Author’s response to reviews

Title: Impact of NPS MedicineWise general practitioner education programs and Choosing Wisely Australia recommendations on prescribing of proton pump inhibitors in Australia

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1. Apostolos Kamekis

I would like to have some more information on how sample estimated in order to be clarified if generalization can occur or not. I would also like to ask if data inclusion or exclusion criteria have been strictly adopted.

This study included all government administrative data on prescriptions for PPIs for concessional patients written by general practitioners over the allocated time period as all these prescriptions incur costs to the Pharmaceutical Benefits Scheme (PBS) and so are complete. For this study, data excluded from the full dataset of all PBS data were non concessional patients’ data. Non-concessional patients’ data would not be complete due to the low cost of PPIs. By using concessional patients only, we have an accurate representation of the changes to general practitioner (GP) prescribing and as this is a national administrative dataset of all prescriptions we assume that the GP prescribing patterns would be similar for the non-concessional patients. We only use the administrative data for prescriptions written by GPs and not specialists as the educational programs only targeted GPs.

Concessional patients do tend to be older and may have more chronic health problems, making treatment options more complex. Concessional patients visit GPs three times more often—on
average nine times a year—than non-concessional patients, have more pathology tests (3 compared to 1.4 for non-concessional patients) and more imaging services (1.0 compared to 0.8). Concessional patients are generally high users of health services. Nearly 88 per cent of prescription medicines dispensed under the PBS are for concessional patients. 30.5% of GP visits are made by those 65 or older and 85% of those in this age group are concessional patients who receive either the Age Pension or the Commonwealth Seniors Health Card. The proportion of the population having a chronic disease increases with age, as do the proportions of people reporting more than one disease. Data shows that disadvantaged individuals are more likely to suffer chronic conditions, have more risk factors for chronic diseases and face financial barriers to health care. Rates of type 2 diabetes are nearly three times higher in the most socio-economically disadvantaged areas, compared to the least disadvantaged areas as well as having higher rates of smoking (up to five times higher for men) and obesity. There is higher use of pathology and diagnostic imaging (DI) services among concessional patients. The ordering by a GP of a pathology test and/or DI indicates that in their professional opinion, further clinical investigation is needed, which would be unlikely if the doctor believed the illness was feigned or trivial. That the rate of such tests is higher among concessional patients is also consistent with the higher rate of PBS prescribing and higher rates of chronic disease among this group. There is evidence that concessional patients are high users of health services, but that appears to reflect their poorer health status.

We have added a sentence to the discussion outlining the differences between concessional patients and other patients. (Discussion – Strengths and Limitations - paragraph 2, page 7)

Concessional patients include low-income earners, welfare recipients, and Health Care Card holders and are higher users of health services due to their generally poorer health status.

Data inclusion and exclusion criteria is strictly adopted as each record of a prescription indicates if the patient is a concessional patient.

Another question I have is if any of the initially recruited participants denied response if yes, do we know characteristics and reasons for those who refused.

The data used for this study has no identifying information about patients. It is administrative data and includes the details of prescriptions written by a general practitioner and dispensed by a pharmacist. The data includes the doctor provider number. This study is looking at the volume of dispensed prescriptions and no participants are recruited as we are using the national administrative data on dispensed prescriptions for concessional patients nationally. No one has the option to consent or refuse as there is no identifying information included.

I would also prefer to have some more information about the bioethical procedures of study approval.

This sentence has been added to the method section:

Consent was sought and provided by the data custodians, the Department of Human Services. (Methods – Setting and Data - last sentence of paragraph 1)
To my knowledge interesting primary care studies related to the topic on the impact of General Practitioners’ education programs and recommendations on prescribing in Australia have been accomplished. I would positively see a couple of them to be listed in the references. The reason of my request is that perhaps similarities and differences could enhance the impact of the discussion section.

We have included the following sections in the discussion and added appropriate references (Discussion paragraph 4, page 6).

There are studies that have shown the impact of educational programs on GP prescribing including a study conducted by May et al. Doctors participating in an educational visiting program in Adelaide focused on better use of prescribed non-steroidal anti-inflammatory drugs (NSAID) reduced their use of NSAIDs by 9% and 28% for two different measures compared to a comparison group.29


Other studies have found positive impacts of educational programs on GP behavior including programs on the treatment and management of incontinence, addressing health behaviours of elderly people and adolescent health care.30,31,32


I would recommend you to further clarify your statement that it is unlikely that the concessional beneficiaries would have switched on an OTC formulation. Further details are necessary on that issue.

We have added the following paragraph to the discussion: (Discussion – Strengths and Limitations, paragraph 2, page 7)
Proton pump inhibitors that are available from pharmacies without a prescription include rabeprazole, pantoprazole, esomeprazole and omeprazole. Standard strength esomeprazole received approval for over-the-counter (OTC) marketing in Australia in February 2016, and some of the reduction in standard strength PPI dispensing we observed following the April 2015 intervention could have been due to patients switching from prescription to OTC access for this medicine. However, the OTC formulation contained just a 7-day supply and the cost was above that of the concessional beneficiary co-payment in 2016 ($6.20). We believe it is unlikely that many concessional beneficiaries would have switched to an OTC formulation. Concessional patients have limited funds available so it is unlikely they will pay for medicines that they can get at a cheaper price or for free if prescribed by their doctor under the PBS. The PBS has a safety net which resets each year on 1 January. In 2019, the PBS Safety Net threshold was $390 for concessional card holders. Before meeting the threshold each medicine costs concessional patients $6.50 and once they reach the threshold all PBS medicines are free of charge. This is an incentive for patients to pay the concessional rates for PBS medicines rather than buying those available over the counter from a pharmacist as not only are the medicines cheaper but the cost contributes to the patient reaching the Safety Net threshold. Non-concessional patients also have a safety net but due to the low cost of PPIs they do not have the cost covered under the PBS and are more likely to purchase PPIs over the counter than concessional patients.

Finally grammar, typo and language editing is recommended. This has been done.

2. Irini Gergianaki

In the introduction, you can define or describe the terms “standard” and “lower strength” PPIs

We have added the following to the Background section – paragraph 4 & 5 Table 2, page 3:

Terminology for PPI doses has changed from highest, high and low to high, standard and low since 1 May 2019. For simplicity we included the Esomeprazole 40 mg high dose as a standard dose and the Esomeprazole 20 mg standard dose as low dose for our analysis.

Table 2: PPI strength categories before and after 1 May 2019

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Before 1 May 2019</th>
<th>After 1 May 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esomeprazole 40 mg</td>
<td>Highest dose</td>
<td>High dose</td>
</tr>
<tr>
<td>Esomeprazole 20 mg</td>
<td>High dose</td>
<td>Standard dose</td>
</tr>
<tr>
<td>Lansoprazole 30 mg</td>
<td>High dose</td>
<td>Standard dose</td>
</tr>
<tr>
<td>Omeprazole 20 mg</td>
<td>High dose</td>
<td>Standard dose</td>
</tr>
<tr>
<td>Pantoprazole 40 mg</td>
<td>High dose</td>
<td>Standard dose</td>
</tr>
<tr>
<td>Rabeprazole 20 mg</td>
<td>High dose</td>
<td>Standard dose</td>
</tr>
<tr>
<td>Lansoprazole 15 mg</td>
<td>Low dose</td>
<td>Low dose</td>
</tr>
<tr>
<td>Omeprazole 10 mg</td>
<td>Low dose</td>
<td>Low dose</td>
</tr>
<tr>
<td>Pantoprazole 20 mg</td>
<td>Low dose</td>
<td>Low dose</td>
</tr>
<tr>
<td>Rabeprazole 10 mg</td>
<td>Low dose</td>
<td>Low dose</td>
</tr>
</tbody>
</table>
In abstract: In my opinion statements like “The NPS MedicineWise programs were associated with reductions in the dispensing rate of standard strength PPIs” are rather strong. You could add that “although, causal relations can not be confirmed” or other similar statement.

This has been amended in the Abstract conclusion (page 2) to read:
The NPS MedicineWise programs were associated with reductions in the dispensing rate of standard strength PPIs, and with an increase in the dispensing rate of low-strength PPIs by June 2016 although a causal relation was not confirmed.