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Invited Commentary

Commentary on "the association of hospital Medicare beneficiary payer-mix, national quality rankings and outcomes following hepatopancreatic surgery" – The need for better data to identify quality

Paredes et al. report on the impact of hospital payer-mix on outcomes amongst Medicare beneficiaries-specifically on the association of high hospital level Medicare patient-mix on short-term postoperative outcomes undergoing hepatopancreatic (HP) surgery.[1] The intent of this study was to determine if the current measured outcomes will be helpful in identifying centers for excellence for geriatric patients undergoing high risk operations in high and low payer mix hospitals. The authors used the Medicare Standard Analytic Files, a database often used to identify this patient population, and includes the following variables: Current Procedural Terminology (CPT) codes, Healthcare Common Procedure Coding System (HCPC) and International Classification of Disease (ICD 10) codes. This database is a large and robust dataset which included more than 55 million Americans in 2015.[2] Furthermore, 98% of those 65 years or greater have Medicare, making this data quite generalizable. One of the limitations of using SAFs in clinical research includes the lack critical data elements such as type of cancer, staging, biochemical parameters and severity of illness. Due to these limitations in ICD 10 codes, the authors stated the difficulty in adjusting for types of surgical resection. Additionally, the hospital level data does not account for non-Medicare patients undergoing similar surgeries.

The authors identified high Medicare patient-mix hospitals generally had better quality indicators versus low/average Medicare patient-mix hospitals. This included being ranked higher than the national average relative to safety of care ($n = 304$, 29.4% vs. $n = 228$, 38.1%; $p < 0.001$) and timeliness of care ($n = 159$, 15.4% vs. $n = 157$, 26.3%; $p < 0.001$). However, despite superior quality ratings, treatment at high Medicare patient-mix hospitals did not yield improved post-operative outcomes following HP surgery among Medicare beneficiaries. Patients who underwent a HP operation at a high Medicare patient-mix hospital had a high post-operative complication rate (1.13; CI 1.04–1.22) as well as 30-days mortality (OR 1.37; CI 1.23–1.53). These findings were noteworthy as they identified a dissonance between quality ratings and outcomes emphasizing the need for quality assessments that serve as an accurate predictive model for outcomes. The study demonstrates that current quality markers are insufficient and the need for improved, relevant and applicable quality metrics as well as age adjusted outcome measurements.

The Overall Hospital Quality Rating uses 7 main categories to determine quality amongst institutions (Mortality, Safety of Care, Readmission, Patient Experience, Effectiveness of Care, Timeliness of Care and Efficient Use of Medical Imaging), however as suggested by the author they are inaccurate predictors of outcomes and thus lack value as a marker for quality.[3] Quality improvement measures lack tangible preoperative quality metrics for the geriatric patient population as well as population specific post-operative outcome measurements to clearly delineate morbidity.

Geriatric patients have distinctive physiological thresholds which require a comprehensive and extensive preoperative workup and subsequent complex postoperative recovery. Outcome measures of importance for Medicare aged patients and their families include quality of life, maintenance of independence, return to baseline functional status, return to baseline living environment and discharge destination.[4] Population based complications should include those commonly seen in the elderly population including post-operative delirium, development of pressure ulcers, falls, and maintenance versus decline of functional or cognitive status utilizing (utilizing Activity of Daily Living (ADLs)). Therefore, quality metrics should be targeted to prevent poor post-operative outcomes such as preoperative geriatric risk stratification to include cognitive workup, Frailty Index (FI), nutritional assessment and functional status evaluation. Min Sun Jeon et al. looked at 30- day readmission for the elderly and its association with pre-operative medications. Preoperative discontinuation-requiring medications were found to be a significant risk factor for readmission.[5] Choi, K. S., et al. identified polypharmacy as a risk factor for post-operative institutionalization in those greater than 65 years of age.[6] Finally, Young Mi Jeong et al. identified that delirium-inducing medications (DIMs) and potentially inappropriate medications (PIMs) were significant risk factors for post-operative delirium in the elderly.[7] This greatly stresses the importance of medication management prior to surgery, the outcomes of inappropriate or negligent preoperative optimization, and the impact it has on patient recovery following surgery in the elderly patient population. One could (and should) argue the importance of an established early post-operative physical rehabilitation plan as a preoperative quality measure is likely far more relevant to outcome than whether the patient simply survives after the operation.

Using the Donabedian conceptual model for the evaluation of health care quality, Yu et al. emphasize relevant procedure-specific outcome measurements are lacking. Continuing to rely on perioperative morbidity and mortality may not provide the most

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robust picture of surgical quality.[8] Merath et al. studied the trifecta of care (Safety Grade, Magnet Recognition, and Leapfrog Minimum Volume Standards) in which Leapfrog was the strongest predictor of mortality, however Wasif et al. suggest the use of case volume cutoffs alone does not correlate well with actual hospital mortality.[9,10]

Therefore, "Textbook Outcome (TO)," a compound metric based on multiple endpoints, serves as a more accurate reflection of a specific disease process. Van Roessel et al. identified TO as a quality measure in pancreatic surgery defined by the absence of postoperative pancreatic fistula, bile leak, postpancreatectomy hemorrhage (all ISGPS grade B/C), severe complications (Clavien-Dindo $\geq$ III), readmission, and in-hospital mortality.[11] Textbook outcome (TO) is an emerging concept within multiple surgical subspecialties, which defines a "standardized, composite quality benchmark based on multiple postoperative endpoints that represent the "textbook" hospitalization."[12]

Dr. Paredes and her colleagues worked with a large database with the understandable limitations that they elucidate in their paper. Ultimately, the devil is in the details of determining "geriatric centers of excellence". The current model being proposed for centers for geriatric excellence is based on the total number of Medicare patients being served at a hospital and may only be helpful in identifying structural elements needed to achieve poorly defined excellence based on the bare minimum of outcomes (survival and monetary cost). Designation should be based on criteria more specific to the procedures performed and providing guidance to the expectations of the patients and providers than simple payor data to achieve excellent geriatric outcomes. Dr. Paredes and her colleagues have highlighted lack of clarity in the data we are using to determine excellent outcomes. Back to the drawing board!

Declaration of competing interest

No Conflict of Interest.

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