

Author's response to reviews

Title: Hospital mortality among major trauma victims admitted on weekends and evenings. A cohort study.

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Version: 2 **Date:** 21 May 2009

Author's response to reviews: see over



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The Journal of Trauma Management & Outcomes Editorial Team
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Re: MS: 8430439132653385: Hospital mortality among major trauma victims admitted on weekends and evenings. A cohort study.

Dear Editorial Team:

Thank you for your prompt review of our manuscript submitted to the *Journal of Trauma Management and Outcomes*. We have revised the article along the lines recommended by the reviewers. A point-by-point response is listed on the following pages. We trust that you will find the manuscript improved.

We look forward to hearing from you.

Sincerely Yours,

A handwritten signature in blue ink that reads "K. Laupland".

Kevin B. Laupland MD MSc FRCPC
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Reviewer's report

Title: Hospital mortality among major trauma victims admitted on weekends and evenings. A cohort study.

Version: 1 Date: 15 May 2009

Reviewer: Wendy Wahl

Reviewer's report:

The authors look at the effects of patient volume and time of day and week on outcomes in trauma patients. This has been studied in other single, centers, mostly reported from the United States. To my knowledge, this is the first study which looks at these particular issues for trauma patients in the Canadian healthcare system.

1) Unlike reports in medical patients, both the USA and now Canadian systems have shown that time of day or weekends does not negatively impact the care of critically ill trauma patients. Most authors believe that this is due to the presence of a "trauma team" who is present 24 hours each day, seven days each week. While the authors also support this model, are there other personnel who are increased as well? On inspection of their data, most trauma admissions occur late in the day. Are the trauma ICU's or other important sites (radiology CT scanners, etc.) staffed differently to accommodate this pattern?

RESPONSE: CT scanners are staffed 24-hours per day, and there is ready access to a trauma operating room such that these are not limited in any way after hours. In addition, 1-2 experienced attending Emergency department physicians are present for the initial trauma resuscitation 24-hours per day. After hours care in intensive care units in the region is reduced somewhat and has been the topic of a recent publication by our group. This is referenced for the interested reader. We have added text to the discussion to address these points.

2) In other studies, the presence of an attending physician (although required for trauma center verification by the American College of Surgeons) has not been shown to necessarily change outcomes. In some cases, outcomes were just as effective with a fellow present. This concept supports that it may be the system and the team which drives effective care, rather than a single individual. Do you have any data which would support or refute this concept (particularly in light of the long work hours cited for the attendings)?

RESPONSE: Trauma fellows are only sporadically available on call, and the attending trauma surgeon nearly always attends the trauma even in the presence of a trauma fellow. We have added this information to the discussion.

3) Since, in my understanding, most patients in the Canadian system are transported to major centers, which are fewer than in the USA, could the improved outcomes be because those who were really sick or unstable never made in to a tertiary trauma center? Is there any data about deaths prior to transfer?

RESPONSE: Unlike with our previous study published in the American Journal of Surgery (reference 21 in revised draft), we did not have access to pre-hospital

deaths and are therefore unable to address this issue. We have added text to limitations paragraph in the discussion to further this point.

Overall, this is a well-written and largely believable manuscript which supports the effectiveness of an in-house trauma team (which is a huge resource and potential expense). It does appear that based on this evidence, and that of others, that the concept and practice of trauma in this manner is uniquely able to manage the acute issues of patients better than that of other patients who may not have “teams” of experts available and waiting for them.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Reviewer's report

Title: Hospital mortality among major trauma victims admitted on weekends and evenings. A cohort study.

Version: 1 **Date:** 18 May 2009

Reviewer: Damon Scales

Reviewer's report:

Laupland and colleagues present a population-based cohort study examining the mortality of patients admitted following trauma hospitals in the Calgary (Alberta, Canada) region on weekends versus weekdays, and during regular working hours versus off-hours. Their main finding was that day or time of hospital admission was not associated with any mortality differences. Mortality depending on time of admission has been studied in multiple areas including critical illness, but the focus on studying outcomes of trauma patients in a region with a highly-developed regional trauma program make this contribution novel, unique, and important. Strengths of this study include its population-based scope, and the authors' use of appropriate and sophisticated analytical techniques. The main limitation is the restricted focus on mortality, and inability to draw inferences about non-mortality endpoints or complication rates that do not result in death. The study is well-written, and the discussion and conclusions are balanced and reasonable.

Major Compulsory Revisions: none

Discretionary revisions for authors:

1) Have you considered stratifying your cohort according to need for ICU admission? Since others (Wunsch et al) have demonstrated no difference in weekend versus weekday outcomes among patients admitted to ICU, it might be interesting to evaluate whether those trauma patients not requiring ICU admission have different outcomes depending on time or day of admission.

RESPONSE: There was no significant contribution to prediction of mortality related to ICU admission once ISS was taken into account in logistic regression model. We have previously undertaken a detailed analysis of after hours admission to ICUs in our region (including both admission and discharge times) and this article is referenced for the interested reader.

2) The authors mention in the discussion that testing and surgical procedures care occur on a 24/7 basis in the Calgary region. Is information available in your dataset to investigate whether procedural or testing volume (and timing) varied substantially depending on timing of admission (especially during the first hours following admission)?

RESPONSE: We do not have this information readily available. We have more explicitly stated this limitation in the last sentence of the discussion accordingly.

3) Please explicitly state in the methods section that only inpatient mortality was measured (if this is indeed the case)

RESPONSE: This is the case and we have now explicitly stated this in a dedicated sentence in the methods section (fifth sentence under data management and statistical analysis).

4) In the presentation of your results, would you consider presenting odds ratios with confidence intervals for your mortality comparisons?

RESPONSE: This is a cohort study, and while odds ratios can be calculated as for a case-control study, relative risk is the more appropriate statistic. We have added relative risks with 95% confidence intervals for the mortality comparisons in the text as requested.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests