"What is your strategy for keeping up with the primary literature?"

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"Keeping up" with the primary literature is impossible. Don't even try.

It reminds me of the classic chocolate factory scene from the 1950s television show *I Love Lucy*. In the scene, Lucy and her friend Ethel go to work in a chocolate factory, where they must wrap pieces of chocolate as they come down a conveyor belt. Although Lucy and Ethel do an admirable job at first, in less than a minute, they can no longer keep up the pace, and most of the chocolates go unwrapped. Unfortunately, you're going to have to leave most of the primary literature unwrapped. To do be successful, you're going to have to be selective.

I use a combination of drilling and grazing approaches to keep up-to-date. When I'm drilling, I'm honing in on the best studies to help answer specific clinical questions. When I'm grazing, I'm skimming the top of the greenest pastures to keep me informed.

One of the best ways keep up-to-date is to consistently use primary literature to answer the questions you encounter every day. No doubt, general reference sources and clinical practice guidelines are more efficient to look up answers to questions like *What is the dose of tadalafil for pulmonary hypertension?* or *What is the generally recommended treatment approach to pulmonary hypertension?* But primary reference sources are most helpful when answering questions like *Does iloprost improve symptoms and reduce mortality more than bosentan in patients with pulmonary hypertension?* and *Would the benefits and risks of ambrisentan use in a 75-year-old male patient with diabetes be similar to those in younger, healthier patients?* Personally, I don't know the answers to these questions, but if I were responsible for caring for a 75-year-old man with diabetes who has pulmonary hypertension, I'd turn to the primary literature to help sort through some of them.

Given the vast amount of primary literature that can be used to help answer these questions, be sure to use good drilling techniques. First, ASK a relevant question—one that is related to a specific patient (or circumstance) and when the answer is important because it will influence what you do or recommend. Next, use sound literature search strategies to ACQUIRE relevant sources. I won't expound on how to do a good literature search—but don't rely solely on Google, and learn to use search terms wisely. When I find an article that I think might be helpful based on the title, I quickly read the abstract to APPRAISE it. Think about PICO—**P**opulation, **I**ntervention, **C**omparison, and **O**utcome—when deciding whether to read the full text article. Don't waste time reading manuscripts that don't relate to your patient, that don't use an intervention(s) available to you, and that don't report patient-oriented evidence that matters. I like using the TRIP (Turning Research into Practice) database (www.tripdatabase.com) to search the literature because it can help me hone in on the manuscripts that match my PICO criteria.

Once you've identified a manuscript that might be useful, I recommend using the RAMMbo (representation/recruitment, allocation, maintenance, measures blinded or objective) checklist to critically analyze the full text. This technique will allow you to assess the quality of the study before deciding to APPLY the results to your patient or circumstance. If the number needed to treat (NNT) or

number needed to harm (NNH) is not stated in the manuscript, I like to calculate it myself. NNT is relatively easy to calculate (watch this NNT tutorial), and it gives me a better sense of the magnitude of the benefit or harm I can expect.

BTW, you shouldn't limit your use of the primary literature to answering questions and making decisions about therapeutic issues. You should also consult the primary literature to answer questions about diagnosis and screening, patient education strategies, workflow, documentation, and more. Everything about your work should be evidence based.

Moreover, although drilling the primary literature using the questions you encounter day to day will keep you up-to-date, it won't help you proactively identify the contemporary issues you should know about—ahead of time. That's why I use good grazing techniques, too. There are many ways to graze. I find that receiving table of content (TOC) alerts, subscribing to abstracting services, and belonging to communities of practice are the best ways to remain up-to-date.

TOC alerts are probably the easiest way to graze and the fastest way to be "in the know" about what's been recently published—but I find TOC alerts the least helpful because they don't analyze the information in any usable way. Nevertheless, they are easy to set up and usually free. Just go to your favorite journals' websites and subscribe to their electronic TOC alerts by e-mail or RSS feed. Typically, you won't need a paid subscription to the journal to receive these alerts. When the journal publishes a new issue or some new online content, you'll receive a message with the titles and authors of the manuscripts that have been released. Don't go wild signing up for TOC alerts. You will get tons of unwanted e-mails every month that clog your inbox. Less is more. Be selective. I subscribe to only four TOC alerts—*New England Journal of Medicine*, *JAMA Internal Medicine*, *Pharmacotherapy*, and *American Journal of Pharmaceutical Education*. My criteria for deciding to subscribe to a TOC alert are simple—there must be at least one thing I want to read each time I get a TOC alert. If, after 2–3 months I find there isn't consistently something I want to read in the TOC of that journal, I unsubscribe.

Abstracting services are helpful, too. I subscribe to three. Some abstracting services are free, but most require a modest (less than $100) fee. What makes an abstracting services helpful is that they do the literature search for you, summarize what was found, and put the information in context. I am an ambulatory care practitioner with broad interests in the treatment of patients with chronic diseases. I'm also interested in educational issues related to adults, health professionals, and patients. So the abstracting services I subscribe to compile the primary literature related to my broad interests. One abstracting service I find particularly helpful is EvidenceUpdates – McMaster PLUS from BMJ. The service is free and highly customizable according to your areas of interest. EvidenceUpdates will send you an alert when new studies are published in your area(s) of interest that meet your threshold for relevance and newsworthiness. Not only do you get a brief summary of the article, but the article has also been prescreened and rated by a group of experts for its relevance to practice and its newsworthiness.

Two other services I find helpful are the *NEJM Journal Watch* and the *Pharmacist's Letter*. Both services are available in paper and electronic formats and provide expert analyses of recently published research manuscripts that the editors believe are relevant to their subscribers. These are not free services, but they are, IMO, well worth the subscription fee. The *NEJM Journal Watch* has abstracting services that cater to several specialty areas—so whether you are interested in, say, infectious diseases, psychiatry, or critical care, *Journal Watch* probably has a specialty abstracting service for you. I like the *Pharmacist's Letter* for different reasons. The editorial staff can take complex topics and distill them into the clinical pearls you need to know. And although the *Pharmacist's Letter*'s writing style is casual and

easily digested, don't be fooled—the articles are evidence based and vetted through a rigorous editorial process. Other abstracting services you might wish to check out are the *ACP Journal Club* (included in a subscription to *Annals of Internal Medicine*) and the *PNN Pharmacotherapy News Network*.

Finally, I like to graze for cutting-edge information by belonging to communities of practice. A community of practice is a group of people who have common interests and a mechanism for communicating with one another. Members of this community often pose questions to one another and share opinions. Communities of practice include the ACCP Practice and Research Networks (PRNs)—subgroups of people within the College who have common therapeutic interests (e.g., endocrinology, women's health) or who work in similar practice environments (e.g., ambulatory care, emergency medicine). I belong to the Ambulatory Care PRN. Messages on the Am Care e-mail list often alert me to new primary literature that's relevant to my patients. Another community of practice that I belong to (and, full disclosure, for which I serve as editor-in-chief) is iForumRx.org—an online community for ambulatory care pharmacy specialists. Similar to an abstracting service, iForumRx posts commentaries regarding recently published primary research manuscripts—but, like in a journal club, the authors critique the strengths and weaknesses of the study, try to place the findings in the context of what's already known, and provide recommendations on how the information should be used. Other members of the iForumRx community can post their own comments as well as start forum discussions and participate in polls. iForumRx also maintains key resource pages that provide annotated bibliographies regarding the most common disease states encountered in ambulatory care practice as well as practice management issues. Similar communities of practice exist for several medical specialties as well as for health professional educators. You can form a local community of practice at your institution or through the college/school of pharmacy. You may already participate in a weekly or monthly journal club or case conference activity—but if you don't, start one.

I encourage you to use a combination of drilling and grazing strategies to remain up-to-date on the primary literature that should influence your practice. When drilling, stick to what's relevant—research that addresses an important question affecting your patient population (or your circumstances), uses an intervention that you can feasibly implement, and reports an outcome that matters to your patients. When grazing, sign up for a few TOC alerts, subscribe to an abstracting service, and join a community of practice or two. Don't worry about "keeping up"—no one can. Just select the best chocolates from the conveyor belt.

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