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Short Communication

## Recent cluster of neonatal enteroviral myocarditis cases in the United Kingdom of Great Britain and Northern Ireland - current scenario and counteracting prospects

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## ABSTRACT

**Objectives:** Neonatal myocarditis is a rare but life-threatening complication of enterovirus infection that presents like bacterial sepsis.

**Outbreak:** A sudden upsurge in cases of neonatal enteroviral myocarditis, reported from South West England and South Wales between June 2022 and April 2023 has alerted health agencies to bring in counteracting measures.

**Impact:** In view of this outbreak situation, the World Health Organisation advisory has urged clinicians seeing neonates and infants with shock may consider myocarditis as a differential diagnosis and test for enteroviruses.

## Introduction

Enteroviruses are known to cause seasonal infections in the paediatric age group that are mostly mild and self-limiting. Neonates, though less commonly, are found to be severely affected especially with viral meningitis and sepsis-like syndrome [1]. A rarer but life-threatening complication of enteroviral infection is neonatal myocarditis which mimics bacterial sepsis and is associated with circulatory failure, cardiogenic shock, congestive cardiac failure and arrhythmia. Along with the clinical signs and symptoms, a diagnosis of neonatal enteroviral myocarditis (NEM) is supported by elevated levels of cardiac enzymes, and echocardiographic and electrocardiographic findings [2]. There is no specific antiviral therapy for NEM. Afterload reduction with drugs such as Dobutamine, Levosimendan or Milrinone is the mainstay of therapy. Treatment with intravenous immunoglobulins may be beneficial, assuming neutralizing antibodies help in virus clearance and thus bring down the detrimental inflammatory effects. Early initiation of the therapy is essential before severe necrosis of myocytes sets in. Anti-viral drugs, Pleconaril and Pocopavir have been used in the treatment of NEM. The prognosis of NEM is poor [2,3]. The mortality rate is about 40% [4].

Though the actual burden of the disease in the UK is unknown, data analysed from the Hospital Episode Statistics database and Patient Episode Database for Wales on hospital admissions for neonatal myocarditis in England and Wales respectively, have shown peaks in the

number of cases in 2013 and 2022 [5]. An investigation of a cluster of NEM reported from June 2022 was undertaken by The UK Health Security Agency along with Public Health Wales in April 2023. The 15 severely ill neonates from South West England and South Wales, admitted to the paediatric intensive care unit with features of myocarditis, tested positive for enterovirus nucleic acid by polymerase chain reaction (PCR). Seven of 10 cases from South Wales had subtyping performed which identified coxsackie B3 or B4 in them. Four of five cases from South West England had subtyping done to identify coxsackie B3 (Figure 1). The most frequently PCR-positive sample type was blood, followed by respiratory and stool samples. As of May 05, 2023, there has been one death, and one case still hospitalized [6,7]. A recent publication by Ng *et al.* [4] describes eight of the 15 NEM cases in South Wales and South West England from September to December 2022.

The World Health Organisation (WHO), based on limited information has assessed the public health risk to be low for the general population. There was sparse evidence of maternal infection in the cases documented, during or prior to delivery. It is possible that asymptomatic carriage and shedding of the virus in maternal enterovirus infection might have caused neonatal infection. Since enterovirus infection is not among the notifiable diseases in Member States, it is likely that a significant number of cases might have gone unreported. WHO advisory states that clinicians seeing neonates and infants with shock may consider myocarditis as a differential diagnosis and test for enteroviruses [7].

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**Figure 1.** Neonatal enteroviral myocarditis outbreak, United Kingdom (June 2022 – April 2023).

There is no vaccine for this virus. The preventive measures during outbreaks are focused on maintaining routine hygiene that includes frequent and thorough handwashing and appropriate disinfection of surfaces. Presently, based on the information regarding the situation, WHO does not recommend any trade and/or travel restrictions to the UK [7].

#### Declarations of competing interest

The authors have no competing interests to declare.

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Not applicable.

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#### Author contributions

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