

# INPLASY

## Implications of Pimavanserin in Patients with Dementia-related Psychosis: A Systematic Review

INPLASY202430089

doi: 10.37766/inplasy2024.3.0089

Received: 23 March 2024

Published: 23 March 2024

Desai, H; Senaratne, M; Swami, S; Aye, SL; Trivedi, Y; Hamid, P.

### Corresponding author:

Heet Desai

hdesai879@gmail.com

### Author Affiliation:

California Institute of Behavioral Neurosciences and Psychology.

### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202430089

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2024 and was last updated on 23 March 2024.

### INTRODUCTION

**Review question / Objective** This systematic review seeks to learn more about and assess the use of pimavanserin in the treatment of dementia-related psychosis (DRP).

**Rationale** There are no authorized pharmacological medicines for treating individuals with DRP, and antipsychotics (AP) pharmaceuticals are frequently used off-label for treating psychosis despite safety concerns with their usage in this group. Their usage is linked to impaired cognition, extrapyramidal symptoms, drowsiness, falls, and a higher risk of mortality, and their effectiveness is at best questionable. Hence, pimavanserin was introduced as a novel atypical antipsychotic for treatment of DRP with much lesser side effects.

**Condition being studied** This comprehensive analysis sheds light on the potential use of pimavanserin in treating psychosis that arises in the most prevalent dementia-related diseases such as Parkinson's and Alzheimer's.

### METHODS

**Search strategy** PubMed: Pimavanserin AND Dementia OR ("Dementia/etiology"[Mesh] OR "Dementia/pathology"[Mesh] OR "Dementia/physiopathology"[Mesh] OR "Dementia/prevention and control"[Mesh] OR "Dementia/psychology"[Mesh] OR "Dementia/therapy"[Mesh]) AND Psychosis ("Psychotic Disorders/etiology"[Mesh] OR "Psychotic Disorders/pathology"[Mesh] OR "Psychotic Disorders/physiopathology"[Mesh] OR "Psychotic Disorders/prevention and control"[Mesh] OR "Psychotic Disorders/psychology"[Mesh] OR "Psychotic Disorders/therapy"[Mesh])

Google Scholar: allintitle: Pimavanserin AND Dementia AND Psychosis  
 Cochrane library: Pimavanserin AND Dementia AND Psychosis in Title Abstract Keyword.

**Participant or population** Populations of all racial and gender identities with dementia-related psychotic symptoms were selected.

**Intervention** Use of pimavanserin in the aforementioned population.

**Comparator** Not applicable.

**Study designs to be included** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines were followed in conducting this systematic review.

**Eligibility criteria** In addition to PICOS, papers were only considered if they were written entirely in English, free full-text articles published within the previous 10 years, randomized control trials (RCTs), non-RCTs, case series, and case reports; cohort studies; case-control studies; systematic reviews; literature reviews; and meta-analyses. This systematic review did not take animal research into account.

**Information sources** PubMed; Google Scholar; Cochrane library.

**Main outcome(s)** It is promising to see the development of novel pharmaceutical therapies for DRP, with pimavanserin, a serotonin receptor antagonist, garnering the greatest traction. Pimavanserin is superior to other atypical AP in treating DRP as it has the least number of side effects associated with the use of other AP because of its minimal activity on other receptors, such as muscarinic, histaminic, or adrenergic. This study has effectively demonstrated that pimavanserin is a potential treatment option for Parkinson's and Alzheimer's patients who exhibit indicators of psychosis.

**Additional outcome(s)** None.

**Quality assessment / Risk of bias analysis** AMSTAR 2: for systematic reviews and meta-analyses; Jadad scale: for RCTs and non-RCTs; SANRA: for narrative review articles; JBI quality appraisal checklist: for case series and case reports; Newcastle-Ottawa checklist: for case-control and cohort studies.

**Strategy of data synthesis** The data is analysed PRISMA diagram which shows the screening

process and the final number of articles used in this systematic review. The results from those final articles have been explained in detail in the discussion section of this systematic review.

**Subgroup analysis** Not applicable.

**Sensitivity analysis** Not applicable.

**Language restriction** No.

**Country(ies) involved** India, USA, Sri Lanka.

**Keywords** Pimavanserin; dementia; psychosis.

### Contributions of each author

Author 1 - Heet Desai made majority of the contribution to the article, such as the conception of the work and collection of data; corrections; tables and figures editing; and drafted the manuscript from introduction to conclusion.

Email: hdesai879@gmail.com

Author 2 - Mithum Senaratne contributed to collecting data; double checked for possible errors; and reviewed the introduction and method section.

Email: mithumse@gmail.com

Author 3 - Shivling Swami participated in checking for data collection; references; and reviewed the discussion and results section.

Email: shivling54@gmail.com

Author 4 - Soe Lwin Aye participated in drafting discussion; data collection; checking for possible errors; and providing suggestions.

Email: soelwinaye6@gmail.com

Author 5 - Yash Trivedi contributed to abstract drafting; discussion editing; data collection; and checking for possible errors.

Email: yashytrivedi98@gmail.com

Author 6 - Pousette Hamid participated in generating ideas; providing suggestions; title modification; corrections; and revising the manuscript.

### References

- Cummings J, Ballard C, Tariot P, Owen R, Foff E, Youakim J, et al. Pimavanserin: Potential treatment for dementia-related psychosis. *J Prev Alzheimers Dis* 2018;5:253-8
- Tariot PN, Ballard C, Devanand DP, Cummings JL, Sultzer DL. Pimavanserin and dementia-related psychosis. *Lancet Neurol* 2022;21:114-5
- Sellers J, Darby RR, Farooque A, Claassen DO. Pimavanserin for psychosis in Parkinson's disease-related disorders: A retrospective chart review. *Drugs Aging* 2019;36:647-53

- 
4. Ballard C, Kales HC, Lyketsos C, Aarsland D, Creese B, Mills R, et al. Psychosis in Alzheimer's disease. *Curr Neurol Neurosci Rep* 2020;20:57
  5. Tariot PN, Cummings JL, Soto-Martin ME, Ballard C, Erten-Lyons D, Sultzer DL, et al. Trial of pimavanserin in dementia-related psychosis. *N Engl J Med* 2021;385:309-19
  6. Caraci F, Santagati M, Caruso G, Cannavò D, Leggio GM, Salomone S, et al. New antipsychotic drugs for the treatment of agitation and psychosis in Alzheimer's disease: Focus on brexpiprazole and pimavanserin. *F1000Res* 2020;9:v1000-686
  7. Espay AJ, Guskey MT, Norton JC, Coate B, Vizcarra JA, Ballard C, et al. Pimavanserin for Parkinson's Disease psychosis: Effects stratified by baseline cognition and use of cognitive-enhancing medications. *Mov Disord* 2018;33:1769-76
  8. Fredericks D, Norton JC, Atchison C, Schoenhaus R, Pill MW. Parkinson's disease and Parkinson's disease psychosis: A perspective on the challenges, 15 treatments, and economic burden. *Am J Manag Care* 2017;23:S83-92
  9. Abler V, Brain C, Ballard C, Berrio A, Coate B, Espay AJ. Motor- and cognition-related safety of pimavanserin in patients with Parkinson's disease psychosis. *Front Neurol* 2022;13:919778