## PEER REVIEW HISTORY



## ARTICLE DETAILS

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| **TITLE (PROVISIONAL)** | DELIRIUM AS A PREDICTOR OF MORTALITY IN US MEDICARE BENEFICIARIES DISCHARGED FROM THE EMERGENCY DEPARTMENT: A NATIONAL CLAIMS LEVEL ANALYSES UP TO 12 MONTHS |
| **AUTHORS** | Israni, Juhi; Lesser, Adriane; Kent, Tyler; Ko, Kelly |

## VERSION 1 – REVIEW

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| **REVIEWER** | Yasuhiro Kishi<br>Department of Psychiatry, Nippon Medical School Musashikosugi Hospital, JAPAN |
| **REVIEW RETURNED** | 13-Jan-2018 |

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| **GENERAL COMMENTS** | The authors used the CMS claims data and found that delirium is a significant risk factor of mortality among seniors discharged from the ED. This paper would provide data in the delirium research fields.<br>I have a few questions.<br>Why were ESRD patients excluded? Was it reasonable to include senior ESRD patients?<br>Only 0.35% of the patients were identified delirium in this study. It is too low. It would be likely delirious who had antipsychotics without prior history of antipsychotic administrations. To improve the quality of the study, can the authors use and combine the pharmacy claims data in this study?<br>Thank you very much for giving me the opportunity to review this interesting study. |

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| **REVIEWER** | Daniel Combs<br>University of Arizona<br>Tucson, AZ<br>United States of America |
| **REVIEW RETURNED** | 19-Feb-2018 |

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| **GENERAL COMMENTS** | The authors present a well-conducted analysis of medicare claims data to evaluate the association between delirium and mortality. The authors describe a strong association between the diagnosis of delirium and risk of subsequent mortality. The paper is generally well-written, and there are a few items to address that may enhance the manuscript:<br>-Patients with ESRD are excluded, but justification is not provided for why ESRD is an exclusion criteria.<br>-It would be useful to provide number of patients for each of the ICD delirium diagnoses. |

## VERSION 1 – AUTHOR RESPONSE

Reviewer #1: Yasuhiro Kishi

- Why were ESRD patients excluded? Was it reasonable to include senior ESRD patients?

Prior literature suggests claims data for ESRD is often incompletely documented or not tracked in the Medicare data system with as much rigor as the general Medicare population, especially for follow-up visits. The presence of potentially unreliable data coupled with the heterogeneity and complex nature of ESRD patients who are already associated with disproportionately higher ED utilization compared to the general population would bias our analyses. We have added justification to the manuscript explaining why ESRD patients were excluded from the study.

- Only 0.35% of the patients were identified delirium in this study. It is too low. It would be likely delirious who had antipsychotics without prior history of antipsychotic administrations. To improve the quality of the study, can the authors use and combine the pharmacy claims data in this study?

Prior research indicates delirium often goes underdiagnosed by up to 80% of ED physicians. In our data, 26,245 (0.35%) patients ≥ 65 were identified as having delirium which is lower compared to rates of delirium in the ED widely reported in literature, which ranges anywhere from 3.6-35% with a mean of 17.5%. Our lower incidence of delirium based on available claims may reflect a failure to diagnose or a failure to code. While we agree additional analysis of pharmacy claims data could more completely capture pharmacological-based delirium claims, the researchers did not have access to Medicare Part D (Drug Coverage) claims data.

Reviewer #2: Daniel Combs

Patients with ESRD are excluded, but justification is not provided for why ESRD is an exclusion criterion.

Prior literature suggests claims data for ESRD is often incompletely documented or not tracked in the Medicare data system with as much rigor as the general Medicare population, especially for follow-up visits. The presence of potentially unreliable data coupled with the heterogeneity and complex nature of ESRD patients who are already associated with disproportionately higher ED utilization compared to the general population would bias our analyses. We have added justification to the manuscript explaining why ESRD patients were excluded from the study.

- It would be useful to provide number of patients for each of the ICD delirium diagnoses.

The researchers agree that the n size distribution for beneficiaries and claims based on ICD-9 delirium diagnosis would be useful to distinguish variation. Sample sizes have been added to supplementary files in the revised manuscript.

## VERSION 2 – REVIEW

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| **REVIEWER** | Daniel Combs<br>University of Arizona<br>Tucson, AZ, USA |
| **REVIEW RETURNED** | 09-Mar-2018 |

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| **GENERAL COMMENTS** | Thank you for making the requested corrections. |

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| **REVIEWER** | Yasuhiro Kishi<br>Department of Psychiatry, Nippon Medical School Musashikosugi Hospital, JAPAN |
| **REVIEW RETURNED** | 10-Mar-2018 |

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| **GENERAL COMMENTS** | The authors answered my questions appropriately. |