

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A matched-group study protocol to evaluate the implementation of an Integrated Care Pathway Programme for Chronic Obstructive Pulmonary Disease in Singapore
AUTHORS	Yu, Weichang; Wu, Christine; Tan, Woan Shin; See, Ryan; Kwek, Lynette; Toh, Matthias; Chee, Thong Gan; Chua, Gerald

VERSION 1 - REVIEW

REVIEWER	Margrethe Smidth The Research Unit for General Practice Aarhus University Bartholins Alle 2 8000 Aarhus C Denmark
REVIEW RETURNED	01-Jun-2014

GENERAL COMMENTS	<p>Thank you very much for giving me the opportunity to review this original and interesting paper. The paper is a study protocol describing a matched-groups study to evaluate the implementation of an integrated care approach for JurongHealth in Singapore. The objective of the study is to evaluate health services utilisation and cost, 1-year mortality rate, 30-day readmission rate, care compliance and quality of life as well as patients' assessment of their care for COPD in Alexandra Hospital. The matched group of patients come from the National Healthcare Group and National Healthcare Group Polyclinics.</p> <p>I have the following specific comments to the paper: An explanation of the differences or similarities between the two healthcare providers would enhance the understanding of how the two can be compared and considered equal. There is an ongoing international discussion of how to address the people with disease for whom we design programmes and we as a society provide care for and support in self-management. "Patients with COPD" seems to be the preferred term when we are talking about care involving hospitals where "people with COPD" are the preferred term when talking with patient organisations, municipalities and social care organisations. That could be addressed in the paper instead of using the term "COPD patients" which gives an idea that the disease controls the person and therefore provides minimal opportunity for any influence from healthcare provider or the person him/herself with self-management. The text is written clearly and does only need a few corrections for using the same tense especially in the Inclusion and Exclusion section.</p> <p>ABSTRACT Methods and analysis</p>
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1) Primary outcome.....there can only be ONE primary outcome and the authors must decide which one that is and then have the other outcomes as secondary outcomes.

Ethics and dissemination

2) The last sentence: "This study also enables...." should be removed from this section. It is an outcome or a result of the measured outcomes.

BACKGROUND

3) Third line: 60,000 cases in Singapore.. is that people with COPD or people who die from COPD. I do not understand that it is one-fifth of all death and then in the next sentence is the seventh principal cause of death. Please, explain more clearly.

4) Regarding the mean cost of the disease and the high percentage being from hospital cost, I would like to see the cost of the full healthcare system in Singapore or the cost presented as a percentage of the overall healthcare cost.

5) Likewise with the high average length of stay and 30-day admission rate. What is high? Is it higher in Singapore than in other countries? Or is it higher than for other diseases?

6) Second paragraph, second sentence postulates that "they can be appropriately managed at the ...". This needs a reference.

7) "Early diagnosis and intervention efforts for at risk individuals ..." and "COPD patients in the community experience poor quality of life due to the lack of convenient access" also needs references.

8) The reference to a Danish study (4): this study investigated if a questionnaire could be used to find people with COPD in the early stages and did not have the large scale and comprehensive approach as this study has as it was only used in GP offices. Other studies would be better to use as reference here like some of the studies in Australia by Nick Zwar or the Cochrane review: "Cochrane corner: is integrated disease management for patients with COPD effective?" by Kruis AL et al.

9) Number 1) objective: western population... is that the population looked after of JurongHealth?

Objective

10) As previously discussed there can only be ONE primary outcome. It could be "Improve the healthcare for people with COPD" illustrated with some of the measures mentioned.

METHODS/DESIGN

Study setting

11) A short introduction to the healthcare system in Singapore as a whole would enhance the understanding of the two groups which will be compared. It could be placed here or in the Background section.

Intervention

12) The 4 groups of patients could be placed in the Inclusion and Exclusion section which may be could change name to Patients and then only have an exclusion criteria section as well?

13) Second paragraph: The Care Continuum Model needs a reference.

14) Table 3.2: To whom will the GPs offer spirometry test to be able to identify patients at risk? 3.3 Who is providing the pulmonary rehabilitation and how can patients access the rehabilitation? If the sentence about the benefit of pulmonary rehabilitations stays here it needs a reference.

STUDY OUTCOMES

15) As previously discussed there need to be only ONE primary outcome.

	<p>Data collection</p> <p>16) Is it possible to collect the level of education for the participants as well in Singapore? That would enable comparison to other international studies.</p> <p>17) It would be interesting if it is possible in the study to include the health professionals' view of the care as well by using the ACIC questionnaire.</p> <p>DISCUSSION</p> <p>Potential shown in the COPD-ICP programme</p> <p>18) Third sentence: "A multi-disciplinary care team....." needs a reference. The sentence "This can potentially lower the risk..." needs a reference or could be revised to include a "might" instead of "potential".</p> <p>Benefits of study evaluation</p> <p>19) The heading would benefit from a change to Rationale for the study or similar; which is to support the programme and to identify gaps to be able to improve AND that the study will add to the evidence supporting integrated care for chronic conditions.</p>
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REVIEWER	Kathy Murphy National University of Ireland Galway Ireland
REVIEW RETURNED	03-Jun-2014

GENERAL COMMENTS	<p>This is an interesting study focused on an evaluation of a health care innovation that has already been implemented. There are a number of outcomes proposed for this study making evaluation of effectiveness more difficult to judge. The level of detail of methods, data collection, fidelity measures, makes judgement difficult.</p> <p>This is an interesting and important study examining the impact of a health care innovation. At present the level of detail given in the protocol makes judgement of the overall quality difficult to do. The literature identified the importance of PR but exercise is not identified as a part of the intervention, and outcomes focus on health care utilisation and 1 year mortality, 30 day readmission rate, more common measures like the CRQ or St Georges questionnaire may enable better comparisons.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Specific Comments:

ABSTRACT

Methods and analysis

1) Primary outcome.....there can only be ONE primary outcome and the authors must decide which one that is and then have the other outcomes as secondary outcomes.

- As suggested by the reviewer, we have decided on COPD-related hospitalisation as the primary outcome, and others as secondary outcomes.

Ethics and dissemination

2) The last sentence: "This study also enables...." should be removed from this section. It is an outcome or a result of the measured outcomes.

- We have removed the sentence accordingly.

BACKGROUND

3) Third line: 60,000 cases in Singapore.. is that people with COPD or people who die from COPD. I do not understand that it is one-fifth of all death and then in the next sentence is the seventh principal cause of death. Please, explain more clearly.

- We have removed the sentence “ there are about 60,000 cases of COPD which constitute about one-fifth of all deaths”.

4) Regarding the mean cost of the disease and the high percentage being from hospital cost, I would like to see the cost of the full healthcare system in Singapore or the cost presented as a percentage of the overall healthcare cost.

- We decided to remove the sentence “the disease places a large financial burden on health-care system and society. A study conducted measures that the mean cost was approximately USD \$9.9 million per year in Singapore, with inpatient admission being the major cost driver, contributing an average of USD \$7.2 million per year”. As this disease only accounted for 0.1% of total health expenditure (US\$8,618 million, 4.5% of Singapore’s Gross Domestic Product).

5) Likewise with the high average length of stay and 30-day admission rate. What is high? Is it higher in Singapore than in other countries? Or is it higher than for other diseases?

- We have provided the figure and reference “The COPD patients with complications spent 8.5 days or 69% longer in hospital and accounted for the high 30-day readmission rate [3-4]. The COPD 30-day readmission in JurongHealth is around 30% which was higher than the national 30-day readmission rate of 11.6% and other condition-specific readmission rate”.

6) Second paragraph, second sentence postulates that “they can be appropriately managed at the ...”. This needs a reference.

- We have provided a reference as suggested.

7) “Early diagnosis and intervention efforts for at risk individuals ...” and “COPD patients in the community experience poor quality of life due to the lack of convenient access” also needs references.

- We have provided a reference as suggested.

8) The reference to a Danish study (4): this study investigated if a questionnaire could be used to find people with COPD in the early stages and did not have the large scale and comprehensive approach as this study has as it was only used in GP offices. Other studies would be better to use as reference here like some of the studies in Australia by Nick Zwar or the Cochrane review: “Cochrane corner: is integrated disease management for patients with COPD effective?” by Kruis AL et al.

- We have provided another reference [11] as suggested.

9) Number 1) objective: western population... is that the population looked after of JurongHealth?

- the sentence has been amended to “Reduce the prevalence of COPD among the population residing in the Western part of Singapore (catchment area of JurongHealth) through effective preventive efforts in the community”

Objective

10) As previously discussed there can only be ONE primary outcome. It could be “Improve the healthcare for people with COPD” illustrated with some of the measures mentioned.

- As suggested by the reviewer previously, we have decided on COPD-related hospitalisation as the primary outcome, and others as secondary outcomes.

METHODS/DESIGN

Study setting

11) A short introduction to the healthcare system in Singapore as a whole would enhance the understanding of the two groups which will be compared. It could be placed here or in the Background section.

- We have provided an introduction to the healthcare system in Singapore and the selection of the intervention and comparator groups from the databases.

Intervention

12) The 4 groups of patients could be placed in the Inclusion and Exclusion section which may be could change name to Patients and then only have an exclusion criteria section as well?

- As suggested by the reviewers, the 4 groups of patients could be placed in the Inclusion and Exclusion section.

13) Second paragraph: The Care Continuum Model needs a reference.

- We have provided a reference as suggested.

14) Table 3.2: To whom will the GPs offer spirometry test to be able to identify patients at risk? 3.3 Who is providing the pulmonary rehabilitation and how can patients access the rehabilitation? If the sentence about the benefit of pulmonary rehabilitations stays here it needs a reference.

- We have revised and decided to remove the table 3.2 as Table 1 & Table 2 have already described our key interventions.

STUDY OUTCOMES

15) As previously discussed there need to be only ONE primary outcome.

- As suggested by the reviewer previously, we have decided on COPD-related hospitalisation as the primary outcome, and the others as secondary outcomes.

Data collection

16) Is it possible to collect the level of education for the participants as well in Singapore? That would enable comparison to other international studies.

- The level of education is not available for the comparator group in COPD disease management registry. It is also not possible to collect because the design of the study draws on routinely collected data from the COPD disease management registry.

17) It would be interesting if it is possible in the study to include the health professionals' view of the care as well by using the ACIC questionnaire.

- The health professional's views are not included in the current scope of the evaluation. We can include it in subsequent studies.

DISCUSSION

Potential shown in the COPD-ICP programme

18) Third sentence: "A multi-disciplinary care team....." needs a reference. The sentence "This can potentially lower the risk..." needs a reference or could be revised to include a "might" instead of "potential".

- As suggested by the reviewer, we have provided the references and made the necessary changes.

Benefits of study evaluation

19) The heading would benefit from a change to Rationale for the study or similar; which is to support the programme and to identify gaps to be able to improve AND that the study will add to the evidence supporting integrated care for chronic conditions.

- We have made the change accordingly.

Reviewer 2 Specific Comments:

Please state any competing interests or state 'None declared': Non declared

- State "The authors declare that they have no competing interests" in the "Competing interests" section.

This is an interesting study focused on an evaluation of a health care innovation that has already been implemented. There are a number of outcomes proposed for this study making evaluation of effectiveness more difficult to judge. The level of detail of methods, data collection, fidelity measures, makes judgement difficult.

We have clarified our objectives to be:

The COPD-ICP programme aims to 1) reduce the prevalence of COPD among the population residing in the Western part of Singapore (catchment area of JurongHealth); 2) reduce risk of hospital admissions and healthcare costs; 3) delay or prevent deterioration of disease condition of COPD patients; and 4) reduce mortality of patients with COPD.

This evaluation study protocol will address the programme aims from 2 to 4. We will use propensity-score matching method to select a suitable comparator group. Specifically, the aim of our study will be to assess whether the intervention group compared to comparator group has 1) better adherence to the recommended process of care; 2) lower risk of COPD-related hospitalisation as our primary outcome; 3) lower overall healthcare and COPD-related inpatient costs; 4) slower disease progression; and 5) lower one-year mortality rate.

We have also provided further details on the methods, data collection and fidelity measures in the manuscript. For fidelity measures, we will use PACIC score to measure patients' perception on the congruency of the service to the Chronic Care Model (CCM). CCM is a guideline which recognises six aspects as key to improving quality of chronic disease management. With the clarification on the primary outcome and details on the methods, data collection and fidelity measures, we hope it will be easier to judge the programme effectiveness.

This is an interesting and important study examining the impact of a health care innovation. At present the level of detail given in the protocol makes judgement of the overall quality difficult to do. The literature identified the importance of PR but exercise is not identified as a part of the intervention, and outcomes focus on health care utilisation and 1 year mortality, 30 day readmission rate, more common measures like the CRQ or St Georges questionnaire may enable better comparisons.

As there is no locally validated tool to measure quality of life in patients with COPD and the COPD-specific version of St. George's Respiratory Questionnaire is too long to administer, we will use CAT score, which is an eight-question health survey, to measure COPD control in individuals. Scores range from 0 to 40 and lower scores indicate better control. Due to its strong correlation with the COPD-specific version of the St. George's Respiratory Questionnaire, it has been used as an alternative tool for assessing quality of life of patients with COPD. Enrolees' CAT score will be measured at baseline and during their follow-up visits within the first year of enrolment. A CAT score difference of 2 or more (or >10%) suggests clinically significant changes in the quality of life. The CAT score difference is taken as the difference between the baseline and the best reading within 1 year. This outcome is only available for programme enrolees as CAT score is not routinely collected for non-enrolees.

VERSION 2 – REVIEW

REVIEWER	Margrethe Smidth The Research Unit for General Practice, Institute for Public Health, Aarhus University, Denmark
REVIEW RETURNED	30-Sep-2014

GENERAL COMMENTS	<p>Thank you for giving me the opportunity to review this manuscript which now has improved substantially since the first submission.</p> <p>I have the following comments to the paper:</p> <p>Line 22: her should be the</p> <p>Page 4 line 22: 69% longer than what? And what are high admissions rate?</p> <p>Page 5 line 52...The primary outcome: lower risk of COPD hospitalization should be mentioned first and not as the second.. It might enhance the understanding of the paper if the authors presented their primary outcome: lower risk of admission to hospitals due to COPD and the their secondary outcomes: better adherence to the programmelower overall cost ...</p> <p>Page 6 line 8: Why mention any outcome which will not be focus for in this study? That is not necessary.</p> <p>Page 12 line 7: How will the adherence to the programme be measured?</p> <p>Page 16 line 36: This is a study protocol and the authors hope naturally that the programme improves the care for patients with COPD but have not proved this yet wherefore it should be written: in conclusion, the COPD-ICP programme AIMS....</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer's Specific Comments:

ABSTRACT

Introduction

1) Page 2 line 22: her should be the

- As suggested by the reviewer, we have changed the word “her” to “the”.

BACKGROUND

3) Page 4 line 22: 69% longer than what? And what are high admissions rate?

- We have amended the sentence to “COPD patients with complications spent 7.7 days or 79% longer than COPD patients without complications”. We have removed the part “...and accounted for the high 30-day readmission rate”.

4) Page 5 line 52: ... The primary outcome: lower risk of COPD hospitalization should be mentioned first and not as the second... It might enhance the understanding of the paper if the authors presented their primary outcome: lower risk of admission to hospitals due to COPD and their secondary outcomes: better adherence to the programme...lower overall cost...

- We have amended the sentence to “Specifically, the aim of our study will be to assess whether the intervention group compared to comparator group has 1) primary outcome: lower risk of COPD-related hospitalisation, and 2) secondary outcomes: better adherence to the recommended processes of care, lower overall healthcare and COPD-related inpatient costs, slower disease progression, and lower one-year mortality rate”.

5) Page 6 line 8: Why mention any outcome which will not be focus for in this study? That is not necessary.

- We have removed the sentence “Our study will focus on the second, third and fourth objectives of the programme as written above”.

METHODS/DESIGN

Study Outcomes

6) Page 12 line 7: How will the adherence to the programme be measured?

- We will use all-or-none care bundle to measure adherence to recommended processes of care. All-or-none care bundle is a process indicator which measures the percentage of patients who adhere with all of the recommended key care elements according to each patient group A, B, C, and D. We have provided a reference.[12]

DISCUSSION

7) Page 16 line 36: This is a study protocol and the authors hope naturally that the programme improves the care for patients with COPD but have not proved this yet wherefore it should be written: in conclusion, the COPD-ICP AIMS...

- We have amended the sentence to “In conclusion, the COPD-ICP programme aims...” as suggested.