hospitalization was also reduced in the intervention arm ($75,180.27 ± $12,236.02 vs. $51,293.46 ± $4,282.71; p = 0.067), although this did not achieve statistical significance. A nonsignificant reduction in in-hospital mortality was also observed (35.2% vs. 26.4%; odds ratio: 0.66; 95% confidence interval: 0.42 to 1.03; p = 0.085). After adjusting for Acute Physiology and Chronic Health Evaluation II score, all noted differences remained robust. Importantly, significant reductions in mortality (odds ratio: 0.40; 95% confidence interval: 0.24 to 0.65; p < 0.001) became apparent.

Only 28% of CICU directors believe that implementing a full-time cardiac intensivist model is feasible at their respective institutions, largely because of an insufficient number of available cardiac intensivists (3). In that same survey, 81% of directors identified a potential benefit to critical care trained physicians in the management of CICU patients (3). Because few accredited dual training pathways in cardiovascular and critical care medicine exist (4), the most feasible staffing model at this time may be the one described herein.

Our study had several limitations. Although these data may be applicable to other level 2 CICUs at tertiary care referral centers, their implementation may not be consistent in other settings. Although our data were consistent in both adjusted and unadjusted analyses, multicenter, cluster-randomized outcomes studies will better parse the clinical and cost effects of a critical care consultation service.

We found that the implementation of a dedicated intensivist consult service for mechanically ventilated CICU patients was associated with significant reductions in CICU LOS, total hospital stay, duration of mechanical ventilation, and mortality. Given its associated improvements in CICU care, this staffing model warrants further study.

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Early Revascularization in NSTE-ACS

Insights From the ICTUS Long-Term Follow-Up

We read with interest the findings of Hoedemaker et al. (1) regarding the 10-year follow-up from the ICTUS (Invasive Versus Conservative Treatment in Unstable Coronary Syndromes) trial investigators, who did not observe a reduction in long-term mortality or spontaneous myocardial infarction in non–ST-segment elevation acute coronary syndrome (NSTE-ACS) patients undergoing an early invasive strategy. As the authors noted, these findings corroborate and extend similar findings from the RITA-3 (Randomized Intervention Trial of unstable Angina) long-term follow-up study (2). Such neutral findings of late benefit for the routine early invasive strategy in NSTE-ACS subjects have reasonably led to questions of whether current guidelines favoring this approach should be re-evaluated (3).

When interpreting trials such as ICTUS and RITA-3, it is essential to underscore that they compared initial *diagnostic* strategies, not early *revascularization* per se, versus optimal medical therapy. Individual site operators made revascularization decisions, and neither procedural details nor anatomic findings were consistently reported. Undoubtedly, some NSTE-ACS patients benefit from revascularization for high-risk anatomic coronary disease discovered by early coronary angiography. However, it also appears that not all early revascularization procedures for NSTE-ACS result in improved outcomes, as the ICTUS results demonstrate (1). In fact, a reasonable interpretation is that the additional 22% of patients who underwent revascularization in the early invasive arm of ICTUS

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gained little incremental benefit in outcomes but were exposed to the potential risks of revascularization (e.g., bleeding, periprocedural myocardial infarction, vascular complications). Thus, it is possible that this subset of patients would have fared just as well without revascularization, especially given the significant advances in contemporary optimal medical therapy over the past 2 decades.

In summary, the ICTUS findings suggest that much remains unknown about which patients benefit from early revascularization in NSTE-ACS. A reconsideration of this treatment premise with updated observational and trials data examining clinical outcomes is warranted. If ICTUS is a guide, the results may prove surprising.

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REPLY: Early Revascularization in NSTE-ACS

Insights From the ICTUS Long-Term Follow-Up

We thank Drs. Schulman-Marcus and Boden for their interest regarding our recent publication showing long-term comparable outcomes after a routine invasive versus selective invasive treatment strategy in non-ST-segment elevation acute coronary syndrome (NSTE-ACS) (1).

In their letter, they underscore the fact that trials such as ICTUS (Invasive Versus Conservative Treatment in Unstable Coronary Syndromes) compare initial diagnostic strategies, not early revascularization, versus optimal medical therapy. This comment is of paramount importance in a comparison of the ICTUS results with those of other randomized trials that did show a mortality benefit with routine intervention. If the ICTUS data are analyzed retrospectively and actual revascularization is compared with optimal medical therapy, actual revascularization was associated with lower mortality and fewer myocardial infarctions (2). However, in a comparison of routine invasive versus selective invasive diagnostic (or treatment) strategies, comparable outcomes are observed. Although trials showing a benefit of a routine invasive strategy have a comparator strategy arm more closely resembling optical medical therapy, in the ICTUS trial, the comparator selective invasive strategy leads to in-hospital revascularization in 40% of patients.

Although we agree that revascularization is associated with procedure-related adverse outcomes, no differences in bleeding were observed between a routine invasive and selective invasive strategy. Procedure-related myocardial infarction was significantly more common with routine intervention but not related with long-term mortality (3).

Therefore, we believe that neither harm nor benefit is associated with routine intervention in NSTE-ACS. However, most of these trials were performed more than a decade ago. It is time for an adequately powered trial comparing a routine invasive with a selective invasive strategy in the current era of radial access, drug-eluting stents, high-sensitivity troponin assays, and novel pharmacological therapies. Novel imaging methods may support identification of NSTE-ACS patients with a high-risk anatomic coronary disease who might benefit from routine revascularization.

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