Reviewer's report

Title: Corticosteroid prescribing in palliative care settings: a retrospective analysis in New Zealand

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Reviewer: Richella Ryan

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General impression:
This article reports the findings of a retrospective review of corticosteroid prescribing across 6 hospices in New Zealand. This appears to be the first review of its kind in New Zealand, though numerous reports of corticosteroid prescribing practices in the palliative care setting have been published from other countries, including a UK prospective study by Hardy et al. (2001), a Canadian retrospective analysis by Pikey et al. (2008) and a large cross-sectional Swedish survey of 30 hospices by Lundstrom et al. (2008). To my knowledge, this appears to be the first multi-site retrospective analysis to be reported and it is possibly the largest of its kind to date. For this reason, the study merits some recognition. While the study does not appear to add new information to the literature, it does confirm previous literature findings and its large sample size lends further weight to these findings.

My overall impression is that this is a large-scale piece of work, which has been conducted rigorously within the constraints of a retrospective study design. My main concern is that the quality of the reporting within this article does not adequately reflect the rigor with which I suspect the study has been conducted. I would, therefore, like to suggest the following revisions in order to improve the quality of the paper.

Major compulsory revisions:
1) Recommendations relating to methodological reporting:
• The method of identifying patient records for corticosteroid prescribing and thereby including records for review is not clearly described. In practice, some patients are on corticosteroids prior to admission and others are commenced on corticosteroids during admission. It is necessary to define which of these cohorts is being studied or whether both are included. It is difficult to interpret the authors' reported frequency of corticosteroid prescribing without this information. Related to this, no distinction is made between number of inpatient admissions and number of patients. Presumably, some patients had more than one admission. Therefore, a statement indicating that x number of patients had y number of admissions in 2007 would be helpful in order to determine the denominator.
• I would recommend that the first paragraph of the 'statistical analysis' section be recorded as a 'data collection' section as the contents of this paragraph do not
pertain to statistical analysis. Within this ‘data collection’ section, more detail about the exact parameters of corticosteroid prescribing selected for evaluation should be included. The authors include some further information about the selected parameters in the results section but, arguably, these parameters should all be defined in the ‘data collection’ section. In particular:

- What information about the dose was recorded? E.g. starting dose or average dose over time or cumulative dose?
- How was an abrupt withdrawal defined?
- How was a ‘drug review’ defined?
- How was an ‘adverse effect’ defined?
- What indications were recorded and how were they defined? (perhaps refer to table 1 at this point).
- Were certain things not recorded due to complexity e.g. preferred tapering schedule?

2) Recommendations relating to results reporting:

- The authors confine the results reporting to corticosteroid prescribing parameters and do not provide demographic or clinical data. This does not allow the results to be contextualised and, thus, restricts the degree to which the reader can assess the generaliseability of the results. Given the heterogeneity of the palliative care population, I consider this to be a significant omission and would recommend that a description or a table of demographic and clinical details be provided. Regarding clinical details, in particular, it would be interesting to know the ratio of cancer to non-cancer patients in the population, to know the primary tumour site and to have some indication of prognosis (e.g. were patients admitted for terminal or symptom-control, how many patients died during admission and how many were discharged, what was the median admission length etc?)

- The authors have omitted to report some data which I feel would actually be of interest to palliative care practitioners and which, arguably, are essential to the report if the primary objective of reporting prescribing patterns is to be fulfilled. For example, what was the most common start-dose for dexamethasone? What was the dose-range used (referred to in the article but not actually stated)? What was the median duration of corticosteroid use (range provided rather than median)? What was the cumulative dose per patient (if this was possible to record)? These parameters are most related to corticosteroid toxicity and, therefore, they are, arguably, the most important parameters to include in a review of prescribing patterns. While it is interesting to compare prescribing practices between hospices (as this highlights the need for consensus guidelines, at minimum), it is preferable to report essential descriptive data in advance of comparative analysis reports.

Minor essential revisions:

- In the sample size section, ‘95%’ should be placed before the term ‘confidence intervals’.
Discretionary revisions:

• The method of selecting 260 inpatient records from a total of 768 inpatient records for further review is not particularly clear. The authors explain that 1 in 3 were selected sequentially but it is not clear to me what this means. Does this mean that every third record from a list of all records was selected for review? Alternatively, was a random sequence generated to randomly select records?

• Though I understand what the authors mean, I do not fully agree with the terminology used in the sentence describing the study aim in the background of the abstract section. Arguably, there is no consensus on ‘international best practice’ and I would suggest substituting this phrase with ‘international practice’ or ‘international experience’. To compare the results to ‘international best practice’, a clear description of this practice would need to be provided; this, however, is not possible.

• The authors provide a thorough review of the literature in the background. I feel that it would be helpful if the authors acknowledged the differences in terminology used across the literature with respect to both palliative care patients (some corticosteroid studies relate to ‘advanced cancer’ or ‘pre-terminal cancer’ patients) and with respect to the categorisation of corticosteroid indications. This is a limitation to the interpretation of the literature. The authors do define ‘non-specific’ in the second paragraph of the background section but it might be better to define this when the term is first used in the first paragraph. In addition, definitions for ‘non-specific’ appear to be variable across the literature and it would be helpful if the authors acknowledged this when providing their definition. Personally, I would limit ‘non-specific’ to cachexia-anorexia-related symptoms (anorexia, fatigue, weight loss) but, clearly, other studies have included nausea, pain and breathlessness within this category (as the authors have cited). Additionally, the authors provide ‘bowel obstruction’ as an example of ‘soft tissue infiltration’ in the first paragraph of the background section, and I am not sure that this is a very sensible example (as bowel obstruction can be caused by a range of pathologies). I would suggest reviewing this so that it does not detract from the article.

• In the methods section, again, I would suggest that the definition for ‘non-specific’ be clearly defined. I notice that ‘non-specific’ and ‘other’ are separate categories in table 1 but paragraph 4 of the discussion sections suggests that these categories were amalgamated (‘non-specific indications in this study was the residual category’) for the analysis. If this is the case, this needs to be explained in the methods section (not the discussion). The definition for ‘non-specific’ needs to be consistent throughout the text, whilst acknowledging that variable definitions exist.

• The finding that 49% of patients had their steroids stopped abruptly is perhaps the most interesting finding for me. It would be interested to know what percentage of these patients had their steroids stopped because they were no longer able to swallow; this is considered to be acceptable practice, in my experience, though it is clinically and ethically questionable. Steroid withdrawal in the last days of life has already been reviewed in a UK palliative care setting
(Gannon et al. 2002) and abrupt withdrawal when the patient was unable to swallow occurred in 98% of cases. There is very limited further literature on this, however, and I would suggest highlighting this more as one of your main findings.

**Level of interest:** An article of limited interest

**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