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Defining "The Elderly" Undergoing Major Gastrointestinal Resections: Receiver Operating Characteristic Analysis of a Large ACS-NSQIP Cohort

To the Editor:

We have read with great interest the report by Kurian et al¹ in which they attempt to determine age cutoffs for the "at-risk" elderly undergoing major gastrointestinal surgery. Using a large ACS-NSQIP cohort, they were able to determine an "optimum age" predicting mortality risk. With the population in most Western countries ageing rapidly, an increasing number of elderly patients will require medical assistance. The impressive data shown by this group not only provide insight into the surgical risk in the elderly patients but also give suggestions on how to adequately inform patients on treatment decisions.

We believe that an important aspect of performing surgery in the elderly patients is not sufficiently addressed in this publication. It is widely accepted that the predictive value of age on mortality in the elderly patients is limited and does not encompass the complexity of this patient category. The accumulation of health problems at an advanced age is highly heterogeneous and therefore individual risks cannot be assessed on the basis of age alone. In our center, we have extensive experience in treating the elderly patients. Our research on the outcome and survival in high-risk patients (onco-geriatric and vascular surgery) has shown that this is independent of age. In fact, when stratified merely by age, we found no difference in outcome and survival in octogenarians after both aortic and carotid surgery.^{2,3}

The outcome of major surgery in the elderly patients seems to be not just a process of combined comorbidities and high age but more of frailty; the loss of resources in several domains of function, which leads to

a declining reserve capacity for dealing with stressors.⁴ The concept of frailty captures the aspect of the heterogeneous rate of ageing. Multiple screening tools for frailty are available, validated, and highly predictive for complications and should therefore be used as an individual indicator for the outcome of major surgery. In our center, we have extensive experience with the Groningen Frailty Indicator, which screens for loss of functions and resources in 4 domains: physical, cognitive, social, and psychological.⁴ The recently developed G8 questionnaire is another screening tool, which was developed on the basis of the Mini Nutritional Assessment and includes 7 items as well as age. Both tools have been validated for various patient groups including onco-geriatric patients.⁵ Another assessment tool, the Hopkins Frailty Score, has been found to be highly predictive for postoperative complications.⁶ Not only is it applicable across multiple surgical oncology disciplines but it is also feasible in a busy patient setting.⁷

In our opinion, frailty is a better individual indicator for the outcome of major surgery than age. Therefore, guidelines to adequately inform patients on treatment decisions should be based on frailty and not on age alone.

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Reply:

We thank you for giving us an opportunity for responding to the letter from Meerdink et al. We appreciate not only their interest regarding our research but also their contribution to the surgical literature on the geriatric population. We completely agree that chronological age by itself is a comparatively poor discriminant for predicting surgical outcomes in the individual patient. The surgical community has come a long way in understanding aging and its effects on surgical outcomes. Gone are the days when patients are refused for surgery solely on the basis of their chronological age. Indeed adequate surgical outcomes have been demonstrated in highly selected cohorts of elderly patients undergoing the most complex of surgical procedures.

Our research does not attempt to undermine the progress that has been made in the perioperative care of elderly patients. Indeed we have attempted to answer a basic question—"When do humans age from a surgical perspective?" Researchers either arbitrarily choose definitions of the "elderly" or borrow from retirement age cutoffs set many decades ago. For instance, the reports chosen by Meerdink et al (see refs 3, 4 in the original article) an arbitrary age pivot (by the authors own admission) of 80 years was used to divide the population into 2 groups.^{1,2} The reason they chose this age cutoff was because it "seems a good cutoff point for analysis because, although arbitrary, current literature has used this cutoff point in binary analyses." Our study demonstrated a rapid increase in mortality in patients 75 years or older, hence possibly identifying the "very elderly." If 75 years or older is the true definition of the "very elderly," it is possible that using the 80-year pivot, there would be "very elderly" patients in both groups hence diluting the difference in outcomes between the groups.

The other reports (see refs 5–7 in the original article) chosen by the group again demonstrate the arbitrary nature of defining the elderly patients. These studies were designed to establish the significance of frailty in the surgical patients older than 65 years.^{3–5} Our report, however, demonstrates the initial inflection in the mortality curve 50 years or more (perhaps defining the beginning of aging). Going by this definition, studies utilizing definitions of the elderly based on retirement ages (>60 years or >65 years) will ignore a large group of patients 50 years or older who are in the "at risk" population. In the study by Revenig et al, they looked at the incidence and predictive value of frailty in

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all age groups, including those younger than 60 years.⁶ They obviously found that frailty does exist below 60 years, however the predictive value of frailty as a discriminant of adverse outcomes in the younger age groups was not equivalent to the older age groups. This highlights the inadequacies in frailty indices that have been designed in populations older than 65 years.

In conclusion, we agree that chronological age by itself is a comparatively poor discriminant for adverse surgical outcomes in the individual patient. Global indices such as frailty have superior prognostic value. However, it is clear that chronological age will continue to be used in designing studies and defining the “at risk” surgical population due to the ease in obtaining this variable. Hence, it is imperative that the surgical community recognizes that the present definition of “the

elderly” might be archaic, borrowed, or arbitrary. Standardizing the surgical definition of aging will enable the collation of data and the development of strategies to predict and improve postoperative outcomes in the elderly patients.

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