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Peer Review File

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Reviewer A:

The authors present a timely review of the impact of COVID 19 on the ENT outpatient clinic service of a local area. Whilst a lot of data has been analysed and presented, much of this is presented in a manner that is difficult to follow and understand and this needs to be rewritten in order for this manuscript to be considered publishable.

Major concerns:

1. *There is no clear aim or objective stated in the manuscript. The authors state that this study is "among the first to evaluate the impact of COVID-19 on ENT surgery waitlists in Australia regional centres" and "one of the first to analyse data in terms of priority categorisation" but there is no mention of the other studies that have evaluated this around the time of this study. Ie what are the other studies who are also among the first few studies to evaluate the impact of COVID 19 on ENT waitlists?*

Reply 1: Thank you for identifying these issue. An Aim has now been included in the introduction – line 88. This is to date the first study to evaluate the effect of the coronavirus pandemic on ENT surgery waiting lists in regional areas and the aforementioned phrases have been changed to reflect this. Lines 66, 68, 69

2. *There is no mention of the methods of statistical analysis other than p-values being "calculated"*

Reply 2: My apologies, this has been rectified. Comparisons of mean waiting times was achieved using independent samples T-test and comparison of the proportion of cases breaching recommended waiting times was analysed using chi-squared test. This has now been updated to reflect this – lines 107 and 111.

3. *3. The Results section is difficult to follow, with far too many figures (10 graphs from Figures 5 to 15) and needs to be completely rewritten. The figures need to be either combined or reduced in number. The authors have not made a clear distinction between patients who are on the waitlist vs patients who have been operated vs new patients added to the waitlist vs patients who are overboundary. Often more than one of these*

subcategories are discussed in the same sentence or paragraph making it very difficult for the reader to follow the author's train of thought. For example in Line 110 – total operating decreased in one site vs increased another site but then "the number of Category 1 cases" decreased at the same site and increased at the corresponding other site. Another example is in line 116 where " the total cases fell…" is referred to but it is unclear as to what is meant by "total cases". Are these total cases operated or on the waitlist? The authors need to clearly separate each of these different subgroups and discuss them individually.

Reply 3: We agree, there is a lot of data from many categories and this should have been presented better. This has been rewritten to provide more concise and digestible information, including the recommendation of separating into subgroups. Regarding the distinction between patients on waitlist vs operated on vs new patients etc, a clearer definition of waitlist time has been provided on line 99.

4. *The Discussion section is far to general, too long, and doesn't offer any concrete solutions to this problem other than the general solutions of telehealth, increasing the workforce and avoidance of lockdowns. Could the authors discuss what solutions they can recommend based upon the data they have analysed and presented?*

Reply 4: thank you for this comment. It is difficult to recommend solutions based wholly upon the data we have analysed as we sought to prove that a significant effect existed between waitlist times pre- and post-covid. Our main recommendation (which has been strengthened in the text) is that statewide or nationwide shutdowns of services do not occur, but instead region specific methods are used, due to the disparity between case numbers per population in rural vs metro areas, and the already reduced services in regional areas compared to metro. Paragraph starting line 282

5. *A lot of analysis has been performed in terms of the surgical categorisation but none of this has been then discussed in the discussion section. Could the authors justify the reason for evaluating changes to the waitlist in terms of its categorisation and offer some explanations for some the changes seen in the time period evaluated?*

Reply 5: Section of discussion has been reworded to better emphasise the difference on results across categories, including an explanation that no significant increase in % breach was seen in annual category 1 cases, probably due to them being allowed to go ahead under

shutdown regulations, but was seen in Dubbo Q5 Cat 1 data – line 176-182 .

6. *Detailed data has been presented on the breaches in waitlist times – could the authors discuss this data and offer the reader some insights into why these patterns are being seen?*

   Reply 6: the effect on percentage breach will be included in more depth throughout discussion

Minor concerns:

1. *Line 56 – " Had standard operating lists continued…" – can the authors please quote who this statement was attributed to*
   a. **Reply 1**. This was local sentiment at Albury and Dubbo hospitals and this line has been amended
2. *Line 88 – Please use full date descriptions*
   a. **Reply 2.** Changed as per recommendation
3. *Line 90 – What does the sentence "Data was categorised by the clinical priority…" mean?*
   a. **Reply 3.** Waitlist data (mean time spent and likelihood of breach) was analysed by each priority category ie: within 30 days, within 90 days, or 365 days. (should have read priority category and not clinical priority), has been amended.
4. *Table 1 – suggest a graph*

   Reply 4: have done so as recommended

5. *Table 3 – suggest as a footnote to table 4*

Reply 5 – have done so, Table 4 (now table 2) includes dates of quarters in bottom row

6. *Table 4 – need to indicate if any of these changes are statistically significant*

Reply 6: have consolidated table data into figures, section including statistically significant figures has been condensed and removed as redundant to have both figure and table data.

Reviewer B:

This is a really important paper and the authors are commended on analysing this data. There are a few areas of concerns that they are asked to address. The

manuscript should be considered worthy of publishing if these areas are addressed.

The authors have made a very important contribution. However, there are a few areas the authors are recommended to clarify/amend

1: Choice of study sites: The authors have chosen 2 regional areas; one governed by NSW health policy and the second by Victoria. The obvious interest in these 2 different geographical sites is that they experienced different policy levers for elective surgery. However, the authors have not clearly articulated why they chose these 2 sites: was it convenience? Was it because they wanted to review the different policy aspects? Was it because they serve similar populations? Are there any geographic or socioeconomic similarities? What is the geographical area that the hospital services? Border towns have experienced very different pressures on elective surgery than regional centers that are not in border towns. It is unclear from this paper, what the additional impact of that complication has been in the data presented in elective surgery backlog in the 2 centers.

Apart from the expected increase in breaches across all hospitals in NSW and Victoria, what is the relevance between highlighting these 2 centers. Was the difference in breach ratio related to different policy, different population, border or non-border issues, larger catchment or Albury servicing a bigger area. The numbers of breaches are not adjusted per capita or area density, so it's difficult to understand the relevance of these 2 specific sites.

Reply 1.1: thank you for this comment. Yes, our intention is certainly to highlight that border towns have faced increased challenges and this was the intention in using Dubbo and Albury. We did not perform statistical analysis comparing Dubbo to Albury as we felt highlighting that two regional areas have individually faced was appropriate for the scope of this paper. However, in future we intend to evaluate the differences in the impacts of the pandemic between a border town such as A-W and another regional centre under the same health administration, expanding parameters to include head and neck cancer presentations in addition to elective surgery. This is a valuable point to include for our limitations.

Recommendation:

1: The authors are requested to discuss the impact of the different variables affecting these 2 centers on ENT surgery waiting time and their influence on the data presented: a) different state policy, b) catchment population, c) geography and d) workforce.

Reply 1.2: Very good suggestions, however we did not analyse data from Albury against Dubbo as we felt it was not within the scope of this paper. We do hope to build on this in the future with a more in depth analysis of the impact unique to border towns by comparing with regional towns in the centre of the state under the same health administration

2: Figure 4 has been mislabeled as Figure 5 with the wrong legend

Reply 2: thank you, has been amended

3: Figure 10-15 should be amalgamated into 1 or 2 figures.

Reply 3: this has been implemented and correct legends ensured.

4: Table 3: Please include a column of Elective surgery restriction time periods in each hospital (the lockdowns are relevant to patient mobility but not necessary to elective surgery service provision)

Reply 4: as per reviewer 1's request, this table has been deleted and added as an extra row to Table 4 (which has also been shortened

5: The authors should reference how this compares to state average for elective surgery backlog to highlight the impact on elective surgery. NSW data is publicly available on Bureau of health information (BHI) website NSW health.

Reply 5: this was considered, however state averages separated into priority categories could not be found.

6: In the discussion, the authors claim that the AIHW data shows that ENT surgery was the most impacted by Elective surgery backlog. However, the study sites are NSW and Victoria based. Although there is no doubt that ENT is one of the worst affected specialties, BHI data which shows that Orthopaedic surgery is the worst by sheer volume of cases. Therefore, the authors are cautioned in their comments for a publication not to use extreme language as the data is variable in different states.

Reply 6: has been reworded, thank you for highlighting

7: Please clarify why there were so many Cat 1 breaches in Dubbo between March-August 2020 when Cat 1 surgery was not interrupted in NSW (?PPE, ?Occupational health and safety concerns ?patient hesitancy for care, ?Hospital issues ?lack of telehealth).

Reply 7: Have addressed this, was due to patient hesitancy as Ruby Princess patients were admitted to DHS and this was unfortunately well known throughout the community

8: In the discussion, the authors have referenced increase risk of cancer. Although it is eminent that there will be a risk of delayed diagnosis and therefore a risk of underdiagnosis of cancer, the authors should be aware that in the period of data they examine, Cancer Institute NSW examined the rate of cancer diagnosis and outcome in 2020 and there was not significant adverse outcome noted. Although this may not be the case in 2021-2022 (as that work has not been undertaken yet), the authors are alluding to local data and they should be aware of statewide work. It is likely that Victoria may have also investigated its cancer rates for 2020. It is recommended that the authors reference any statewide publicly available work in cancer outcomes in the comparable periods to avoid bias in opinion.

Reply 8: this has been reworded to reduce bias, thank you for highlighting this

9: The authors highlight an important conundrum for rural surgeons: increasing operating time whilst effectively reducing waiting time also reduces waiting list prospectively as they are reducing their consulting time.

- *They have commented on income: Please comment if the aspect of income impact is unique to rural surgeons (or all surgeons metro or rural).*

Reply 9.1: Income as an attractant to particular jobs is certainly not unique to rural positions, however locum positions are more commonly offered for rural areas with workforce shortages compared to metro areas.

- *In NSW many different policy measures have been employed to combat waiting times for patients in regional and rural centers each with its own complications (eg flying patients to metro centers to access care and flying locums to rural centres to support local workforce). It would be valuable to hear from the authors what solutions (local or statewide policy measures) can be used to overcome this issue (eg if locum surgeons are employed, where should they be employed and how should they be used to support the local workforce).*

Reply 9.2: A number of strategies have been discussed and suggested for future pandemic waves including more region-specific shutdowns, rigorous testing that would allow for elective operating to continue, waitlist reduction lists (not without their limitations)

- *Please also comment on any other issues impacting workforce unique to rural surgeons in "surge planning"*

Reply 9.3: This is an excellent recommendation and I have included a paragraph in the discussion detailing this, beginning line 245.

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