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Medical journals

What are they good for?

In 2007 Kath O'Connor completed a 12 month GPET funded editorial and research training post at *Australian Family Physician* and the University of Melbourne. In this article, she reflects on the role of medical journals. Are they of use to practising clinicians? Or is their main role to foster research and further the careers of authors?

■ **When I started as a general practice registrar and joined The Royal Australian College of General Practitioners (RACGP), two things happened. The first was that my ecological footprint increased about a hundredfold. Every day I found my letterbox stuffed full of papers, journals, magazines and promotional material from pharmaceutical companies. Then there were the myriad investment opportunities and the insurance and credit card offers.**

My overflowing letterbox is just the tip of the iceberg. The overload of medical information is real. In recent decades there has been a massive increase in the number of journal titles and articles. In 1970, around 10 000 journal titles existed;¹ in 2005–2006, there were more than 20 000 biomedical journals producing 5000 articles per day.² Medical information websites proliferate. There is so much information available that even the fraction relevant to general practitioners feels impossible to navigate.

The second thing that happened was that I realised – with a jolt – how much I did not know. And these are merely the unknowns that I know about. The unknown unknowns are impossible to assess. As a registrar, I hope my knowledge vacuum will fill over the years. But with a new problem every 15 minutes, I know this learning will be lifelong.

At the risk of contributing to the information overload of GPs, I was drawn by my interest in writing to apply for a job as *Australian Family Physician (AFP)* Publications Fellow. On my second day on the job I heard a discussion in *AFP*'s production office about how best to get people to 'rip open' *AFP*'s plastic wrapping – that is, how to attract readers. At the time it seemed obvious that journals should provide instantly palatable education and research updates for clinicians (the pile of unread copies of *AFP* and *Medicine Today* on my own bedroom floor notwithstanding).

Do medical journals educate practising clinicians?

Initially I was pretty certain that the role of journals was to update clinicians through education and research. So I started to look into the information needs of GPs to see how *AFP* could best serve them. I performed a literature search and a small qualitative study. The study took the form of a survey of clinical questions raised by GPs in practice and a focus group at the 2007 RACGP Annual Scientific Convention (*Table 1*).

Ethics approval for the survey and focus group was granted by the RACGP Ethics Committee.

Health professionals need information that will benefit particular patients.³ In 1996, Dr Richard Smith, then editor of the *British Medical Journal (BMJ)*, described the information needs of doctors as broad; encompassing patient data, populations statistics, medical knowledge, logistical information and social influences, as well as political, legal, management and ethical issues.⁴ Interestingly, Smith's extended categories have similar content to the RACGP's five domains of general practice.⁵

More recently, an observational study of the information needs and information seeking behaviour of 112 Spanish primary care physicians showed that most of the questions raised were either medical and scientific or administrative (logistical).⁶ Similarly, 41 of the 54 questions I collected from the 11 GPs surveyed were about medical and scientific knowledge, followed by 10 questions concerning logistical information.

An important study by Ely et al⁷ confined itself to clinical questions raised by primary care physicians in the course of their work. It found that the most common questions were about drug prescribing, obstetrics and gynaecology, and adult infectious diseases. These areas accounted for 36% of all questions. Interestingly, in this study, the answers to most questions (64%) were not pursued while the patient was present.⁷

Smith's review found that questions raised by GPs are overwhelmingly specific and 'nongeneralised', making it hard to find answers. General practitioners deal with undifferentiated illnesses and multiple problems in a single patient.⁴ Similarly, in many of the questions I collected, the GP had knowledge about a condition and its treatment but was unsure how to apply it to a complex patient.

GPs ask colleagues first

With GPs looking for immediate knowledge to apply to complex patients, it is not surprising that colleagues – not journals or textbooks – are their major source of clinical information.⁸ Colleagues help ‘weigh up the complexities of a particular patient problem’.⁹ In my small study, half the questions (27/54) were answered by asking a colleague. Focus group participants agreed that asking colleagues saves time.

No time for original research

When GPs in my survey did not ask colleagues, they mainly looked to internet based guidelines and summaries. General practitioners want resources that are fast, available, familiar, readable and cheap.¹⁰ They prefer cumulated information, brief summaries and guidelines that are explained simply and fit GP problems – not original research articles.¹¹

This trend toward summarised information is similar across the specialties. In one study, hospital physicians preferred so-called ‘throwaway journals’ (*Consultant, Hospital Practice, Patient Care and Postgraduate Medicine*) because they were more relevant to clinical practice and easier to read (despite being judged as lower in methodological quality).¹²

Glasziou¹³ describes two processes in medical information gathering by doctors: information ‘pull’ (seeking information to answer specific questions) and ‘push’ (receiving information unsolicited). He suggests that information ‘pushed’ to us should focus on the clinical conditions we commonly see in practice. Perhaps this is where medical journals have a role and a responsibility: making sure that the information we ‘push’ onto readers is not only accurate and available in summary form, but also relevant to the patients they are seeing.

It is important to try to keep abstracts accurate. In a United States (US) study, rehabilitation specialists were shown to scan the table of contents and read only the abstracts of articles of interest.¹⁴ German diabetic physicians reported that they usually only read the abstract and discussion in journal articles.¹⁵ This is of some concern as 18–68% of abstracts in medical journals, including *Annals of Internal Medicine, BMJ, JAMA* and *New England Journal of Medicine*, have been shown to be inaccurate (containing data inconsistent with the text or not contained in the text at all).¹⁶

General practitioners who participated in my focus group said they did not have enough time during a consultation to look up PubMed or Cochrane, but they will occasionally do a literature search after hours. However, they found they did not need to go to source articles (ie. original research); review articles were good enough.

A multitude of electronic resources for GPs exist. Some are free, others require subscription fees. Sources vary in their relevance, searchability and application to patients. Free sources tend to be in the form of static guidelines or text, with minimal searchability and variable relevance. Focus group participants reported using the resources presented in *Table 2* to answer clinical questions.

Ebell¹⁷ describes a number of USA efforts to deliver ‘point of care’ information for GPs, including the Family Practice Inquiries Network, Infotriever and DynaMed. Ebell points out that the infrastructure

Table 1. Clinical questions raised by GPs: survey and focus group pilot study

Part A. Survey

A convenience sample of 11 GPs answered an advertisement in the RACGP’s *FridayFax*. They then completed a survey about the questions raised in two sessions of clinical practice. A predominance of younger GPs and registrars was noted among respondents

Fifty-four questions were collected from 11 GPs. Each GP raised between two and 10 questions in the two sessions. Questions were grouped according to content and type of questions; sources used were grouped according to the type of source

Triangulation was achieved by asking similar questions of a focus group (see *part B*). Rigor in this analysis was achieved by having a second person group the data

The majority (n=41) of questions were about medical and scientific knowledge, followed by logistical information (n=10). There were only three questions about the professional and legal role of the GP. The major medical and scientific knowledge areas covered by the questions were gynaecology, obstetrics, immunisation, orthopaedics, ENT, asthma and other respiratory and oral health including dental

The majority of questions (n=27) were answered by asking a colleague. The next most popular source was computer resources, including websites, intranets and medical director (n=16). Other GPs used print sources such as textbooks, journals and their own filing systems (n=11). Satisfactory answers were found to all questions except two. The majority (n=22) of questions were answered in less than 5 minutes, followed by within 5 and 10 minutes (n=18)

Part B. Focus group

Six GPs attended a focus group at the ASC. The focus group was advertised both in the conference material and by leaflet drop. Once again, a predominance of younger GPs and registrars was noted

The focus group discussed which sources of information the participants used most often to answer their clinical questions and what they believed made an information source useful. In addition they were asked how they assess quality of information sources. Rigor in this analysis was achieved by having a second person group the data

Major themes included that:

- clinical information should be recent, local, brief and applicable to general practice rather than a specialist setting
- it is important but sometimes difficult to match clinical information to a specific patient
- asking colleagues saves time
- logistical information takes the most time and requires a filing cabinet or computer lists and favorites
- there are useful cultural resources available but you need to know where to find them and it is always important to check with the patient whether a cultural assumption applies to them
- for ‘quality’ of information, these GPs looked at the reputation of authors and original journals, as well as the number of references, the use of peer review and the absence of drug company funding
- ideally GPs should apply critical thinking and look at study design, references and clinical and statistical significance of results in a review article, but there is not always time for this

Table 2. Websites used by focus group participants for point of care clinical information*

Website	Country of origin	Annual cost as at April 2008 (AUD)
<i>Australian Medicines Handbook</i> (www.amh.net.au)	Australia	\$150
Therapeutic guidelines (www.tg.com.au)	Australia	\$300 or \$130 (miniTG version)
National Prescribing Service (www.nps.org.au)	Australia	Free (Commonwealth Government funded)
RACGP 'red book' (www.racgp.org.au/redbook/static/index.htm)	Australia	Free (funded by RACGP)
UpToDate (www.uptodate.com)	USA	Around \$540
<i>BMJ Clinical Evidence</i> (www.clinicalevidence.bmj.com)	UK	Around \$283
Emedicine (www.emedicine.com)	USA	Free
NHMRC guidelines (www.nhmrc.gov.au/publications/categories/conditions.htm)	Australia	Free (Commonwealth Government funded)
National Guideline Clearinghouse (www.guideline.gov)	USA	Free
New Zealand guidelines (www.nzgg.org.nz)	NZ	Free
<i>Medical Journal of Australia</i> (www.mja.com.au)	Aus	Free
Medline via PubMed (www.ncbi.nlm.nih.gov/sites/entrez)	USA	Free**
Google (www.google.com)	USA	Free
<i>gplearning</i> (www.gplearning.com.au)	Australia	Free*** with upgrade for \$75
Royal Children's Hospital (www.rch.org.au/clinicalguide/)	Australia	Free
Royal Women's Hospital (www.thewomens.org.au/ClinicalPracticeGuidelines)	Australia	Free
<i>Australian Doctor</i> (www.australiandoctor.com.au)	Australia	Free
MyGeneralPractice (www.mygeneralpractice.com.au/)	Australia	Free***
DynaMed (www.ebscohost.com/dynamed/)	USA	On application

* Examples only and not an exhaustive list of available electronic sources ** Access to full text articles limited without individual or institutional subscription

*** RACGP members

for 'truly useful' resources is there, however it is not cheap to develop or maintain. Clinicians, however, expect not to have to pay for summarised information. Focus group participants were also frustrated at the lack of free access to useful internet sites.

What about quality?

Summarised information raises the issue of quality assessment. How much methodological detail is given in a summary? And does anyone read this 'fine print'?

General practitioners are fairly trusting of information sources. Focus group participants stated that, although they believed critical thinking to be important, they did not have enough time for formal critical appraisal. Instead, they were reassured by the reputation of source journals and authors and the absence of drug company funding. In addition, a source journal being peer reviewed was perceived to improve quality. Interestingly, a 2002 systematic review which looked at the effects of peer review found that the process is 'largely untested' and that 'its effects are uncertain'.¹⁸

Do medical journals progress authors' careers?

During my year of medical editor training, I visited London and met Dr Richard Smith, former editor in chief at *BMJ*. I asked him about his research into doctors' information needs, to which he replied, with a smile, 'That's when I thought the role of journals was to educate doctors!'

Journals are not for clinicians. They serve authors and the research community, not readers. This is not a totally cynical view. Getting published in the right journal has a certain prestige and can guarantee university tenure or progress an author's career.

This is reflected by the use of the impact factor as a measure of journal quality. The impact factor assesses a journal on how many times the articles published in it are cited by other journals. High impact factor journals are thought to be prestigious and important. However, the impact factor is a measure of a journal's influence on the research community, and not of its use by practising clinicians.

The way forward

The world of medical journals appears to be a little confused. Journals publish original research alongside educational material. Research authors choose journals that will progress their careers. Editors try to target information to clinicians. Yet clinicians ask colleagues and look to summarised electronic information.

As a general practice journal, *AFP* tries to both foster GP research and to educate GPs. These aims may seem contradictory, but I believe there is room for both. Communication within the research community is important. *Australian Family Physician* has an important role in making sure the research we publish is of a high quality, especially considering the minimal time GPs have for critical appraisal.

I keep coming back to the GP who is overloaded with paper and spam and who needs to make decisions about a new patient every

15 minutes. This clinician needs up-to-date, reliable information, as this is 'the commodity used to help make patient care decisions'.¹⁹ Their first port of call is a colleague. Next, they look for easily accessible resources (particularly focusing on medical and scientific and logistical information) that are:

- brief/summarised
- recent
- local
- applicable to general practice rather than a specialist setting, and
- readily available at the point of care (ie. available online).

The least medical journals such as *AFP* can do, is to try to move journals a little closer to meeting these needs.

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References

1. Wyatt J. Uses and sources of medical knowledge. *Lancet* 1991;38:1368–72.
2. Attia A. Information mastery: Finding the gold. *Middle East Fertil Soc J* 2005;10:2.
3. Gorman PN, Helfand M. Information seeking in primary care: How physicians choose which clinical questions to pursue and which to leave unanswered. *Med Decis Making* 1995;15:113–9.
4. Smith R. What clinical information do doctors need? *BMJ* 1996;313:1062–8.
5. The Royal Australian College of General Practitioners. Making sense of GP learning: A companion to the RACGP Training Program Curriculum. Melbourne: RACGP, 1998.
6. González-González A, Dawes M, Sánchez-Mateo J, et al. Information needs and information-seeking behavior of primary care physicians. *Ann Fam Med* 2007;5:345–52.
7. Ely JW, Osheroff JA, Ebell MH, et al. Analysis of questions asked by family doctors regarding patient care. *BMJ* 1999;319:358–61.
8. Coumou H. How do primary care physicians seek answers to clinical questions? A literature review. *J Med Libr Assoc* 2006;94:1.
9. Williamson J, German PS, Weiss R, Skinner E, Bowes F 3rd. Health science information management and continuing education of physicians. A survey of U.S. primary care practitioners and their opinion leaders. *Ann Intern Med* 1989;110:151–60.
10. Greer AL. The two cultures of biomedicine: Can there be consensus? *JAMA* 1987;258:2739–40.
11. Koseoff J, Kanouse DE, Rogers WH, McCloskey L, Winslow CM, Brook RH. Effects of the National Institutes of Health Consensus Development Program on physician practice. *JAMA* 1987;258:2708–13.
12. Rochon P, Bero LA, Bay AM, et al. Comparison of review articles published in peer-reviewed and throwaway journals. *JAMA* 2002;287:2853–6.
13. Glasziou P. Information overload: What's behind it, what's beyond it? *Med J Aust* 2008;189:84–5.
14. Burke D, Judelson A, Schneider J, DeVito M, Latta D. Reading habits of practicing physiatrists. *Am J Phys Med Rehabil* 2002;81:779–87.
15. Trelle S. Information management and reading habits of German diabetologists: A questionnaire survey. *Diabetologia* 2002;45:764–74.
16. Itkin R, Branagan MA, Burmeister L. Accuracy of data in abstracts of published research articles. *JAMA* 1999;281:1110–1.
17. Ebell MH. Point-of-care information that changes practice: It's closer than we think. *Fam Med* 2003;35:261–3.
18. Jefferson T, Alderson P, Wager E, Davidoff F. Effects of editorial peer review: A systematic review. *JAMA* 2002;287:2784–6.
19. Wyatt JC. Medical informatics: artefacts or science. *Methods Inf Med* 1996;35:314–7.