## Clinical Technology and Glucose Management

*To the Editor:*

Implementation of perioperative glucose management bundles[1] through integration of technology with clinical decision support systems was recently presented by Ehrenfeld *et al.*[2] Although their results suggest an association between optimal glucose control and reduction in surgical site infections, the authors did not clearly discuss whether the implementation of the glucose bundle was unique or associated with other quality improvement initiatives earlier or concurrently initiated with the study. In addition, the glycosylated hemoglobin (HgbA1C) value, after the propensity score matching, is missing from table 2 in Ehrenfeld *et al.*

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### Competing Interests

The author declares no competing interests.

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*In Reply:*

We would like to thank Dr. Cattano for his comments regarding our article, "A Perioperative Systems Design to Improve Intraoperative Glucose Monitoring Is Associated with a Reduction in Surgical Site Infections in a Diabetic Patient Population."[1] Our local implementation of the glucose bundle primarily focused on (1) implementation of intraoperative decision support, (2) departmental agreement around the utility of intraoperative glucose monitoring, and (3) broadened availability of intraoperative glucose point-of-care testing. The implementation of this bundle was a free-standing initiative, not linked to any other quality improvement initiatives that occurred during the study time course. Glycosylated hemoglobin (HgbA1C) was only available for a subset of patients: 810 (20%) preintervention and 3,088 (26%) postintervention. HgbA1C was therefore not included in the propensity score because matching on HgbA1C resulted in a dramatic decrease in the number of matched pairs.

### Competing Interests

The author declares no competing interests.

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## Perioperative Pain Management for Total Knee Arthroplasty: Need More Focus on the Forest and Less on the Trees

*To the Editor*:

We read with interest the recent network meta-analysis by Terkawi *et al.*,[1] which focuses on pain management modalities for patients undergoing total knee arthroplasty. The authors conclude that the combination of femoral and sciatic nerve blocks provides the best analgesia.[1] Although some may suggest that this study[1] warrants a change in clinical practice,[2] we believe that these results should be interpreted with caution. It is not surprising that anesthetizing multiple nerves is superior to blocking a single nerve. However, the authors' preferred intervention is associated with the highest incidence of peroneal nerve palsy (7.6%) and patient falls (2.28%).[1] Readers should be aware that the authors excluded studies that combined multiple analgesic modalities.[1] However, combining peripheral nerve block with periarticular injections offers advantages.[3] Additionally, the authors' rehabilitative outcomes were limited to range of motion and degree of flexion[1] at 72 h. These may have been measured and documented differently at various institutions (*e.g.*, passively, actively with/without assistance, while on a continuous passive motion machine). In addition, range of motion and degree of flexion at 72 h may not correlate with long-term outcomes. Ambulation distance and active measurements were not reliably analyzed by network meta-analysis yet play critical roles for meeting discharge criteria.

So how should readers interpret this study? We believe that one size does not fit all. Previous studies have already revealed the heterogeneity of anesthetic practice for total knee arthroplasty patients. Memtsoudis *et al.*[4] have shown that most total

knee arthroplasty patients in the United States (76.2%) receive general anesthesia alone, whereas only 12.1% receive any type of peripheral nerve block. Given these data, recommending a complex combination of both femoral and sciatic nerve blocks is totally impractical and does not improve access. Rather, introducing a single peripheral nerve block intervention in the context of multimodal analgesia may be more achievable.

Centers with an established multimodal analgesic total joint pathway have recently seen an essential shift in the application of peripheral nerve block for postoperative analgesia in the total knee arthroplasty patient with the implementation of the adductor canal block. Routine use of femoral[3] and sciatic nerve blocks for pain control conflict with the goals of early active mobility and may delay diagnosis of perioperative common peroneal nerve injury, which can occur in 0.3 to 4% of patients.[5] If patients are already receiving multimodal analgesia, peripheral nerve block, and periarticular injections,[6] sciatic block may not offer added benefit.[7]

Total knee arthroplasty clinical pathways that combine multimodal analgesics with continuous peripheral nerve block have already been shown to reduce hospital length of stay[3] and improve early participation in physical therapy.[8] It seems evident that the pathway, and perhaps not the individual items themselves, is most important. We believe the more critical question that still needs to be answered is how to best tailor a multimodal total knee arthroplasty clinical pathway to a specific institution and patient population to provide the best pain control, promote early ambulation, improve patient satisfaction, and facilitate timely discharge.

## Competing Interests

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*In Reply*:

Webb *et al.* note our conclusion that "the combination of femoral and sciatic nerve blocks provides the best analgesia"[1] and assert that it is "not surprising that anesthetizing multiple nerves is superior to blocking a single nerve." In fact, it was hardly a forgone conclusion that sciatic nerve blocks are necessary, because femoral nerve blocks alone work fairly well and might have proven sufficient, especially when combined with supplemental nonopioid systemic analgesics. Our results clearly show that sciatic nerve blocks significantly augment the benefit of femoral nerve blocks, and—importantly—quantify the effect magnitude.

Webb *et al.* comment that the incidence of transient peroneal nerve palsy was high in combined femoral-sciatic nerve blocks (7.6%). It is important to recognize that this fragile estimate was based on only six episodes in the femoral-sciatic group and was nearly the same as after periarticular infiltration (6.4%). Given how infrequently peroneal nerve palsy was reported in our underlying studies and the transient nature of the condition, it seems ill-advised to select analgesic strategy based on this minor and rare outcome.

Adding sciatic blocks to femoral blocks might slightly increase the incidence of falls, especially when a continuous infusion is used (we reported an incidence of 2.3%). However, it is important to recognize that falls are common (about 3%) even when patients are not given nerve blocks, presumably because of difficulty bearing weight on the painful joint. Patient and staff education might be more important than whether a block is used. For example, Clarke *et al.*[2] report that a simple patient education program almost eliminates postarthroplasty falls. Webb *et al.* suggest substituting adductor canal blocks for femoral nerve blocks to reduce the risk of falls. Quadriceps strength is generally preserved with adductor canal blocks, but it remains unclear whether these blocks reduce the risk of falls after knee arthroplasty[3] and