Sunshine is the Best Disinfectant

Once again, Pennsylvania has made national headlines as a pioneer in the public reporting of information related to medical quality. Now with the release of PHC4's report on hospital-acquired infections (HAI) in Pennsylvania[1], the state has focused a very bright light on a critical health care issue with national policy implications. Indeed, Pennsylvania is the first state in the nation to release a publicly funded, statewide, hospital-specific report on the incidence of HAI. As the longtime chairperson of the Technical Advisory Group for PHC4, one of us (DN) has had the privilege of participating directly in this process.

On the heels of the PHC4 report, the *American Journal of Medical Quality (AJMQ)* published a series of three studies in a special supplement regarding HAI.[2] These studies were highlighted in a press conference held this past fall at the National Press Club in Washington, DC. The three studies, which garnered national press from *USA Today*[3] to a cover story in *Modern Healthcare*[4], all noted that HAI could be prevented by changing processes of care in the hospital setting. Flawed hospital processes caused infection, not the severity of the patient's illness, according to the studies, contradicting long-held beliefs that the opposite was true.

In this editorial, we will review both the PHC4 report and aspects of the subsequent *AJMQ* studies. We will note how this body of work, coupled with other activities around the nation, has led to a serious re-evaluation of the cause of HAI. Finally, we will describe the reactions of three stakeholder groups, consumers, purchasers, and providers, to these reports.

In 2005, Pennsylvania hospitals reported a total of 19,154 cases of hospital-acquired infections leading to a rate of 12.2 per 1,000 cases. The average length-of-stay (LOS) for this group was 20.6 days with an average charge of $185,260 per case. For patients without hospital-acquired infections, the average LOS was only 4.5 days with an average charge of $31,389 per case. The mortality rate for patients with a HAI was 12.9 percent compared to a mortality rate of 2.3 percent in patients without hospital-acquired infections. PHC4 recommends that the HAI Report "should be used to measure individual hospital performance over time, rather than to compare hospitals to each other." The report is not intended to help patients choose the "safest hospital" rather, it is hoped that public reporting on infection rates will stimulate hospitals to assess infection control measures and implement changes to improve performance.[1]

Two of the three studies published in the *AJMQ Supplement* examined data previously submitted to PHC4. The first study by Hollenbeak and colleagues[5] found that despite a statistically significant association between patient-specific factors and the patient's risk of surgical wound infection, the risk was largely determined by the process and practice of care. The second study by Peng and his team[6] showed infection-related increases in mortality, LOS, and charges that could not be explained by patient-specific factors. The third study by Shannon[7] examined data on hospital revenues and expenses in 54 patients with central line associated bloodstream infections (CLAB). The average hospital cost for a patient with CLAB was $91,733, the average reimbursement $65,894 resulting in a loss of $26,839 per case. Additionally, Shannon found that process defects, rather than age and severity of illness at the time of admission, were critical risk factors for HAI.

Of course, both publications have certain limitations. For example, the PHC4 report include disparities in data-reporting by the hospitals, potential under-reporting, and the issue of risk adjustment of the data. The *AJMQ Supplement* studies were hampered by sample size and the fact that the economic analysis was only performed on one type of HAI. Yet, despite these limitations, the results of both the PHC4 study and *AJMQ Supplement* are a one-two, knock-out punch to previously held beliefs regarding HAI. Specifically, HAI is not an inevitable by-product of the care of severely ill patients being admitted to the hospital, but rather the result of flawed processes within the delivery system and such infections have a negative impact on the hospitals' bottom line, because payment increases are insufficient to cover the increased marginal costs associated with HAI.[2]

As for the stakeholders, from the consumers' perspective, the report revealed that HAI is a relatively common occurrence and this may help the public understand the scope of the problem and their role in its prevention. Patient advocacy groups applauded the added transparency provided by the public reporting of HAI.[8] While research[9] has questioned the lay public's ability to fully understand and appreciate such data, many advocacy groups, professional organizations and governmental agencies have developed educational programs encouraging patients to ask the kinds of questions that might prevent adverse occurrences. For example, the Joint Commission has launched a "Speak Up"[10] safety initiative advising patients on how to prevent errors in care, and prevention of HAI is a major focus of their accreditation surveys. Accumulating evidence examining consumer attitudes about HAI and hand hygiene concluded that not only are consumers ready to be empowered with information to ensure a positive outcome, but that they will also utilize infection data in selecting a health care provider.[11] A study released by Blue

Cross Blue Shield[12] demonstrated that out of 1,600 consumers surveyed, 77 percent ranked quality over cost when selecting a hospital or clinic. Other surveys confirm the public has become increasingly aware of health care quality measures and that the number of individuals saying they have used this information in making decisions is increasing.[13] Finally, public reporting of quality data itself has been shown to change provider behavior in ways that may benefit the consumers.[8, 14, 15]

From the purchasers' perspective, the report was viewed as a valuable tool in the efforts to improve health care quality. A reduction of HAI is a key plank in Governor Edward Rendell's proposed "Prescription for Pennsylvania".[16] Health care purchasers, increasingly sensitized to the problem, may be tempted to include HAI rates in their performance-related fee schedules. Many proposed pay-for-performance (P4P) systems acknowledge the dilemma of HAI and contain provisions to refuse payment for any medical misadventures, including HAI.

From the providers' perspective, the PHC4 report exposes a difficult challenge. Ideally it will become a catalyst for positive cultural change within the health care system, but research confirms that behavior change is complex and that successful measures often rely on more than a single intervention. Removal of barriers to change, implementation of incentives, and improved multidisciplinary communication should aid in the process.[17] In our view, the report provides compelling evidence for the need to standardize the approach to decreasing HAI. Therefore, we urge hospital executives to examine their institutions' baseline infection rate and prioritize opportunities needed for improvement. For example, promotion of hand hygiene, education of staff, standardization of procedures and selective use of antibiotics carry a great cost savings

potential. As future Medicare reimbursement may be tied in part to infection rates, a commitment to a culture of safety could significantly impact the bottom-line of all hospitals.

We encourage all the stakeholders to review the data in the PHC4 report and the *AJMQ Supplement*, and we challenge other states to follow Pennsylvania's lead of tracking and reporting hospital-acquired infections. At the *AJMQ* press conference in Washington, DC PHC4's Executive Director, Marc P. Volovka noted, "There are still clouds on the horizon, but in Pennsylvania the sun is shining." Indeed, we know that "sunshine" is the best disinfectant.

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