

## Patient Safety Tip of the Week

### February 18, 2020 More Nudges

We learned a lesson from commercial laboratories many years ago. Those commercial labs made their money, of course, by doing more tests. So, they packed their order forms for tests in a manner that made it most easy for clinicians to check as many boxes as possible.

So, when we recognized at our hospital that many tests were either unnecessarily repetitive or of low value, we changed our own lab and radiology requisition forms (paper at the time) to remove from the front of the form those tests that were of low value. We also looked at all our standardized order sets and saw the same pattern. Those order sets that offered checkboxes for “prn” medications almost always invited checking boxes.

And, when we did our first electronic medical record implementation, we were extremely concerned that design of various screens and menus could make it too easy to order things that might not be absolutely necessary. We discussed that in our March 23, 2010 Patient Safety Tip of the Week [“ISMP Guidelines for Standard Order Sets”](#). We noted that order sets often included prn orders for sleep meds, laxatives, antacids, etc. Often, these were included so a clinician did not have to be awakened at night to order such medications. ISMP’s guideline on order sets also cautioned against including blanket-type orders (eg. laxatives, sleep meds, antiemetics, antidiarrheals, antacids, etc).

Conversely, you can use form design to **“nudge”** clinicians to remember to do certain things, like assessing DVT risk and considering DVT prophylaxis.

We’ve done several columns on how use of “nudges” can increase the likelihood of the most desirable action occurring. But sometimes nudges can be in the wrong direction. That is, they push you to do something that may actually be detrimental or at least not the best course of action. We discussed these issues in our July 23, 2019 Patient Safety Tip of the Week [“Order Sets Can Nudge the Right Way or the Wrong Way”](#).

A recent study looked at the impact of default settings for opioid prescribing in the emergency department ([Montoy 2020](#)). The researchers randomly altered the default settings for quantities of opioid tablets. These changes were made without announcement, and prescribers were not informed of the study itself. They found that an increase of 0.19 tablets prescribed was found for each tablet increase in default quantity. They conclude that this low-cost, easily implementable, EMR-based intervention could have far-

reaching implications for opioid prescribing and could be used as a tool to help combat the opioid epidemic.

Chin and colleagues ([Chin 2018](#)) demonstrated similar findings for postprocedural prescribing of opioids. The electronic medical record (EMR) can autopopulate a default number of pills prescribed, and 1 potential method to alter prescriber behavior is to change the default number presented via the EMR system. In a multi-hospital system, they reduced the default number of opioid pills autopopulated in the EMR when prescribing discharge analgesia from 30 to 12. Clinicians could still alter the number of pills prescribed to any amount they deemed necessary. After the default change, the median number of opioid pills prescribed decreased from 30 to 20. The percentage of prescriptions written for 30 pills decreased from 39.7% before the default change to 12.9% after the default change, and the percentage of prescriptions written for 12 pills increased from 2.1% before the default change to 24.6% after the default change. This occurred without significant change in opioid refill rates. This translated to a decrease of 5.22 opioid pills per prescription and a total decrease of 34.41 morphine milligram equivalents (MME's) per prescription. The authors concluded this is a simple, effective, cheap, and potentially scalable intervention to change prescriber behavior and decrease the amount of opioid medication prescribed after procedures.

Another recent study used an EMR “nudge” to reduce inappropriate orders for C. diff testing ([Howard-Anderson 2020](#)). Orders for hospital-onset C. difficile infection testing in patients administered a laxative or stool softener in <24 hours triggered an EMR alert defaulting to cancellation of the order (“nudge”). Orders considered inappropriate for C. diff testing decreased from 8% to 6% after implementation of the “nudge”. Total monthly orders decreased by 21% postintervention.

In our April 30, 2019 Patient Safety Tip of the Week “[Reducing Unnecessary Urine Cultures](#)” we noted how clinicians and researchers at Barnes-Jewish Hospital implemented a program to reduce unnecessary cultures ([Munigala 2019](#)). Their intervention consisted of notifications to providers, changes to order sets, and inclusion of urine culture reflex tests in commonly used order sets. The CPOE intervention they implemented was setting the **default option** to urine dipstick testing followed by a bacterial culture if positive (i.e. reflex testing), rather than a culture alone. This resulted in a **45% reduction in the urine cultures ordered**. That intervention saved approximately \$104,000 in laboratory costs alone over the 15-month period plus likely savings from reduced antibiotic use and less contribution to the emergence of resistant organisms.

Note that the “nudge” need not necessarily go to the physician. Another innovative intervention from the PennMedicine Nudge Center increased screening rates for breast cancer and colorectal cancer 22 percent and 14 percent, respectively ([Hsiang 2019](#)). The intervention was an active choice intervention in the electronic health record that prompted medical assistants to inform patients about cancer screening during check-in and template orders for clinicians to review during the visit. Unfortunately, there were minimal changes in the rates of patients who followed through within one year and

completed their screenings. Perhaps a “nudge” at the patient level is necessary as well. But the study demonstrated that we can reduce the risk of alert fatigue for physicians by sending the alerts to other members of the healthcare team. We’ve previously noted that some alerts might be sent to pharmacists rather than directly to physicians.

Most of the examples above are aimed at overcoming one of the most powerful cognitive biases, the “**default bias**”. That bias demonstrates our natural tendency to select default options when several options are possible. Two related cognitive biases are the “**inertia bias**” and the “**status quo bias**”, both of which encourage us to keep doing something. (Remember that monthly fee for software you seldom use anymore that you keep forgetting to cancel?). We discussed these in our July 7, 2009 Patient Safety Tip of the Week “[Nudge: Small Changes, Big Impacts](#)”. The study by Chin et al. ([Chin 2018](#)) also raised the role of yet another cognitive bias, “**anchoring**”, to the result produced by the new default. “Anchoring reflects the idea that human adjustments of estimates are based on a given starting value. In this case, estimates of the number of opioid pills needed for analgesia were anchored around the default number of pills presented, and a new, lower anchor helped decrease overall prescribing.”

Nudges can also be valuable in steering medication ordering in a desirable way. A study by Patel et al. ([Patel 2016](#)) found that a change in the EMR default to generics instead of brand names resulted in prescribing rates for generics increasing from 75% to 98%.

In another study, Patel and colleagues ([Patel 2018](#)) found that nudges which asked clinicians to make an active choice on statin prescriptions and delivered feedback on how each clinician’s performance compared to their peers led to a significant increase in statin prescription rates. Physicians received an email with a link to an online information “dashboard” listing their patients who were eligible for statin therapy but not already receiving it. One group of physicians also received a note comparing their rate of prescribing statins for eligible patients to other doctors in relevant specialties. Physicians in both intervention groups were asked to review the list of patients and use a multi-choice menu to prescribe a statin for each one or indicate a reason for non-prescribing. Results were compared to a third group that received no “dashboard” list and no comparison feedback.

The “dashboard” listed each of their patients along with their age, sex, and the following data as available from the EHR: 10-year ASCVD risk score, most recent LDL-C level, other lipid levels, body mass index, history of smoking and any form of clinical ASCVD (eg, myocardial infarction or stroke), liver function tests, and medical record number. The PCPs were asked to review the list of patients within 1 week and use the dashboard to select whether or not to prescribe each patient a statin. The dashboard provided an overview of the study, a link to the American College of Cardiology/American Heart Association guidelines, and options for selecting statin dosage.

Compared with usual care, there was a significant increase in statin prescribing in the active choice with peer comparison arm (adjusted difference in percentage points, 5.8), but not in the active choice arm.

The authors felt that a key element of their intervention design was active choice framing. Physicians could review patients using the automated patient dashboard and make decisions on statin prescriptions. By offering multiple options to prescribe a guideline-indicated statin and requiring a reason to say no, clinicians may be nudged toward prescribing a statin. Peer comparison feedback delivered just once by email was effective at increasing physician engagement with the automated patient dashboard. One advantage of this approach is that it does not require waiting for a patient to come to the clinic to make a decision. It also might optimize future clinic visits by removing the identification of eligible patients and process of prescribing so that the physician and patient can focus more on other aspects of care. A potential downside is that physicians with larger patient panels may face difficulties managing these types of decisions outside of their traditional clinic model when they receive a long list of eligible patients.

Mitesh S. Patel, M.D., head of Penn Medicine's "Nudge Unit", and colleagues wrote an informative review on nudges in the *New England Journal of Medicine* ([Patel 2018b](#)). They describe nudges as ways of presenting choices in ways that strongly influence consumer behavior. They give some great practical examples from everyday life. Airlines require consumers to actively choose whether to purchase trip insurance before they can buy a plane ticket. Amazon displays additional, complementary items alongside the purchase you are about to make. Video streaming sites often use default settings to automatically play the next episode in a TV series to encourage binge watching.

They go on to describe how nudges can be designed to remind, guide, or motivate behavior in healthcare. They suggest targeting areas in which suboptimal care can be addressed by targeting a specific decision that drives a less-than-optimal behavior. For example, when prescribing medications, physicians must decide between brand-name and generic formulations. They cite the study we noted above ([Patel 2016](#)) that found a change in the EMR default to generics instead of brand names resulted in prescribing rates for generics increasing from 75% to 98%.

They note suboptimal referral of eligible patients for cardiac rehabilitation after myocardial infarction may have resulted from an opt-in system. So, they redesigned the process as an opt-out system in which referral for rehab was the default. The referral rate increased to more than 80%.

Thoughtful design of order entry screens and standardized order sets is important in helping physicians make correct choices and avoid less optimal ones. An editorial by Vaughn and Linder ([Vaughn 2018](#)) discussed how "**nudges**" may be helpful. They note some designs provide a stimulus to do the wrong thing. For example, simply providing a checkbox may nudge a physician to check that checkbox. Providing the brandname of a drug may nudge the physician to order the more expensive formulation rather than a generic equivalent. And allowing a test to be ordered repetitively (eg. "daily CBC") may lead to inappropriate testing.

They suggest the following questions be asked during design of order sets or order entry screens:

- When a new order set is created, is influence on clinician behavior considered?
- Which options are listed for testing and treatment? All options? Or just clinically appropriate ones?
- How are they listed? Alphabetically? Numerically? Or are recommended and less-expensive options listed first?

They stress the strong effect of using appropriate default settings, citing the study mentioned above ([Munigala 2018](#)) that successfully reduced inappropriate urine cultures in an emergency room by changing the default option from “urinalysis with reflex to urine culture” to “urinalysis with reflex to microscopy”.

Of course, there are other interventions that can be used to reduce the amount of unnecessary tests. Education and audit and feedback may modestly reduce the ordering of “routine” tests. A recent study ([Ambasta 2020](#)) found an 11% reduction in “routine” lab tests ordered in an academic setting when residents were given education and feedback with comparison to peers and attending internists were given feedback with comparison to peers.

But education and training always rank low in our hierarchy of effective interventions. In our January 2020 What's New in the Patient Safety World column “[ISMP Canada: Change Management to Prevent Recurrences](#)” we noted the excellent editorial by Soong and Shojania “Education as a low-value improvement intervention: often necessary but rarely sufficient” ([Soong 2019](#)). It describes several scenarios and how education fits in with each. In our brief illustrative Power Point “[RCA Strong vs. Weak Responses](#)” we show education and training as the weakest actions. We don't include “nudges” in that hierarchy because that list actually applies to RCA actions. But nudges would probably fit somewhere near the middle of a list of action effectiveness.

The strongest actions are **forcing functions** and **constraints**. How about this for an effective constraint: Don't Pay for It! In a study on low-value tests, Henderson et al. ([Henderson 2020](#)) looked at the impact of Choosing Wisely recommendations for vitamin D testing in Canada and the US. These resulted in 4.5% and 14.5% reductions in testing in Ontario and the US, respectively. But Ontario implemented a payment policy change that eliminated reimbursement of vitamin D screening. That was associated with a 92.7% relative reduction in such screening!

To be effective, any “nudge” needs to be inexpensive to implement, nonobtrusive to the clinician, and provide useful information that helps lead to active choices. You need to be very wary you don't simply create “noise” that leads to alert fatigue. Equally important is to establish a method by which you will evaluate whether the nudge actually produced desired results and, just as importantly, did not produce any unintended consequences.

In sum, we think nudges are a great way to help change clinician behavior. They can usually be implemented inexpensively and in a minimally obtrusive manner. They have a

definite role in our armamentarium of interventions. But we should always continue to look for stronger interventions that might have a greater impact when feasible.

**See some of our other columns dealing with “nudges”:**

- July 7, 2009 “[Nudge: Small Changes, Big Impact](#)”
- February 18, 2018 “[Nudged, But Who Nudged Who?](#)”
- June 19, 2018 “[More EHR-Related Problems](#)”
- April 30, 2019 “[Reducing Unnecessary Urine Cultures](#)”
- July 23, 2019 “[Order Sets Can Nudge the Right Way or the Wrong Way](#)”

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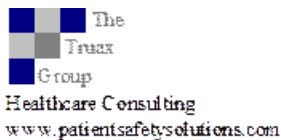
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Our Power Point: RCA - Strong vs. Weak Responses

[http://patientsafetysolutions.com/docs/RCA\\_strong\\_vs\\_weak\\_responses.ppt](http://patientsafetysolutions.com/docs/RCA_strong_vs_weak_responses.ppt)

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