PPIs and Suppressing Surprise

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In a previous issue of P&T (April 2005), I described the workings of the PEACE (PharmacoEconomics and Cost Effectiveness) Committee at Jefferson University Hospital. Since that writing, the committee has continued to meet regularly, and we have tackled issues beyond the use of recombinant activated coagulation factor VIIa (rFVIIa, NovoSeven®, Novo Nordisk) in trauma settings.

Recently, I have learned that more than half of the inpatients in our institution are receiving some form of gastric acid suppression either with a proton pump inhibitor (PPI) or a histamine H₂ blocker. During fiscal year 2004–2005, we spent nearly $300,000 to acquire these agents. A recent dramatic increase in the number of acutely ill inpatients with Clostridium difficile infection brought this issue to the attention of the PEACE Committee.

As most of our readers know, certain clinical factors are associated with the risk of bleeding from so-called “stress ulceration.” These factors are generally acknowledged to include mechanical ventilation for more than 48 hours; severe coagulopathy; some forms of head injury and multiple trauma; a history of upper gastrointestinal bleeding; and possibly even acute spinal cord injury. Therefore, scores of patients throughout all of our intensive-care unit (ICU) settings receive some form of acid suppression.

This widely used practice, however, raises some troubling questions—namely, does the use of a PPI create additional risk factors for C. difficile infection when an H₂ blocker might work just as well? One can just imagine the appropriate setting. Let’s take, for example, a busy neurological ICU. Here, virtually every patient receives standardized stress ulcer prophylaxis, usually with a PPI. These acutely ill patients have many competing priorities for the attention of the attending physicians responsible for their care; as a result, diarrhea might not be at the top of their priority list. Yet we know that infectious colitis in the hospital is associated with significant mortality, morbidity, and, of course, an increased length of stay.

So, here is the dilemma in a nutshell. Although many ICU patients receive acid-suppression therapy, the combination of broad-spectrum antibiotics for infection and PPIs for acid suppression may create an environment that is especially hospitable to C. difficile organisms. Even when we believe we are always doing the best for our patients, without a good evidence basis to support prophylaxis with PPIs, we might actually be putting our patients at greater risk.

Here is where the PEACE Committee swings into action. There is really no other venue for us to evaluate the burgeoning data regarding the relationship between antibiotic use, PPIs, acid suppression, and a significant increase in C. difficile nosocomial colitis. Once we recognize this important potential new clinical trend, we have a venue to evaluate the data and plan our response.

The PEACE Committee has assigned appropriate staff members in the Department of Pharmacy to collect data regarding PPI gastric acid suppression in ICU settings. Other staff members of the performance improvement team are investigating the incidence of C. difficile nosocomial colitis. Still others—P&T committee members—are hard at work developing evidence-based guidelines for stress ulcer prophylaxis that take these issues into account. Our strategies to enhance appropriate use of gastric acid suppression include the creation of specific drug policies; educational programs with guidelines and algorithms; unique order forms; and even the institution of prior authorization order sets if appropriate.

We are not ready to press the panic button yet; clearly, however, we are thankful that there is an appropriate venue in which we can comfortably air these concerns and bring a multidisciplinary team together to review the data. The key lesson that always guides us is this: “You only manage that which you measure.” The activities of the PEACE Committee enable us to question some tightly held beliefs and adhere to the measurement mandate about our own performance throughout the institution.

Has your P&T committee made a similar connection between PPI use, acutely ill patients, and a rise in C. difficile nosocomial colitis? More important, do you have an appropriate mechanism to recognize these trends and to effectively implement policies and procedures to tackle them after they are recognized?

In the hurly-burly, everyday ICU-based practice, there is not much time for leisurely self-evaluation of current and potential trends in care. A mechanism such as the PEACE Committee gives us the luxury to sit back and question nearly everything we do with the best intentions for our patients.

As usual, I am interested in your views. You can reach me at my e-mail address, david.nash@jefferson.edu.