Letters

RESEARCH LETTER

EVIDENCE REPORT

Ocular Prophylaxis for Gonococcal Ophthalmia Neonatorum: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force

Gonococcal ophthalmia neonatorum (GON) is a neonatal conjunctival infection transmitted intrapartum from mothers infected with *Neisseria gonorrhoeae* to their newborns. Although GON is rare in the United States, with 0.4 cases or fewer per 100 000 live births per year during 2013-2017,[1] prevention remains important because of high risk of corneal perforation and blindness, which can develop within 24 hours after delivery.[2]

Related article page 394 and JAMA Patient Page page 414

Preventive strategies for GON include screening for and treatment of gonorrhea in pregnant women and ocular prophylaxis in newborns, which is mandated in most states. Since 1996, the US Preventive Services Task Force (USPSTF) has maintained an "A" recommendation for prophylactic ocular topical medication for all newborns for the prevention of GON, based on good evidence that blindness due to GON has become rare in the United States since the implementation of universal preventive medication of infants. This brief evidence update was used by the USPSTF to update its 2011 "A" recommendation.[3]

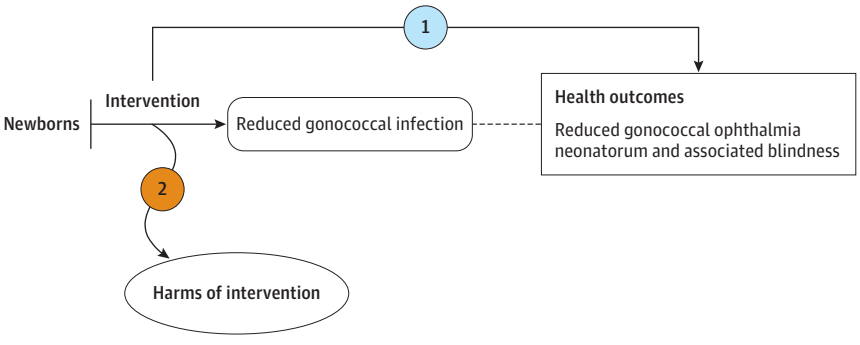
Methods | Because ocular prophylaxis for GON represents a long-established standard of practice, the USPSTF commissioned a targeted review using a reaffirmation updating process to identify "new and substantial evidence sufficient enough to change the prior recommendation."[4] As such, only the interval evidence since the previous systematic review was evaluated. An analytic framework and 2 key questions guided the evidence update (**Figure**). Detailed methods, including the search strategy, inclusion and exclusion criteria, criteria for critical appraisal, and a list of excluded studies, are available in the full evidence report at http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/ocular-prophylaxis-for-gonococcal-ophthalmia-neonatorum-preventive-medication1.

Results | PubMed and the Cochrane Central Register of Controlled Trials were searched from January 1, 2008, to January 16, 2018. Two reviewers independently reviewed 282 unique citations and 6 full-text articles.

No new publications meeting eligibility criteria were identified.

Discussion | This systematic review yielded no relevant new studies since the previous USPSTF recommendation addressing the effectiveness and harms of GON prophylaxis (**Table**).[3] The foundational evidence for prior USPSTF recommendations largely consisted of observational studies from sub-Saharan Africa conducted in the 1980s and 1990s. Given the low prevalence of maternal gonorrhea in developed countries, any contemporary study conducted in a developed country would be underpowered. Comparative effectiveness studies, including one conducted in the United States, have found no statistically significant differences in efficacy for GON prevention with different agents, including silver

Figure. Analytic Framework and Key Questions: Ocular Prophylaxis for Gonococcal Ophthalmia Neonatorum



Key questions

1 What is the effectiveness of ocular prophylaxis for the prevention of gonococcal ophthalmia neonatorum and associated blindness?

2 What are the harms of ocular prophylaxis for the prevention of gonococcal ophthalmia neonatorum?

Evidence reviews for the US Preventive Services Task Force (USPSTF) use an analytic framework to visually display the key questions that the review will address to allow the USPSTF to evaluate the effectiveness and safety of a preventive service. The questions are depicted by linkages that relate to interventions and outcomes. A dashed line depicts a health outcome that follows an intermediate outcome. Further details are available from the USPSTF Procedure Manual.

Table. Snapshot of the Evidence

Rationale for Previous GON Prophylaxis USPSTF Recommendation[3] and Foundational Evidence	Limitations of Foundational Evidence	New Evidence Findings
Benefits		
Consistent evidence that topical ocular prophylactic preparations including erythromycin (0.5% ophthalmic ointment), tetracycline (1% ophthalmic ointment), and 1% silver nitrate solution are effective in preventing GON Strong evidence that universal administration of ocular prophylaxis has reduced incidence of GON in the United States	Primarily based on observational evidence from studies conducted in countries with limited applicability to the United States >20 years ago Limited evidence evaluating comparative effectiveness of prophylactic preparations that do not rely on antibiotics (ie, povidone-iodine)	No new studies identified for clinical effectiveness Few new studies identified evaluating comparative effectiveness of prophylactic agents from countries with limited applicability to the United States; 1 study from Israel using 2003-2004 data found no difference between iodine and tetracycline in reducing in GON cases
Harms		
Harms not discussed	Reporting of harms is sparse and nonspecific, generally indicating the occurrence of chemical conjunctivitis, particularly with the use of silver nitrate	No new harms studies identified

Abbreviations: GON, gonococcal ophthalmia neonatorum; USPSTF, US Preventive Services Task Force.

nitrate, erythromycin, tetracycline, and povidone iodine, although conclusions are limited by low power.[5]

Although the USPSTF and other bodies recommend universal GON prophylaxis based on the foundational evidence, others, such as the Canadian Pediatric Society, have questioned the current applicability of such evidence because the universal prenatal screening and treatment of sexually transmitted infections introduced in the 1970s is considered the most effective preventive strategy and the standard of care. It is possible that state-mandated ocular prophylaxis may be less warranted in settings with comprehensive access to prenatal care, including screening pregnant women for gonorrhea and addressing infections before birth. However, not all US women receive prenatal care. In the United States, where risk-based prenatal gonorrhea screening is recommended and ocular prophylaxis is the standard of care, the individual contribution of each method for preventing GON is unknown.

The ideal candidate agent for prophylaxis would be effective against GON but with low risk of antibiotic resistance, not cause chemical conjunctivitis, be inexpensive in single-dose vials, and be approved by the US Food and Drug Administration and available in the United States. Currently, erythromycin fulfills most of these criteria, but some concerns remain about potential antibiotic resistance[6] and data on the incidence of chemical conjunctivitis with erythromycin agents are scarce.

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Author Contributions: Dr Guirguis-Blake had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Concept and design: Guirguis-Blake, Evans.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: All authors.
Critical revision of the manuscript for important intellectual content: Guirguis-Blake.
Administrative, technical, or material support: Evans, Rushkin.
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Role of the Funder/Sponsor: Investigators worked with USPSTF members and AHRQ staff to develop the scope, analytic framework, and key questions for this review. AHRQ had no role in study selection, quality assessment, or synthesis. AHRQ staff provided project oversight, reviewed the report to ensure that the analysis met methodological standards, and distributed the draft for peer review. Otherwise, AHRQ had no role in the conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript findings. The opinions expressed in this document are those of the authors and do not reflect the official position of AHRQ or the US Department of Health and Human Services.

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Editorial Disclaimer: This evidence report is presented as a document in support of the accompanying USPSTF Recommendation Statement. It did not undergo additional peer review after submission to *JAMA*.

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