Author's response to reviews

Title: A cost minimisation analysis of a telepaediatric otolaryngology service

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Author's response to reviews: see over
To the Editor  
BMC - Health Services Research  

Dear Sir / Madam,

Re: Response to reviewers - MS: 5266354814714116  
A cost minimisation analysis of a telepaediatric otolaryngology service

We are grateful for the comments provided by the reviewers. Our responses to all suggestions are described below.

Reviewer 1 – Yogesan Kanagasingam:

Major Compulsory Revisions
None

Minor Essential Revisions
None

Discretionary Revisions

1. In this study the authors conducted 88 tele-consultations for 70 patients. What happened to the patients who needed a full, face-to-face examination and what about these costs?

   The tele-ENT group was compared with the outpatient group (OPD-ENT) who travelled to Brisbane to have a face to face consultation. This was described in the paper (see Methods section, page 4 and page 5). The unit costs were compared and reported in the paper (see Results section, pages 7-10 and Table 3). The unit cost is the calculated cost “per consultation” not per patient, as one patient may have had multiple consultations. Patients who had a tele-consultation and a face-to-face examination (or vice versa) were counted in that group for that consultation.

2. The authors should explain why they have not included a cost-minimal analysis for other options like ENT specialist visits to Bundaberg. Can the patients have a full ENT examination via videoconference and not by a visiting specialist?

   The study design was to compare the cost of two methods of service delivery, i.e. tele-ENT service and FTF appointments at the Royal Children’s Hospital outpatient department (OPD-ENT). The majority of ENT patients usually travel to Brisbane for consultations or go to the local private ENT specialist. There are no visiting ENT specialists who provide outreach services in Bundaberg.

3. The authors claimed to have compared the cost-minimisation of the tele-ENT consultations with cost-minimisation of RCH outpatient options. A cost-minimisation analysis requires that the costs are somehow related to the same kind of minimisation measurement.
The paper reports the results of a cost-minimisation analysis which was done using the standard approach (e.g. see Drummond et al. 1997 [reference 16]) To do this we have assumed that the clinical outcomes of both services are equal. We have clearly stated the main objective and design of the study in the Abstract (see page 2) and in the Background and Methods sections (see page 4). Assuming that the outcomes are the same, we have measured and compared the cost of delivering a telemedicine service with the cost of provided outpatient service in the conventional manner (i.e. face-to-face). This process has been described in the manuscript, in the Background and Methods sections (see page 4).

4. The sensitivity analysis should be more than a best case scenario. The authors should test the validity of the results by varying the assumptions.

The sensitivity analysis has covered a reasonable spectrum of scenarios. These included expected equipment useful life (3 – 8 years), travel costs and ISDN line charges. The sensitivity analysis was a threshold analysis rather than a best-worst case scenario. The threshold analysis (described on pages 8-9) is undertaken by varying one of these key factors and determining the number of tele-ENT consultations that can be undertaken for the same cost as face-to-face consultations. These “thresholds” were investigated and reported by the health economist and the findings were deemed sufficient for this study.

5. The author should discuss the need for teleconsultation. Can a patient have a consultation without a referral from a GP?

The need for a telemedicine service, i.e. tele-ENT was discussed in the paper, see Background section, page 3 - Patients can be referred by the local health care providers – including either the GP or primary paediatrician. We have clarified these details and amended the manuscript accordingly, see Background section, page 3.

6. Did the follow-up rate differ between the two options? And if so, were the costs of this difference in follow-up consultation included?

We have analysed the follow-up rate between the two service options. Statistical analysis (Mann-Whitney Test) suggested that there was no significant difference between the two options (p=0.35).

Reviewer 2 – David Pothier:

Major Compulsory Revisions

1. To make a useful statement of cost-effectiveness that can be expanded, clear aims and objectives should be used to define the context of the results.

The authors appreciate the reviewer’s comments. In response, we have improved the description of the study objectives and design in the manuscript (see page 2 and page 4).

“The objective of this study was to identify the least-cost approach to providing ENT services for paediatric outpatients”.
This study is based on the data collected at the RCH where there were existing basic telemedicine facilities. However, we also discussed the costs of establishing a new site. The start-up costs and annual equivalent costs were calculated in detail (see page 10, Tables 6, 7)

2. *I think that an opinion of a health economist would be of enormous value to a paper such as this one.*

We affirm that this study has been co-authored by Professor Paul Scuffham an internationally recognized health economist. Professor Scuffham provided valuable guidance for the health economic evaluation aspect of this paper. (Authors’ contribution. Page 13 in the manuscript)

Minor Essential Revisions
None

Discretionary Revisions
None

**Reviewer 3 – Kenneth M McConnochie:**

1. *I believe that the underlying assumption of cost-minimisation studies – that alternatives evaluated are equal in effectiveness – should be acknowledged in the Background section. In addition, it seems appropriate to provide some assessment of the validity of the assumption (e.g. from prior studies) in the Discussion section.*

This is a good point. The authors describe in the Background section of the manuscript that the objective of this study was *to compare the costs of tele-ENT to the costs of providing conventional outpatient ENT services* (see page 1 and page 4). In response to the reviewer’s suggestion, we have clearly defined the study design and made an amendment in the manuscript (see Methods section, pages 4-5)

> We conducted a cost-minimisation analysis to compare the cost of the tele-ENT service in Bundaberg to the cost of providing the conventional RCH outpatient service for patients travelling from Bundaberg... We assumed the consultation effects would be equal based on previous studies 11-14, 17-19, only costs were analysed and the least costly alternative was determined.

2. *Table 1 indicates that a much lower proportion of children were admitted from tele-ENT visits than from OPD-ENT visits. Does this mean that the casemix between these comparison groups was not comparable? How do such clinical differences affect cost-minimisation analysis?*

This is a very good question. Although the case mix between the two groups was different, the unit costs were based on the equipment, staff, travel and accommodation costs. We have conducted further tests by removing the conditions where significant differences existed and were able to show that the actual casemix did not influence the results of the present cost-minimization analysis.
We acknowledge the difference in casemix and have described this clearly in the manuscript:

Results
There were substantial differences in clinical conditions between the two study groups because the study subjects were controlled based on their mode of consultation rather than clinical conditions. (page 8)

Discussion
...Also there were significant clinical variations between the two study groups since the clinical case-mix was not controlled. Finally, it was an observational study and not a randomised controlled trial. Thus the clinical outcomes and economics of using telemedicine for paediatric ENT assessments require further study before definitive conclusions can be drawn. (page 12)

Minor Essential Revisions

1. The abbreviation RCH appears in the Results section of the Abstract, but it is never defined in the Abstract.

   We have amended the Abstract in the manuscript (page 2) to read: A cost-minimisation analysis was conducted comparing the annual costs of the two modes of services provided by the Royal Children’s Hospital (RCH) in Brisbane.

2. Please clarify p3, para2, last sentence. Were those 1,980 ENT admissions to hospital inpatient units?

   In 2005, there were 4,819 ENT outpatient department consultations (OPD) and 1,980 ENT inpatient admissions to the hospital.

3. Table 3. ISDN line charges is mistakenly listed as “ISND” charges.

   Correction made.

4. Page 9. 1st sentence in section on Sensitivity analysis. Second line of this sentence should read, “…of the instrument was greater than the effect of changes in the initial…”

   Correction made.

Discretionary Revisions
Acknowledged by authors

Please find attached the revised manuscript with the specified amendments.

Regards,
Dr Cathy Xu