

## Varicella-Zoster Virus (VZV) associated hospitalisations (incl. post infectious complications)

### Disease surveillance

All children < 16 years with VZV infection leading to hospitalisation

### Primary investigators

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### Summary

In Switzerland VZV associated hospitalisations were reported to SPSU during 2000 to 2003. Case load and highest hospitalisation rates were in children < 9 years at that time. About 5% of children and adolescents escape VZV infection (especially those who grow up without siblings) and, in the absence of immunisation, remain susceptible and thereby enter an age-group (adulthood) at risk of severe complications. Recent varicella surveillance data from England show that the incidence of hospitalizations and complications has increased by a quarter between the years 2004 to 2017 for all age groups. In Switzerland recent data on varicella associated hospitalizations and complications are missing. However, these particular data are necessary as they will give a portrait of children hospitalized for varicella reflecting what could be prevented by vaccination. They will serve as an argumentation base for decision makers when discussing implementation of universal VZV vaccination in Switzerland.

### Begin of study

01.07.2021

### Duration of study

Three years (2021-2023) with an option for prolongation

### Aim of the study

Surveillance of type and frequency of VZV associated complications leading to hospitalization in Switzerland to review the epidemiology, risk factors, exposures, VZV vaccination, complications, clinical management, antibiotic exposure, hospital days (incl. ICU) and outcome during the currently implemented prevention strategy. Comparison with previous SPSU VZV surveillance data and international data.

## Background

Many believe that varicella, a common infectious disease, is a benign childhood disease. This may be true for the majority of cases, however there are noteworthy and serious exceptions<sup>1</sup>. In Switzerland VZV associated hospitalisations were reported to SPSU during 2000 to 2003. During these years a total of 335 cases were identified. Mean age of patients was 4.1 years (median 3.5 years, range 0-16 years). Only 13% were immunocompromised. Most common complications were secondary bacterial infections and central nervous system involvement. 3% required intensive care and three died. The calculated hospitalisation rate was 13 per 10<sup>4</sup> cases<sup>2</sup>. In Switzerland age-specific seroprevalence in children <5 years is 37% and by 15 years this reaches about 96%<sup>3</sup>. About 5% of children and adolescents escape VZV infection (especially those who grow up without siblings) and, in the absence of immunisation, remain susceptible<sup>4</sup> and thereby enter an age-group (adulthood) at much higher risk of severe complications<sup>5,6</sup>. The current vaccination strategy in Switzerland recommends that, due to the elevated risk of complications in adults, VZV infection should be prevented in anyone who did not have chickenpox as a child. Vaccination against chickenpox (varicella) is therefore recommended for all adolescents between 11 and 15 years of age who are not immune (catch-up vaccination for adults up to the age of 39)<sup>7</sup>. During a monitoring period (2014-2016) of VZV vaccination uptake, the Swiss Federal Office of Public Health noted that only 1% of adolescents at 16 years had received 2 doses of vaccine<sup>8</sup>.

The results of a recent publication on surveillance data of VZV complications in England, a country where universal VZV vaccination is also not yet implemented but under discussion, show that the hospitalization and complication incidence has increased by 25% and 24% respectively, when comparing the years 2004 to 2017<sup>11</sup>. VZV hospitalizations and complications have decreased dramatically in the USA<sup>9</sup> and Germany<sup>10</sup> after implementation of a universal VZV vaccination strategy.

Data from VZV hospitalisation surveillance programs which were implemented in Australia and New Zealand in the past ([www.inopsu.com](http://www.inopsu.com)) delivered evidence for the implementation of national VZV vaccination programs. In Switzerland recent data on varicella associated hospitalizations and complications are missing. However, these particular data are necessary as they will give a portrait of children hospitalized for varicella reflecting what could be prevented by vaccination. They will serve as an argumentation base for decision makers when discussing implementation of universal VZV vaccination in Switzerland.

## Methods

Observational, multicentric surveillance with reporting of all children and adolescents ≤ 16 years of age hospitalised in one of the SPSU participating hospitals with VZV infections, i.e. varicella or herpes zoster. Reporters will be encouraged to report VZV associated ischemic stroke also to the Swiss Neuropediatric Stroke Registry (<https://snpsr.neuropaediatrie.ch/>) and vice versa we will be informed about cases reported to the Swiss Neuropediatric Stroke Registry during the study period.

After notification to SPSU by participating hospitals/clinics an anonymised CRF (see attachment) is linked to the notifying centre for online data entry.

## Reporting

Reporting of all hospitalised children and adolescents ≤ 16 years with clinical manifestations of VZV infection (ICD-10: B01.-).

## Literature

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