

Article details: 2019-0053	
Title	Impact of the Quebec Alzheimer plan on the detection and management of Alzheimer's disease and other dementias in primary healthcare: a retrospective chart review study
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General comments (author response in bold)	<p>This manuscript provides important new information required for appraisal of the effect of a provincial policy innovation on dementia detection and management in primary care. The finding that implementation of the QAP did not result in a 'flight from primary to specialty care' is among the most important results of this paper and is novel; it is especially important because of the very limited supply of specialists in most if not all western countries and the problem of overusing specialists for routine dementia care. The demonstration that primary care visits increased is welcome; that's what should happen in programs designed to improve management of dementia. The major problems with the paper are not in the statistical methods or results, but in its framing, organization, presentation, and need for additional information.</p> <p>INTRODUCTION</p> <p>1. Framing: the authors cite well-known facts about the rising prevalence of dementia and the impact of dementia on costly health risks and health care utilization. The lead-off paragraphs, intended to certify the importance of the topic, are never touched upon again. There are some underlying assumptions (ie received wisdom, but never proven) that are subject to evidence development that is not part of the present manuscript - e.g. (for one) that better detection and management in primary care would necessarily improve the profile of health care costs in dementia. This over-reach of assumptions is not necessary to justify the need for better primary care of dementia; the literature from many countries supports that premise. (After all, interventions to improve detection and management are a necessary first step toward assessing whether such programs CAN reduce inflated health care cost profiles.) A more modest approach would simply justify the study as an essential pilot-phase policy evaluation. If you don't do this, the reader will expect to see outcomes that include delirium and hospitalization rates (among other items) as outcomes, which are not included here.</p> <p>Thank you for this constructive feedback and helpful suggestions. We have reframed the introduction to remain more consistent with the scope of the objectives and study outcomes. We have also highlighted the novelty of our study, an essential first phase policy evaluation, in our discussion.</p> <p>2. In their literature review, the authors overlook a series of important papers from EVIDEM, a serious trial of methods to improve detection and management of dementia in the UK, led by Steve Iliffe. While overall the results of that trial were disappointing, EVIDEM is recognized as a major contribution to the literature on what works (and doesn't) with respect to improving dementia care in primary care practices. A recent summary paper can be found in Z Gerontol Great 2017; 50(Suppl 2), A 63-67 (S. Iliffe, J Wilcock); a comprehensive outcome document can also be found online.</p>

Thank you for pointing out this important literature gap. We have revised our discussion to include and compare our results to this EVIDEM report as well as to additional relevant peer-reviewed papers which measured similar outcomes (p. 7).

METHODS

3. The manuscript cries out for a table of what exactly is included in the QAP and this belongs within the body of the paper, as it is necessary to orient readers outside Quebec to what the goals, methods, and measures were used. At a minimum, please include each goal, who (what discipline) carries responsibility for implementing it, what outcomes are assessed for each goal, and what measures are used to assess each outcome (where no specific measure is specified, at least give examples of what would qualify). While the key provisions of the QAP are shown in Table 3 (Results), the reader needs more introduction, and should not encounter them first in the Results section.

Please refer to our answer to the editors' comment 3 above.

The goal of the QAP was to improve the capacity of actors in primary care to detect, diagnose, treat and follow-up patients living with dementia. We have created a logic model explaining the goals of the QAP, the actors (who, what discipline), and the relevant indicators measured in our study. Non-assessed indicators were measured with other tools, described in other studies, including a questionnaire of the clinicians' Knowledge, Attitude, and Practices (accepted in the Canadian Family Physician journal), an organizational questionnaire, and a qualitative study (results not shown here).

4. Explain what was captured from medical records in this study. E.g.: how was 'documentation of cognitive status' ascertained? If no testing was done, how could that documentation occur? PCP opinion? Just a statement such as 'cognition normal' (or not). PCPs in many western countries are known not to be very skilled at detecting cognitive impairment without some form of testing, especially when it is in milder stages. That is actually the argument supporting use of simple screening tools as part of what in the US is termed the 'annual wellness exam', which requires 'detection of cognitive impairment.' Please explain the information that serves as the basis for identifying PCP documentation of cognitive status. [The USPSTF recommendation against routine cognitive testing in clinical practice - which you cite - is based on the current absence of evidence that it makes a difference to patient outcomes, NOT that it doesn't make a difference in detection of dementia/cognitive impairment; in fact, that report summarizes excellent evidence that screening improves detection - just not that it improves clinical outcomes. The QAP (studies of it as policy) would be an appropriate vehicle for filling that evidence gap; it is unfortunate that QAP apparently doesn't require more than some sort of PCP assertion about cognitive status.]

From the medical records, we captured information on our study variables from any data source within the patients' charts including: clinician's notes, emails, results from cognitive tests, referral forms to or reports from specialists and homecare and the patients' summary profile. No interpretation of the information was applied. Also, please refer to our response to Reviewer 1 Comment 4 and Comment 15 on how we ascertained documentation and testing.

We agree that testing cognitive status is an essential part of the diagnosis

process. The QAP clearly outlines the importance of cognitive testing (please see new appendix 1 for more details). We have provided more explicit details in the results section and used a more consistent label for “documented diagnosis of NCD” throughout the manuscript. While no significant change in the rate of cognitive testing in patients 75+ was observed, we believe it is likely that physicians’ use cognitive tests after the QAP were more in line with current medical guidelines based on case finding in patients where there is a suspicion of dementia rather than more subjective, possibly inconsistent, reasoning.

RESULTS:

5. Tables:

(a) Table 1 belongs in an Appendix, not the body of the paper.

Thank you for this suggestion. Accordingly, we turned old Table 1 into new Appendix 3.

(b) Table 2 is very difficult to interpret; the pre and post numbers don’t match any other numbers in other tables, and the reader can’t tell either how these samples were derived and how they relate to anything else. A good strategy would be to revise the flow chart.

Table 2 refers to the full sample 75+, with 944 patients in pre and 975 in post periods. This is the same population and sample size reported in Table 4.

Table 3 refers to subsample with NCD, equivalent to Table 5, with 455 patients in the pre-period and 490 in the post-period.

We have revised the flow chart to show the numbers and overlap in each population, both pre and post, to better align with the structure of the tables and the numbers reported in the main document.

We have made this information clearer in the methods section as well (p. 4).

(c) Table 3 needs clarification of the sample derivation; how many “Post” patients are included in the “Pre” patient group? (i.e. is this a repeated measures design? Ideally, one would like to see such an analysis.)

As stated in our methods, we conducted a retrospective chart review of independent, randomly-selected patient charts before and after the implementation of the Quebec Alzheimer Plan (p. 4). Therefore, there was no overlap between charts in both the pre and post periods. To ensure independence between pre- and post-charts, only charts in the post-period which were not assessed in the pre-period were selected.

In our discussion, we further explained that a strength of this design was that the random selection of charts in each period ensured representative samples of the target population (p. 8).

Our study design based on randomly selected and independent charts in the pre- and post-periods allowed for a more robust assessment of the Quebec Alzheimer Plan as it mimics more closely the design of a fully randomized controlled trial than other quasi-experimental designs, such as a traditional pre-post quasi-experimental design with the same patients in both groups. We have clarified the justification for our design in the methods section (p. 4).

6. Flow chart - needs a more detailed title and more explanation, as well as

clear depiction of what data is collected at what point and how each sample for analysis fits into the study flow and the analytic output. This is your opportunity to get the reader's interest and assure that your analyses are properly understood and interpreted. It belongs in the narrative (should not be relegated to an Appendix, in case that was your plan.)

Please refer to our response to your Comment 5 b). Additionally, we have given the flowchart a more detailed title and clarified the legend. Finally, we have put the flow chart in the main document as a Figure.

7. Other - the rate of antipsychotic use seems quite high for an ambulatory primary care practice, and suggests either that some other classes of drugs are being inappropriately classified as antipsychotics, or that the sample is skewed toward including patients in moderate and severe dementia stages where behavioral disturbances typically treated with antipsychotics tend to occur. The latter would be expected when PCPs are not required to 'prove' cognitive status by use of a screening tool or other cognitive tests; there is evidence that PCPs disproportionately detect more severe dementia when they don't use a validated screening tool. Please clarify what drugs were included in the antipsychotic category.

We clarified the classification of medications in our methods section. Antipsychotic medication included medications belonging either the phenothiazines, butyrophenones, thioxanthenes or atypical antipsychotics classification as per the American Hospital Formulary Service (AHFS) pharmacologic-therapeutic classification system using the Health Canada online database (<https://health-products.canada.ca/dpd-bdpp/index-eng.jsp>). The rate of antipsychotics significantly decreased from 25% to 20%, which is in line with previous studies (see Kirkham, Seitz, Rochon, says between 20% and 30%). Nevertheless, the fact that 1/5 patients are taking antipsychotic medication is still high.

8. The finding that specialty referrals appear to be more appropriately tailored is important; however, the high rates of 'uncertainty' are worrisome, and would seem to speak very specifically to PCP lack of comfort with doing NCD diagnoses - or lack of desire to undertake this task. The true rate of 'uncertain' diagnoses - while 'in the eye of the beholder' to some extent - should be far lower than the 36% of referrals you find as justification for a specialty referral. This deserves more discussion as a gap - either in PCP education or motivation.

While we agree the finding that specialty referrals appear more appropriate (or justified) should be examined more in depth, we remain careful in our claims as this represents a small number of referrals. In our discussion, we focused on the overall rate of referrals which remained low: n=22 (2.5%) before the QAP to n=19 (2.1%) after the QAP as shown in Table 3. We agree that this is an important topic that should be addressed in subsequent studies.