Letters to the Editor

BIOTERRORISM PREPAREDNESS

The letter from Gazmararian and her colleagues on "Impact of Bioterrorism Preparedness on the Public Health Response to the 2003–2004 Influenza Vaccine Crisis" (*Public Health Reports*, November/December 2005, page 589) is a summary and analysis of responses to a survey of public health officials in eight southeastern states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) regarding their responses to the influenza vaccination shortages, including questions about the impact of funding for preparations related to bioterrorism (BT). Gazmararian et al. state that "the vast majority of state and county health departments indicated that BT funding did not hinder their ability to respond to influenza in the 2003/04 season." The letter also notes that respondents to the survey "reported one or more beneficial effects of BT-related funding, with the most common being improved risk communication or media relations capacity."

Gazmararian and her colleagues are distinguished public health professionals experienced in administering and analyzing surveys, so it is surprising that several important sources of bias are not acknowledged. The first is "selection bias." The survey was limited to states whose electoral votes went to President Bush in the 2004 election ("red states"). Would the results have been different if states that voted for Senator Kerry ("blue states") had been included in the survey? The second is "response bias." Were the responses influenced by concern that negative responses might cause funding agencies to reduce or cut off funding? Fear by even some respondents that their individual responses might become known to funding agencies would seriously bias the results. The third is "multiplicity bias." In a survey with multiple questions, there is a built-in increased likelihood that at least one response will support a hypothesis, even if the hypothesis is false. Reporting the results for "one or more" of a list of benefits allows a single benefit to skew the inference. What would the results have been if the standard for a positive evaluation of the program had been categorized to a slightly less generous "two or more" benefits? Further, the mere listing of "descriptions of how bioterrorism-funded activities supported their response to influenza" without indicating how many respondents contributed to that list obscures more than it reveals.

The observation that the majority of respondents "indicated that BT funding did not hinder their ability to respond to influenza in the 2003/04 season" is hardly an endorsement that BT funding helped. Moreover, our greatest concern is that the survey did not ask about "opportunity costs." For example, what would the responses have been if the officials surveyed had been asked, "If the support to your health department had not been categorically directed to bioterrorism preparedness, could general public health funding have been used more effectively to respond to influenza and to other urgent public health needs?" More specifically, the officials surveyed might have been asked, "If the most important use of BT funding was improved risk communication and media relations capacity, was that an effective public health use for the relatively large amounts of BT funding provided to your department?" Additionally the survey could have asked, "The 2003 campaign to offer smallpox vaccinations occurred in between flu seasons. Had the smallpox campaign coincided with an influenza season, how would it have impacted your ability to respond to influenza?"

We are pleased that Gazmararian and her colleagues cited our commentary in the *American Journal of Public Health*[1] as the basis for their statement that "some concern has been raised that it would not enhance public health capacity to respond to more common threats." But we think it should be noted that the cited commentary is but one of many articles, books, and presentations that have made similar points.[2–6]

In sum, the authors have chosen to highlight "important although limited positive effects" of BT preparedness, whereas a careful reading of their report suggests that if biases are accounted for, the findings might be more consistent with an opposite conclusion.

Hillel Cohen, MPH, DrPH[a]
Robert Gould, MD[b]
Victor W. Sidel, MD[c]

[a]Albert Einstein College of Medicine, Bronx, NY

[b]San Francisco Bay Area Chapter, Physicians for Social Responsibility, Berkeley, CA

[c]Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY

REFERENCES

1. Cohen HW, Gould RM, Sidel VW. The pitfalls of bioterrorism preparedness: the anthrax and smallpox experiences. Am J Public Health 2004;94:1667-71.
2. Cohen HW, Gould RM, Sidel VW. Bioterrorism preparedness: dual use or poor excuse? Public Health Rep 2000;115:403-6.
3. Elliott VS. Public health funding: feds giveth but the states taketh away. Amednews.com. Oct. 28, 2002 [cited 2003 Aug 31]. Available from: URL: http://www.ama-assn.org/sci-pubs/amnews/pick_02/hll21028.htm
4. Smith S. Anthrax vs. the flu: as state governments slash their public health budgets, federal money is pouring in for bioterrorism preparedness. Boston Globe 2003 Jul 29; C4.
5. Mulcahy N. Bioterrorism funds can't mitigate states' deep budget cuts (public health funding still down overall). OB-GYN News 2003 Feb 1; 1.
6. Levy BS, Sidel VW. Challenges that terrorism poses to public health. Levy BS, Sidel VW, editors. In: Terrorism and public health. New York: Oxford University Press; 2003.

DEPRESSION AND HIP FRACTURE

In his recent article "Depression and Hip Fracture Risk: The NHANES I Epidemiologic Follow-Up Study" (*Public Health Reports*, January/February 2005, pages 71–75), author Michael E. Mussolino documents his research about whether depression is predictive of fracture risk. The study concluded that "an association between high depressive symptomatology and hip fracture risk was observed. This study has the advantage of being based on a representative sample that included a relatively large number of subjects with depression compared to other studies; thus the results may be more generalized than those of previous studies" (p. 75).

Accounting for psychosocial ramifications is as important in health care intervention as the individual's physical condition. This notion has been demonstrated and reinforced throughout my college career in occupational therapy at Utica College. While reading Mussolino's article, I realized that health care practitioners, such as occupational therapy clinicians, must be sensitive to antecedent diagnoses as well as the current ones; in Mussolino's study it is depression to hip fracture. Mussolino considered other risk factors: age at baseline, gender, bone mineral density (BMD), smoker, alcohol consumption, and recreational physical activity (p. 73). My experience as a clinician and researcher has also provided insight into the importance of risk factors, past medical history, and current lifestyle choices such as the ones Mussolino outlined.

This article is informative, yet it suggests further studies. Another study that may extend Mussolino's work could evaluate the level of depression (high, intermediate, or low) after treatment (for example, follow-up studies of the level of depression of individuals who have experienced a hip fracture). An additional study could focus on depression in individuals with total hip replacements to determine the effectiveness of medical intervention on secondary or antecedent diagnoses. This would also provide evidence-based research for administrators or clinicians. Level of depression could be examined using the General Well-Being Schedule (GWB-D)—the same tool Mussolino used—pre and post surgery and intervention. Conclusions could then be drawn on the effectiveness of health care services in treating psychosocial concerns such as depression in an individual with an orthopedic impairment.

Another study could consider if pain is interrelated with depression. Mussolino cites studies supporting evidence of association between depression and BMD (p. 72). For clinical research it would be valuable to identify if individuals who experience pain pre or post surgery due to osteoarthritis, osteoporosis, or degenerative bone mass changes have increased levels of depression. Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."[1] One might conclude that an individual who experiences chronic pain from degenerative bone mass changes could have higher levels of depression pre and post surgery, compared to that of an individual who has acute pain due to a hip fracture. In addition, the findings of this study would add to evidence-based practices for occupational therapy practitioners and health care providers. Sound research in this arena would provide the information needed to incorporate the relativity of pain and depression into intervention planning. This could also provide information for clinicians, such as occupational therapy professionals, to manage and treat pain within this diagnosis while assisting administrators with employee education and training on pain, depression, and the probable relationship and impact on intervention.

Determining the level of depression in individuals who suffer hip fractures compared to that of individuals undergoing total hip replacement surgery could be the focus of yet another study. This study could examine differences between the levels of depression in individuals with acute sustained fractures and those patients undergoing elective total hip replacement. (One might conclude that an elective surgery, although invasive, is less traumatic to an individual due to the decision process, while an individual with an acute fracture would be affected by higher levels of depression for a more prolonged period due to a possible longer recovery phase.)

The limitations of Mussolino's study include, in his

words, confounding by variables that were not measured, in particular use of antidepressant medications. The study also suffered a loss of follow-up studies within the sample size (5.2%), resulting in a possible bias due to cohort exclusions (p. 74). Mussolino reported that another potential source of bias, incorrect diagnosis of hip fracture, "is unlikely on medical records, but may be more of a concern for death certificates" (p. 75). Quintana, Arostegui, Azkarate, and Goenaga concluded through their research of four hospitals that 13.7% out of 216 participants undergoing total hip replacement surgery were considered to have been treated inappropriately or misdiagnosed by their physician.[2]

Pain was another confounding variable the study did not take into account. According to Verma and Gallagher, "depression is more likely to co-occur with chronic pain than with chronic illnesses without pain."[1] Mussolino's work also does not consider the etiology of hip fracture, resulting in another limitation. The American Occupational Therapy Association reports that one out of three Americans over the age of 65 sustain a fall each year.[3] In 2001, more than 1.6 million seniors were treated in emergency departments for fall-related injuries and nearly 388,000 were hospitalized.[4]

Additional studies in this arena will expand evidence-based research on depression, pain, hip fractures, and total hip replacements. This research will also inform evidence-based practice (from the expert, consumer, and research) that could substantiate or challenge the existing research. Further research might provide a means for change in practice framework and best practice theories for allied health professionals in ways to treat depression and/or pain. Increased research could be gathered on the validity and reliability of assessment tools such as the GWB-D or Randall Chronic Pain Scale.[5]

Further studies would raise awareness of the importance of co-morbid diagnoses such as depression, while creating more evidence-based research. As Mussolino emphasizes, it is essential to determine whether depression is predictive of a fracture, as it could change the outlook of intervention.

Shannon Digsby, COTA/L, OTS[a]

[a]Occupational therapy graduate student, Utica College, Utica, NY

REFERENCES

1. Verma S, Gallagher RM. Evaluating and treating co-morbid pain and depression. International Review of Psychiatry 2000;12:103-14.
2. Quintana J, Arostegui I, Azkarate J, Goenaga J. Evaluation by explicit criteria of the use of total hip joint replacement. Rheumatology 2000;39:1234-42.
3. American Occupational Therapy Association. AOTA fact sheet. Occupational therapy and falls prevention [cited 2005 Oct 21]. Available from: URL: http:// HYPERLINK "http://www.aota.org/feartured/area6/docs/FallsFact.pdf" www.aota.org/feartured/area6/docs/FallsFact.pdf
4. Centers for Disease Control and Prevention (US), National Center for Injury Prevention and Control. WISQARS. Nonfatal injury reports [cited 2005 Oct 21]. Available from: URL: http:// HYPERLINK "http://www.cdc.gov/nicpc/wisqars" www.cdc.gov/nicpc/wisqars/
5. Neistadt M. Occupational therapy evaluations for adults. Philadelphia: Lippincott; 2000.