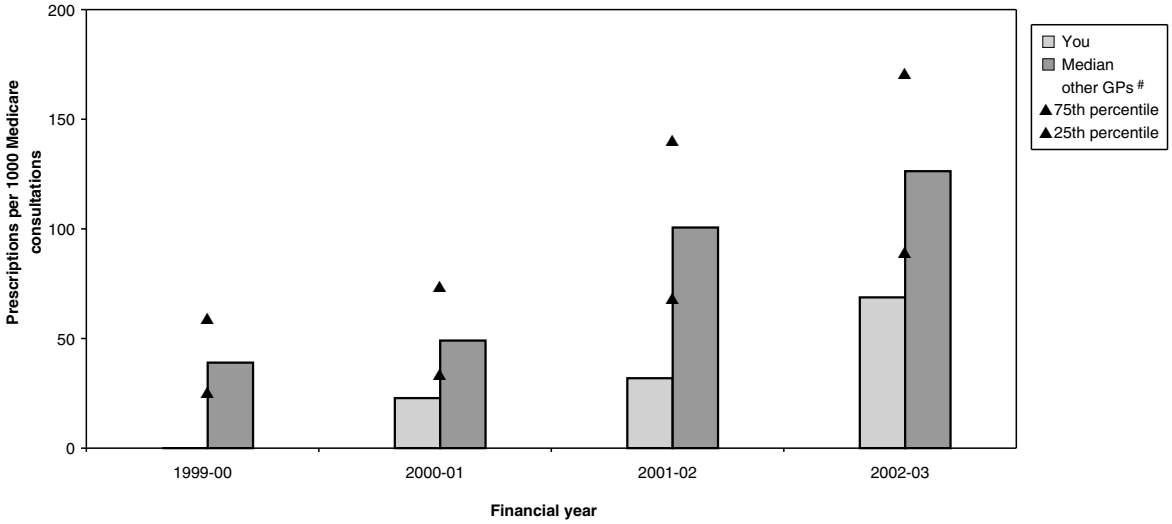
006862 - V4

1. Source: Health Insurance Commission dispensing data.

Your confidential prescribing data

These data have been extracted from the Health Insurance Commission PBS claims database and are provided confidentially for your own personal review. All proton pump inhibitors (PPIs) are over the patient co-payment, therefore the data shown includes all prescriptions dispensed on the PBS for your patients.

Proton pump inhibitors 1999-00 to 2002-03



Number and cost of proton pump inhibitors 2000-01 to 2002-03

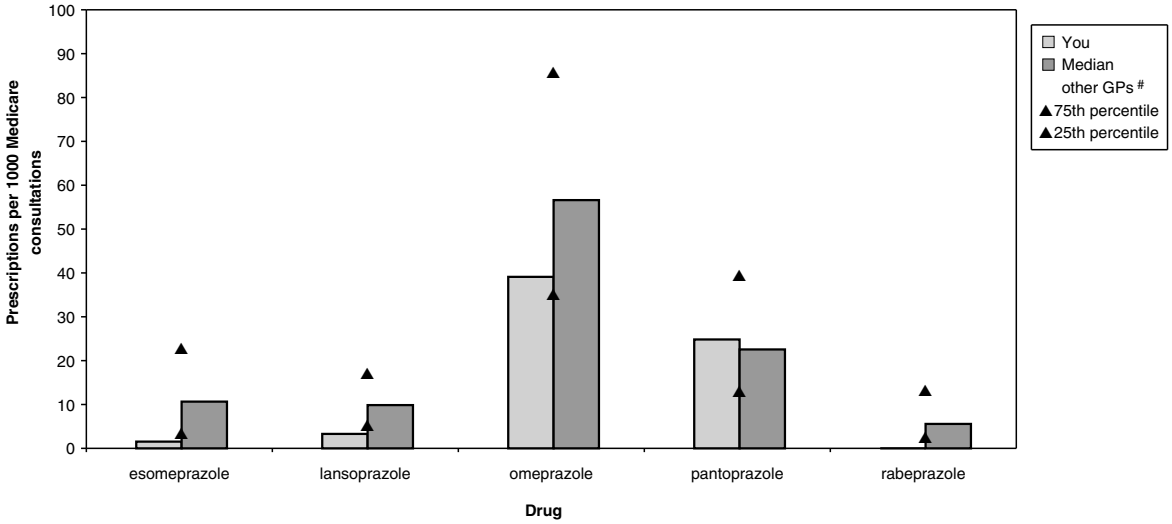
PPIs account for 9% of the total cost of all medicines prescribed by GPs on the PBS. The majority of PPI prescriptions are written by GPs; other medical specialists prescribe only 6% of PPIs.

Year	You			All GPs nationally		
	Percentage of your PBS cost	Cost	Number of prescriptions	Percentage of PBS cost	Cost	Number of prescriptions
2000-01	5%	$4 518	73	6%	$223 019 030	3 346 143
2001-02	5%	$9 347	180	8%	$329 542 997	6 380 158
2002-03	9%	$15 244	313	9%	$399 038 646	7 687 676

Practice Point

- Is it reasonable that 9% of our national PBS budget is spent on PPIs? Could these resources be used elsewhere more valuably to improve health?

Proton pump inhibitor selection 2002-03



Practice Point

- All PPIs are very effective in controlling GORD symptoms and are clinically equivalent in most patients.

Proton pump inhibitor prescriptions by strength 2002-03

		You		Median other GPs[#]	
		Percentage of PPI prescriptions	Number of PPI prescriptions	Percentage of PPI prescriptions	Number of PPI prescriptions
Higher strength products	esomeprazole 40mg lansoprazole 30mg omeprazole 20mg pantoprazole 40mg rabeprazole 20mg	98%	306	89%	554
Lower strength products	esomeprazole 20mg lansoprazole 15mg omeprazole 10mg pantoprazole 20mg rabeprazole 10mg	2%	7	11%	65

Practice Points

- Lower dose PPIs or intermittent symptom driven therapy control GORD symptoms effectively for many patients. (See table 1 in the accompanying PPR for dosing regimes)
- Could you use a lower dose in any of your patients?

Long term therapy

	You	Median other GPs[#]
Percentage of patients prescribed a PPI who have had more than 6 PPI prescriptions dispensed in 2002-03.	42%	52%
Total number of patients dispensed a PPI in 2002-03.	53	112

Practice Points

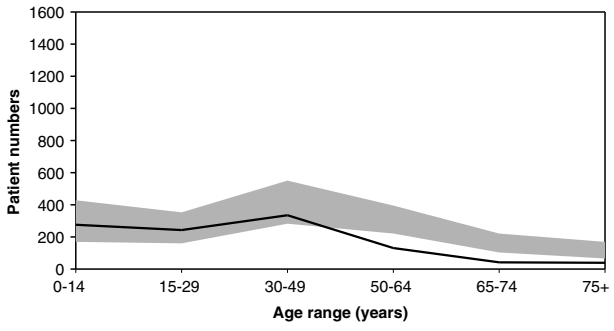
- How regularly do you review PPI prescriptions?
- Consider testing for and treating *H. pylori* in long-term PPI users.

Practice profile

The data below, based on Medicare claims, are provided to help you review your prescribing data within the profile of your practice.

Age profile of your practice

(1 July 2002 to 30 June 2003)



The black line represents the age profile of patients in your practice.
25% to 75% of other GPs[#] fall within the shaded area.

Medicare patients in your practice

(1 July 2002 to 30 June 2003)

	You	Median other GPs[#]
Total Medicare Patients	632	654

Notes:

[@] Data shown are an aggregate for all your provider locations.
The comparator group "other GPs" includes all prescribers who are currently located in a similar geographical region ie captial city, other metropolitan area, large rural centre, other rural area, remote centre and other remote area.
▲ 25% to 75% of all doctors in the comparator group fall in the range shown by the triangular symbols.

Source: Health Insurance Commission, PBS claims database. Extracted for your personal review only.

April 2004

National Prescribing Service Limited

PPR twenty five

Prescribing Practice Review—*PPR*

For General Practice

Proton pump inhibitors: too much of a good thing?

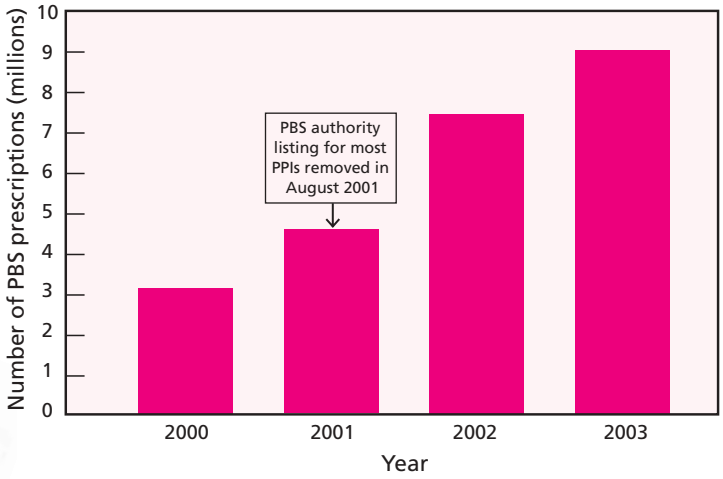
Key messages

- Establish whether ongoing proton pump inhibitor (PPI) therapy is necessary in each patient.
- Decrease PPI use to low doses or intermittent, symptom-driven therapy once symptoms of gastro-oesophageal reflux disease (GORD) are controlled.
- All PPIs are very effective in controlling GORD symptoms and are clinically equivalent in most patients.
- Consider testing for and treating *Helicobacter pylori (H. pylori)* in people with uninvestigated dyspepsia or who are using PPIs long term.

PPI prescribing is growing

PPIs are effective, well tolerated drugs for relieving symptoms that can be debilitating and concerning for patients. A marked increase in PPI prescribing followed the removal of the PBS authority listing in 2001 and the number of PPI prescriptions written continues to grow (Figure 1).[1] Is the growth in PPI prescribing justified by improved outcomes for patients?

Figure 1: Prescribing of PPIs*



*Source: HIC PBS item reports.[1] Number of prescriptions refers to the volume of services processed by HIC. Year refers to year that service was processed by HIC, not the date of prescribing or the date of supply.

Before starting a PPI…

Is investigation needed?

Anyone with alarm symptoms (such as difficulty or pain on swallowing, unexplained weight loss, evidence of GI bleeding, recurrent vomiting or upper abdominal mass) should be referred for investigation.[2]

There is currently debate over the appropriate age threshold for early endoscopy in people with dyspepsia, with investigation variously advised for people aged over 45 or 55 years.[3,4] The Gastroenterological Society of Australia (GESA) suggests that people with mild, typical reflux symptoms and no alarm symptoms be given a trial of therapy without investigation.[2]

Are drugs causing or exacerbating symptoms?

Where appropriate, stop, replace or adjust drug regimens that may be causing symptoms, such as nonsteroidal anti-inflammatory drugs (NSAIDs), calcium channel blockers, bisphosphonates, nitrates and theophylline.[3]

Suggest lifestyle changes

Before seeking treatment, people will often have identified foods or activities that exacerbate their symptoms. Reinforce that continuing to avoid these while taking a PPI will help to prevent breakthrough symptoms.

Losing weight, stopping smoking, healthy eating and moderating alcohol intake can also be suggested; although evidence for these measures in improving symptoms is lacking, all have general health benefits and may be effective in individual patients.

Establish a treatment plan

Initiate treatment with a PPI based on an explicit goal, such as control of reflux symptoms or ulcer healing.

Review the need for ongoing therapy in every patient

Plan to review the success of initial treatment with a view to reducing or ceasing PPIs as appropriate

The fact that approximately twice as many prescriptions are written for continuation than for initiation of PPIs[5] underlines the importance of establishing the need for ongoing therapy.

In any patient presenting for a repeat prescription, consider whether ongoing treatment with a PPI is warranted. If a PPI has been initiated during hospitalisation, review the need for it after discharge.

Managing GORD

Use a step-down approach

The step-down approach has gained popularity because it rapidly achieves the goals of initial therapy and minimises the need for repeat consultations.[2] For long-term management, reduce or cease use of PPIs where possible; ongoing daily standard-dose PPIs are often unnecessary.

Initiate with a PPI to[2]

- **aid diagnosis**
- **control symptoms**
- **reassure patients**
- **heal oesophagitis**

Diagnosis of GORD is usually based on the presence of heartburn or acid regurgitation as the predominant symptom. Patient understanding of the term ‘heartburn’ is variable; asking about ‘a burning feeling rising up from the stomach or lower chest towards the neck’ may identify GORD more accurately.[2]

A clear response to PPI therapy supplements a symptom-based diagnosis and can help to reassure patients that their symptoms are not the result of serious underlying disease. Endoscopy has a limited role in routine diagnosis of GORD but is indicated if the diagnosis is unclear, symptoms are suggestive of severe or complicated oesophagitis, or alarm symptoms are present.[2]

Initiate with a trial of a PPI at a standard dose for 4 weeks. Those with insufficient response should receive a further 4 weeks' treatment.[6] If this fails to control symptoms, doubling the PPI dose may be effective; consider seeking specialist advice.[2]

Following PPI therapy, the absence of symptoms is related to healing of oesophagitis; endoscopy to confirm healing is usually unnecessary in uncomplicated GORD.[3]

Decrease PPI use once GORD symptoms are controlled

The goals of long-term treatment for GORD are to maintain symptom control and prevent complications, while minimising costs.[2] After a successful initial course of treatment, try reducing PPI use while monitoring symptoms. Needs for ongoing maintenance therapy vary widely; aim for the lowest dose that maintains symptom control.

Options for step-down

Low-dose PPIs

Taken daily, a low-dose PPI maintains endoscopic remission and symptom control in a substantial proportion of people with uncomplicated healed oesophagitis.[7–11] Currently, less than 10% of all PPI prescriptions are for lower strengths.[1]

Intermittent, symptom-driven use

Patients are advised to take a PPI on days when symptoms occur. Although intermittent use allows symptoms to recur, the vast majority of patients in clinical trials have been willing to continue with this strategy after 6 months.[12–14]

Ceasing PPIs

Manage symptoms with lifestyle changes, antacids and histamine-2 receptor (H_2) antagonists if needed. Some patients with milder disease will not relapse when PPI treatment is withdrawn. GESA endorses a trial of treatment withdrawal to identify these patients; those who relapse can be treated with a repeat course of the initially successful therapy, then treatment stepped down to the lowest dose that maintains symptom control.[2]

Exceptions to step-down

People known to have severe oesophagitis will relapse unless they continue to take PPIs daily.[2,6] Those with complications such as strictures, scleroderma or Barrett's oesophagus also require daily PPIs at standard or higher doses.[6]

Consider step-up for mild GORD symptoms

In people with mild or intermittent symptoms, consider a step-up approach: initiate with lifestyle measures and antacids, then switch to an H_2 antagonist, then a PPI, if further symptom control is required.

Managing patient expectations

Explain the treatment plan

Patients can be reluctant to reduce their PPI dose when they have experienced profound symptom relief with drug therapy. Explaining that PPI treatment is directed at controlling symptoms, rather than curing the condition, may increase acceptance of suggested changes to treatment.

Patients' concerns about the safety of long-term use of medicines may lead them to take PPIs intermittently[15]; reinforce that on-demand use of PPIs is appropriate for many patients.

Choosing a PPI

All PPIs are very effective and clinically equivalent in most patients

PPIs are superior to H_2 antagonists for healing oesophagitis[16] and resolving symptoms in short-term empirical treatment.[17]

Studies have found no significant differences in clinical efficacy in oesophagitis between most PPIs.[16] Some efficacy differences have been reported for esomeprazole, and there has been large uptake of this drug since its PBS-listing in August 2002.[1] Does esomeprazole provide a clinically significant benefit over other PPIs for people with GORD?

Esomeprazole is the s-enantiomer of omeprazole

Omeprazole is a racemate; that is, a mixture of equal amounts of two enantiomers, r- and s-omeprazole. Enantiomers are isomers that are mirror images of one another. Esomeprazole and r-omeprazole have the same inhibitory effect at the proton pump[18], but are metabolised differently: after equal milligram doses, esomeprazole reaches much higher plasma concentrations than omeprazole.[19]

Clinical studies have used higher doses of esomeprazole than of comparator PPIs…

Omeprazole 20 mg has been compared to esomeprazole 20 mg or 40 mg. Thus, inequivalent doses of esomeprazole and other PPIs have been used to assess comparative clinical efficacy.

…but have found that esomeprazole provides a limited additional benefit

Although higher doses of esomeprazole have been used, studies indicate that few additional people will benefit from using it instead of another PPI.[20–23]

The clinical advantage of esomeprazole over other PPIs is limited to a relatively small benefit in people with (either active or healed) erosive oesophagitis, who make up less than half of all patients with reflux symptoms.[2] In comparative clinical trials in erosive oesophagitis, esomeprazole 40 mg, omeprazole 20 mg and lansoprazole 30 mg have all produced 8-week healing rates of over 80%; differences between treatment groups have ranged from 4–10%.*[20–22] For maintenance treatment in healed oesophagitis, 11 people need to be treated for 6 months with esomeprazole 20 mg instead of lansoprazole 15 mg to prevent one additional relapse.*[23]

*Note that standard and low doses of esomeprazole are more expensive than corresponding doses of omeprazole and lansoprazole.[24]

Uninvestigated dyspepsia

Symptoms do not reliably predict diagnosis in uninvestigated dyspepsia

Heartburn and acid regurgitation as predominant symptoms are relatively specific indicators of the presence of GORD; however, symptoms do not reliably predict other diagnoses such as peptic ulcer disease or non-ulcer dyspepsia.

Management options in uninvestigated dyspepsia include prompt endoscopy, empirical acid suppression therapy or the *H. pylori* test-and-treat approach.

Empirical therapy or test-and-treat is generally preferred. Endoscopy is usually reserved for those at risk of serious pathology (that is, over 45 years* or with alarm symptoms) and those whose symptoms persist after initial therapy.

* Some guidelines suggest that a non-invasive *H. pylori* test-and-treat approach may be as appropriate as early endoscopy in patients aged over 55 years who are not taking NSAIDs and do not have alarm symptoms.[4]

Uninvestigated dyspepsia *(continued)*

Consider test-and-treat in uninvestigated dyspepsia

Test-and-treat refers to a strategy in which patients presenting with uninvestigated dyspepsia (excluding those with indications for prompt endoscopy, with suspected GORD or who are NSAID users) receive a non-invasive test for *H. pylori* (such as the urea breath test, faecal antigen test or serology). Those who test positive receive eradication therapy and those who test negative receive a short course of a PPI. People whose symptoms persist after confirmed *H. pylori* eradication or an adequate trial of a PPI can be referred to a specialist.

A recent study found that the test-and-treat approach reduced symptoms and rates of referral for endoscopy more than empirical acid suppression.[25] However, evidence for this approach in primary care is still limited: much of the current evidence comes from studies considering the efficacy of eradication therapy in *H. pylori*-infected subjects in secondary care settings.[26] Nevertheless, many guidelines now recommend this approach.[4,27,28] GESA suggests that it is reasonable to consider eradicating *H. pylori* in dyspeptic patients younger than 50 years without further investigations if there are no alarm features.[29]

Non-ulcer dyspepsia

What is non-ulcer dyspepsia?

Non-ulcer or functional dyspepsia describes people who have had investigations to rule out structural or biochemical causes for their dyspeptic symptoms.

Drugs are generally not effective in non-ulcer dyspepsia

PPIs, H_2 antagonists, *H. pylori* eradication and motility stimulants have all been evaluated in non-ulcer dyspepsia; each is effective only in small numbers of patients.[30,31] Non-ulcer dyspepsia is thought to encompass a range of underlying causes, including abnormal gastrointestinal motility, acid sensitivity and *H. pylori* infection; this may explain the lack of a single effective therapy.

Explanation and reassurance are key aspects of management

Reassure patients that although symptoms are understandably troubling, they are part of a common condition and are not due to serious underlying disease. Explain that treatments are not usually very effective, although a small number of people may be helped by some medicines.

Consider test-and-treat

Eradicating *H. pylori* in infected people with non-ulcer dyspepsia improves or eliminates symptoms in a small proportion: 15 people must be treated for one to benefit.[31] Although the effect size is small, eradication can be considered because it eliminates the need for ongoing therapy in responders. However, Australian information on the cost-effectiveness of this approach is not available.

Consider a short course of an H_2 antagonist or PPI in symptomatic patients in whom *H. pylori* has been excluded or eradicated

Short courses of H_2 antagonists or PPIs improve symptoms in 10–20% of people with non-ulcer dyspepsia.[30] There is currently no evidence that PPIs are more effective than H_2 antagonists in non-ulcer dyspepsia[30]; use an H_2 antagonist for 4 weeks first because it is less expensive, but consider switching to a PPI for a further 4 weeks if the patient fails to respond.[3] Encourage intermittent, short courses of treatment as needed.

Role of motility stimulants

Cisapride is the best-studied motility stimulant for non-ulcer dyspepsia[30] but its use has been restricted due to the potential for serious cardiac arrhythmias. Evidence for metoclopramide and domperidone is insufficient to support their use in this indication.

Eradicating *H. pylori* in long-term PPI users

Benefits are currently uncertain

It has been proposed that long-term acid suppression in the presence of *H. pylori* infection accelerates the development of atrophic gastritis, which may lead to gastric cancer. At present, evidence for PPIs accelerating *H. pylori* gastritis is conflicting.[28] In the absence of definitive evidence, some guidelines suggest testing for and eradicating *H. pylori* in people on long-term PPIs to reduce the potential associated risks.[28]

Where people on long-term PPIs have underlying peptic ulcer disease, subsequent cure of the ulcer following *H. pylori* eradication should allow PPIs to be discontinued.[28]

Table 1: Standard and low doses of PPIs[6]

PPI	Standard dose*	Low dose*
esomeprazole	40 mg daily	20 mg daily
lansoprazole	30 mg daily	15 mg daily
omeprazole	20 mg daily	10 mg daily
pantoprazole	40 mg daily	20 mg daily
rabeprazole	20 mg daily	10 mg daily

*Standard dose refers to the dose usually recommended for initial therapy in reflux oesophagitis. Low dose refers to the lower dose recommended for maintenance therapy.

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Level 7/418A Elizabeth Street, Surry Hills 2010
Phone: 02 8217 8700 | Fax: 02 9211 7578 | email: info@nps.org.au | web: www.nps.org.au

APPENDIX C

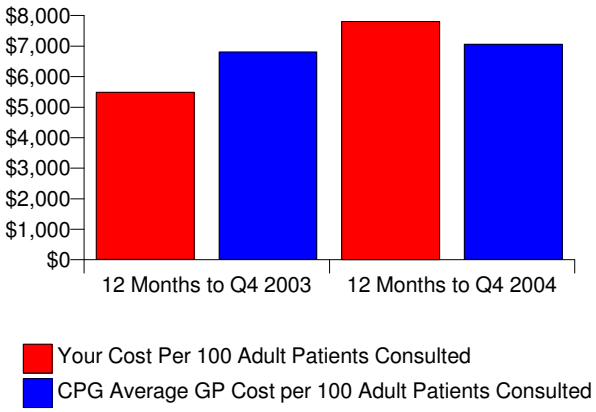
Quarterly Prescribing Report

Year ended Dec 2004

Dear Dr Xxxx Xxxxxxxx

This report is intended to provide you with details of your pharmaceutical utilisation for the year Jan 04 to Dec 04, compared with the previous year and your comparative peer group (CPG).*

1. Cost per 100 adult patient comparison - Years ended Dec 03 and Dec 04.



2. Your Medication Cost Comparison - 12 months to Dec 04.

The following 2 pages show the top 10 medicines you have prescribed ranked on cost for a 12 month period.

Each graph shows your volume of scripts per 100 adult patients consulted compared with the average of your comparative peer group. Again Practitioner data is shown in red, Pegasus Heath in blue. Beside each graph are the actual total volumes and cost compared to the average of your comparative peer group for the same period.

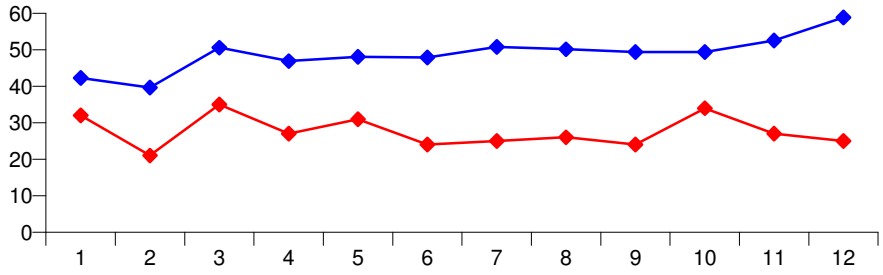
The Pegasus Health ranking indicates where each chemical sits on the list of most expensive drugs.

The coloured cells are a ratio of your total volume against that of your CPG. The examples below illustrate the ranges. These ratios are quantitative should not be taken as indicative of performance.

Low	0 to 0.75	Average	0.75 to 1.50	High	1.50 and above

1 Omeprazole

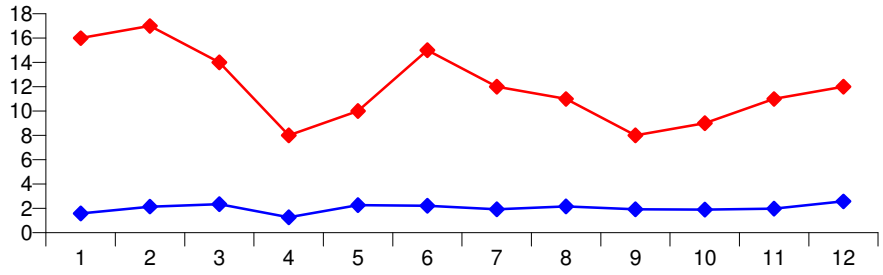
0.56 PH 20 Most Expensive - 1



	Vol	Cost
You	331	$16,869
CPG	587	$25,037

2 Olanzapine

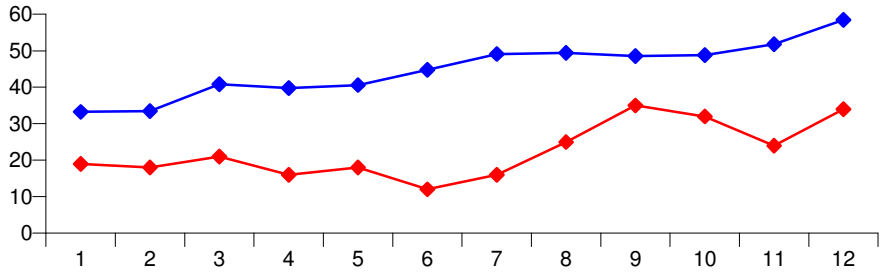
5.89 PH 20 Most Expensive - 14



	Vol	Cost
You	143	$7,797
CPG	24	$3,628

3 Simvastatin

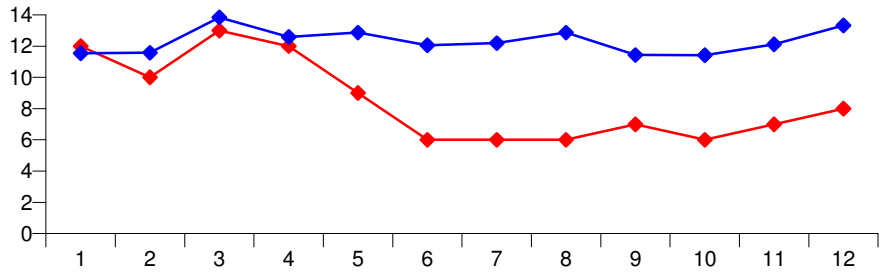
0.50 PH 20 Most Expensive - 2



	Vol	Cost
You	270	$7,462
CPG	539	$14,748

4 Paroxetine Hydrochloride

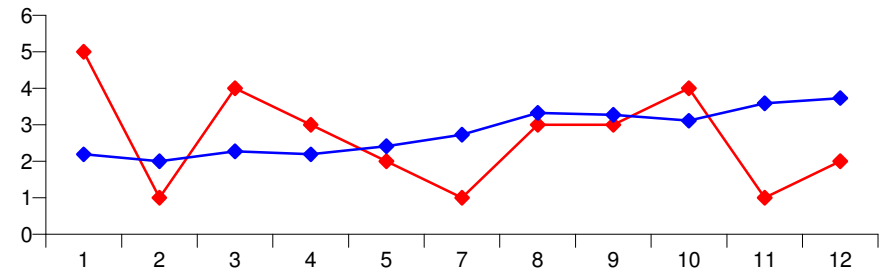
0.69 PH 20 Most Expensive - 3



	Vol	Cost
You	102	$5,399
CPG	148	$5,851

5 Quetiapine

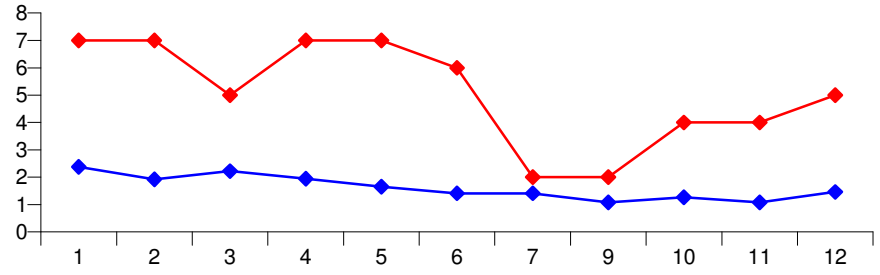
0.94 PH 20 Most Expensive - Not Ranked



	Vol	Cost
You	29	$4,880
CPG	31	$2,270

6 Terbinafine

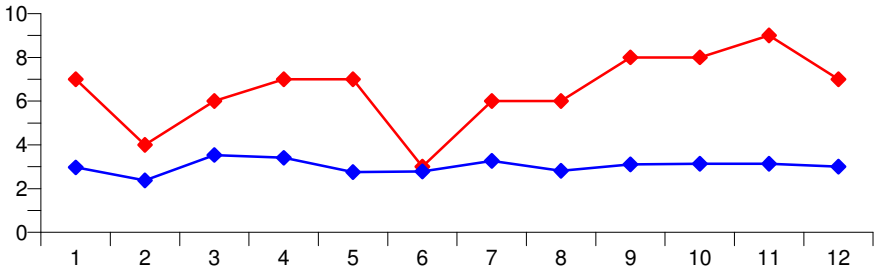
3.14 PH 20 Most Expensive - Not Ranked



	Vol	Cost
You	56	$4,840
CPG	18	$1,689

7 Sumatriptan

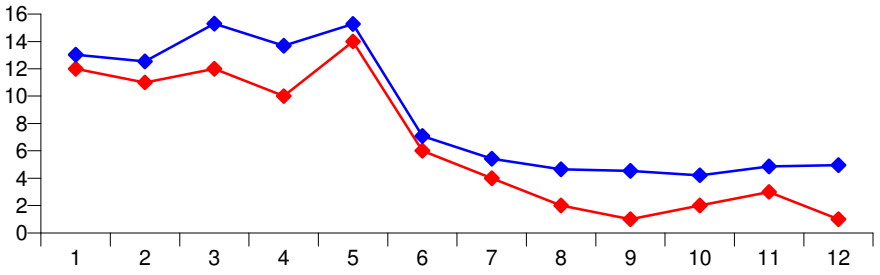
2.15 PH 20 Most Expensive - 7



	Vol	Cost
You	78	$4,384
CPG	36	$4,249

8 Atorvastatin

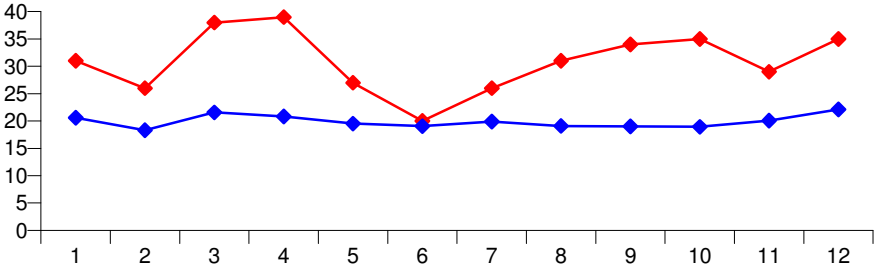
0.74 PH 20 Most Expensive - 4



	Vol	Cost
You	78	$3,566
CPG	106	$4,946

9 Cilazapril

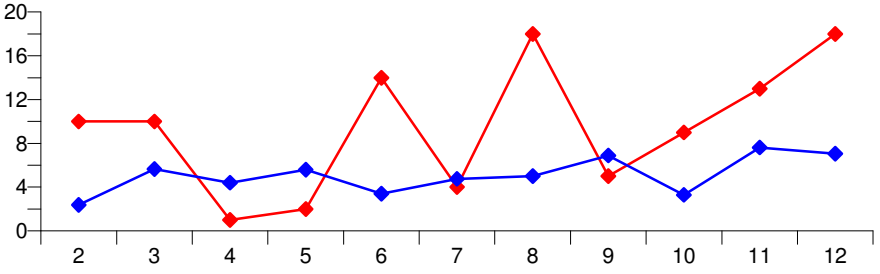
1.55 PH 20 Most Expensive - Not Ranked



	Vol	Cost
You	371	$3,367
CPG	239	$2,528

10 Oral Feed 1.5kcal/ml

1.86 PH 20 Most Expensive - Not Ranked



	Vol	Cost
You	104	$3,216
CPG	56	$1,345

Our Clinical Practice Facilitators will be visiting GPs in the near future to discuss this report.

You will notice a change in the appearance and level of detail contained in this report. We would welcome any feedback you have on the structure of the report.

The Clinical Practice Education programme has two main aims: to promote best clinical practice and to encourage members to critically analyse pharmaceutical prescribing and reflect on areas of cost inefficiency. Efficiencies in pharmaceutical prescribing are reflected directly in funds being available for initiatives to benefit all of our patients.

If you have any queries regarding this report or any other prescribing issues please contact Sanjoy Nand on 353 9898, Janine Stevens on 353 9913 or Marie Hartley's replacement on 353 9977.

Yours sincerely

Clinical Practice Education

Caveats

1. Comparative Peer Group = GPs who have similar patient populations based on the % of patients over the age of 65."

2. 100 Adult Patients Consulted

3. Volume

4. Cost

5. Data Maturation

APPENDIX D

National Prescribing Service Limited

Clinical audit enrolment form

Clinical Audit

Pharmacotherapeutic management of hypertension 2004

Aims of the clinical audit

This clinical audit offers you the opportunity to:

- review the pharmacotherapeutic management of your patients with hypertension
- identify and optimise blood pressure control
- review appropriate selection of antihypertensive drugs.

This is the second clinical audit offered by the NPS for the Quality Prescribing Initiative of the Practice Incentives Program (PIP) for the period May 2004 to April 2005 and can be used to claim PIP payments.

NPS has applied for 20 clinical audit points in the 2005–2007 Triennium of the RACGP QA&CPD Program and the ACRRM PD Program.

What the audit involves

Participating doctors in full-time and part-time practice are required to:

- identify 20 patients with a principal diagnosis of hypertension
- record your management for each patient on an individual clinical audit form.

Your data will be collated and you will be provided with:

- individual and aggregated results
- commentary on the aggregated results
- a set of review questions for your response to assist you to review your management of hypertension.

To enrol:

Fax/Post: Complete details below
Fax to: 02 9211 7579, OR
Post to address below

Phone: Call us on 02 8217 8700
Once you have enrolled, your free audit pack will be sent to you.
To see an audit form before enrolling, visit our website at www.nps.org.au

Enrolments must be received at NPS by 20 August 2004.

Submission date:

Completed clinical audit forms must be submitted to NPS by Friday 17 September 2004. Unfortunately, late submissions cannot be accepted.

Participation in this clinical audit requires agreement to aggregation of de-identified patient data.

For more information:

Sheena O'Riordan
Judith Mackson
Phone: 02 8217 8700
Fax: 02 9211 7579
Email: info@nps.org.au

Your details: I wish to enrol in the clinical audit

Please use BLOCK LETTERS

Doctor's first name

Family name

Postal address

Suburb/town

State Postcode

Phone number ( )

Fax number ( )

Fax to: 02 9211 7579, OR
Post to: NPS
PO BOX 1147
Strawberry Hills
2012

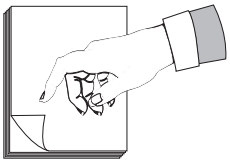
National Prescribing Service Limited

Pharmacotherapeutic management of hypertension 2004

Aims of the clinical audit

- To review the pharmacotherapeutic management of your patients with hypertension.
- To identify and optimise blood pressure control.
- To review appropriate selection of antihypertensive drugs.

Please tear off each section. *Registration/summary form* and clinical audit forms to be returned to NPS. Please tear off forms carefully.



How to participate

1. Select patients

Prospectively as patients present for consultation, or retrospectively from a search of electronic/paper medical records, identify 20 patients who:

- have been diagnosed with hypertension
- have been prescribed an antihypertensive drug(s)
- are older than 16 years of age.

Patients may be managed with medication or a combination of medication and lifestyle changes.

Patient privacy

Patients must be informed that data from their medical records may be used for the purposes of clinical audits, and **written consent obtained.** Please:

- display the enclosed poster in your practice
- ask patients who present to the practice to read and sign a copy of the enclosed *Patient information and consent form*, or
- send the enclosed *Patient information and consent form* to patients whose records you wish to use retrospectively, asking them to sign and return it to the practice.

You may use the *Patient record form* to record the patients you have included for your future reference.

Do NOT send in the *Patient record form* or the *Patient information and consent form*. Keep these in your files.

2. Collect data and review

Complete the clinical audit form for each patient. See notes on pages 2–4.

Please note:

- patient information must only be collected and recorded by the participating doctor
- both full-time and part-time GPs are required to submit 20 completed clinical audit forms.

3. Send in the clinical audit forms

Return the 20 clinical audit forms and *Registration/summary form* to:

NPS Clinical Audit: Hypertension 2004
Locked Bag 4888
STRAWBERRY HILLS NSW 2012

To be received at NPS not later than:

Friday 17 September 2004

Please note: Unfortunately, late submissions cannot be accepted.

4. When you receive your results

You will be required to answer and return a set of review questions to complete the clinical audit cycle. See back page for details.

Professional development

This clinical audit qualifies as an activity for the Quality Prescribing Initiative (QPI) of the Practice Incentives Program.

The NPS has applied for 20 clinical audit points in the 2005–2007 triennium of the:

- Royal Australian College of General Practitioners (RACGP) Quality Assurance & Continuing Professional Development (QA&CPD) Program (Group 1 points), and
- Australian College of Rural and Remote Medicine (ACRRM) Professional Development Program (practice improvement category points).

Further information

Contact NPS for:

Therapeutic enquiries
Sheena O'Riordan or
Cate Kelly at NPS
Phone (02) 8217 8700

Audit and QPI enquiries
Cris Abbu at NPS
Phone (02) 8217 8700

Guide to clinical audit

Notes for clinical audit form

Additional information to assist you to review management

Patient details

(Q1) Your patient code

Choose your own unique identifying code for the patient e.g. sequential number or the patient's initials.

(Q3) Most recent sitting blood pressure

Record the most recent sitting blood pressure reading.

Review current medication and lifestyle interventions

(Q5) Current antihypertensive treatment

Mark the drug class(es) and record details of drug(s) and dose(s) of current antihypertensive treatment.

Table 1 (page 5) lists drug classes and product names. For fixed-dose combination products, mark the product used and not the individual agents.

(Q6–8) Fixed-dose combination antihypertensive products

Patients should ideally be initiated on one antihypertensive drug only. Where two drugs are required, consider that the fixed doses in combination products do not allow the dose of the individual drugs to be titrated and make it difficult to identify the source of adverse effects. Combination products should be reserved for patients stabilised on similar doses of single agents; this may benefit some patients in terms of compliance.

(Q9) Medication which may increase blood pressure

Mark if any drug(s) that may increase blood pressure are used (prescribed or purchased over-the-counter).

The following list is not exhaustive but includes the main drugs or drug classes most frequently encountered in the community setting.[1]

- bromocriptine (rare)
- clonidine*
- clozapine (rare)
- corticosteroids
- cyclosporin
- epoetin, darbepoetin
- irreversible MAO inhibitors (phenelzine, tranylcypromine)#
- leflunomide
- moclobemide (rare)
- nicotine (infrequent)
- NSAIDs/COX-2 selective NSAIDs
- oral contraceptives
- sibutramine (rare)
- sympathomimetics
- tacrolimus
- venlafaxine

* Abrupt withdrawal may lead to rebound hypertension.

\# MAO inhibitors in combination with tyramine rich foods (e.g. matured or out of date cheese, fermented or matured meats, yeast and soy bean extracts, and others[1]) can lead to hypertensive crisis.

(Q10) Complementary medicines which may increase blood pressure

Mark if the patient uses any complementary medicines including herbal products that may increase blood pressure.

Those listed below are some of the most frequently encountered agents that have the potential to increase blood pressure.[2]

- bayberry
- black cohosh
- blue cohosh
- broom
- capsicum
- cola
- coltsfoot
- ephedra
- gentian
- ginger
- ginseng (panax)
- liquorice
- maté
- vervain

(Q11,12) Ongoing lifestyle advice

Mark all lifestyle advice provided to the patient. The lifestyle interventions listed are aimed at reducing blood pressure and/or cardiovascular risk.[3,4]

Lifestyle advice should be repeated and reinforced with verbal and written information. Monitoring and support for adherence to this advice is an important step in the ongoing management of hypertension.

Past medication history

(Q13) Previously prescribed antihypertensive drug(s)

Mark all drug classes, if any, that were prescribed prior to the patient's current antihypertensive drug regimen.

(Q14) Reason(s) for changing previous antihypertensive therapy

Mark why the patient's previous treatment was changed. If the patient's regimen was changed several times mark all reasons for change, if known.

(Q15) Initiation of therapy

Mark if monotherapy, i.e. single drug, was prescribed when the patient was first initiated on antihypertensive treatment, if known. Use of fixed-dose combination products is not regarded as monotherapy.

Co-existing conditions

(Q16) Co-existing conditions/patient characteristics

Mark if the patient has any of the listed co-existing conditions/patient characteristics that may influence the selection of antihypertensive drug(s).

Review current management

(Q17) Current status of hypertension control

Mark the current status of the patient's management:

- undergoing stabilisation – within 3 months of initiation of a new antihypertensive treatment; target blood pressure not yet achieved
- maintenance – target blood pressure achieved
- unstable – more than 3 months treatment; target blood pressure not achieved; hypertension difficult to manage.

(Q18) Target blood pressure for this patient

Determine the target blood pressure for each patient[3]:

- **below 125/75 mmHg:**
  for people with proteinuria* > 1 g/day
  (i.e. people with and without diabetes)
- **below 130/85 mmHg:**
  for people < 65 years, or those with renal insufficiency and/or diabetes and/or proteinuria* 0.25–1 g/day
- **below 140/90 mmHg:**
  for people ≥ 65 years unless they have diabetes and/or renal insufficiency, and/or proteinuria* ≥ 0.25 g/day.

(Q19) Current blood pressure compared to target, for either diastolic or systolic level

Calculate the variation of the current blood pressure from the target blood pressure. When a patient's systolic and diastolic blood pressures vary from the target by different amounts, the greater amount should apply, i.e. use the largest difference of the diastolic or systolic blood pressure reading from the target level to classify the current blood pressure level.

Example: target blood pressure is 130/85 mmHg,
actual blood pressure is 142/90 mmHg,
variation is ≥ 6 mmHg higher than target.

(Q20) Achievement of target blood pressure

Mark the possible reason(s) why the target blood pressure has not been achieved.

Any movement towards the target blood pressure and cardiovascular risk factor modification will be beneficial, particularly in those at high cardiovascular risk. It is important to individualise the aims of treatment.[3] Target blood pressure levels may not be achieved or tolerated in some patients especially the elderly.[4] However target levels in patients with diabetes are particularly important: tight control of blood pressure reduces the risk of microvascular and macrovascular diabetic complications.[5]

---

*Urinary protein:

Patients without diabetes:
If proteinuria detected on urinalysis (≥ 1+ on dipstick), determine 24-hour urinary protein excretion.

Patients with diabetes:
Knowledge of urinary albumin excretion determines intensity of antihypertensive therapy. Determine urinary albumin/creatinine ratio on a 'spot' urine. In patients with values at least in the micro-albuminuric range, a 24-hour urine collection should be obtained for accurate quantification.

(Q21, Q22) *Compelling* indications or contraindications

Based on co-existing condition(s)/patient characteristic(s) recorded in Q16 and using the attached table (*Choice of antihypertensive drugs in patients with co-existing conditions*) determine whether the patient has a *compelling* indication or a contraindication for a particular class of drugs.

Compelling, in terms of indications, means that the recommendation is supported by good quality evidence.

Review the patient's current antihypertensive drugs in Q5 to determine whether the drug for which there is a *compelling* indication or a contraindication is included in the current regimen.

Current guidelines recommend that if there is not a *compelling* indication or a contraindication, a low-dose thiazide is a first-line choice; this drug class has the most outcome evidence.[1,4]

Most patients require two or more drugs to achieve their target blood pressure.[6] There is good evidence that treatment based on low-dose thiazide or thiazide-like diuretics prevents cardiovascular complications in patients with hypertension.[6,7]

Choice of drug(s) should take into account *compelling* indications and contraindications, associated morbidity, overall cardiovascular risk and individual response.[3,4,8]

Effective drug combinations have an additive or synergistic effect on blood pressure. The following combinations are recommended by *Therapeutic Guidelines: Cardiovascular*[4] and should be considered if the patient requires more than monotherapy to control hypertension:

- thiazide + beta-blocker
- thiazide + ACE inhibitor/AT II receptor antagonist (particular role in the presence of heart failure)
- beta-blocker + dihydropyridine calcium-channel blocker (CCB) (particular role in the presence of coronary heart disease).

The following combinations should be **avoided** due to unacceptable adverse effects[1,3]:

- ACE inhibitor or AT II receptor antagonist + potassium-sparing diuretic
- beta-blocker + verapamil.

Compliance and follow up

(Q23) Compliance with antihypertensive therapy

Lack of compliance is a frequent problem with antihypertensive therapy. Strategies to improve compliance[3]:

- ensure good communication and patient involvement in all treatment decisions
- reassure patient regarding prognosis and lifestyle
- provide specific written instructions and patient education materials
- tailor advice
- explain new symptoms and side-effects
- assess patient's quality of life
- reinforce lifestyle advice at follow up visits
- set up a hypertension register and recall system
- evaluate social and economic barriers that may impact on medication supply and storage
- use compliance aids
- judicious use of home blood pressure monitoring.

(Q24) Follow up

Indicate whether you will change your management of the patient as a result of the audit process.

Table 1. Antihypertensive drug names

(use this table to assist you to complete question 5)

Generic drug name	Product name		
Thiazide diuretics		**Low-dose**	
bendrofluazide 5 mg	Aprinox	2.5 mg (1/2 a tab)	
hydrochlorothiazide 25 mg	Dithiazide	⩽ 25 mg (1/2–1 tab)	
Thiazide-like diuretics			
chlorthalidone 25 mg	Hygroton	⩽ 25 mg (1/2–1 tab)	
indapamide 1.5 mg	Natrilix SR	1.5 mg (1 tab)	
indapamide 2.5 mg	Dapa-Tabs, Indahexal, Insig, Napamide, Natrilix	Not practical	
Thiazide and potassium-sparing diuretic combination products			
hydrochlorothiazide 25 mg/ triamterene 50 mg	Hydrene	⩽ 25 mg/50 mg (1/2–1 tab)	
hydrochlorothiazide 50 mg/ amiloride 5 mg	Amizide, Moduretic	25 mg/2.5 mg (1/2 a tab)	
Beta-blockers			
atenolol	Anselol, Atehexal, Noten, Tenormin, Tensig		
bisoprolol	Bicor		
carvedilol	Dilatrend, Kredex		
labetalol	Presolol, Trandate		
metoprolol	Betaloc, Lopresor, Metohexal, Metolol, Metrol, Minax		
oxprenolol	Corbeton		
pindolol	Barbloc, Visken		
propranolol	Deralin, Inderal		
ACE inhibitors			
captopril	Acenorm, Capoten, Captohexal, Topace		
enalapril	Alphapril, Amprace, Auspril, Enahexal, Renitec/M		
lisinopril	Fibsol, Liprace, Lisodur, Prinivil, Zestril		
fosinopril	Monopril		
perindopril	Coversyl		
quinapril	Asig, Accupril		
ramipril	Ramace, Tritace		
trandolapril	Gopten, Odrik		
Angiotensin II receptor antagonists			
candesartan	Atacand		
eprosartan	Teveten		
irbesartan	Avapro, Karvea		
losartan	Cozaar†		
telmisartan	Micardis, Pritor		
Fixed-dose combination products			
Very low-dose thiazide and ACE inhibitor			
hydrochlorothiazide/enalapril	Renitec Plus	hydrochlorothiazide/quinapril	Accuretic
hydrochlorothiazide/fosinopril	Monoplus	indapamide/perindopril	Coversyl Plus
Very low-dose thiazide and angiotensin II receptor antagonist			
hydrochlorothiazide/candesartan	Atacand Plus	hydrochlorothiazide/irbesartan	Avapro HCT, Karvezide
hydrochlorothiazide/eprosartan	Teveten Plus	hydrochlorothiazide/telmisartan	Micardis Plus
Dihydropyridine calcium-channel blockers			
amlodipine	Norvasc		
felodipine	Agon SR, Felodur ER, Plendil ER		
lercanidipine	Zanidip		
nifedipine	Adalat, Adalat Oros, Adefin/XL, Nifecard†, Nifehexal, Nyefax, Nypine		
Non-dihydropyridine calcium-channel blockers			
diltiazem	Cardizem/CD, Coras, Diltahexal/CD, Dilzem/CD, Vasocardol/CD		
verapamil	Anpec/SR, Cordilox SR, Isoptin/SR, Veracaps SR, Verahexal		
Alpha-blockers			
prazosin	Minipress, Prazohexal, Pressin,		
terazosin	Hytrin†		
Centrally-acting antihypertensives			
clonidine	Catapres		
methyldopa	Aldomet, Hydopa		
Vasodilators			
hydralazine	Alphapress, Apresoline†		
minoxidil	Loniten		

† not available on the Pharmaceutical Benefits Scheme May 2004.

Prepared: June 2004

5. Completing the clinical audit cycle

Review questions which allow you to reflect on your prescribing practice will be sent to you along with:

- your original clinical audit forms
- feedback on your individual results
- the aggregate results of all participants' management practices
- commentary on the aggregate results.

Review questions must be completed and returned to NPS for 20 RACGP/ACRRM clinical audit points to be allocated and for the clinical audit to qualify for the Quality Prescribing Initiative (QPI) of the Practice Incentives Program (PIP). You will then be sent a certificate of completion for step 4 of the audit cycle.

Option for a further 15 RACGP points and/or 7 ACRRM points

An invitation to participate in step 5 of the clinical audit will be provided with the review questions.

Step 5 requires further review of patient management to determine whether any changes made have resulted in improved patient management.

Confidentiality

Patient information must only be collected and recorded by the participating doctor. Individual results of your clinical audit and responses to review questions are kept confidential by NPS.

What will happen to

Your patient data:

- Your de-identified patient data forms are returned to you.
- Your individual results are provided to you only.
- Your data are aggregated with that of other participants and the de-identified aggregate results:
  - are provided to all participants
  - may be used in NPS evaluation and reports
  - are provided to the RACGP and ACRRM.

The RACGP has advised that program information may be shared with researchers and interested general practitioners for the purpose of continuing education coordination at the discretion of the QA&CPD Program.

Your personal details:

- are provided to the RACGP QA&CPD Program and/or ACRRM Professional Development Program for point allocation (if applicable)
- are recorded for the purpose of the Practice Incentives Program and NPS evaluation.

Individual clinical audit results will not be available after potentially identifying data are removed from NPS records at the close of the clinical audit cycle, i.e. after submission of the review questions in step 4.

Please note: You are responsible for advising the NPS of any changes of address during the audit cycle. You can obtain a record of your personal details from the NPS by request in writing.

Important:
Please sign the confidentiality agreement on the enclosed *Registration/summary form*

References

1. Rossi S, ed. Australian Medicines Handbook 2004. Adelaide: Australian Medicines Handbook Pty Ltd; 2004.
2. NPS Therapeutic Advice and Information Service. Advice provided, July 2003.
3. Hypertension Management Guide for Doctors. National Heart Foundation of Australia; 2004.
4. Cardiovascular Writing Group. Therapeutic Guidelines: Cardiovascular, Version 4. Melbourne: Therapeutic Guidelines Ltd; 2003.
5. UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. BMJ 1998;317:703–13.
6. The JNC 7 Report. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. JAMA 2003;289:2560–72.
7. Psaty BM, Lumley T, Furberg CD, et al. Health outcomes associated with various antihypertensive therapies used as first-line agents. JAMA 2003;289:2534–44.
8. Whitworth JA; World Health Organization, International Society of Hypertension Writing Group. 2003 World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. J Hypertens 2003;21:1983–92.

The information contained in this material is derived from a critical analysis of a wide range of authoritative evidence. Any treatment decisions based on this information should be made in the context of the individual clinical circumstances of each patient.

National Prescribing Service Limited

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06/04

Clinical audit: Pharmacotherapeutic management of hypertension 2004

National Prescribing Service Limited

Please see the *Guide to clinical audit* booklet for additional information to assist you to complete this double-sided form.

Mark the appropriate response(s) for this patient. Completely fill in bubbles with black biro (as shown here). Do not use pencil. Make no stray marks.

If you make a mistake use white correction fluid or cross through the bubble clearly (as shown here), and mark your selected response.

NPS office use only

Patient details

1. Your patient code: _____

2. Age: ○ 16–64 years ○ ≥ 65 years

3. Most recent sitting BP: ☐☐☐ / ☐☐☐ mmHg

4. Gender: ○ male ○ female

Review current medication and lifestyle intervention

5. What is the current antihypertensive drug regimen? (see Table 1, p.5 of the *Guide*)

Antihypertensive drug class	Drug name (specify individual drug for applicable drug class)	Dose
○ low-dose thiazide*		
○ high-dose thiazide		
○ beta-blocker		
○ angiotensin converting enzyme (ACE) inhibitor		
○ angiotensin II (AT II) receptor antagonist		
Fixed-dose combination products:		
○ very low-dose thiazide + ACE inhibitor		
○ very low-dose thiazide + AT II receptor antagonist		
○ dihydropyridine calcium-channel blocker (CCB), i.e. amlodipine, felodipine, lercanidipine, nifedipine		
○ non-dihydropyridine calcium-channel blocker (CCB) i.e. diltiazem, verapamil		
○ alpha-blocker		
○ other		

* Equivalent to bendrofluazide 2.5 mg, hydrochlorothiazide ⩽ 25 mg, Amizide & Moduretic 1/2 tab, Hydrene 1/2–1 tab. Includes thiazide-like diuretics: chlorthalidone ⩽ 25 mg, indapamide SR 1.5 mg (see Table 1).

6. Is the patient taking a fixed-dose combination antihypertensive product?

○ yes (go to Q7) ○ no (go to Q9)

7. Was this fixed-dose combination product the first antihypertensive therapy prescribed?

○ yes ○ no ○ not known

8. What was the main reason(s) for prescribing a fixed-dose combination product?

○ BP not controlled on monotherapy
○ cost to the patient
○ effective combination where two drugs required
○ patient compliance
○ patient request
○ not known
○ other _____

9. Is the patient using medication which may increase blood pressure (prescribed or over-the-counter)? (see list, p.2 of the *Guide*)

○ yes ○ no ○ not known

10. Is the patient using complementary medicines which may increase blood pressure? (see list, p.2 of the *Guide*)

○ yes ○ no ○ not known

11. What ongoing lifestyle advice has been given to the patient?

○ healthy eating
○ moderate alcohol intake
○ regular physical activity
○ salt intake reduction
○ smoking cessation
○ weight reduction
○ none
○ not known

12. Is the patient compliant with this lifestyle advice?

○ yes ○ no ○ partially ○ not known

Past medication history

13. Was the patient previously prescribed different antihypertensive drug(s) at any time?

○ yes ▼ ○ no (go to Q15) ○ not known (go to Q15)

Which drug class(es) were prescribed?

○ low-dose thiazide
○ high-dose thiazide
○ beta-blocker
○ ACE inhibitor
○ AT II receptor antagonist
○ fixed-dose combination
○ dihydropyridine CCB
○ non-dihydropyridine CCB
○ alpha-blocker
○ other

Continue to 11 above

Please turn over

14. What was the reason(s) for changing previous antihypertensive therapy?

- ◯ allergy or adverse drug reaction
- ◯ co-existing condition
- ◯ not known
- ◯ compliance/motivation issues
- ◯ therapeutic failure
- ◯ other _____

Continue to 15 above

15. When antihypertensive treatment was first initiated, was monotherapy used?

◯ yes ◯ no ◯ not known

Co-existing conditions

16. What other relevant co-existing condition(s)/patient characteristic(s) are present?

Cardiovascular

- ◯ angina
- ◯ heart block
- ◯ heart failure
- ◯ left ventricular hypertrophy
- ◯ orthostatic hypotension
- ◯ peripheral vascular disease
- ◯ post myocardial infarction
- ◯ previous stroke
- ◯ systolic hypertension
- ◯ tachyarrhythmias

Diabetes

- ◯ type 1 diabetes
- ◯ type 2 diabetes

Respiratory

- ◯ asthma
- ◯ COPD/CAL

Renal

- ◯ bilateral renal artery stenosis
- ◯ proteinuria > 1 g/day
- ◯ proteinuria 0.25–1 g/day
- ◯ microalbuminuria 30–299 mg/day
- ◯ renal insufficiency

Other

- ◯ Aboriginal, Torres Strait Islander, Maori, Pacific Islander origin
- ◯ ACE inhibitor intolerance
- ◯ gout
- ◯ hyperkalaemia
- ◯ pregnancy
- ◯ prostatic hypertrophy
- ◯ other _____

Review current management

17. Current status of hypertension control is:

◯ undergoing stabilisation ◯ maintenance ◯ unstable

18. Target blood pressure for this patient is:

◯ 125/75 mmHg ◯ 140/90 mmHg

◯ 130/85 mmHg ◯ other □□□/□□□ mmHg

19. Current blood pressure compared to target, for either diastolic or systolic, is:

◯ at target: +/– 5 mmHg ◯ higher by: ≥ 6 mmHg

◯ lower by: ≥ 6 mmHg

20. If target blood pressure is not being achieved, reason(s) are:

- ◯ intake of prohypertensive drugs/dietary factors
- ◯ measurement artefacts
- ◯ non-compliance
- ◯ other reason _____
- ◯ undergoing stabilisation
- ◯ underlying secondary hypertension
- ◯ therapeutic failure

21. Are there *compelling* indications for prescribing this patient a drug(s) from a particular antihypertensive class?

To determine your response, consider the patient's co-existing condition(s)/patient characteristic(s) recorded in Q16 and use the attached table, *Choice of antihypertensive drugs.*

◯ yes ◯ no (go to Q22) ◯ not known (go to Q22)

Are these drugs(s) included in the current regimen (as recorded in Q5)?

◯ yes (go to Q22) ◯ no ◯ partially

Reason(s) for not prescribing antihypertensive drug(s) where there is a *compelling* indication due to co-existing condition(s):

- ◯ adverse effect
- ◯ contraindicated
- ◯ continuing another doctor's therapy
- ◯ other _____
- ◯ overlooked
- ◯ trialled but not appropriate
- ◯ unaware
- ◯ not known

22. Are there contraindications for prescribing this patient a drug(s) from a particular antihypertensive class?

To determine your response, consider the patient's co-existing condition(s)/patient characteristic(s) recorded in Q16 and use the attached table, *Choice of antihypertensive drugs.*

◯ yes ◯ no (go to Q23) ◯ not known (go to Q23)

Are these drug(s) included in the current regimen (as recorded in Q5)?

◯ yes ◯ no (go to Q23) ◯ not known (go to Q23)

Reason(s) for prescribing antihypertensive drug(s) where there is a contraindication due to co-existing condition(s):

- ◯ continuing another doctor's therapy
- ◯ other overriding indication
- ◯ other _____
- ◯ overlooked
- ◯ unaware

Compliance and follow up

23. Compliance with antihypertensive treatment assessed by:

- ◯ check of repeat prescriptions issued
- ◯ open questioning
- ◯ regular BP monitoring
- ◯ not undertaken
- ◯ other _____

24. What action(s) will you take for this patient as a result of the audit?

- ◯ continue current management
- ◯ alter target BP
- ◯ alter management of risk factors
- ◯ cease an antihypertensive drug(s)
- ◯ add another antihypertensive drug(s)
- ◯ alter dose of antihypertensive drug(s)
- ◯ review compliance
- ◯ no action
- ◯ other _____

Continue to 22 above