

PEDIATRIC EMERGENCY MEDICINE PRACTICE

AN EVIDENCE-BASED APPROACH TO PEDIATRIC EMERGENCY MEDICINE ▲ EB MEDICINE.NET

Enterovirus And The Neonate: Controversies In The Diagnosis And Management Of Potentially Lethal Infections

Goodman, K, Garcia, S, Paul, A. March 2009, Volume 6; Number 3

An evidence-based review of the evaluation and management of enteroviral infections in the emergency department is presented in this issue of *Pediatric Emergency Medicine Practice*. Here, we outline key recommendations for practice based on valid research evidence within the journal issue. For a more detailed and systematic look at the latest evidence on enteroviral infections as well as other considerations such as the physical examination, clinical pathways, and other laboratory tests not noted here, see the full text article.

EVIDENCE-BASED CLINICAL RECOMMENDATIONS FOR PRACTICE

Key Points	References*	Comments
<i>Enteroviruses</i> are a genus of RNA viruses that can present with a wide range of clinical symptoms ranging from mild/asymptomatic to fulminant sepsis with myocarditis, hepatitis, and encephalitis.	10	The genus <i>Enterovirus</i> belongs to the family <i>Picornaviridae</i> , a large family of morphologically identical, single-strand RNA viruses that share a common genomic and structural organization.
Neonates are at risk for more severe disease.		Neonates (children less than one month of age) have immature immune systems and are at higher risk for serious complications of bacterial and viral infections, including enteroviral diseases.
Typical onset of generalized enteroviral infection is at 3 to 5 days of life, though some may present with a diphasic illness characterized by 1 to 7 days of recovery between initial presentation and disease progression.	17,19	Some patients will present in the neonatal nursery; others will present after discharge home. For this latter group, the emergency department will become the first portal of entry for the clinically ill patient.
Various serotypes including <i>coxsackie</i> and <i>echovirus</i> may cause disease.	18	Although certain serotypes may be related to particular symptoms, there is overlap of clinical manifestations.
The primary modes of transmission of <i>Enterovirus</i> in neonates can involve transplacental, intrapartum, or postnatal acquisition.	19	Neonates may be secondarily affected by modes of transmission of enteroviral infection through the community. Enteroviral infection can be spread by the fecal-oral route and/or by oral-oral contamination (respiratory routes).
Taking a thorough history may suggest particular risk factors that put the baby at risk for enteroviral disease		Neglecting to address particular characteristics in the neonate's history and current state may lead the physician to miss important clues that would aid in diagnosis and management of the neonate.
Viral culture and PCR are 2 methods used in detecting <i>Enterovirus</i> . While there are many advantages of using PCR over viral culture, including shortened time to obtain results and improved sensitivity, use of PCR is laboratory dependent at this time.	72	One study of 502 children, two-thirds of whom were less than 1 year of age, reported 100% sensitivity and 97% specificity when using CSF PCR compared to CSF viral culture, which has a sensitivity of 65% of 75%.
Although confirmed <i>Enterovirus</i> by PCR has been shown to reduce administration of antibiotics and shorten hospital stays in patients older than 90 days, this cannot be applied to the neonate at this time. More research must be performed in order to show the applicability to the neonate.	18,65,76,77	When considering sending a specimen for <i>Enterovirus</i> PCR, it is important to know whether the hospital's laboratory is capable of running the specimen or whether it must be sent to another laboratory. This drastically changes the turnaround time for obtaining results.
The current treatment of enteroviral disease in neonates is supportive, including addressing complications of diseases such as hepatitis and myocarditis.	50,60	Though it will not treat enteroviral infection, the initiation of antibiotics such as ampicillin, gentamycin, or cefotaxime along with the consideration of vancomycin in the very ill-appearing infant is recommended. Similarly, infants suspected of HSV should be started on acyclovir to protect and treat herpes encephalitis.
Current research is examining IVIG and pleconaril as possible treatment strategies for enteroviral infection. Future studies may continue to address these issues and perhaps present a successful means to treating the disease and preventing sequelae.	87	Before pleconaril or any other medication can be used, modalities to differentiate which patients are more likely to have a worsening of their disease progression must be determined.

* See reverse side for reference citations.

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These references are excerpted from the original manuscript. For additional references and information on this topic, see the full text article at ebmedicine.net.

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