Bland–Altman analysis for bias in estimates of scheduled *versus* actual times of operating room entry

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To the Editor,

Merchant compared scheduled *vs* actual times of operating room (OR) entry at British Columbia hospitals.¹ His Table 2 shows the frequencies of different time differences (e.g., –1 to –30 min was 12.69% of the 7,770 cases at Royal Columbian Hospital). His conclusion was “that, in the Fraser Health Authority, the anesthesia start time for electively slated patients is within one hour of the slated time in 87% of cases, and cases start more than 90 min early in only 0.6% of cases.”

Checklists for cohort studies include consideration of confounders because when confounding is present (as in virtually all observational studies), unadjusted percentages (i.e., the 87% and 0.6%) are biased and thus unreliable for use for *individual patients*. Merchant refers to “case mix, patient population, and surgical predictability” as potential confounders. Nevertheless, the principal confounder is the scheduled start time itself.² A case scheduled to enter the room at 8:00 AM is less likely to enter 90 min early than a case scheduled to enter the room at 4:00 PM.² (Readers interested in the mechanism of earliness and tardiness of case entry can refer to references ² and ³).

To investigate this potential further, one could perform a Bland–Altman analysis, where the absolute values of Merchant’s Table 2 differences are plotted on the vertical axis and the predicted (i.e., scheduled) OR times are plotted on the horizontal axis, with adjustment for workday

start times (e.g., start one-hour later than typical if meetings are held on Mondays).^{2,4}

Among the 7,770 cases at Royal Columbian Hospital, and among the 123,865 cases at all Fraser Health Authority hospitals, what were the Spearman rank correlations between the absolute values of the time differences seen in Table 2 and the “slated time of room entry” in units of hours from each hospital’s start of the workday? If either or both of these two Spearman correlations (one for the Royal Columbian Hospital and one for the entire data set) were substantive (e.g., > 0.3), then Merchant’s overall percentages would be sufficiently biased to influence decisions, compared with making different decisions by time of day and days of the week at each hospital. If applicable, and perhaps not as Merchant assumes because of hospitals’ policies, then modification is simple to implement in practice so that each patient need not have unnecessary fasting.^{2,3}

Conflicts of interest None.

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Editorial responsibility This submission was handled by Dr. Philip M. Jones, Associate Editor, *Canadian Journal of Anesthesia*.

This letter is accompanied by a reply. Please see Can J Anesth 2020; 67: this issue.

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