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Vaccinovigilance 2019

Summary of adverse events following immunization reported in Switzerland during 2019

Contents

Executive summary

During 2019, the division Safety of Medicines of Swissmedic received 273 new case-reports of suspected adverse events following immunization (AEFI) from Switzerland. This is a higher reporting level as the number of cases submitted during 2018 (223 reports) and as compared to 2017 (232 reports).

As in previous year 2018, AEFI-reports submitted during 2019 have been recorded and evaluated in the pharmacovigilance database of Swissmedic - VigilanceONE Ultimate. There are no accurate data available regarding the total number of vaccines/doses administered during 2019 and therefore a straightforward conclusion regarding AEFI reporting rates cannot be drawn.

As previously, Swissmedic is encouraging spontaneous reporting of AEFIs in high quality, which enables early detection of new safety signals. Important safety issues concerning vaccines – including potential risks – are evaluated with participation of the Human Medicines Expert Committee (HMEC) of Swissmedic, if necessary.

An increased AEFI reporting rate within the database, followed by a scientific evaluation of relevant cases can lead to risk minimisation measures in order to ensure vaccines safety.

Reports of AEFI 2019

Figure 1
Number of AEFI reports per age group and gender, 2019

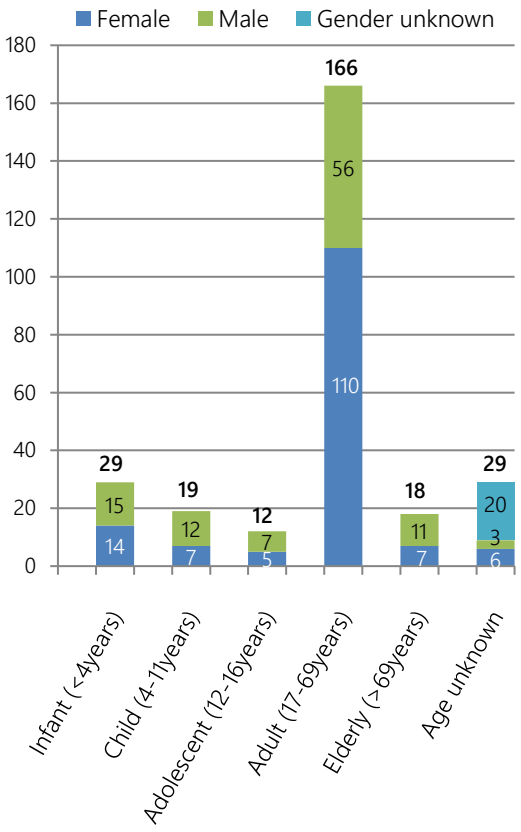

Figure 1 compares the number of reports per age group and gender. The largest number of AEFI reports involved adults (166 reports), followed by infants (29 reports), children (19 reports), elderly (18 reports) and adolescents (12 reports).

Throughout the year 2019, the number of reports concerning females (149 reports) exceeded the number of reports concerning males (104 reports). In 20 AEFI reports, the gender of the persons remained unknown. In 29 case-reports, the age-group of the patients was not specifically reported.

Figure 2
Number of reports per vaccine group (ATC code) and seriousness, 2019

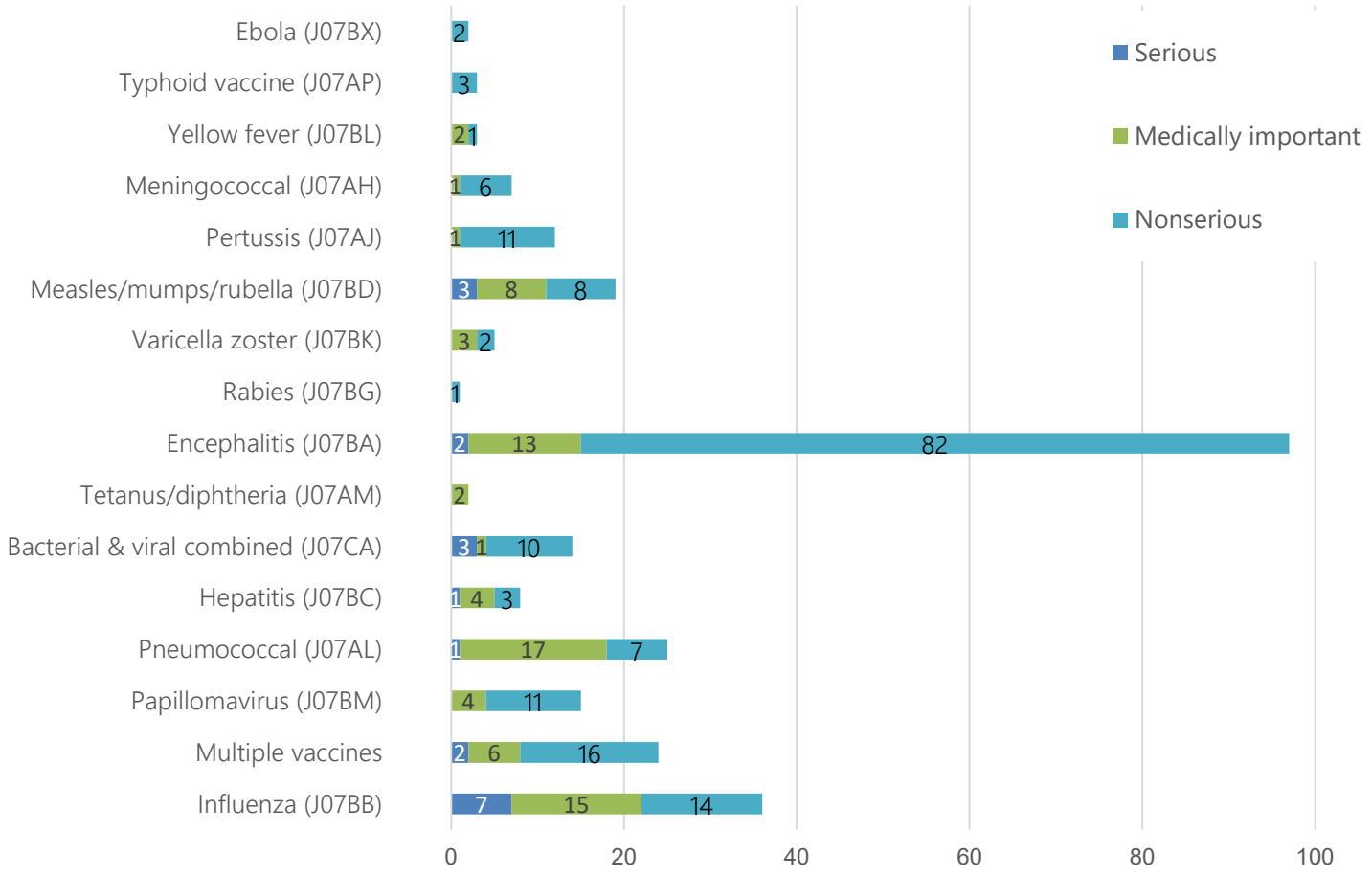

Figure 2 shows the number of spontaneous AEFI reports grouped per vaccine group (ATC code) and seriousness. There are no data available to Swissmedic regarding the number of doses administered in each particular vaccine group in 2019 and therefore this figure does not indicate which vaccine group displayed a higher AEFI rate (as number per 100'000 doses).

Generally, a safety report is assessed as 'serious' if it involves an adverse event leading to death, to hospitalisation or to prolongation of an existing hospitalisation, if it was life threatening or resulted in a significant or persistent disability or a congenital anomaly.

Furthermore, a report is assessed as 'medically important' (and hence as 'serious') even if it does not fulfil the criteria for 'seriousness' mentioned, but it involves an event considered to be significant by medical judgement.

All other reports are assessed as 'not serious' (e.g. self-limiting adverse events with good recovering). Of the 273 spontaneous reports received in 2019, 177 (64.8%) were not-serious, 77 (28.2%) included medically important events and 19 (7%) of the reports involved AEFIs with serious consequences.

Generally, by considering all vaccines, the relative frequency (percentage) of 'serious' or 'medically important' cases taken together decreased as compared to those recorded during the previous year (35.2% in 2019 vs. 52.9% in 2018).

As apparent in Figure 2, a higher number of cases was submitted in 2019 in relation with the tick-borne encephalitis vaccination. However, the vast majority of these case-reports were assessed as 'non-serious', whereas the number of 'serious' or 'medically important' cases regarding encephalitis vaccines was comparable with those received for other vaccine groups.

Figure 3
Number of AEFI reports per reporter qualification and seriousness, 2019

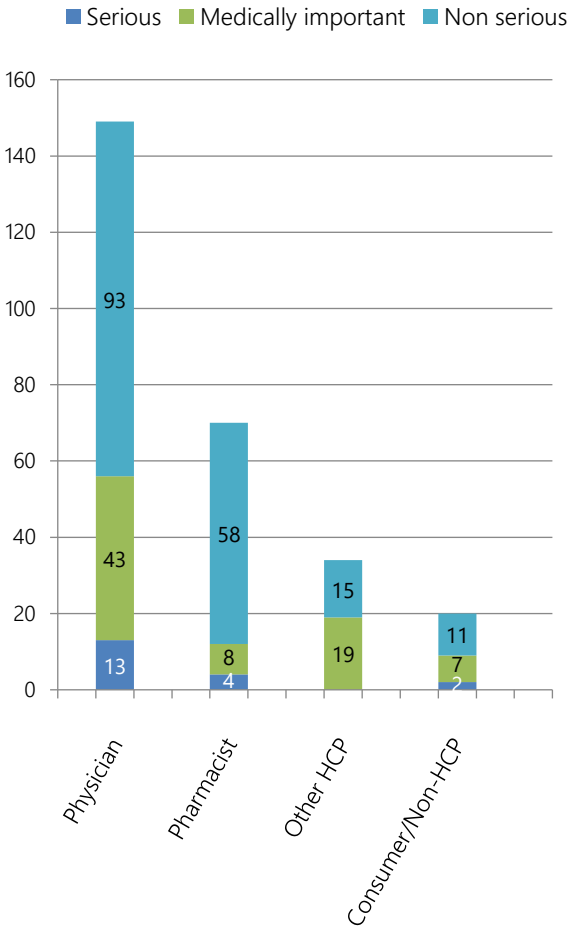

Figure 3 shows the number of Swiss AEFI reports in 2019 grouped by primary reporter and seriousness. Health care professionals - generally providing medically confirmed data and good quality of individual AEFI reports - have been primary reporters in the vast majority of cases. Physicians reported the largest group of AEFI reports (149 of 273), comprising also a higher number of reports assessed as serious or medically important (56 of 149 reports).

Figure 4
Number of AEFI reports per age group and seriousness, 2019

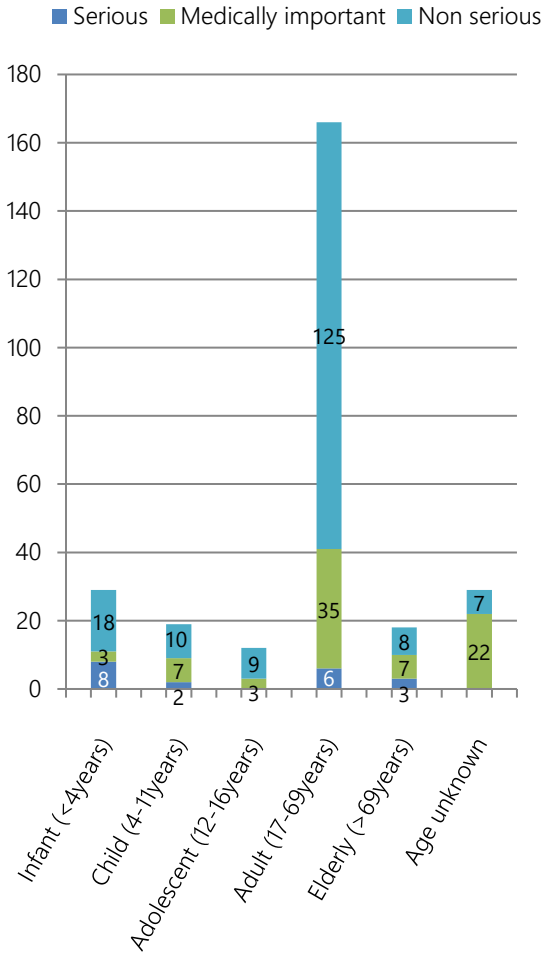

Figure 4 shows the number of spontaneous AEFI reports grouped by age group and seriousness. It becomes apparent that the highest number of 'serious' or 'medically important' (41 AEFI-reports in total) have been recorded in the age group 'adults'.

However, during 2019, the age group 'elderly' totalises the highest percentage of 'serious' or 'medically important' cases taken together (10 of 18 reports, 55.5%) as compared with the other age groups specifically recorded: 'children' (9 of 19 reports, 47.4%), 'infants' (11 of 29 reports, 37.9%) and 'adults' (41 of 166 reports, 24.7%).

Figure 5
Number of AEFI reports in Switzerland by System Organ Classes, 2019

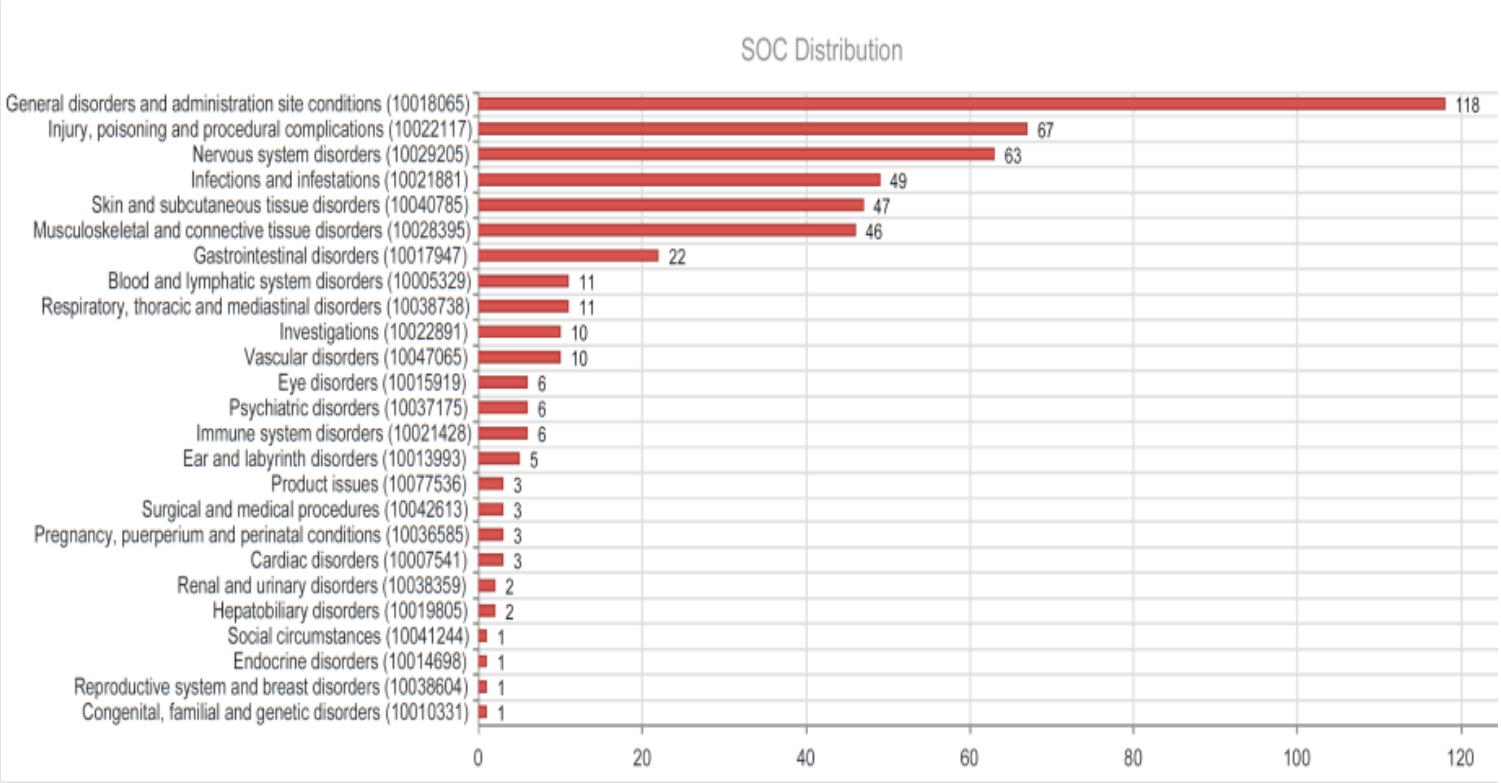

Figure 5 provides an overview on the AEFI reports received during 2019, as grouped by the MedDRA System Organ Classes (SOCs) concerned, i.e. regarding AEFIs of each report. The following six organ classes were most frequently involved in reports after immunization:

- General disorders and administration site conditions (118 reports, 43.2%)
- Injury, poisoning and procedural complications (67 reports, 24.5%)
- Nervous system disorders (63 reports, 23.1%)
- Infections and infestations (49 reports, 17.9%)
- Skin and subcutaneous tissue disorders (47 reports, 17.2%)
- Musculoskeletal and connective tissue disorders (46 reports, 16.8%).

Figure 6
AEFI reports by vaccine group (ATC code) and top 3 involved System Organ Classes, 2019

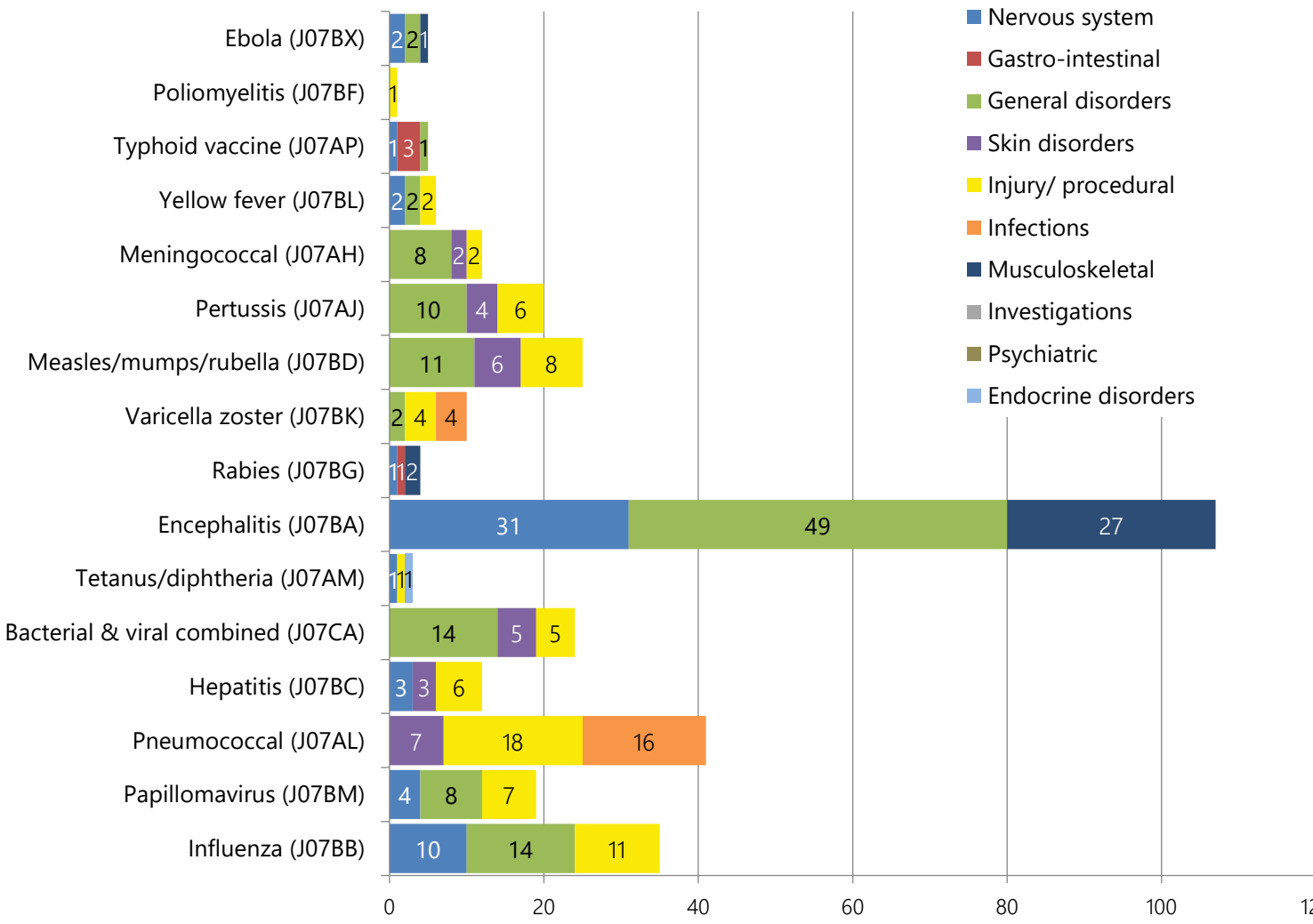

Figure 6 shows the AEFI reports by vaccine group (ATC code) and top 3 MedDRA system organ classes concerned. Notably, most of the vaccines have a significant part of their frequently reported adverse events classified in the SOCs:

- General disorders and administration site conditions
- Musculoskeletal and connective tissue disorders
- Nervous system disorders
- Skin and subcutaneous tissue disorders
- Injury, poisoning and procedural complications.

Table 1
Overview on the most frequent AEFIs of all reports, 2019

Adverse event	System Organ Class	Number of reports
Injection site reactions	General disorders and administration site conditions	65
Vaccination failure	Injury, poisoning and procedural complications	35
Erythema/ Rash/ Urticaria	Skin and subcutaneous tissue disorders	32
Fever	General disorders and administration site conditions	30
Headache	Nervous system disorders	20
Asthenia/Fatigue	General disorders and administration site conditions	19
Nausea/ Vomiting	Gastrointestinal disorders	17
Exposure during pregnancy	Injury, poisoning and procedural complications	16
Influenza	Infections and infestations	16
Pneumococcal sepsis	Infections and infestations	16
Myalgia	Musculoskeletal and connective tissue disorders	14
Arthralgia	Musculoskeletal and connective tissue disorders	13
Vertigo/ Dizziness	Nervous system disorders	12
Pain in extremity	Musculoskeletal and connective tissue disorders	11
Paraesthesia	Nervous system disorders	9

Table 1 displays the most frequent AEFI as reported during 2019:

- injection site reactions
- vaccination failure
- erythema / rash / urticaria; fever
- headache
- asthenia / fatigue; nausea/ vomiting
- exposure during pregnancy
- influenza
- pneumococcal sepsis
- myalgia; arthralgia
- vertigo / dizziness
- pain in extremity
- paraesthesia.

Table 2
The most frequent AEFIs in 'serious' or 'medically important' reports, 2019

Adverse event	System Organ Class (SOC)	Number of reports
Vaccination failure	Injury, poisoning and procedural complications	31
Pneumococcal sepsis	Infections and infestations	16
Fever	General disorders and administration site conditions	13
Influenza	Infections and infestations	10
Asthenia /Fatigue	General disorders and administration site conditions	8
Nausea / Vomiting	Gastrointestinal disorders	6
Headache	Nervous system disorders	5
Erythema / Rash / Urticaria	Skin and subcutaneous tissue disorders	5

Table 2 summarizes the most frequent AEFIs in reports assessed as 'serious' or 'medically important' (n ≥ 5 cases). The two tables (Table 1 and Table 2) are displaying quite similar reported AEFIs.

The 16 case-reports of pneumococcal sepsis – noticeable in table 1 and table 2 – are originating from a literature article (see Ref. 1) reporting the results of a study assessing the impact of pneumococcal vaccines on the burden of pneumococcal sepsis in children. All 16 cases occurred as result of vaccine ineffectiveness, following the administration of the 13-valent pneumococcal conjugate vaccine.

Reports of serious neurological AEFIs occurring in Switzerland during 2019 included:

- One case of 'hypotonic-hyporesponsive episode' occurring in a 17-months-old girl following influenza vaccination, with outcome reported as 'recovered'.
- One case of 'polyneuritis' in a 73-year-old man, following influenza vaccination, with outcome reported as 'recovered'.
- One case reporting 'paralysis of arm' in an adult man, following tick-borne encephalitis vaccination, with outcome 'unknown'.
- Two cases, each reporting of 'facial paralysis': one case in an 81-year-old male, following influenza vaccination, with outcome 'not recovered' at the time of reporting. The second case occurred in an adult man of unspecified age following administration of the tick-borne encephalitis vaccine, with outcome reported as 'recovered'.
- One case of 'facial nerve paresis' in a 41-year-old woman, following tick-borne encephalitis vaccination, with outcome 'recovering' at the time of reporting.
- One case of 'severe headache', 'gait disturbance' and 'vertigo' in a 65-year-old woman, following tick-borne encephalitis vaccination, with outcome reported as 'recovering'.
- One case reporting of 'demyelination' and 'optic neuritis' in a 41-year-old woman following administration of a combined tetanus/ diphtheria/ pertussis/ poliomyelitis vaccine. The outcome was 'not recovered' at the time of reporting.
- One case of 'amyotrophic lateral sclerosis' in a woman of unspecified age following administration of a combined tetanus/ diphtheria vaccine, with outcome reported as 'not recovered'.
- One case from the literature of 'acute disseminated encephalomyelitis' and bilateral 'optic neuritis' in a 59-year-old man following influenza vaccination (see Ref. 2). The outcome was 'recovered' at the time of reporting.
- One case of moderate 'sensory-motor axonal polyneuropathy' in a 66-year-old man, following administration of yellow fever vaccine, with outcome reported as 'not recovered'.
- One case of 'myelitis' in a 55-year-old man, following tick-borne encephalitis vaccination, with outcome reported as 'not recovered'.
- One case of 'status epilepticus' in a 13-months-old male infant, following measles/mumps/rubella vaccination, with outcome reported as 'not recovered'.
- One case-report of 'Guillain-Barre syndrome' in a man of unspecified age, following influenza vaccination, with outcome reported as 'unknown'.
- One case-report of 'Wartenberg migrant sensory neuritis' and 'dysesthesia of extremities' in a 46-year-old woman, following yellow fever vaccination, with outcome reported as 'not recovered'.

Fatal case-reports received by Swissmedic in 2019 included:

- A report describing a case of vaccination failure (vaccine ineffectiveness) in a 95-year-old male patient following influenza vaccination. The patient was admitted to the hospital by the emergency service with increasing dyspnoea, fever, nausea and with increasing non-productive cough. A community-acquired pneumonia was first hypothesized and intravenous antibiotic therapy was started. Over the course, he was tested positive for Influenza A and therefore an oral antiviral treatment was added. As a further complication, a decompensation of the known severe aortic stenosis in relation with the ongoing infection has been recorded. Finally, despite all medical efforts, the patient died due to a severe cardiogenic shock and acute renal failure.
- A case reported in a literature article (see Ref. 3) described the occurrence of vaccination failure (vaccine ineffectiveness) in a 26-year-old male patient undergoing rituximab-containing chemotherapy for a pre-existing chronic lymphocytic leukaemia, who received measles/ mumps/ rubella vaccine for prophylaxis. The patient acquired a measles infection and later developed severe measles pneumonitis with acute respiratory distress syndrome, requiring invasive ventilation and veno-venous extracorporeal membrane oxygenation. Finally, 17 days after the onset of symptoms, the patient succumbed due to mixed shock and severe pneumonitis, despite all intensive-care measures and treatments provided.

References

1. Asner SA et al. Burden of Streptococcus pneumoniae Sepsis in Children after Introduction of Pneumococcal Conjugate Vaccines: A Prospective Population-based Cohort Study. Clinical Infectious Diseases. 2019;69(9):1574–80
2. Jelcic I et al. Unfavorable Structural and Functional Outcomes in Myelin Oligodendrocyte Glycoprotein Antibody-Associated Optic Neuritis. Journal of Neuro-Ophthalmology 2019; 39(1): 3-7
3. Jent P et al. Fatal measles virus infection after rituximab-containing chemotherapy in a previously vaccinated patient. Open Forum Infectious Diseases 2018; 5 (11): 1-3.

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