

## Surgical Comanagement for Hip Fracture: Time for a Randomized Trial

Corita Vincent, MD, MSc<sup>1</sup>, Peter Cram, MD, MBA<sup>1,2,3\*</sup>

<sup>1</sup>Department of Medicine, University of Toronto, Toronto, Canada; <sup>2</sup>Institute for Health Policy, Management, and Evaluation, University of Toronto, Toronto, Canada; <sup>3</sup>Division of General Internal Medicine and Geriatrics, Sinai Health System, Toronto, Canada; <sup>4</sup>Division of General Internal Medicine and Geriatrics, University Health Network, Toronto, Canada.

The growth in the hospitalist workforce has been one of the major trends shaping US (and international) inpatient medicine over the last 25 years.<sup>1</sup> Hospitalists' clinical work is typically split among serving as the primary attending for admitted patients (termed "most responsible physician," or MRP, in Canada), outpatient clinics, medical consults, and comanagement.<sup>2,3</sup> Comanagement typically involves the cooperative efforts of hospitalists and subspecialists ranging from general surgery to orthopedics to medical oncology. Comanagement differs from typical medical consultation because comanaging hospitalists are commonly given broad discretion to directly write orders, manage intercurrent medical illness (eg, hyperglycemia), and even discharge patients from the hospital when appropriate. There can be significant heterogeneity in how comanagement is implemented across institutions.<sup>4</sup>

With respect to hip fractures, literature suggests that subspecialists value comanagement and that comanagement is associated with reductions in hospital length of stay, timelier surgical repair, and potential cost savings for hospitals.<sup>5-7</sup> Some studies have found reductions in in-hospital and 1-year mortality (including one meta-analysis on ortho-geriatric comanagement)<sup>8</sup> and complications,<sup>9</sup> but others have found no such benefits.<sup>10,11</sup>

In the current issue of the *Journal of Hospital Medicine*, Maxwell and Mirza used data from the National Surgical Quality Improvement Program (NSQIP) Participant Use Data File (PUF)—specifically, from the Hip Fracture PUF—to investigate the relationship between comanagement and mortality and major morbidity among more than 15,000 patients hospitalized with hip fracture.<sup>12</sup> The investigators did not find that comanagement was associated with a reduction in either morbidity or mortality.

Several factors give gravitas to their analysis. First, the NSQIP PUF is an extremely rigorous data source for evaluating surgical outcomes. Originally developed in the US Veterans Health Administration in the 1980's to standardize data elements needed for quality improvement and hospital benchmarking, today NSQIP involves more than 600 hospitals in 9 different countries

submitting hundreds of thousands of cases annually.<sup>13</sup> Second, the authors recognized that the comanagement and noncomanagement groups differed substantially and used propensity score matching in an effort to account for these differences. Surprisingly, they found that the comanagement had significantly higher mortality and morbidity than the noncomanagement group, even after propensity score matching.

These results are important in testing the assumption of the inherent "good" of comanagement. Does this study provide definitive evidence that surgical comanagement does not improve outcomes? We would suggest that this study be interpreted in light of certain considerations.

First, comanagement is a broad term including a variety of operationalizations, such as geriatrician vs hospitalist comanagement, involvement before vs after surgery, and varying divisions of responsibility between the surgical and medical services. Research indicates that successful comanagement models tend to incorporate multidisciplinary teams, embrace the "dual primary caregiver" nature of comanagement, and shared goals among primary caregivers, specifically anticipating prevention of complications.<sup>5</sup> The NSQIP data do not provide sufficient granularity to allow for investigation of these crucial nuances that may ultimately determine whether comanagement programs are effective. Additionally, comanagement often (but not always) coexists with a care pathway, and so deficiencies in or absence of a care pathway add additional heterogeneity to the comanagement group which is not captured in the NSQIP PUF.

Second, it is important to consider the potential for unmeasured confounding. The propensity score matching did seem to achieve balance in the distribution of most baseline variables between the comanagement and noncomanagement groups, though differences remain for certain covariates. A key assumption in propensity score matching (and in observational research more broadly) is the principle of "no unmeasured confounders" (ie, the assumption that all variables that might influence treatment assignment and outcomes are measured).<sup>14</sup> For the NSQIP PUF this absence of unmeasured confounders is clearly not the case because hospital and surgeon variables are omitted from the PUF for reasons of confidentiality. Inclusion of hospital and surgeon variables could well be important because outcomes may vary by hospital or by surgeon, and simultaneously, different hospitals and different surgeons will have different protocols and preferences regarding comanagement. Furthermore, confounding is virtually guaranteed to the extent that hospitals and surgeons do not randomly

\*Corresponding Author: Peter Cram, MD, MBA; Email: peter.cram@uhn.ca; Telephone: 647-767-5508; Twitter: @pmcram.

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assign hip fracture patients to comanagement or usual care. The finding of higher mortality in the comanagement group, even after adjustment and matching, suggests the presence of residual confounding. Even if residual confounding is the explanation for the worse outcomes observed in the comanagement group, the finding of a lack of benefit of comanagement is noteworthy and should not be dismissed out of hand.

Limitations aside, these results suggest a need for humility among strong proponents of comanagement, at least in the hip fracture population. While it may still be reasonable to claim that comanagement improves efficiency and may enhance certain aspects of patient or physician satisfaction, the

lack of an impact on mortality highlights a need to examine the benefits of these programs more carefully. From a clinical perspective, hospitalists and orthopedic surgeons should consider which hip fracture patients might be most likely to benefit from comanagement.<sup>4</sup> From a research perspective, the current study highlights the pressing need for a randomized trial of comanagement to definitively address the effectiveness of these programs.

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