



Trägerschaft: pädiatrie schweiz und Bundesamt für Gesundheit (BAG)

Neonatal enterovirus infections

Disease surveillance

All neonates (< 28 days) with laboratory evidence of Enterovirus

Primary investigators

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Summary

World Health Organisation (WHO) and the European Center of Prevention and Disease Control (ECDC) report on severe, fatal Echovirus 11 infections in neonates from France, Croatia, Sweden, Spain and Italy in the last 12 months[1,2]. Using the SPSU, we aim to rapidly implement a nationwide surveillance system for Enteroviruses including Echovirus 11 in neonates. The aim of this study is to rapidly analyse their epidemiology.

Background and rationale

On 5 May 2023, France reported an increase in cases of severe neonatal sepsis associated with Enterovirus (Echovirus-11 (E-11))[3,4]. A total of nine cases of neonatal sepsis with hepatic impairment and multi-organ failure were reported between July 2022 and April 2023 from four hospitals in three regions of France. As of 5 May 2023, seven cases have died and two were still hospitalized in neonatal unit. The current increase in incidence and severity in neonates, associated with a recombinant lineage of E-11 that previously was not detected in France, and is considered unusual due to the extremely rapid deterioration and associated case fatality rate amongst the affected babies. Based on the limited information available, WHO assesses the public health risk for the general population to be low, despite the concerning nature of the increase.

Aims of the study

Therefore, we aim to rapidly implement a nationwide surveillance system for Enteroviruses, including Echovirus 11 in neonates < 28 days with the following aim:

- describe the epidemiology of Enteroviruses, including Echovirus 11 in neonates in Switzerland

Methods

Observational, multicentric surveillance with reporting of all neonates with laboratory evidence of Enterovirus infection.

Two step approach: 1) declaration of cases through the monthly SPSU card; 2) filling of a specific, individualized, anonymized case-report form (see attached) by physician in charge.

Case definition

Neonate (< 28 days) hospitalised with laboratory-confirmed diagnosis of non-polio Enterovirus

Inclusion criteria

- Age < 28 days
- Laboratory confirmed non-polio Enterovirus
- Hospitalised in one of the Swiss pediatric clinic

Study Design

1. Reporting, data collection and questionnaire:

Upon identification of a case by a clinician to the SPSU in the monthly report, they will enter the data into SPSU questionnaire, which will contain all data needed.

All data is anonymized and does not contain any identifiable information.

Enterovirus-containing samples (blood, stool, cerebrospinal fluid) are to be sent to the National Polio Reference Laboratory (Institute for Medical Microbiology, Petersplatz 10, CH-4003 Basel) for genotyping. The costs will be borne by the FOPH.

Through this system, we aim to capture all patients meeting the case definition. Patients admitted to one of the SPSU participating hospitals will be reported through the usual SPSU surveillance system.

Study initiation

01.09.2023

Duration of study

Five years (2023–2028) with an option for extension

Literature

- 1 Epidemiological update: Echovirus 11 infections in neonates. 2023.<https://www.ecdc.europa.eu/en/news-events/epidemiological-update-echovirus-11-infections-neonates> (accessed 11 Aug 2023).
- 2 Enterovirus-Echovirus 11 Infection - the European Region. <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON474> (accessed 11 Aug 2023).
- 3 Grapin M, Mirand A, Pinquier D, *et al.* Severe and fatal neonatal infections linked to a new variant of echovirus 11, France, July 2022 to April 2023. *Eurosurveillance* 2023;**28**:2300253. doi:10.2807/1560-7917.ES.2023.28.22.2300253
- 4 A variant of E-11 Enterovirus linked to severe acute hepatitis and meningoencephalitis in newborns in France. ESCMID - Emerg. Infect. Task Force. 2023.https://www.escmid.org/fileadmin/src/media/PDFs/3Research_Projects/EITaF/EITaF_2023_07_07.pdf (accessed 11 Aug 2023).