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Complex Ventral Hernia Repair Using Components Separation With or Without Biologic Mesh: *A Cost-Utility Analysis*

To the Editor:

We commend Dr Chatterjee and colleagues for advancing the discussion beyond short-term comparisons of acquisition cost or profit and loss assessments, common in a number of recent papers assessing financial implications of using biologic acellular dermal matrices for surgical repair in complex ventral hernias. The authors have raised the bar to a broader "value for money" framework, and to our knowledge, this is the first analysis that considers the impact of using biologic mesh to patients in terms of an assessment of quality-adjusted life years (QALYs).[1]

We would encourage the authors to further advance this debate and consider the following areas, which we feel underestimate the benefits that biologics, and specifically Strattice, bring to complex ventral hernia repair.

The authors used surgeons from one academic institution to estimate utility rather than asking patients or potential patients directly. Although surgeons have deep insights into their patients, it is likely that they underestimated the day-to-day, ongoing impact on the patient's pain due to surgery or pain from downstream complications, the inability to maintain typical family or other social interactions, the impact on productivity from the surgery and downstream complications, and so forth. Moreover, the period of impact on QALYs is likely well beyond 30 days to 3 months, which was assumed for this analysis. For example, patients were assumed to recover from complications within 3 months, which may be too short for complications such as fistula formation. When used together, the problem is likely compounded, which further minimizes the difference between benefits and deleterious outcomes that patients actually experience.

A quick comparison of the last columns in Tables 1 and 2 highlights differences in the populations in terms of Ventral Hernia Working Group (VHWG) hernia grades, which raises the problem of confounding by severity (ie, the procedure used is not independent of the population severity). It is highly probable that subjects in the CS-alone group were less severe and had fewer comorbid conditions than the CS with biologic mesh group. Thus, the probability of events is not independent of group assignment and can be reasonably expected to occur with less frequency in the CS-alone group than one might expect had the populations been more closely matched. A deeper examination of the individual references cited in Tables 1 and 2 shows that, although VHWG ranges might overlap, the VHWG distributions in each group were different; the CS-alone group tends to include a greater proportion of patients with lower VHWG grades, with the converse being true for the CS with biologic mesh group. Specifically, patients in the CS-alone group were more likely to have their midline closed and abdominal wall reconstructed due to smaller defect sizes. Conversely, the CS with biologic mesh group likely had greater defects, and in some cases, bridging with the biologic was undertaken. This introduces a confounding problem that minimizes the differences in outcomes when CS alone is compared with CS with biologic mesh. A systematic literature review and meta-analysis of the available data with attempts to control for population differences may help to clarify these data.

The use of $50,000/QALY, although commonplace, is somewhat arbitrary[2] when used to assess "value for money"; no basis for its use in this regard was provided by the authors. Moreover, to our knowledge, the use of $50,000 has remained static since the early 1990s and has not been adjusted for inflation; if such a threshold was applied, many of the therapies commonly used today, particularly in oncology, would not be funded, let alone considered good "value for money."

The use of reimbursement rates is certainly one method of assessing costs. However, reimbursement rates essentially reimburse for the "average" case. There are certainly some adjustments for complications and comorbidities; however, these are unlikely to take into account the difficulties and challenges associated with complex hernia repair. Without a detailed costing assessment, the reimbursement rates certainly give important insights, but, again, they tend to minimize differences between treatment groups. When the aim of the analysis is to understand the impact of decisions on resources, the use of an "average" case will invariably blunt the importance of an effective treatment.

Finally, we would recommend a more thorough probabilistic and multivariate sensitivity analysis to provide a more nuanced interpretation of the findings. A more detailed assessment of sensitivity will provide decision makers with a distribution or probability of cost-effectiveness rather than a simple "yes" or "no" to the question: does the use of a biologic in ventral hernia repair represent good "value for money?"

The "value for money" question is the right question and we applaud Chatterjee and colleagues for undertaking this difficult assessment, despite the limitations of the data. Given the limitations noted previously, we would strongly encourage building upon and advancing this work to truly understand the "value for money" with biologic use.

David Macarios, BSc, MBA (HSM)
Michael Franz, MD, FACS
Anne Marie Dawidczyk, BSc
LifeCell Corporation
95 Corporate Dr
Bridgewater, NJ 08807
dmacarios@lifecell.com.

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2. Grosse SD. Assessing cost-effectiveness in healthcare: history of the $50,000 per QALY threshold. *Expert Rev Pharmacoecon Outcomes Res*. 2008;8: 165–178.

Complex Ventral Hernia Repair Using Components Separation With or Without Biologic Mesh: *A Cost-Utility Analysis: Reply*

To the Editor:

We would like to thank Mr. Macarios and colleagues for their excellent letter encouraging discussion in the area of cost-utility analysis. As health care reform evolves, this type of research will hopefully guide policy reform that advocates rational usage of health care technology and practice from an economic perspective without the compromise of health care quality.

Mr. Macarios and colleagues bring up some important discussion points beginning with the choice of surveying doctors/surgeons when obtaining utility scores (that certainly effect quality adjusted life years gained as a measure). We would argue that doctors would be one of the best sources to obtain utility scores. Their very occupation involves investing emotionally and professionally in the outcomes of the patient, and when complications do occur, surgeons have the responsibility to treat the patient the best way they are able. The duration and impact of complications on patients are well comprehended by surgeons as