Author's response to reviews

**Title:** Validation of the Provincial Transfer Authorization Centre database: a comprehensive database containing records of all inter-facility patient transfers in the province of Ontario.

**Authors:**

- Victoria Robinson (victoriar@gmail.com)
- Russell D. MacDonald (rmacdonald@basehospital.on.ca)
- Doug Manuel (doug.manuel@ices.on.ca)
- Vivek Goel (vivek.goel@utoronto.ca)

**Version:** 2  **Date:** 9 August 2006

**Author's response to reviews:** see over
Validation of the Provincial Transfer Authorization Centre database: a comprehensive database containing records of all inter-facility patient transfers in the province of Ontario. (MS: 1526368726887215)

Victoria Robinson
Russell D. MacDonald
Doug Manuel
Vivek Goel

Response to Reviewers

Reviewer 1 – Lisa Lix

<table>
<thead>
<tr>
<th>Major Compulsory Revisions</th>
<th>Response</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1. a) Did a single researcher conduct the chart review?</td>
<td>Yes, author VR did the entire chart review.</td>
<td>This information was added to the manuscript.</td>
</tr>
<tr>
<td>b) Sampling frame: What was the source of the sampling frame for facilities? How many facilities of each size and type were in the sampling frame?</td>
<td>The source of the sampling frame was the PTAC database. On page 4 it is stated that “The validation process included selecting a random sample of 100 patient transfer records from the PTAC database and comparing these records to the hospital record for the transferred patient from the sending healthcare facility.” In the sampling frame, the Greater Toronto Area (GTA), there are 261 health care facilities. During the study timeframe there were 183 facilities that had inter-facility patient transfers representing a total of 76,952 transfers or 21.4% of all of the transfers performed during the study timeframe. Of the 183 facilities, 20 were ‘large senders’, 11 were ‘medium senders’ and 152 were ‘small senders’. Of the 20 large senders there are 9 teaching facilities and 11 community facilities. Of the 11 medium senders, there are 8 teaching facilities and 3 community facilities. And of the 152 small senders, there are 14 teaching facilities.</td>
<td>Some of this information, as suggested, was included in Table 1.</td>
</tr>
</tbody>
</table>
c) Statistical Analysis: the kappa statistic provides a measure of agreement for categorical (i.e. binary or nominal) data. It is not clear how the demographic variables of last name and first name, or how the primary reason variable were defined as categorical variables. It is also not clear how age was defined as a categorical variable.

Since this is a validation study, each variable regardless of its type (i.e. binary, nominal, categorical) is considered binary. Each variable being validated from the PTAC database either agrees with the same variable in the hospital record or it does not. Since the kappa statistic provides a measure of association for nominal variables.

The kappa analyses were removed in favour of accuracy rates and sensitivity analyses.

| #2. a) Tables 1 and 2 should be combined. | Tables 1 and 2 were combined. |
| b) The labels of large-volume, medium-volume and small-volume senders should be adopted. | These labels were adopted. |
| c) Information on the expected and actual number of facilities samples could be combined in a single table. Why not also include information about the total number of facilities in the sampling frame in the table? | This information was added to the new Table 1. |

#3. Table 3 requires some clarification: a) Is the medical supervision variable dichotomous (i.e. yes/no) variable?

Yes.  This was clarified in the new Table 2.

b) The description of the emergent/non-urgent field implies there are three possible categories: emergent, urgent and non-urgent. Were three categories retained in the statistical analyses?

Yes, this variable is categorical – emergent, urgent and non-urgent. The categories were not retained in the statistical analyses because the comparison was considered nominal.

The three possible categories for this variable were clarified in the new Table 2.
<table>
<thead>
<tr>
<th>#4. Confidence intervals should be reported for the kappa and sensitivity statistics in Table 5.</th>
<th>The kappa statistics have been removed from the analyses and confidence intervals have been reported for the sensitivity statistics in new Table 4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5. The conclusion section of the manuscript is too brief. The authors should discuss the potential uses of the PTAC database for population-based research.</td>
<td>Since this manuscript was submitted, PTAC data has been used for research purposes and more plans have been made for further research. Future research plans for the PTAC database include modelling the relationship of the spread of disease to patient movement among hospitals using Monte Carlo simulation and the linking of patient transfer data to hospital outcome databases and other data sources.</td>
</tr>
</tbody>
</table>

**Minor Essential Revisions**

**#1:** Table 5 has two blank columns on the right side. These should be deleted.  
The blank columns were deleted.

**Discretionary Revisions**

**#1.** It would be helpful to know if the PTAC is modeled on any existing administrative data sources from other jurisdictions.  
As stated in the background, the PTAC was created and fully functioning within a matter of days during the SARS emergency. It was not modeled on any existing administrative source. What is so remarkable about this database is that it was established during an emergency situation and yet the quality of its data surpasses the quality of
many well established databases.

Reviewer #2

<table>
<thead>
<tr>
<th>Major Compulsory Revisions</th>
<th>Response</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The database is not sufficiently described. How many and what additional variables were there in the database? Did any of the additional variables contain relevant clinically detailed information that would be particularly valuable in research? What was “primary reason for transfer”; was it an ICD-9 code or was it in free text?</td>
<td>There were several additional variables that are relevant to the transport of patients and would not be contained in the hospital record, therefore, these variables were not validated against the hospital record. Only common variables were validated. The ‘primary reason for transfer’ variable is a free text variable and it is in the process of being transformed into a categorical variable to reflect ICD-10 chapters for research purposes.</td>
<td>The ‘primary reason for transfer’ variable was clarified as a free text variable.</td>
</tr>
<tr>
<td>More detailed examples of how this database could be useful in research would be helpful.</td>
<td>Since this manuscript was submitted, PTAC data has been used for research purposes and more plans have been made for further research. Future research plans for the PTAC database include modelling the relationship of the spread of disease to patient movement among hospitals using Monte Carlo simulation and the linking of patient transfer data to hospital outcome databases and other data sources.</td>
<td>Current and future research plans for PTAC data have been added to the conclusion section of the manuscript.</td>
</tr>
<tr>
<td>Five records were missing and consequently omitted from the analyses. This is a potential error. Why was the record missing?</td>
<td>As stated on page 5, there were 5 medical records that “could not be located by the institutions’ medical records departments”.</td>
<td>This was clarified in the paper.</td>
</tr>
<tr>
<td>Perhaps it was missing because the sending facility or name variables were wrong. Thus the disagreement rate could be considerably higher.</td>
<td>For all 5 missing medical records, there was a record of the patient having been at the institution electronically on the date of the transfer, but the physical medical record itself was missing and could not be located. Therefore, the disagreement rate in the analyses would not be higher.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>7th paragraph of Methods describes small transfer volume facilities as being less than 1000 when it should be less than 400.</td>
<td>This has been corrected.</td>
<td></td>
</tr>
<tr>
<td>Table reference numbers wrong.</td>
<td>These have been corrected.</td>
<td></td>
</tr>
<tr>
<td>Measures of agreement should be described in greater detail. What is error rate? It is surprising that low rates of agreement for variables such as ‘transfer service’ are associated with such high kappas. Is this because of how missing data were handled in the calculations?</td>
<td>The term agreement rate was changed to accuracy rate and explained. Error rate was also defined. Kappa statistics were removed from the results section. The authors agreed that sensitivity analyses, along with the accuracy rates, were the most appropriate validation measures.</td>
<td></td>
</tr>
<tr>
<td>Minor Essential Revisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of tables can be reduced by combining information from several of them.</td>
<td>The number of tables has been reduced from 5 to 4.</td>
<td></td>
</tr>
<tr>
<td>References are extremely limited and do not consider the extensive literature on quality of administrative data.</td>
<td>References are extremely limited because there is very little literature about inter-facility patient transfers in general and no literature about patient transfer databases or their</td>
<td></td>
</tr>
<tr>
<td>References have been added to the background section.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
validation. General literature on validation methodology of administrative databases was referenced in the background section.