swissmedic

Summary of adverse events following immunization reported in Switzerland during 2012

Executive summary

In 2012, 183 reports of adverse events following immunization (AEFIs) were received by Swissmedic, representing an increase of 43 AEFIs (28%) as compared with previous year 2011. Despite this moderately increased number of reports, the rate of spontaneous AEFIs reporting remains very low, considering the high number (millions) of immunizations performed during the year. As previously, Swissmedic continues to actively encourage good quality in spontaneous reporting of AEFIs. Since 2010, important topics with regard to AEFIs are evaluated in Swissmedic with the participation of the Human Medicines Expert Committee.

Figure 1. Number of AEFI reports per month and gender, 2012

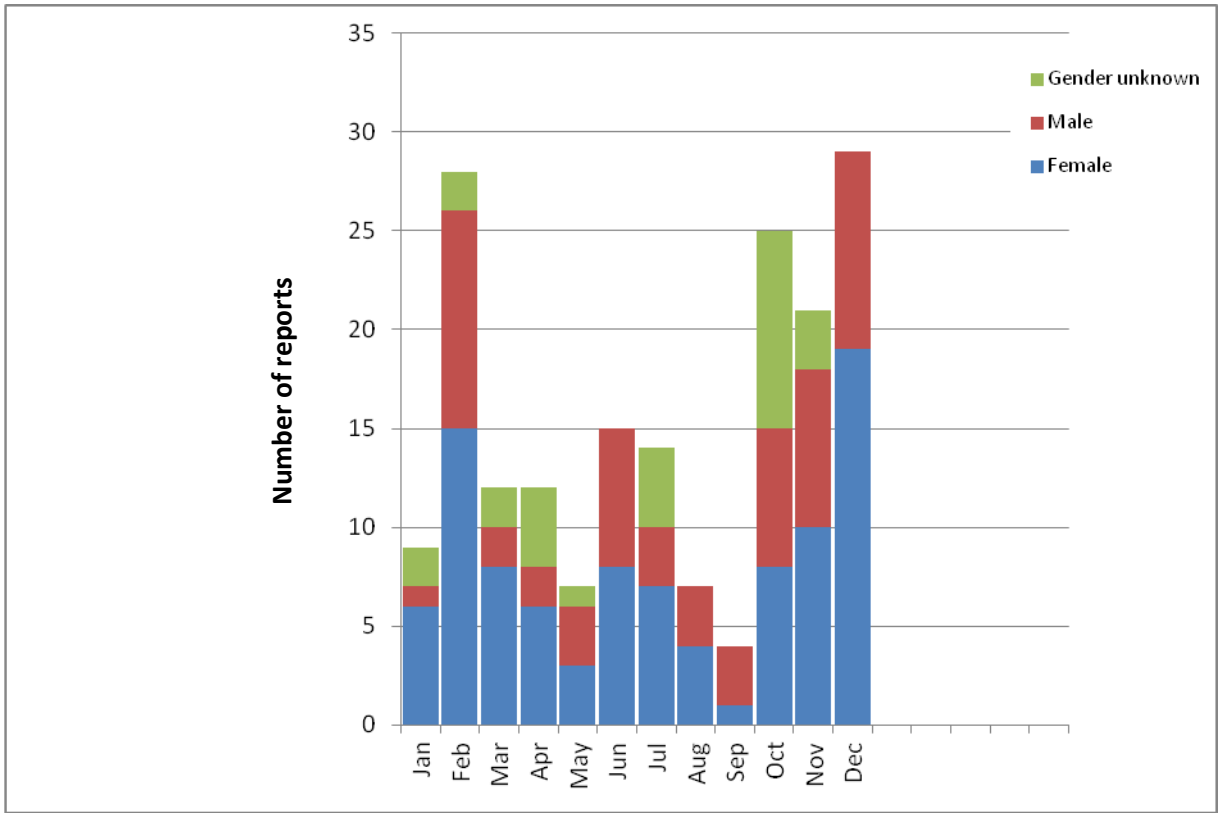


Figure 1 shows the number of AEFI reports received in 2012, as grouped by calendar months and compared by gender. The months with the highest numbers of AEFIs reported were December (29 reports received), February (28 reports), October (25 reports) and November (21 reports). Throughout the year, the number of reports concerning females (95 reports) was significantly higher as the number of reports regarding males (60 reports) and

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

this difference was highest in the first quarter of the year (29 reports of women vs. 14 reports of men). In 28 AEFI reports, the gender of the persons remained unknown.

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Figure 2. Number of AEFI reports per age group and gender, 2012

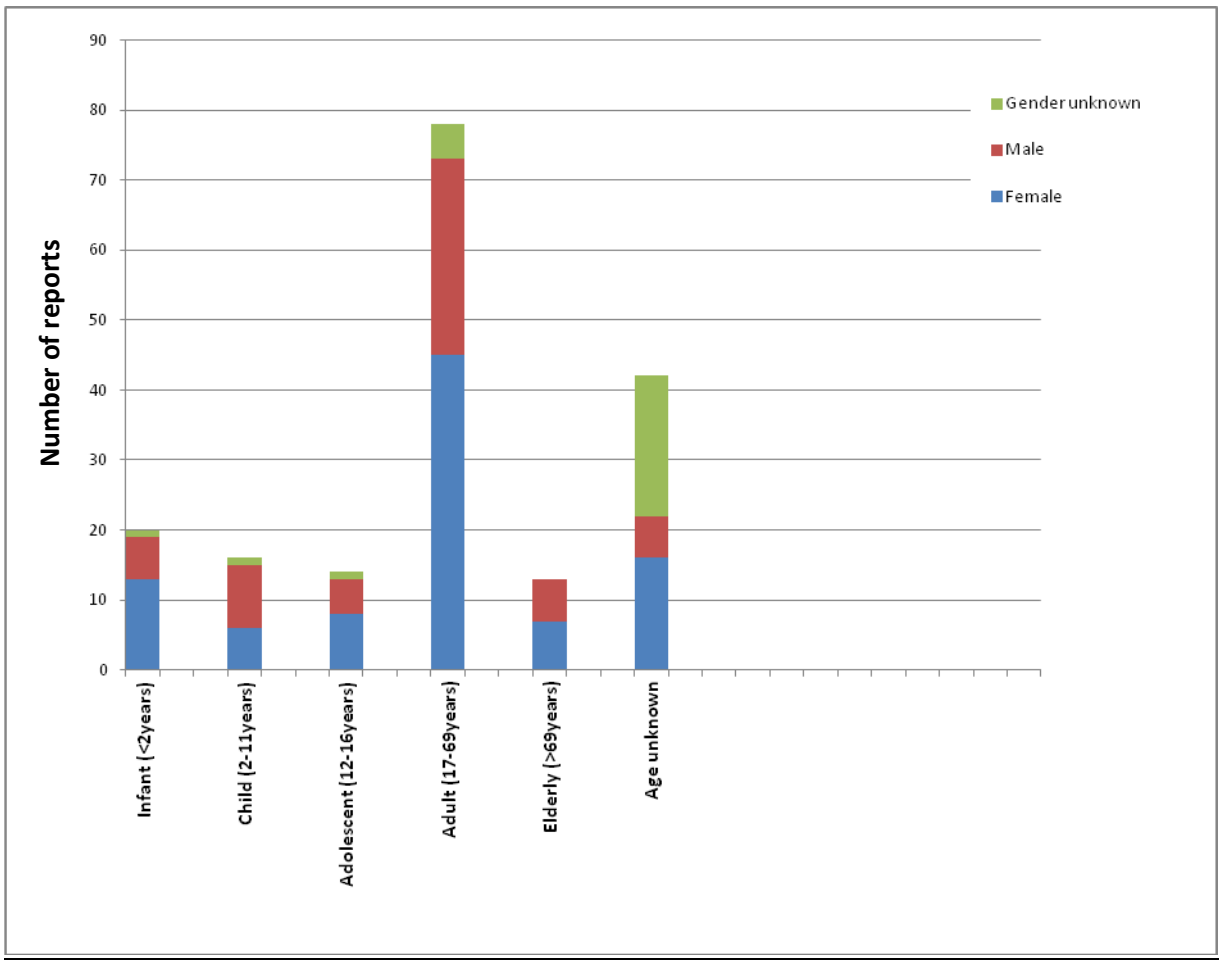


Figure 2 compares the number of reports between age groups and gender. The largest number of AEFI reports involved adults (78 reports), followed by infants (20 reports) and children (16 reports). The difference in gender is apparent in this view as well, a high discrepancy being recorded in the adults group (45 reports of females vs. 28 males). In 42 cases (reports), the age of the patients was not recorded.

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Figure 3. Number of reports per vaccine group (ATC code) and seriousness, 2012

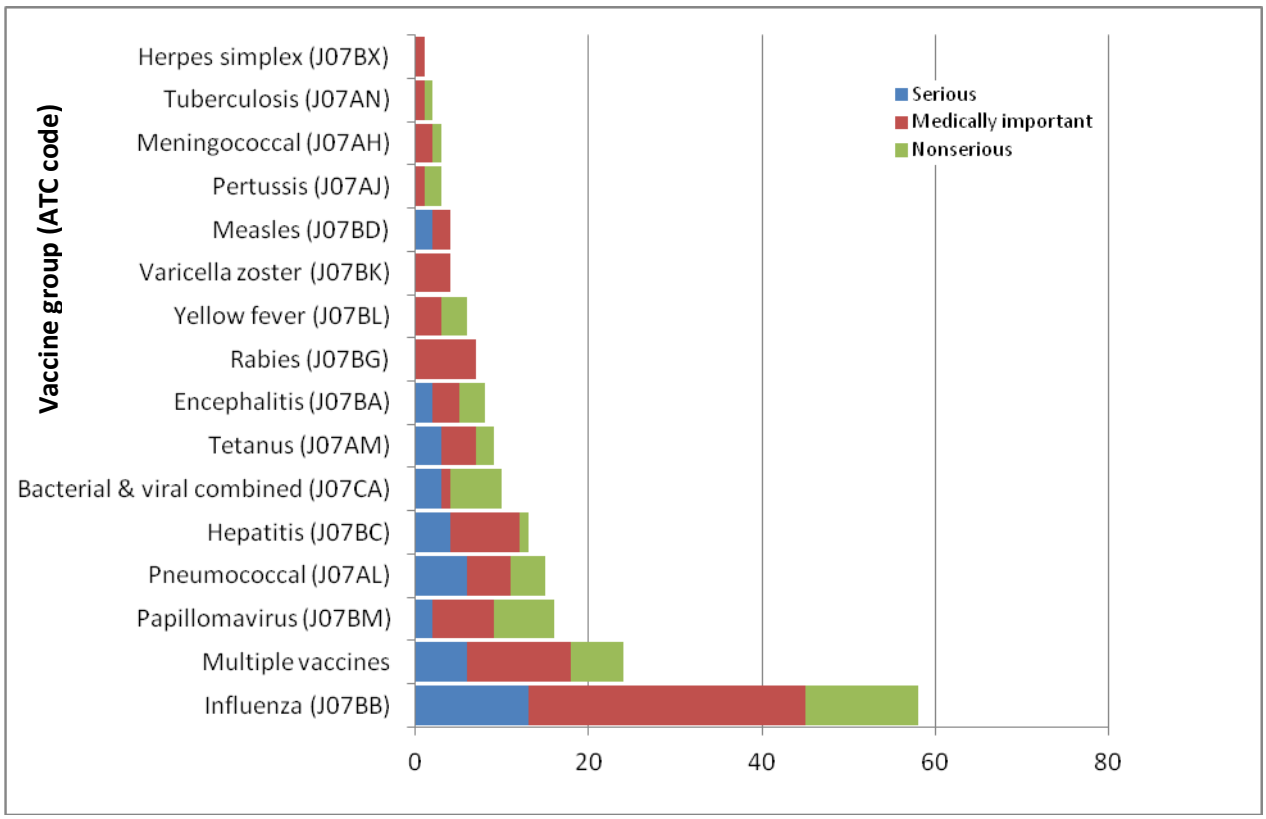


Figure 3 shows the number of spontaneous AEFI reports grouped per vaccine group (ATC code) and seriousness. There are no data available regarding the number of doses administered in each vaccine group and therefore this figure does not show which vaccine group displayed a higher AEFI rate (as number per 100'000 doses). Generally, a safety report is assessed as 'serious' if it involves an adverse event leading to death, to hospitalization or to prolongation of an existing hospitalization, if it was life threatening or resulted in a significant or persistent disability or a congenital anomaly. A report is assessed as 'medically important' if it does not fulfil the criteria for 'seriousness' but it involves a medically significant event. All other reports are assessed as 'not serious' (e.g. expected or self-limiting adverse events with good recovering). Of the 183 spontaneous reports, 49 (26.8%) were not-serious, 93 (50.8%) were medically important events and 41 (22.4%) of the AEFIs included events with serious consequences. The relative frequencies (percentages) of serious and medically important reports were very similar to those recorded during previous year 2011.

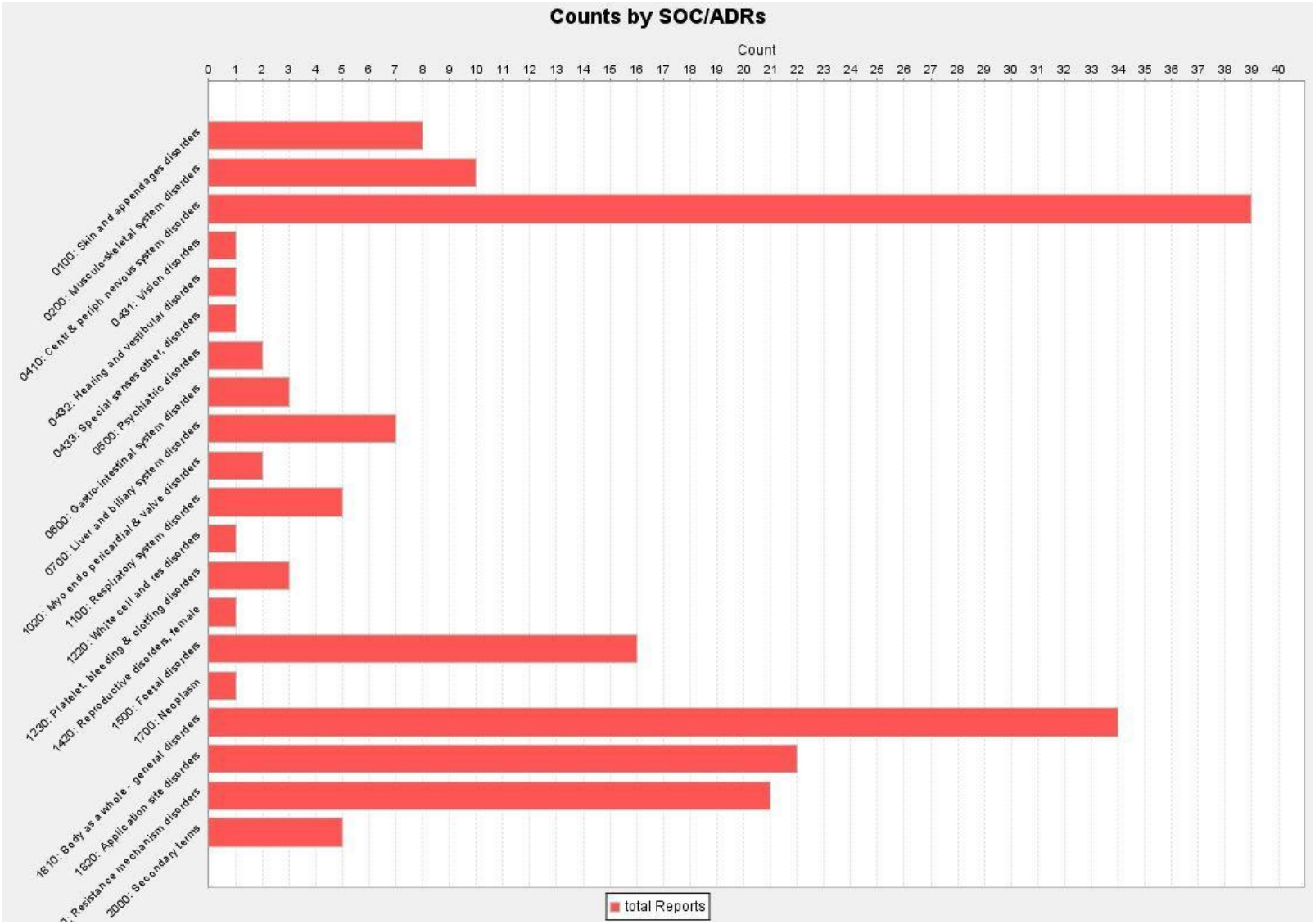
Figure 4 provides an overview on the AEFI reports received during 2012, grouped by primary System Organ Classes (SOCs) concerned. Following five organ classes were most frequently involved in reports after immunization: Nervous system (39 reports, 21%); Body as

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

a whole – general disorders (34 reports, 19%); Application site disorders (22 reports, 12%); Resistance mechanism disorders (21 reports, 11%); Foetal disorders (16 reports, 8.8%).

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Figure 4. Number of AEFI reports in Switzerland by System Organ Classes, 2012



Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Figure 5. AEFI reports by vaccine group (ATC code) and top 3 involved System Organ Classes, 2012

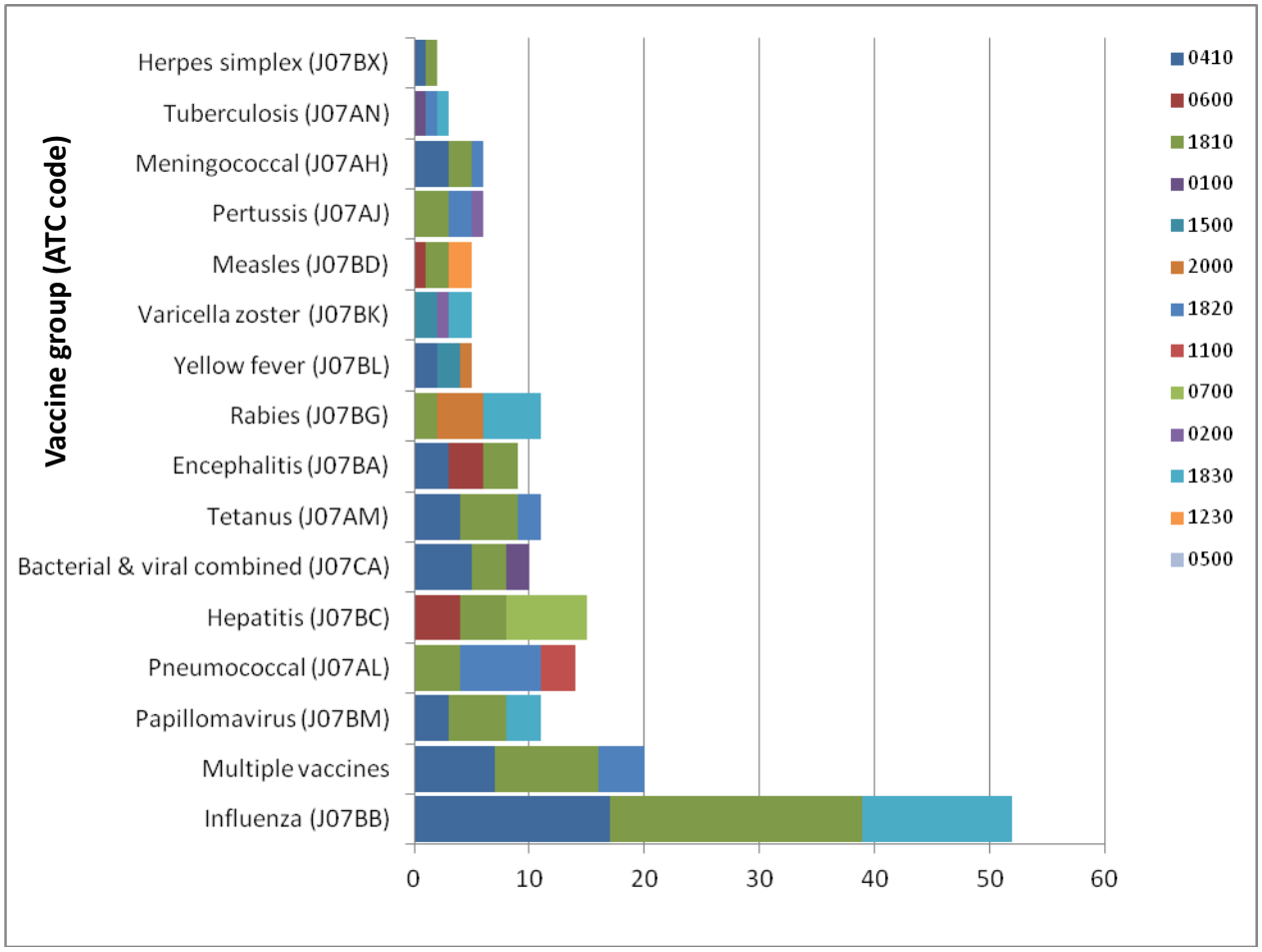


Figure 5 shows the AEFI reports by vaccine group (ATC code) and top 3 system organ classes. Notably, drug exposures during pregnancy or before pregnancy are coded and counted under Foetal disorders (1500). Thus, in figure 5 they are 12 exposures in pregnancy (4 with influenza vaccine, 3 with multiple vaccines, 2 with papillomavirus vaccine, 2 with yellow fever vaccine, 1 with varicella zoster vaccine) and 2 cases of exposure before pregnancy (1 with papillomavirus vaccine, 1 with varicella zoster vaccine). No congenital anomalies were reported/recorded following immunization in 2012.

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Figure 6. Number of reports per vaccine group (ATC code) and labelling, 2012

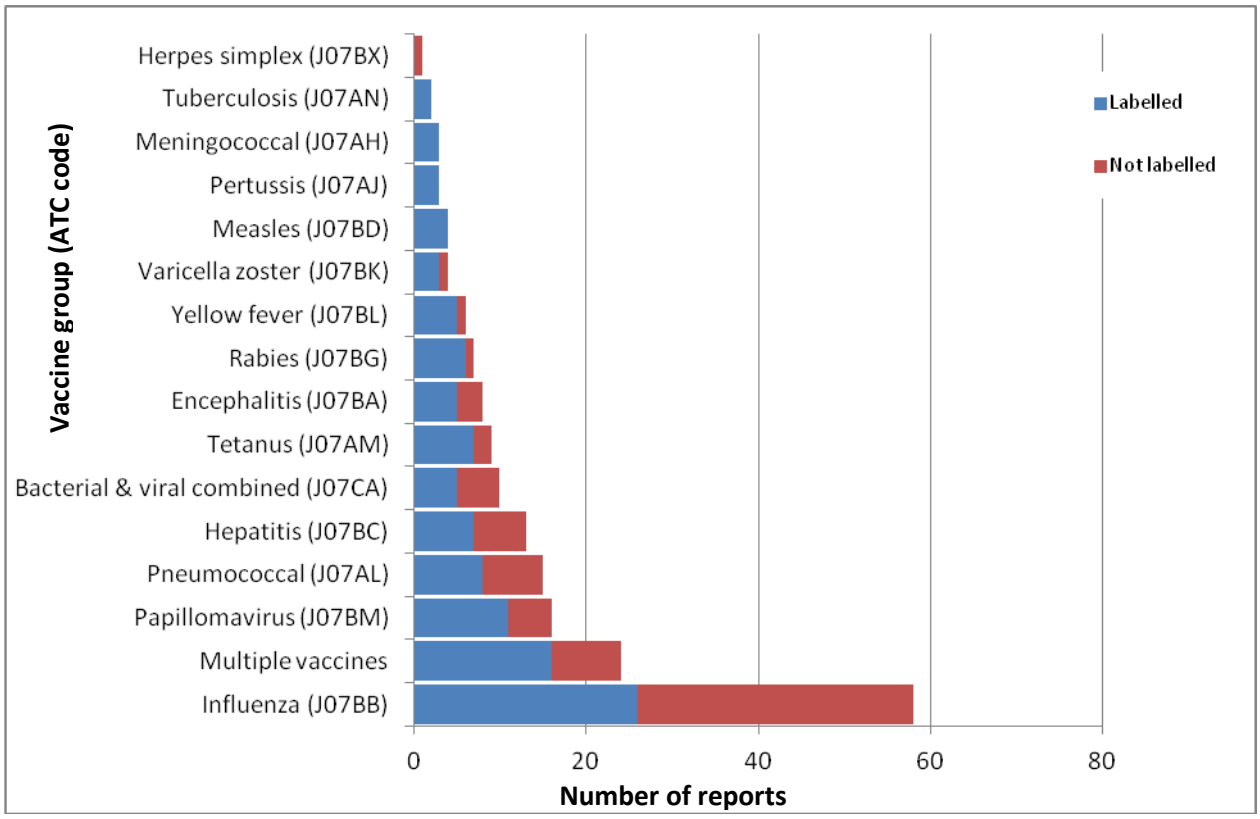


Figure 6 shows the number of AEFI reports per vaccine group (ATC code) and labelling status. Vaccine groups with higher numbers of reports containing unlabelled AEFIs were influenza (32 of 58 reports), pneumococcal (7 of 15 reports) and hepatitis (6 of 13 reports with unlabelled AEs).

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Table 1. Overview on the most frequent AEFIs of all reports, 2012

Adverse event	System Organ Class	Number of reports
Injection site reactions	Application site disorders	71
Fever	Body as a whole	20
Drug exposure in pregnancy	Foetal disorders	12
Exanthema (Rash)	Skin and Appendages	12
Myalgia / Arthralgia	Musculoskeletal System	12
Infection viral	Resistance mechanism disorders	12
Headache	Central and Peripheral Nervous System	10
Upper respiratory tract infection	Respiratory System	8
Malaise	Body as a whole	8
Fatigue	Body as a whole	6
Vomiting	Gastrointestinal System	6
Vaccine failure	Resistance mechanism disorders	6

Table 1 displays the 10 most frequently adverse events following immunization as reported during 2012: injection site reactions; fever; drug exposure in pregnancy; exanthema (rash); myalgia/arthralgia; infection viral; headache; upper respiratory tract infection; malaise; fatigue; vomiting; vaccine failure.

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

Table 2. The most frequent AEFIs classified as 'serious' or 'medically important'

Adverse event	System Organ Class	Number of reports
Injection site reactions	Application site disorders	27
Fever	Body as a whole	15
Drug exposure in pregnancy	Foetal disorders	12
Infection viral	Resistance mechanism disorders	12
Arthralgia / Myalgia	Musculoskeletal System	8
Headache	Central and Peripheral Nervous System	7
Upper respiratory tract infection	Respiratory System	7
Exanthema (Rash)	Skin and Appendages	6
Vertigo	Central and Peripheral Nervous System	5
Malaise	Body as a whole	5
Fatigue	Body as a whole	5

Table 2 summarizes the 10 most frequent AEFIs assessed as 'serious' or 'medically important'. The two tables are displaying very similar distributions of AEFIs, however relatively more cases of vertigo and less cases of vomiting have been assessed as 'serious' or 'medically important'.

Among other serious or medically important AEFIs during 2012, 3 cases of convulsions were reported (all recovered) and 3 cases of fever convulsions after immunization of young children (all recovered).

Further neurological AEFIs reported as serious were:

- One case of encephalitis in a 47 years old women, following immunisation with multiple vaccines (MMR, tetanus, hepatitis A and hepatitis B), outcome 'recovered'
- 4 cases of meningitis: 1 case after diphtheria/tetanus vaccine (outcome 'recovered'); 1 case after DTPP vaccine (outcome 'recovered'); 2 cases after pneumococcal vaccine (1 case with outcome 'recovered', 1 case with outcome 'unknown')
- 5 cases of hemiparesis: 3 cases with outcome 'recovered' (2 cases with influenza vaccine and 1 case after tick-borne encephalitis vaccine); 1 case with outcome 'not recovered' and 1 case with outcome 'unknown', both after influenza vaccine.
- 4 cases of Guillain-Barré syndrome: 3 cases in relation with influenza vaccines (2 of these with outcome 'recovering', 1 case with outcome 'not recovered' at the time of

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12

reporting); 1 further case following the immunisation against yellow fever (outcome 'recovering').

A single AEFI case with fatal outcome was received, namely a literature report as published in 2012 (1). This case occurring during 2009 concerns a 40-year-old male patient with medical history of acute myelocytic leukemia, who developed multiple viral infections - including H1N1, Epstein-Barr virus, Cytomegalovirus - following allogeneic hematopoietic stem cell transplantation. He had been vaccinated with seasonal/pandemic influenza vaccine. The patient died of respiratory failure within 94 days of symptoms onset, including 90 days of hospitalization of which 70 days under mechanical ventilation. However, the severe pre-existing (background) immunosuppression of the patient and the emergence of therapy-resistant viral strains during hospitalization provide possible alternative explanations for the reported adverse events and fatal outcome of this case.

Reference

1. Clinical features and outcome of 2009-influenza A (H1N1) after allogeneic hematopoietic SCT. Mohty B, Thomas Y, Vukicevic M, Nagy M, Levrat E, Bernimoulin M, Kaiser L, Roosnek E, Passweg J, Chalandon Y. Bone Marrow Transplant. 2012 Feb;47(2):236-42

Swissmedic • Hallerstrasse 7 • CH-3000 Bern 9 • www.swissmedic.ch • Tel. +41 31 322 02 11 • Fax +41 31 322 02 12