UNIVERSITY OF SURREY

Post-authorisation safety study of influenza vaccine

Key Statistics:

Reporting Week Number/Year.....48/2017
Reporting Week Starting - Ending.....27/11/2017 - 03/12/2017
Issue date.....22/12/2017
No. of Practices.....10
Population.....118,350 (27,006 vaccinated since 01/09/2017)

Post-authorisation safety study:

The European Medicines Agency (EMA) has set out new requirements for influenza vaccine safety surveillance that all Marketing Authorisation Holders (MAHs) providing vaccines in the EU must address. This pilot, funded by Glaxo-SmithKline and conducted by the University of Surrey, explores the use of routinely collected data in the UK to provide timely and relevant information on influenza vaccine safety.

UK primary care is highly computerised, though the major suppliers have different data models, coding systems, and methods of data access. This pilot study demonstrates the feasibility of drawing together the heterogeneous data from different brands of computer system into a single report format.

Key messages:

Vaccine exposure:

Vaccine exposure rates for all ages have **increased** from **22.0%** in week 47 to **22.8%** in week 48.

Possible adverse events in the vaccinated population (per 100,000 patients):

- **Fever/Pyrexia :** Incidence rate was **156.0** in week 47 compared with **704.2** in week 48.
- **Gastrointestinal :** Incidence rate was **0.0** in week 47 compared with **0.0** in week 48.
- **General symptoms :** Incidence rate was **156.0** in week 47 compared with **0.0** in week 48.
- **Local symptoms :** Incidence rate was **468.0** in week 47 compared with **0.0** in week 48.
- **Musculoskeletal :** Incidence rate was **780.0** in week 47 compared with **352.1** in week 48.
- **Neurological :** Incidence rate was **156.0** in week 47 compared with **0.0** in week 48.
- **Rash :** Incidence rate was **156.0** in week 47 compared with **176.1** in week 48.
- **Respiratory/Miscellaneous :** Incidence rate was **2496.1** in week 47 compared with **704.2** in week 48.
- **Sensitivity/anaphylaxis :** Incidence rate was **0.0** in week 47 compared with **0.0** in week 48.

Comment:

Over 22% of the population have now been vaccinated against influenza with the highest rate in the 75 to 84 year old age band.

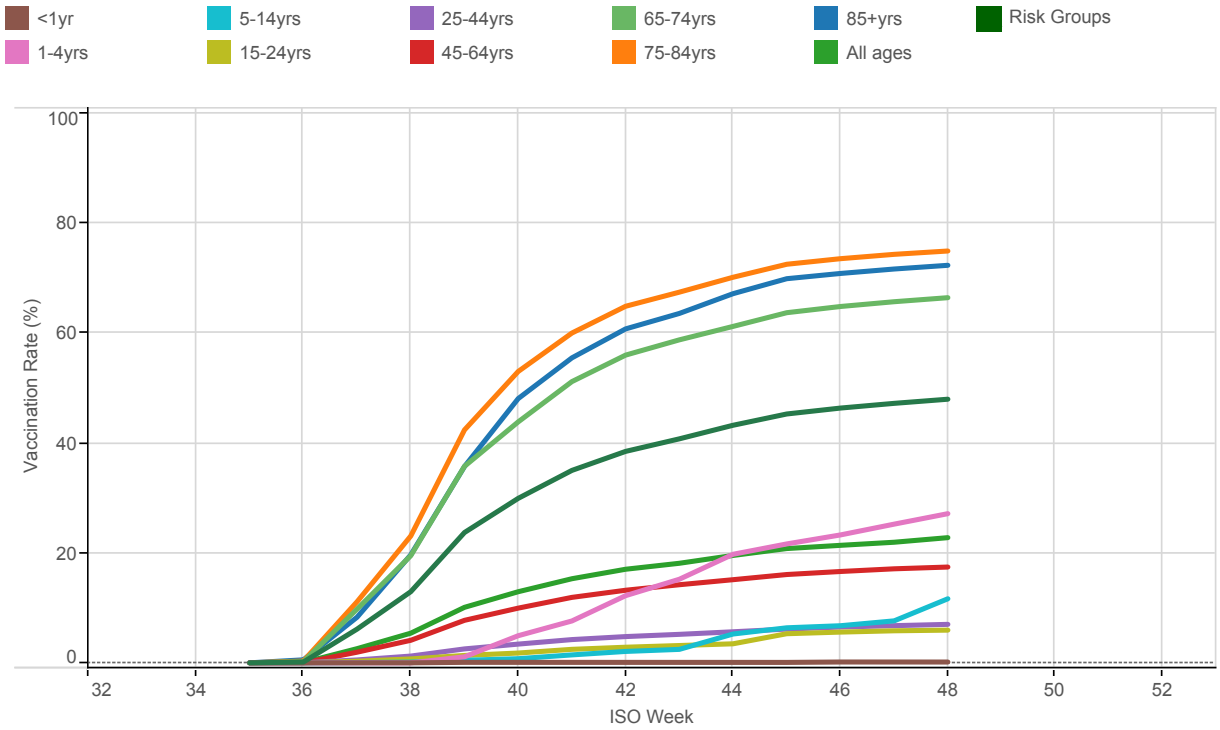
Amongst the conditions monitored there were 4 cases of cough in week 48, out of 568 people vaccinated.

There was 1 serious adverse event detected over the week with no obvious causal linkage to influenza vaccination from the data we hold. There was 1 hospitalisation of a patient vaccinated with GSK brand vaccine. The practice confirmed that the patient was admitted due to ongoing condition.

This is the last report issued as part of this study.

Influenza vaccine exposure rates

(1) Cumulative vaccine exposure rates: All age groups, 2017 *



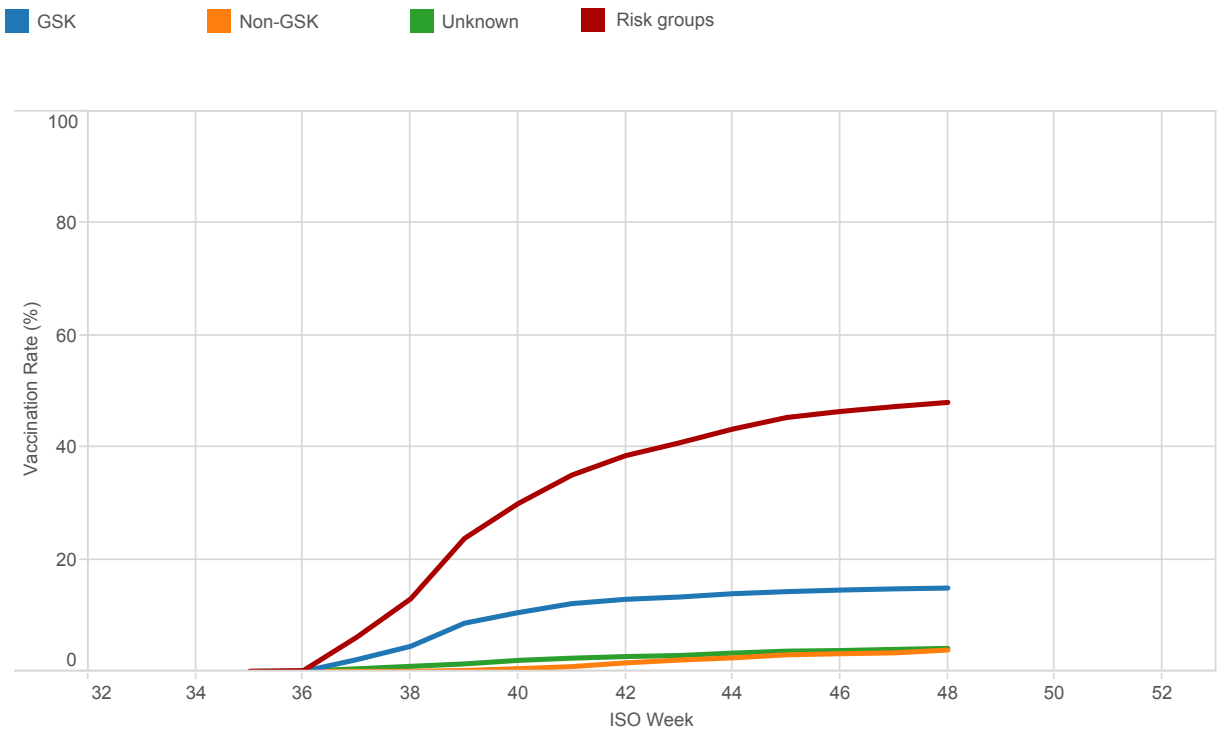
* The vaccination exposure rates are a percentage of all registered patients in the pilot practices.

(2) Cumulative vaccine exposure rates: All age groups, 2017

	48		47	
	Vaccination Rate for risk group patients	Vaccination Rate overall	Vaccination Rate for risk group patients	Vaccination Rate overall
<1yr	8.70	0.15	8.70	0.15
1-4yrs	35.21	27.19	33.21	25.28
5-14yrs	27.67	11.68	24.85	7.65
15-24yrs	15.96	5.96	15.45	5.84
25-44yrs	20.19	7.01	19.60	6.78
45-64yrs	42.34	17.46	41.66	17.14
65-74yrs	73.30	66.56	72.62	65.82
75-84yrs	77.66	75.06	76.97	74.45
85+yrs	74.65	72.46	73.99	71.78
All Ages	48.05	22.82	47.30	21.98

Influenza vaccine exposure rates

(3) Cumulative vaccine exposure rates: All brands, 2017 *



* The vaccination exposure rates are a percentage of all registered patients in the pilot practices.

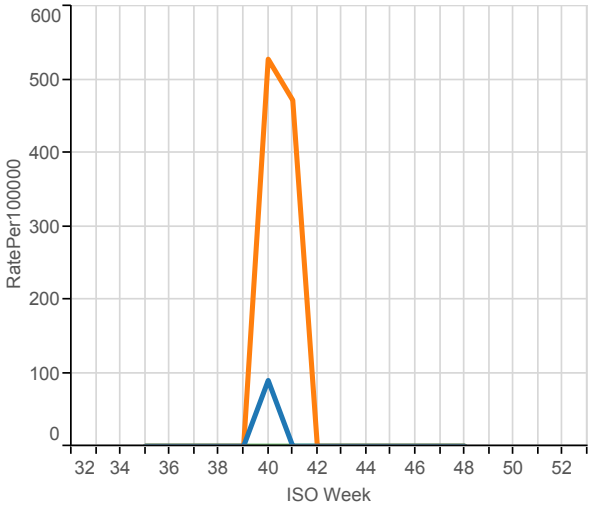
(4) Cumulative vaccine exposure rates: All brands, 2017

	48		47	
	Vaccination Rate for risk group patients	Vaccination Rate overall	Vaccination Rate for risk group patients	Vaccination Rate overall
GSK	34.73	14.89	34.37	14.74
Non-GSK	5.59	3.82	5.32	3.31
Unknown	7.74	4.11	7.60	3.93

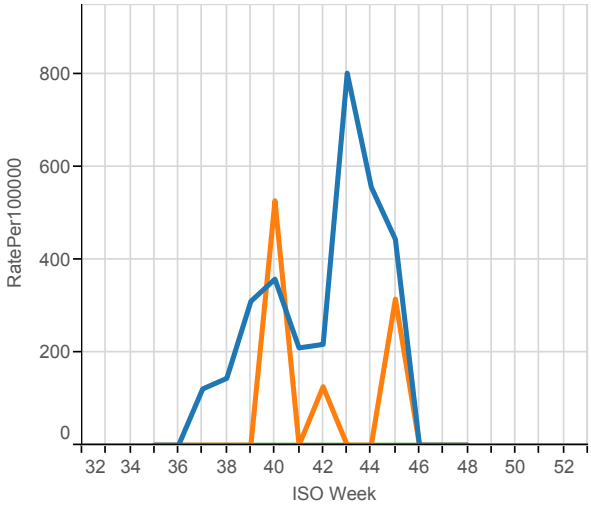
Possible adverse event rates by EMA surveillance condition

GSK Non-GSK Unknown

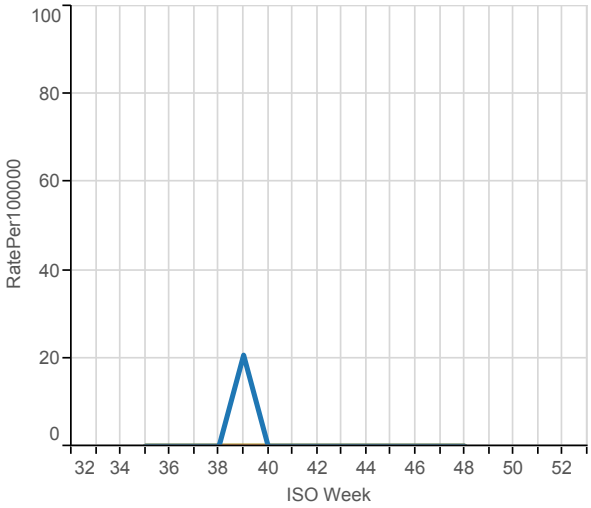
(5) Anaphylactic reaction: Incidence rates per 100,000, 2017



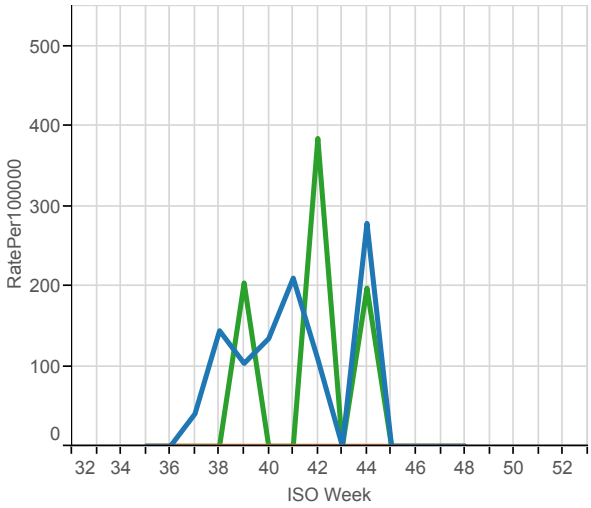
(6) Arthtropathy: Incidence rates per 100,000, 2017



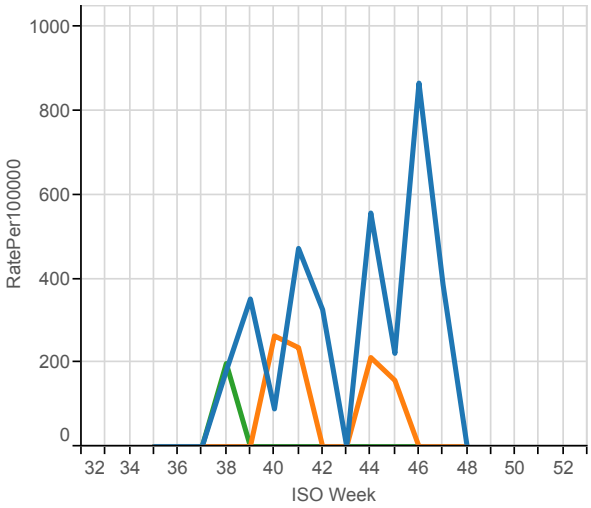
(7) Bell's Palsy: Incidence rates per 100,000, 2017



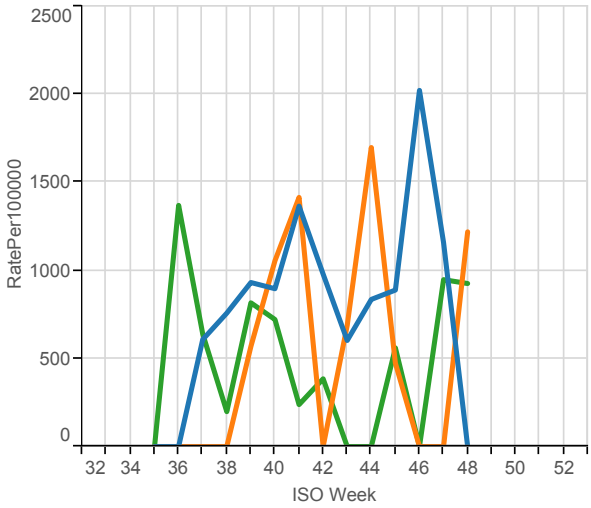
(8) Conjunctivitis: Incidence rates per 100,000, 2017



(9) Coryza: Incidence rates per 100,000, 2017

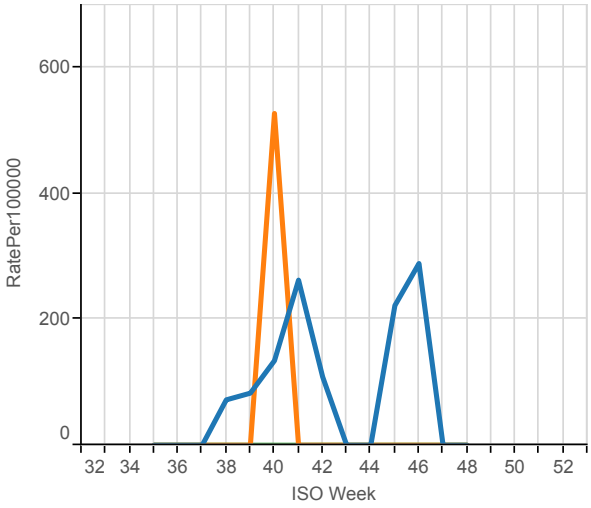


(10) Cough: Incidence rates per 100,000, 2017

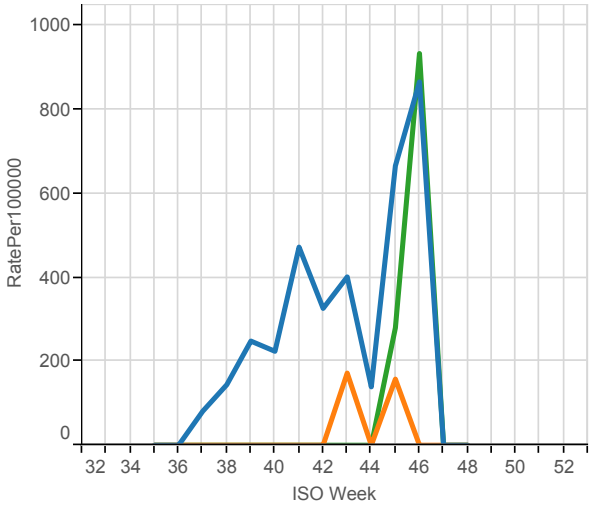


Possible adverse event rates by EMA surveillance condition

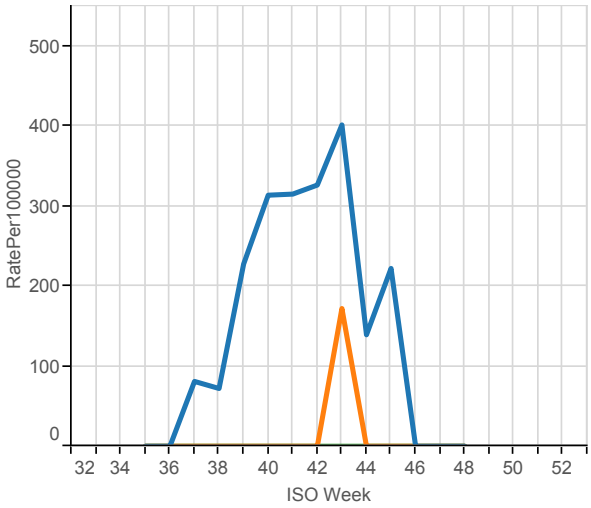
(11) Decreased appetite: Incidence rates per 100,000, 2017



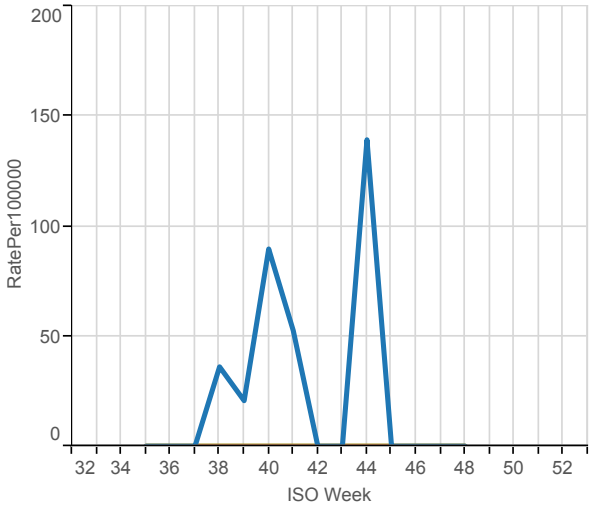
(12) Diarrhoea: Incidence rates per 100,000, 2017



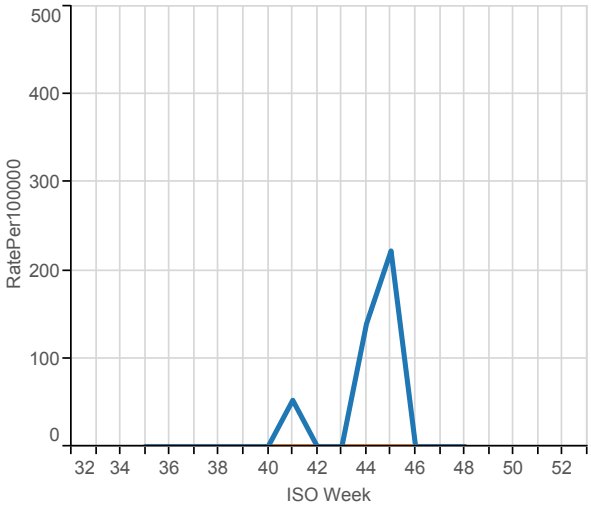
(13) Drowsiness: Incidence rates per 100,000, 2017



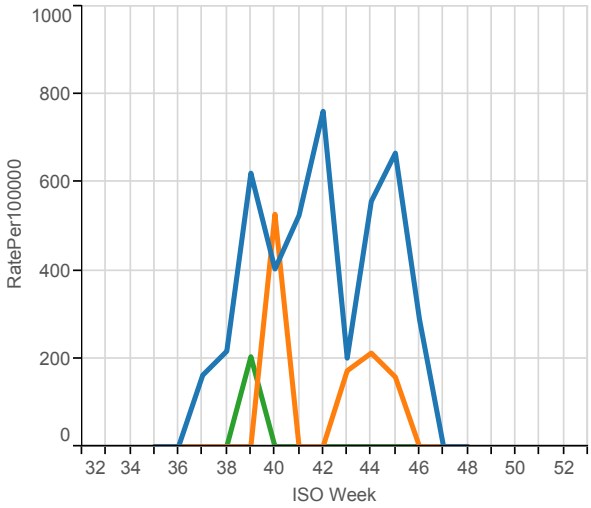
(14) Epistaxis: Incidence rates per 100,000, 2017



(15) Facial Oedema: Incidence rates per 100,000, 2017



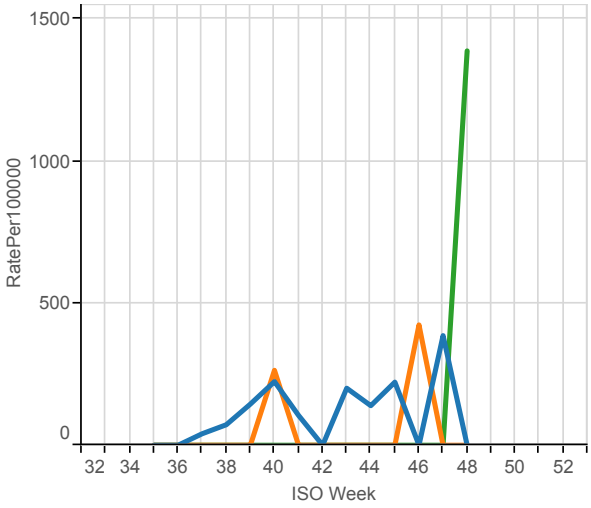
(16) Fatigue: Incidence rates per 100,000, 2017



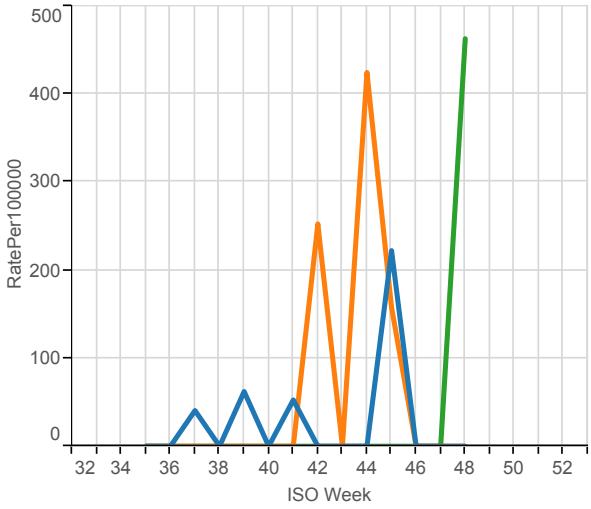
Possible adverse event rates by EMA surveillance condition

GSK Non-GSK Unknown

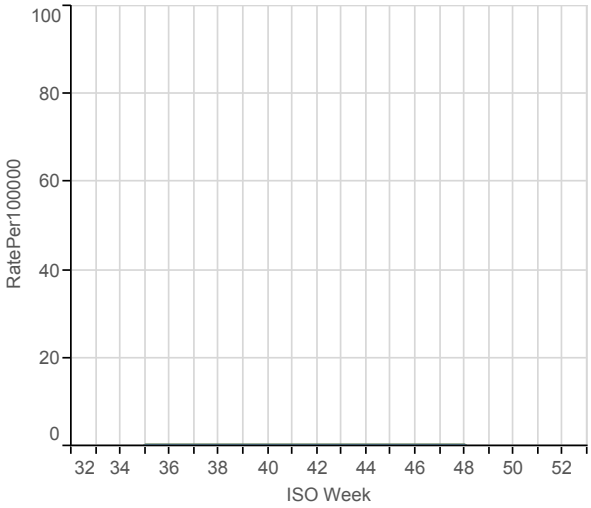
(17) Fever: Incidence rates per 100,000, 2017



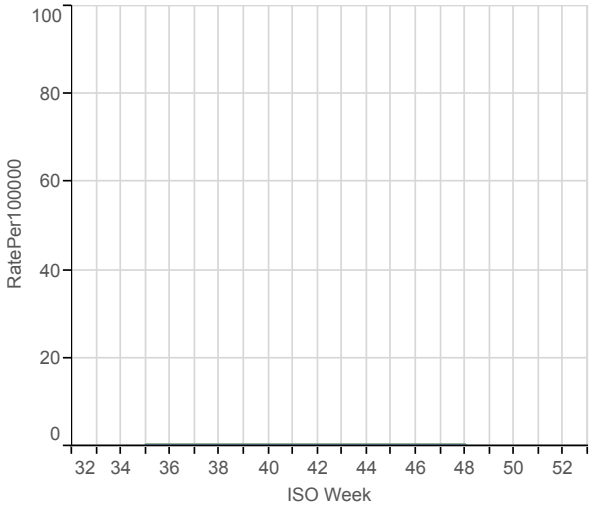
(18) Mild fever: Incidence rates per 100,000, 2017



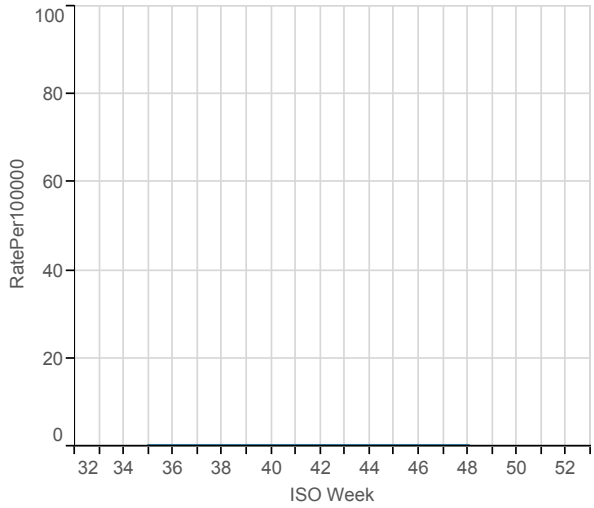
(19) Moderate fever: Incidence rates per 100,000, 2017



(20) High fever: Incidence rates per 100,000, 2017



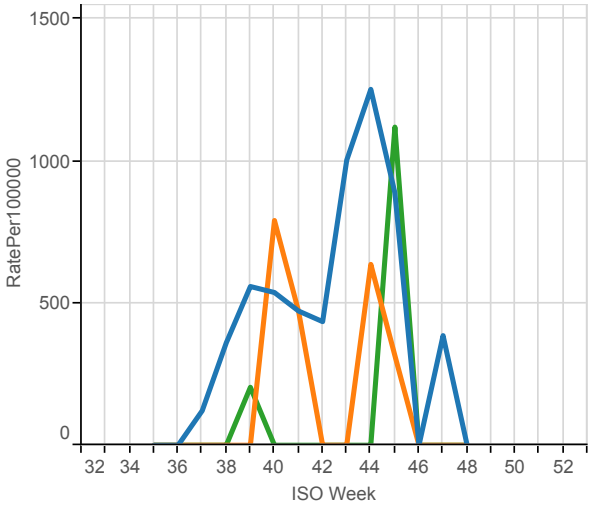
(21) Guillain Barre Syndrome: Incidence rates per 100,000, 2017



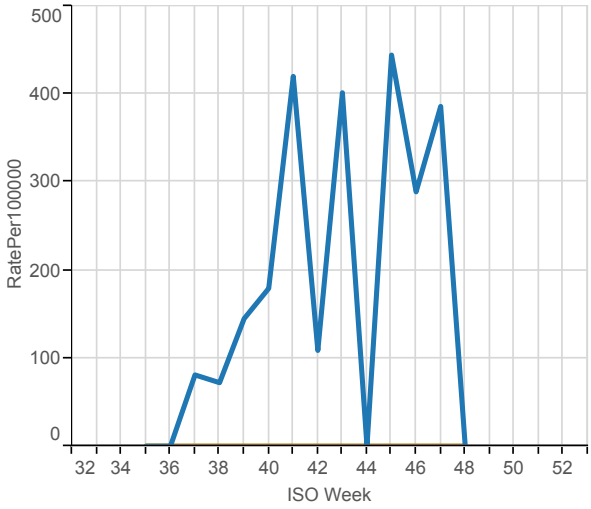
Possible adverse event rates by EMA surveillance condition

GSK Non-GSK Unknown

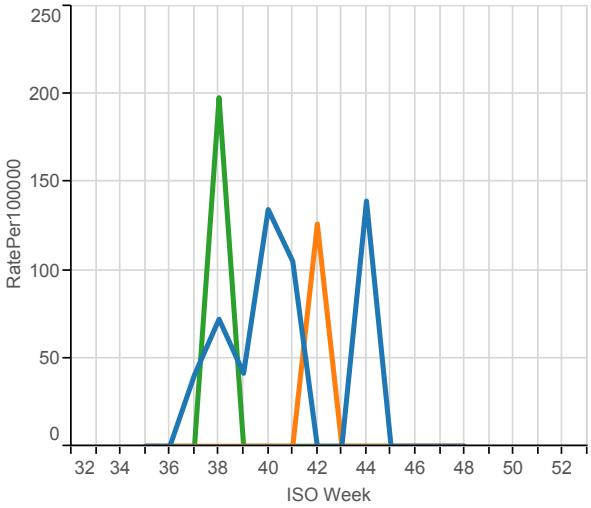
(22) Headache: Incidence rates per 100,000, 2017



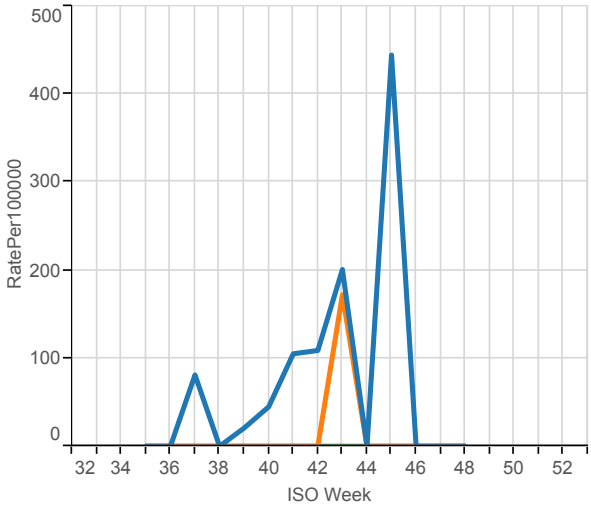
(23) Hoarseness: Incidence rates per 100,000, 2017



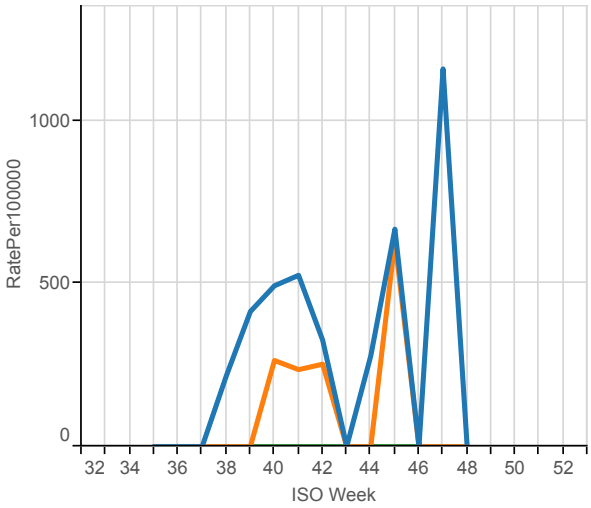
(24) Hypersensitivity reactions: Incidence rates per 100,000, 2017



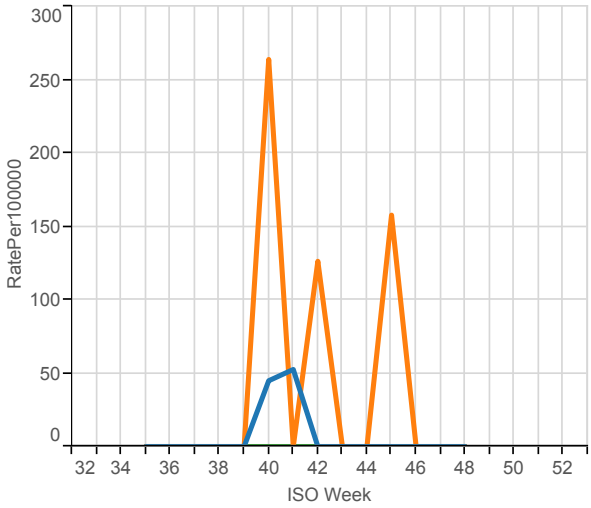
(25) Irritability: Incidence rates per 100,000, 2017



(26) Local erythema: Incidence rates per 100,000, 2017

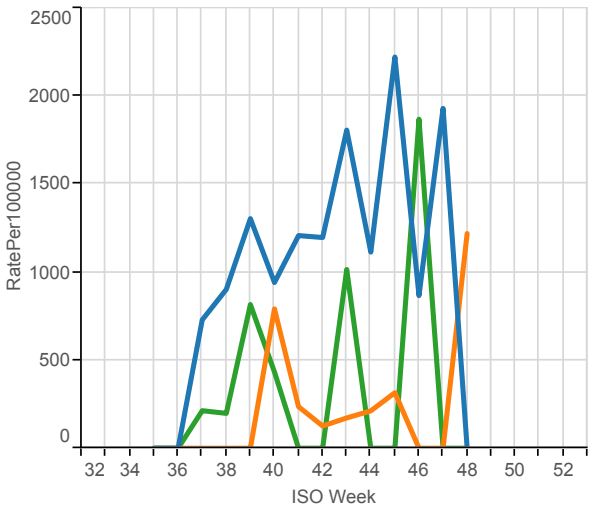


(27) Malaise: Incidence rates per 100,000, 2017

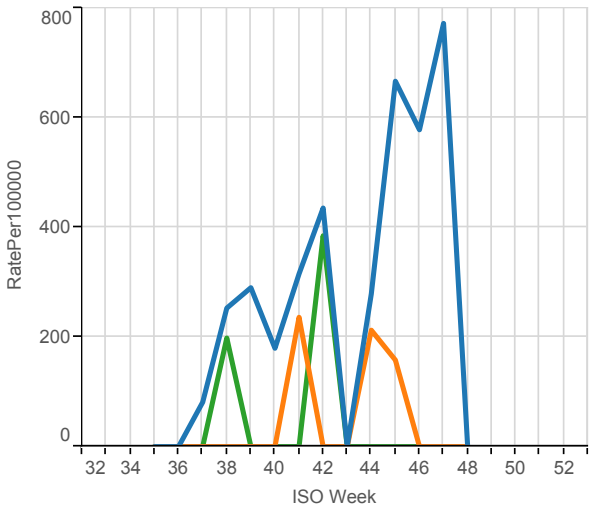


Possible adverse event rates by EMA surveillance condition

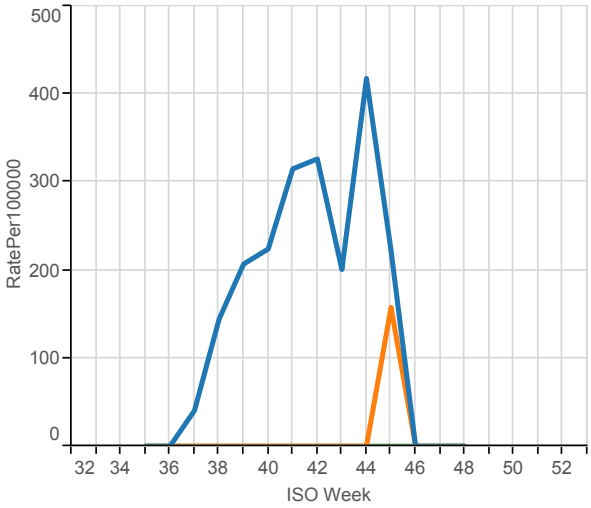
(28) Muscle aches / Myalgia: Incidence rates per 100,000, 2017



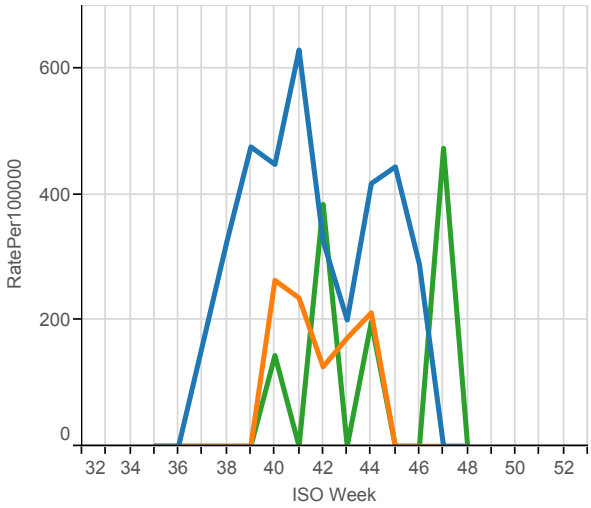
(29) Nasal congestion: Incidence rates per 100,000, 2017



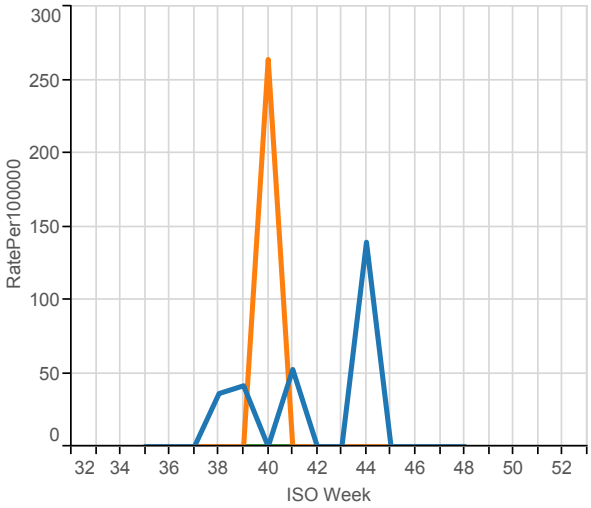
(30) Nausea: Incidence rates per 100,000, 2017



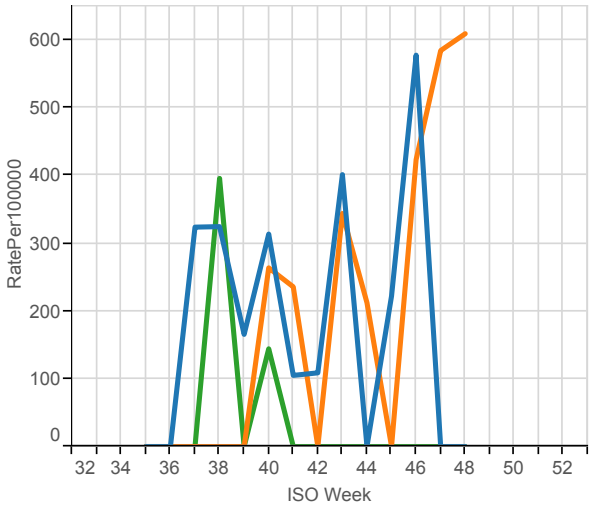
(31) Oropharyngeal Pain: Incidence rates per 100,000, 2017



(32) Peripheral Tremor: Incidence rates per 100,000, 2017



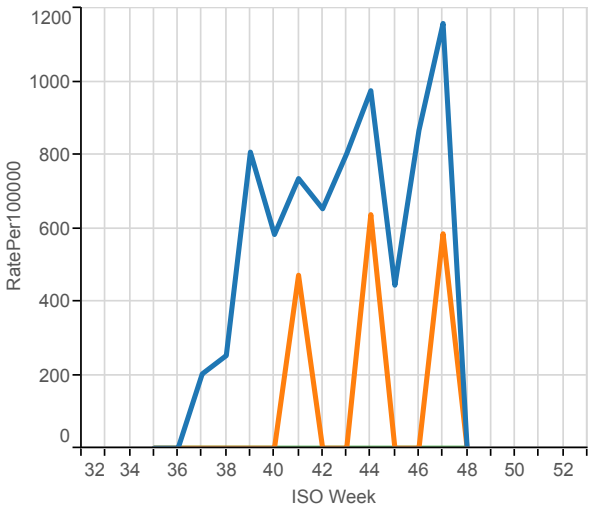
(33) Rash: Incidence rates per 100,000, 2017



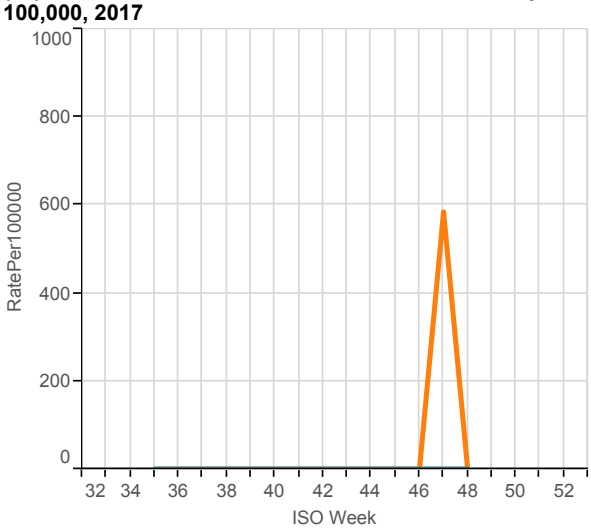
Possible adverse event rates by EMA surveillance condition

GSK Non-GSK Unknown

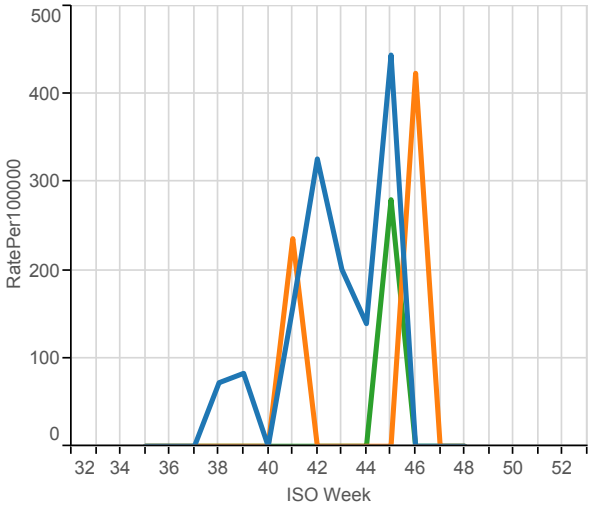
(34) Rhinorrhoea: Incidence rates per 100,000, 2017



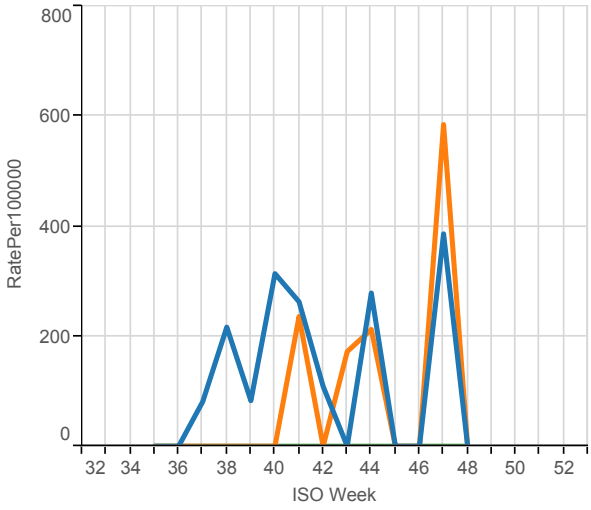
(35) Seizure / Febrile convulsions: Incidence rates per 100,000, 2017



(36) Vomiting: Incidence rates per 100,000, 2017



(37) Wheezing: Incidence rates per 100,000, 2017



Weekly summary of possible adverse event rates by EMA surveillance condition

(38) Possible adverse events by EMA surveillance condition: Incidence rates per 100,000 and count of episodes, 2017

Week number	48		47		46		45	
Week beginning	27/11/2017		20/11/2017		13/11/2017		06/11/2017	
Week ending	03/12/2017		26/11/2017		19/11/2017		12/11/2017	
	Episodes	Rate	Episodes	Rate	Episodes	Rate	Episodes	Rate
Anaphylactic reactions	0	0.0	0	0.0	0	0.0	0	0.0
Arthropathy	0	0.0	0	0.0	0	0.0	4	277.6
Bell's Palsy	0	0.0	0	0.0	0	0.0	0	0.0
Conjunctivitis	0	0.0	0	0.0	0	0.0	0	0.0
Coryza	0	0.0	1	156.0	3	435.4	2	138.8
Cough	4	704.2	5	780.0	7	1,016.0	9	624.6
Decreased appetite	0	0.0	0	0.0	1	145.1	1	69.4
Diarrhoea	0	0.0	0	0.0	4	580.6	5	347.0
Drowsiness	0	0.0	0	0.0	0	0.0	1	69.4
Epistaxis	0	0.0	0	0.0	0	0.0	0	0.0
Facial oedema	0	0.0	0	0.0	0	0.0	1	69.4
Fatigue	0	0.0	0	0.0	1	145.1	4	277.6
Fever	3	528.2	1	156.0	1	145.1	1	69.4
Guillain-Barre Syndrome (G..	0	0.0	0	0.0	0	0.0	0	0.0
Headache	0	0.0	1	156.0	0	0.0	10	694.0
High fever (>39.5°C)	0	0.0	0	0.0	0	0.0	0	0.0
Hoarseness	0	0.0	1	156.0	1	145.1	2	138.8
Hypersensitivity reactions	0	0.0	0	0.0	0	0.0	0	0.0
Irritability	0	0.0	0	0.0	0	0.0	2	138.8
Local erythema	0	0.0	3	468.0	0	0.0	7	485.8
Malaise	0	0.0	0	0.0	0	0.0	1	69.4
Mild fever (<=38.5°C)	1	176.1	0	0.0	0	0.0	2	138.8
Moderate fever (38.6-39.5°C)	0	0.0	0	0.0	0	0.0	0	0.0
Muscle aches/ myalgia	2	352.1	5	780.0	5	725.7	12	832.8
Nasal congestion	0	0.0	2	312.0	2	290.3	4	277.6
Nausea	0	0.0	0	0.0	0	0.0	2	138.8
Oropharyngeal pain	0	0.0	1	156.0	1	145.1	2	138.8
Peripheral tremor	0	0.0	0	0.0	0	0.0	0	0.0
Rash	1	176.1	1	156.0	3	435.4	1	69.4
Rhinorrhoea	0	0.0	4	624.0	3	435.4	2	138.8
Seizure/ Febrile convulsions	0	0.0	1	156.0	0	0.0	0	0.0
Vomiting	0	0.0	0	0.0	1	145.1	3	208.2
Wheezing	0	0.0	2	312.0	0	0.0	0	0.0

Population	118,350	118,207	118,104	117,966
Vaccinated this week	568	641	689	1,441
Vaccinated late this week	455	47	34	64
Vaccinated to date	27,006	25,983	25,295	24,572

Adverse events by category

Disease Name	EMA surveillance condition
Fever/Pyrexia	Fever
	High fever (>39.5°C)
	Mild fever (<=38.5°C)
	Moderate fever (38.6-39.5°C)
Gastrointestinal	Decreased appetite
	Diarrhoea
	Nausea
	Vomiting
General symptoms	Drowsiness
	Fatigue
	Headache
	Irritability
	Malaise
Local symptoms	Local erythema
Musculoskeletal	Arthropathy
	Muscle aches/ myalgia
Neurological	Bell's Palsy
	Guillain-Barre Syndrome (GBS)
	Peripheral tremor
	Seizure/ Febrile convulsions
Rash	Rash
Respiratory/Miscellaneous	Conjunctivitis
	Coryza
	Cough
	Epistaxis
	Hoarseness
	Nasal congestion
	Oropharyngeal pain
	Rhinorrhoea
	Wheezing
Sensitivity/anaphylaxis	Anaphylactic reactions
	Facial oedema
	Hypersensitivity reactions

Further information:

Post-authorisation safety surveillance pilot study

The European Medicines Agency (EMA) has set out new requirements for influenza vaccine safety surveillance that all Marketing Authorisation Holders (MAHs) providing vaccines in the EU must address. This pilot, funded by GlaxoSmithKline and conducted by the University of Surrey, demonstrates the potential of routinely collected data in the UK to provide timely and relevant information on influenza vaccine safety.

We are assessing adverse event of interest (AEI) frequencies among subjects who have received the influenza vaccine, using routinely collected data in ten primary care practices. AEIs up to 7 days from the date of vaccination are included for vaccinated patients.

A reporting card has been given to vaccinated patients to return to the practices, and practice staff have been asked to input the data from returned cards into the computerised system.

This report shows the weekly data flow capturing vaccine coverage, and proportions of patients reporting possible AEIs, as specified by EMA. The results of this pilot will be used to assess whether the data collected in the study meet the requirements of enhanced safety surveillance as stipulated in the Guideline on Influenza Vaccines issued by EMA in July 2016.

This pilot study has received NHS REC approval (REF: 17/NE/0286).

How rates of possible adverse events are calculated

Denominator: The vaccinated denominator are all registered patients in the participating practices who have received the seasonal influenza vaccine in the reporting week. We report with a 2-week delay, to allow for late recording.

The front page details the population denominator and the vaccinated to date denominator. The complete population denominator are all regular patients registered at the participating practices from 01/09/2017 until this reporting week. The vaccinated denominator are all the patients from the complete population denominator who have been vaccinated to date (from 01/09/2017 until this reporting week). This is slightly different from the denominator used in calculating the possible adverse event rates, which is the number of people vaccinated in the reporting week only.

Numerator: The numerator is the number subjects from the denominator reporting the AEI within 7 days following vaccination with a seasonal influenza vaccine

Detailed numerators and denominators for the vaccinated patients are stated in page 10.

Vaccinated late this week: These patients have a had late recording of their vaccination beyond the allowed 2-week window.

Timeliness of the data

In routine primary care data, the date of recording may differ from the date of the event. Sometimes GPs may add an entry to the patient's record several weeks after the date of the event. Usually, this lag in recording would not be greater than 6 weeks. Therefore, it is expected that each week there may be a small variation in the AEI rates from previous weeks, as new data is recorded. We allow for a 2-week delay to capture as many late recordings as possible, without compromising the timeliness of the data.

Further information:

Data extraction process and information governance

Data are extracted twice weekly from practice systems by Apollo Medical Systems on behalf of the University of Surrey. Patients who have withheld consent for data sharing are excluded from the extraction process. Data are pseudonymised as close to source as possible.

Data are held on secure servers at the Section of Clinical Medicine and Ageing at the University of Surrey. Both Apollo and the University of Surrey are registered and compliant with the Data Protection Act and fully compliant with all relevant HSCIC and NHS data information governance best practice.

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