



Effective Health Care

Statins for the Prevention of Neurodegenerative Disease, Septicemia, and Ventilator-Associated Pneumonia Nomination Summary Document

Results of Topic Selection Process & Next Steps

- Statins for the prevention of neurodegenerative disease, septicemia, and ventilator-associated pneumonia was found to be addressed by a number of existing reports. Given that the existing reports cover this nomination, no further activity will be undertaken on this topic.

Alzheimer's disease

- Williams JW, Plassman BL, Burke J, Holsinger T, Benjamin S. *Preventing Alzheimer's Disease and Cognitive Decline*. Evidence Report/Technology Assessment No. 193. (Prepared by the Duke Evidence-based Practice Center under Contract No. HHSA 290-2007-10066-I.) AHRQ Publication No. 10-E005. Rockville, MD: Agency for Healthcare Research and Quality. April 2010. <http://www.ahrq.gov/clinic/tp/alzcoqtp.htm>

Parkinson's disease

- Becker C, Meier CR. Statins and the risk of Parkinson disease: an update on the controversy. *Expert Opinion on Drug Safety* 2009 May;8(3):261-71. PMID: 19366342.

Ventilator-associated pneumonia and septicemia

- van den Hoek HL, Bos WJ, de BA, et al. Statins and prevention of infections: systematic review and meta-analysis of data from large randomised placebo controlled trials. *BMJ* 2011;343:d7281. PMID: 22127443.
 - Kwok CS, Yeong JK, Turner RM, et al. Statins and associated risk of pneumonia: a systematic review and meta-analysis of observational studies. *Eur J Clin Pharmacol* 2011 Nov 15. PMID: 22083167.
 - Tleyjeh IM, Kashour T, Hakim FA, et al. Statins for the prevention and treatment of infections: a systematic review and meta-analysis. *Archives of Internal Medicine* 2009 Oct 12;169(18):1658-67. PMID: 19822822.
- Statins for the prevention of neurodegenerative diseases other than Alzheimer's and Parkinson's disease is not feasible for a full systematic review due to the limited data available for a review at this time.

Topic Description

Nominator: Individual

Nomination Summary: The nominator questions whether statins have a protective effect against neurodegenerative diseases, septicemia, or ventilator-associated pneumonia.

Staff-Generated PICO- Neurodegenerative disease

Population(s): Patients without neurodegenerative diseases

Intervention(s): Statins

Comparator(s): No use of statins, comparative effectiveness between statins

Outcome(s): Development of neurodegenerative disease, mortality, disease severity

Staff-Generated PICO- Ventilator-associated pneumonia

Population(s): Hospitalized patients being treated with a ventilator

Intervention(s): Statins

Comparator(s): No use of statins, comparative effectiveness between statins

Outcome(s): Development of ventilator-associated pneumonia, mortality, disease severity

Staff-Generated PICO- Septicemia

Population(s): Hospitalized patients at risk for septicemia

Intervention(s): Statins

Comparator(s): No use of statins, comparative effectiveness between statins

Outcome(s): Development of septicemia, mortality, disease severity

Key Questions

from Nominator: None

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see <http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/>.)
- This topic has three main areas:
 1. Statins for the prevention of neurodegenerative disease
 2. Statins for the prevention of ventilator-associated pneumonia
 3. Statins for the prevention of septicemia.

Statins for the prevention of neurodegenerative diseases

- The topic of statins for the prevention of Alzheimer's disease was found to be addressed by a 2010 AHRQ EPC review titled *Preventing Alzheimer's Disease and Cognitive Decline*. Key questions from this report include:
 1. What factors are associated with the reduction of risk of Alzheimer's disease?

2. What factors are associated with the reduction of risk of cognitive decline in older adults?
 3. What are the therapeutic and adverse effects of interventions to delay the onset of Alzheimer's disease? Are there differences in outcomes among identifiable subgroups?
 4. What are the therapeutic and adverse effects of interventions to improve or maintain cognitive ability or function? Are there differences in outcomes among identifiable subgroups?
 5. What are the relationships between the factors that affect Alzheimer's disease and the factors that affect cognitive decline?
 6. If recommendations for interventions cannot be made currently, what studies need to be done that could provide the quality and strength of evidence necessary to make such recommendations to individuals?
- The topic of statins for the prevention of Parkinson's disease was found to be addressed by an existing systematic review titled *Statins and the risk of Parkinson disease: an update on the controversy*. This review examines the existing literature addressing the association between previous statin use and the risk of later development of Parkinson's disease. Only three additional studies were identified addressing the association between the use of statins and development of Parkinson's disease since the last search date of this review. Given the mixed findings of these studies, it does not appear that a new review would have different conclusions than the inconsistent results identified in the previous review.
 - Very few studies have been conducted on the association of statin use and risk of neurodegenerative diseases other than Alzheimer's and Parkinson's diseases. Therefore, this topic is not feasible for a full systematic review due to the limited data available for a review at this time.

Statins for the prevention of ventilator-associated pneumonia and septicemia

- The topic of statins for the prevention of infectious disease (including sepsis and pneumonia) is addressed by an existing systematic review titled *Statins and prevention of infections: systematic review and meta-analysis of data from large randomised placebo controlled trials*. This review examined whether previously identified beneficial associations between statins and infections published in observational studies is causal based on previous randomized trials.
- The topic of statins for the prevention of pneumonia is addressed by an existing review titled *Statins and associated risk of pneumonia: a systematic review and meta-analysis of observational studies*. This article systematically reviews the risk of pneumonia in statin users versus non-users.
- The topic of statins for the prevention of septicemia is addressed by *Statins for the prevention and treatment of infections: a systematic review and meta-analysis*. This article systematically reviews the risk of infections (including sepsis) in statin users versus non-users.