



**TURNING DATA  
INTO EVIDENCE**

# **Risk Management Planning and Proactive surveillance**

[www.p-95.com](http://www.p-95.com)

# Module content

- Risk Management Planning – industry perspective
- Risk Management Planning –health authority perspective
- Case studies
  - HPV vaccine
  - COVID 19 vaccines

# Regulatory context

- The principles of PhV and Risk Management are not just for post-authorisation planning, but should be part of the product development life-cycle
  - Clinical trial programme, developmental RMP (See Chapter 3 – of [https://cioms.ch/wp-content/uploads/2017/01/Mgment\\_Safety\\_Info.pdf](https://cioms.ch/wp-content/uploads/2017/01/Mgment_Safety_Info.pdf))
    - However, in this module we will focus on post-authorization planning
- Based around the principles of ICH E2E ([https://database.ich.org/sites/default/files/E2E\\_Guideline.pdf](https://database.ich.org/sites/default/files/E2E_Guideline.pdf)), stringent regulators require a PhV Plan/Risk Management Plan as part of the product licence

# Risk Management Plan

**Table V.1.** Overview of the RMP parts and modules

<b>Part I</b>	Product(s) overview
<b>Part II</b>	Safety specification
<b>Module SI</b>	Epidemiology of the indication(s) and target population(s)
<b>Module SII</b>	Non-clinical part of the safety specification
<b>Module SIII</b>	Clinical trial exposure
<b>Module SIV</b>	Populations not studied in clinical trials
<b>Module SV</b>	Post-authorisation experience
<b>Module SVI</b>	Additional EU requirements for the safety specification
<b>Module SVII</b>	Identified and potential risks
<b>Module SVIII</b>	Summary of the safety concerns
<b>Part III</b>	Pharmacovigilance plan (including post-authorisation safety studies)
<b>Part IV</b>	Plans for post-authorisation efficacy studies
<b>Part V</b>	Risk minimisation measures (including evaluation of the effectiveness of risk minimisation activities)
<b>Part VI</b>	Summary of the risk management plan
<b>Part VII</b>	Annexes

[https://www.ema.europa.eu/en/documents/scientific-guideline/guideline-good-pharmacovigilance-practices-module-v-risk-management-systems-rev-2\\_en.pdf](https://www.ema.europa.eu/en/documents/scientific-guideline/guideline-good-pharmacovigilance-practices-module-v-risk-management-systems-rev-2_en.pdf)

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## Guidance for Industry

### E2E Pharmacovigilance Planning

<https://www.fda.gov/media/71238/download>

U.S. Department of Health and Human Services  
Food and Drug Administration  
Center for Drug Evaluation and Research (CDER)  
Center for Biologics Evaluation and Research (CBER)

April 2005  
ICH

# Risk

- In the context of PhV and RMP planning, risk refers not only to adverse reactions but anything that has potential to negatively impact benefit-risk balance
  - New serious adverse reactions
  - Change in frequency/severity/nature (e.g. new risk factors) of known adverse reactions
  - Non-serious/mild adverse reactions that affect acceptance/tolerability (healthy recipients)
  - Defects in vaccine quality that affect safety/efficacy
  - Programme-related safety – administration errors, storage/handling deviations
  - Waning effectiveness over time, vaccine failures

# EU Risk Management Plan

- Safety 'specification'
  - To summarise we know about safety based on the non-clinical/clinical development programme
  - But equally important, the *things that we don't know/gaps* in knowledge that could be important in real-life use
    - Identified Risks
    - Potential Risks
    - Important missing information
      - Each of these needs addressing by the plans below
- Pharmacovigilance Plan
  - To agree the scientific plan to continually monitor safety, to address the gaps in knowledge and achieve specific safety milestones in the life-cycle
    - Routine PhV, Additional PhV, safety studies (PASS)
- Risk Minimisation Plan
  - To agree the measures needed to minimize risk, promote safe use and optimise benefit-risk balance, monitor impact of measures
    - Product information, educational material, product access

# Current EMA/PRAC approach

- For many years, EU RMPs often contained potential risks and/or missing information that was not necessarily evidence-based/fully justified, or would not significantly impact benefit-risk
- In past few years, revisions to EU guidance and a more pragmatic approach allows for a more risk-proportionate approach to PhV plans
  - i.e. a renewed focus on what is 'important', less 'nice-to-haves' and less requirement for additional risk minimisation measures if such measures are already part of routine clinical practice
    - e.g. the management of anaphylaxis should be standard clinical care rather than a product-specific issue

# RMP planning – a tale of two 'similar' EU (flu) vaccines

## Flucelvax RMP summary of concerns - 2018

### 2.7. Risk Management Plan

#### Safety concerns

Important identified risks	None
Important potential risks	Neuritis
	Convulsion
	Encephalitis (ADEM)
	Vasculitis
	Guillain-Barré Syndrome
	Demyelination
	Bell's palsy
	Immune thrombocytopenia
Important missing information	Safety in immunocompromised patients
	Safety in subjects with underlying diseases
	Use in pregnant and breastfeeding women

#### VI.2.1. List of important risks and missing information

There are no important identified risks with RIV4 that require inclusion as a safety concern in the RMP.

There are no important potential risks with RIV4 that require inclusion as a safety concern in the RMP.

There is no important missing information with RIV4 that requires inclusion as a safety concern in the RMP.

Table 1 - List of important risks and missing information

Important identified risks	Not applicable
Important potential risks	Not applicable
Important missing information	Not applicable

## Supemtek ▼ RMP summary of concerns - 2020

Historical 'concerns', not product-specific, not relevant to the 'real-world' use

# EU Risk Management Plan

- It is a key part of the product licence
- A 'living' document to be maintained throughout the product
  - New risks, new PhV activities/PASS can be added at any time
- The fulfilment of PhV Plan and PASS is a legal obligation
- The overall objective is to have a plan to convert;
  - Potential Risks into Identified, or refuted Risks
  - Missing information into known information
  - Risk minimization into routine practice/standard care
- But, the RMP is merely a legal document – we will focus on the science behind the PhV/RMM Plan, and making this robust and achievable

# RMP - vaccines



9 December 2013  
EMA/488220/2012

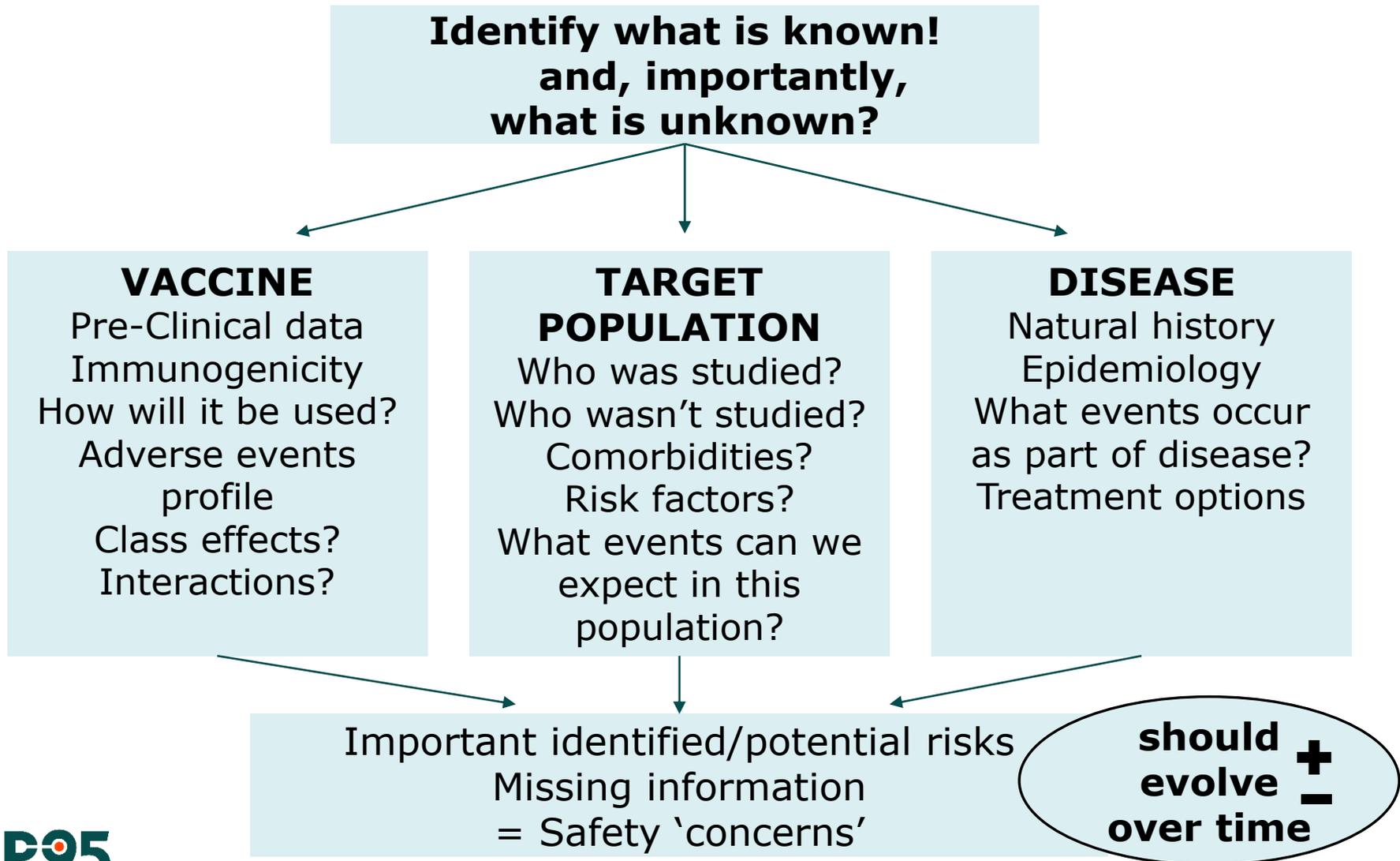
## Guideline on good pharmacovigilance practices (GVP)

Product- or Population-Specific Considerations I: Vaccines for prophylaxis against infectious diseases

Draft finalised by the Agency in collaboration with Member States	21 February 2013
Draft agreed by ERMS FG	8 March 2013
Draft adopted by Executive Director	9 April 2013
Start of public consultation	12 April 2013
End of consultation (deadline for comments)	12 June 2013
Revised draft finalised by the Agency in collaboration with Member States	23 October 2013
Revised draft agreed by ERMS FG	11 November 2013
Revised draft adopted by Executive Director as final	9 December 2013
Date for coming into effect after finalisation	13 December 2013

- GVP Module P1 – summarises the specific issues for vaccine in all aspects of PhV

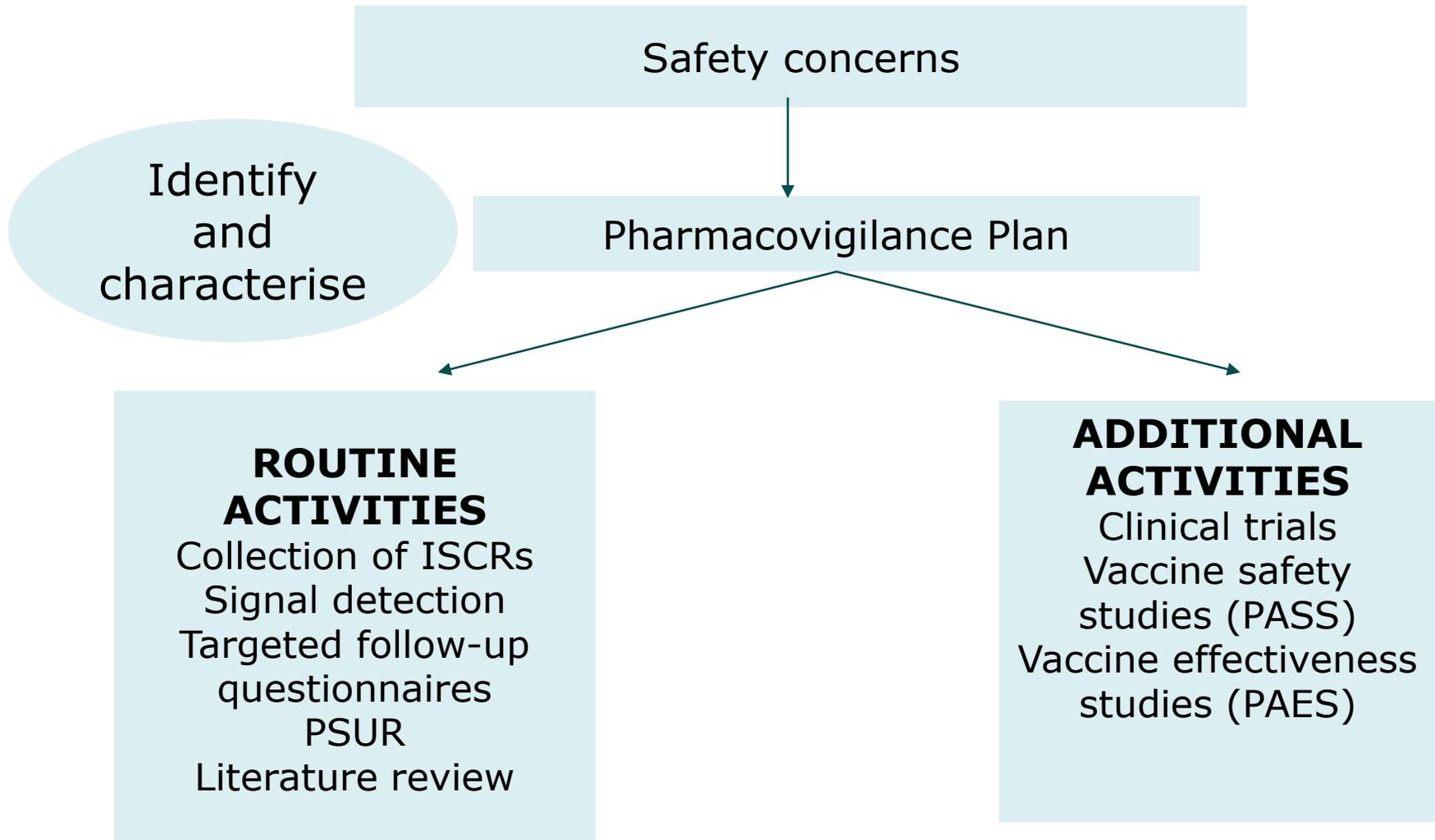
# Safety specification



# Safety specification

- Some vaccine-specific considerations:
  - Impact of previous/similar vaccines on disease epidemiology
  - Past experience with adjuvant, vector, similar biotech
  - Impact of manufacturing residuals (e.g. homology with human proteins etc)
  - Live virus shedding/transmission
  - Known effect of excipients (e.g. immunogenicity)
  - Impact of reactogenicity – tolerability, anti-pyretics
  - Special age groups excluded from trials – important as vaccine programmes often include these groups (e.g. 'off-label')
    - younger/older age groups, pregnancy, immunocompromised, co-morbid
  - Potential for errors ([ultra] cold-chain, multi-dose vials, reconstitution/dilution, mixed schedules etc)
  - Waning immunity
  - Concurrent vaccines (multivaccination in real-world)
  - 'Core RMP' guidance – e.g. pandemic, AESIs etc

# PhV Plan



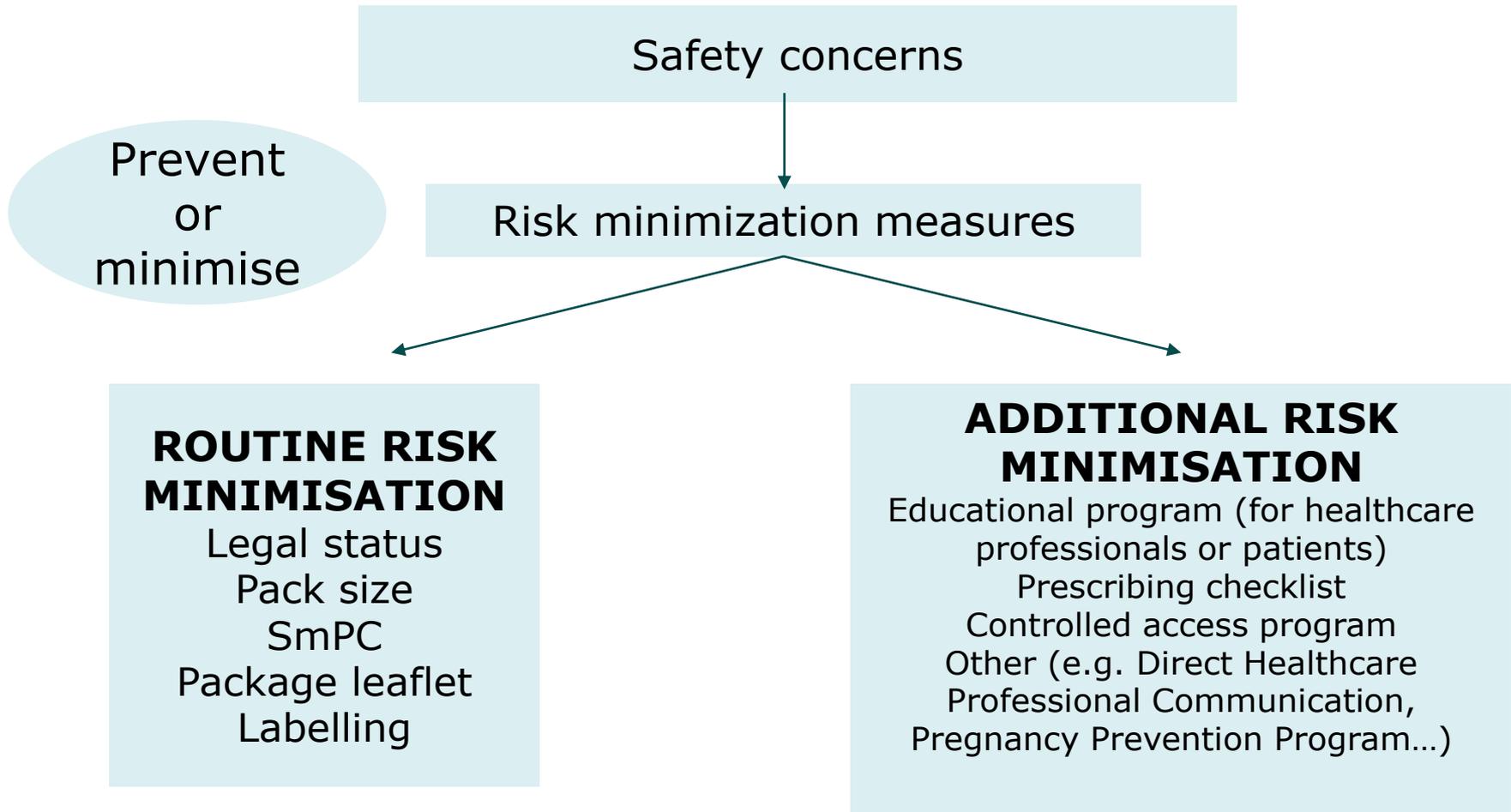
# 'Enhanced' routine PhV

- Routine PhV = the basic (legal) obligations for PhV
- Regulators may ask for more 'enhanced', *ad hoc* forms of routine PhV for new vaccines
  - More frequent signal detection (e.g. at least weekly)
  - Adoption of AESI lists to focus surveillance (i.e. these may be generic lists that are separate to the 'summary of safety concerns')
  - Observed vs expected analysis of ICSRs (inc. gathering vaccine usage data), and other disproportionality analyses and statistical approaches
  - Batch-specific surveillance/focus on traceability
  - Plans to deal with high volume of ICSRs
  - *Ad hoc (more frequent)* periodic/aggregate safety reports
  - Targetted ICSR follow up

# Additional PhV

- Additional (Phase IV) clinical trials
- Post authorization safety studies - PASS
  - Observational, secondary data/RWE studies
  - Active safety surveillance, primary data studies
  - Pregnancy registries
- Post authorisation efficacy studies – PAES
  - Not usually needed, but effectiveness studies often requested within PASS
- Multi-company, international initiatives
  - E.g. registries, COVIDRIVE

# Risk Minimisation Plan



# Risk Minimisation Measures (RMM)

- As with any medicinal product, the most basic, routine element of the RMM plan is the product information
  - Labelling, packaging, SmPC, PIL, legal status etc
- An 'additional' RMM Plan may be required, if those measures may be insufficient
- Used less often for vaccines, but may be important if the vaccine has unusual presentation or risks that create a precedent
  - Measures to improve traceability/handling, user checklists
- RMM also includes plans to monitor the effectiveness/impact of the measures – e.g. surveys, drug-utilization studies

# 'core' RMP/PhV guidance



European Medicines Agency  
Post-authorisation Evaluation of Medicines for Human Use

10 April 2014  
EMA/PRAC/222346/2014  
Pharmacovigilance Risk Assessment Committee (PRAC)

London, 25 June 2009  
Doc. Ref: EMEA/359381/2009

Interim guidance on enhanced safety surveillance for  
seasonal influenza vaccines in the EU

## CHMP Recommendations for the Pharmacovigilance Plan as part of the Risk Management Plan to be submitted with the Marketing Authorisation Application for a Pandemic Influenza Vaccine

Adopted by CHMP in November 2006

Revision 1.0 adopted by CHMP on 25 June 2009



[https://www.ema.europa.eu/en/documents/other/consideration-core-requirements-rmps-covid-19-vaccines\\_en.pdf](https://www.ema.europa.eu/en/documents/other/consideration-core-requirements-rmps-covid-19-vaccines_en.pdf)

EMA/PRAC/234052/2021  
10 June 2021

Consideration on core requirements for RMPs of COVID-  
19 vaccines

coreRMP19 guidance v2.0

# Transparency.....

BNT162b2  
Risk Management Plan 25 November 2021

**COMIRNATY (COVID-19 mRNA VACCINE)  
RISK MANAGEMENT PLAN**

RMP Version number: 4.0

Data lock point for this RMP: See below

12-15 years of age	13 March 2021 18 June 2022
16 years and older	23 October 2021 13 March 2022 18 June 2022
5 to < 12 years of age	06 September 2021 18 June 2022

VAC31518 (Ad26.COVS.2.S)

Risk Management Plan Version 3.1  
Final for Procedure EMEA/H/C/005737/II/0029 – HA approval date 13/01/2022

**European Union Risk Management Plan  
VAC31518 (Ad26.COVS.2.S)**

Data lock point for current RMP 04 October 2021 Version number 3.1

Final for Procedure EMEA/H/C/005737/II/0029 – Health Authority approval date 13/01/2022

**Note: This document contains unblinded clinical trial data**

## SUMMARY OF RISK MANAGEMENT PLAN FOR NUVAXOVID (COVID-19 VACCINE (RECOMBINANT, ADJUVANTED))

This is a summary of the RMP for Nuvaxovid. The RMP details important risks of Nuvaxovid, how these risks can be minimised, and how more information will be obtained about Nuvaxovid's risks and benefits.

The package leaflet give essential information to HCPs and patients on how to use the vaccine.

AstraZeneca  
Version: 4, Succession number: 2

European Union Risk Management Plan	
Drug Substance	ChAdOx1-S (recombinant) (AZD1222)
Version Number	4
Succession number	2
Data lock point	25 June 2021
Date of final sign-off	See e-signature page

ModernaTX, Inc.  
EU Risk Management Plan for COVID-19 Vaccine Moderna

## EU Risk Management Plan for COVID-19 mRNA vaccine

**Risk Management Plan (RMP) version to be assessed as part of this application:**

RMP version number: 1.1

Data lock point for this RMP: 21 December 2020

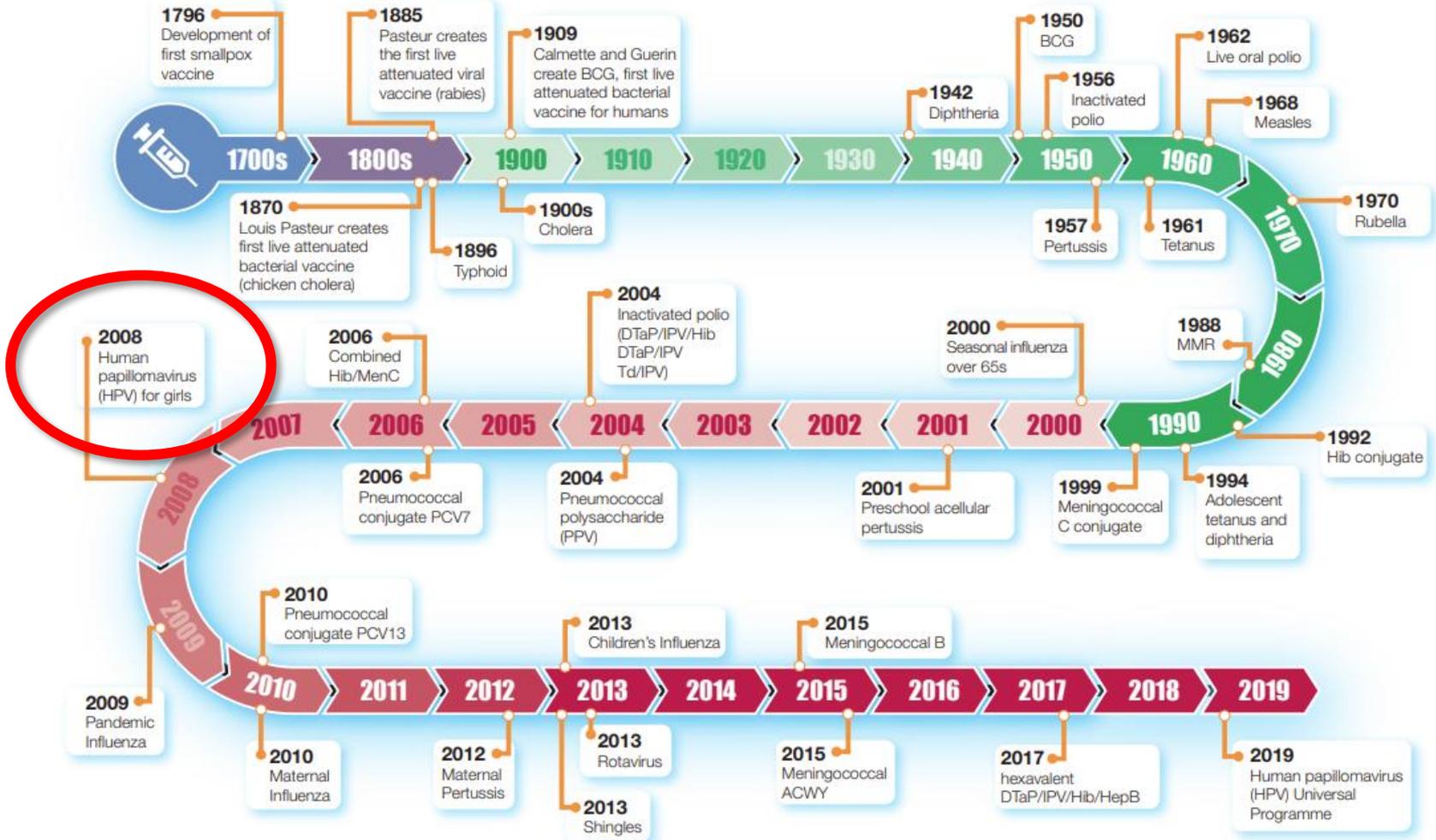
Date of final sign off: 01 March 2021

## EUROPEAN UNION RISK MANAGEMENT PLAN (EU RMP) FOR VAXZEVRIA (ChAdOx1-S [RECOMBINANT])

- <https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/covid-19-vaccines>

# Public Health Authority perspective

Public Health England Historical vaccine development and introduction of routine vaccine programmes in the UK



# Reactive vs Proactive surveillance

- April 2009.....



.....October 2009

# Proactive PhV

- With mass vaccination programmes (partic. with novel vaccines), emerging safety concerns are almost inevitable
- These may eventually be confirmed, or refuted
- Some may be entirely unpredictable
  - E.g. autism, narcolepsy, thrombotic thrombocytopenia
- Others may be anticipated
- We should prepare for as many eventualities as we can
  - Be in the best position to quickly respond, and always keep an open mind

# PhV planning for a new vaccine programme

- Principles the same as for RMP planning, but with a focus on the immunisation programme rather than the product *per se*
- Understand full safety specification
  - Identify key risks and/or gaps (age, pregnancy, co-morbidities)
- Understand when and how programme will be implemented
  - Target Group (any important missing info?)
  - Immunisation schedule (is it same as the licence/clinical trials?)
  - Number in cohort (how many doses per week do we expect?)
  - Who/where will administer vaccine – (community? Hospital? schools?)
- *Anticipate* and *plan* for the issues likely to arise
  - Look at the specific vaccine (specification)
  - Look at similar/previous vaccines
  - Look at prior experience in similar populations

# Case study - HPV vaccine

daughters vaccinated, others are adamant that it has triggered alarming side-effects . . .

## HOW SAFE IS THE CERVICAL CANCER

by Rachel Porter

### Cervical cancer vaccine quarantined after death of girl (14)

## JAB 'AS DEADLY AS THE CANCER'

Cervical drug

HEALTH authorities have a batch of

vaccine. Just one of those was regarding Cervarix. The other seven involved Gardasil, manufactured by Merck & Co.

at a school in Liverpool became paralysed from down. She has spent all the time since in hospital. More than 1.4 million

## Cancer jab has left me unable to walk

EXCLUSIVE

By Lucy Johnston HEALTH EDITOR

A CHILD specialist has linked the controversial cervical cancer vaccine to a

## HPV jab left our girl in a 'waking coma'

### MUM'S WARNING

By STEPHEN WHITE

A TEENAGER has been plunged into a "waking coma" after having a cervical cancer injection with the rest of the girls in her class.

A sp about 5 every 9 The million Drug

- Media headlines started to appear in the first year of the immunisation programme - 2008

# What events were likely to be reported?

## ORIGINAL STUDIES

### Human Papilloma Virus Immunization in Adolescent and Young Adults

#### *A Cohort Study to Illustrate What Events Might be Mistaken for Adverse Reactions*

Claire-Anne Siegrist, MD,\* Edwin M. Lewis, MPH,† Juhani Eskola, MD,‡  
Stephen J. W. Evans, MSc,§ and Steven B. Black, MD||

<https://doi.org/10.1097/inf.0b013e318149dfea>

#### Hospital Admissions and Outpatient Consultations for in Adolescent Girls and Young Women

Diagnoses	Adolescents		Adults Rates per 100,000	
	Frequency Counts	Rates per 100,000		
<b>Hospitalizations</b>				
(...)				
556.X	Thyroid disorders	35	16.3	286.77
7100	Ulcerative colitis	22	10.2	14.90
	Systemic lupus erythematosus	18	8.4	31.16
555.X	Regional enteritis	16	7.4	20.32
71430	Juvenile rheumatoid arthritis	9	4.2	19.87
2794	Autoimmune disorders (NS)	6	2.8	2.26
37730	Optic neuritis	6	2.8	1.81
340	Multiple sclerosis	2	0.9	9.94
3570	Acute polyneuritis	1	0.45	1.81
<b>Outpatient care</b>				
Several	Thyroid disorders	859	396	1412.05
556.X	Ulcerative colitis	76	35.4	117.52
555.X	Regional enteritis	68	31.6	97.18
7100	Systemic lupus erythematosus	63	52.9	120.23
7140	Rheumatoid arthritis	29	13.5	119.33
37730	Optic neuritis	10	4.7	13.56
340	Multiple sclerosis	9	4.2	64.18
71659	Polyarthriti	7	3.3	30.74

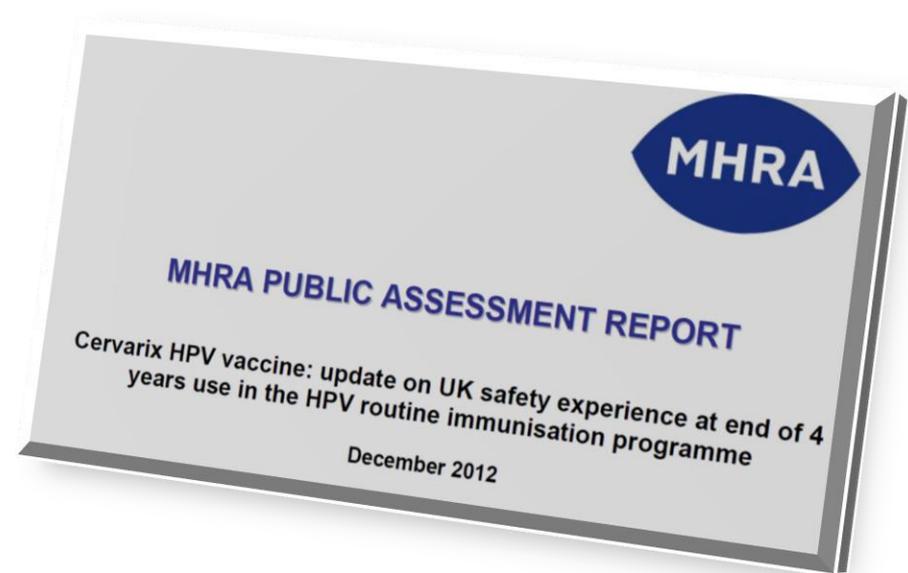
NS indicates not significant.

# Chronic Fatigue Syndrome (CFS)

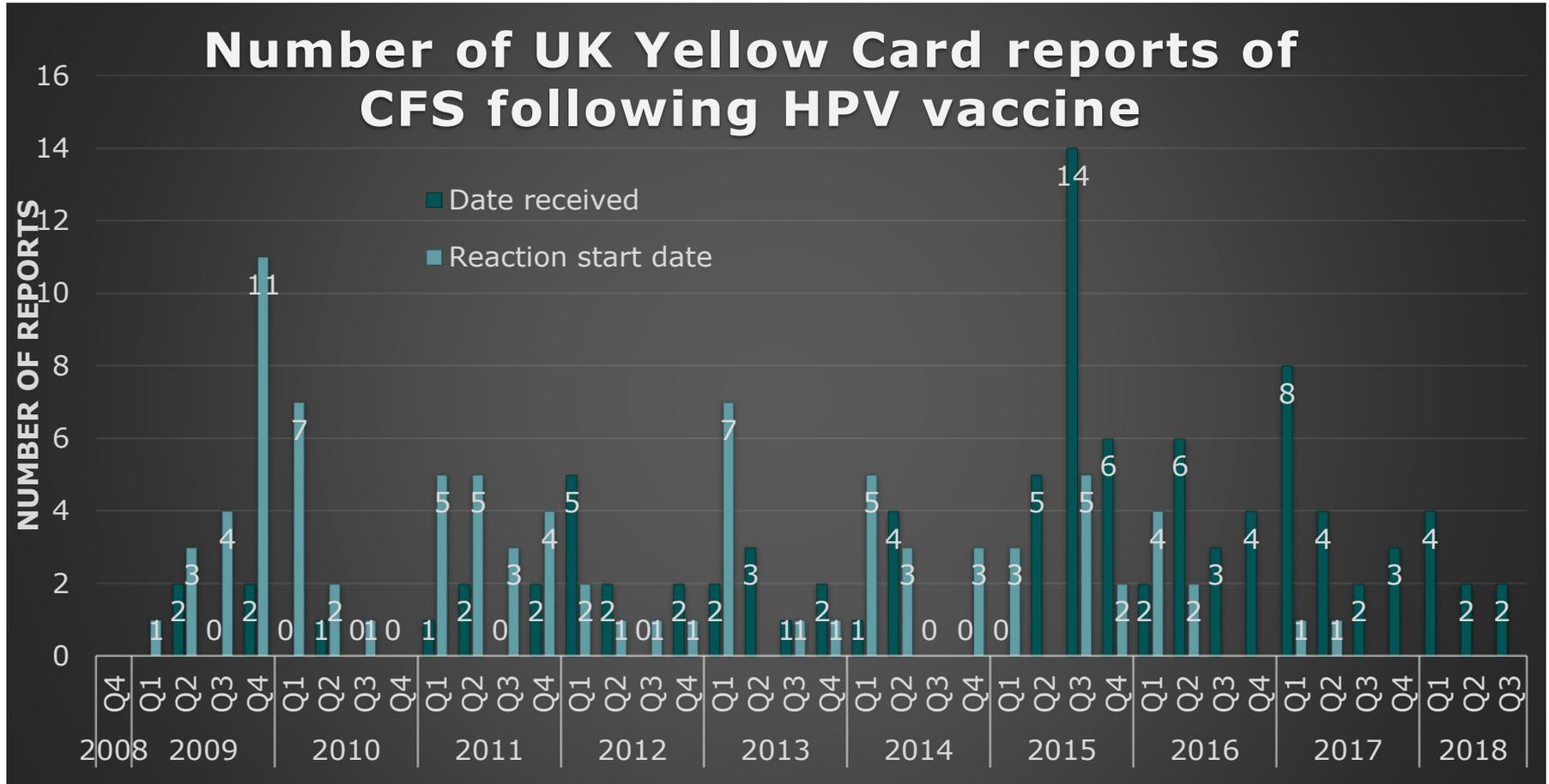
- Identified as a likely AESI for a vaccine in adolescent females
- Natural incidence in 12-18 yr old UK females ~30 to 70 /100,000/year - ~2% prevalence at the time
- Insidious onset and lack of a known cause for CFS
  - early CFS symptoms could coincide with transient vaccine side effects - vaccination a point of symptom recall
- Past, unfounded issues with hepatitis B vaccine in adolescents led to widespread concerns in the 1990s (Canada, France)
- Reports as suspected ADRs might be expected

# Initial UK PhV plan - 2008

- Enhanced, near real-time passive surveillance
- Supplemented with analysis of routinely-collected electronic health record data (GPRD/CPRD)
  - Weekly O/E analysis of range of AESIs
  - 'Ecological analysis'
  - Observational study
- Fully transparent – weekly publication of data/analyses
- Focus on CFS
  - Internal – i.e. intention is not to stimulate reporting



# Spontaneous reports of CFS in UK



# Near real-time surveillance

- Real time O/E of Yellow Cards – ‘signal’ if 10% reporting assumed

i) 2008/09 - ages 12-13 years

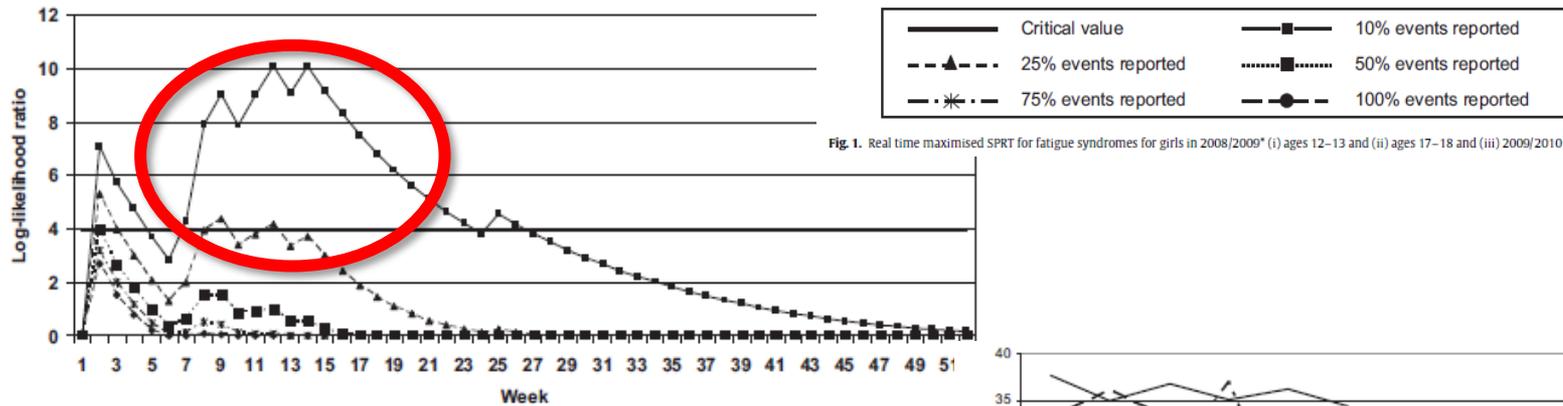


Fig. 1. Real time maximised SPRT for fatigue syndromes for girls in 2008/2009\* (i) ages 12–13 and (ii) ages 17–18 and (iii) 2009/2010 ages 12–18.

- Ecological analysis of CPRD data – no signal

<https://doi.org/10.1016/j.vaccine.2013.08.024>

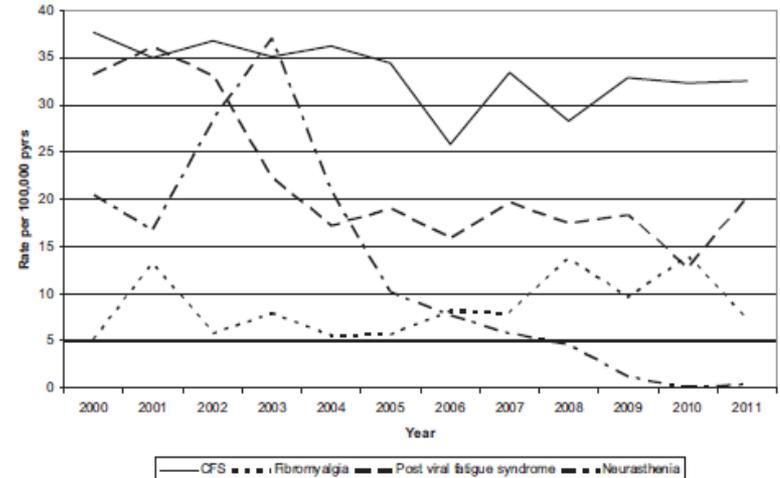


Fig. 3. The incidence of fatigue syndromes in girls aged 12–20 years by type of diagnosis 2000–2011.

# CFS – UK SCCS study

- Epidemiology study using CPRD conducted to provide a more robust evaluation

*Results:* The number of spontaneous reports of chronic fatigue following Cervarix vaccination was consistent with estimated background rates even assuming low reporting. Ecological analyses suggested that there had been no change in the incidence of fatigue syndromes in girls aged 12–20 years after the introduction of the vaccination despite high uptake (IRR: 0.94, 95% CI: 0.78–1.14). The SCCS, including 187 girls, also showed no evidence of an increased risk of fatigue syndromes in the year post first vaccination (IRR: 1.07, 95% CI: 0.57–2.00,  $p = 0.84$ ).

*Discussion:* The successful implementation of an enhanced pharmacovigilance plan provided immediate reassuring evidence that there was no association between vaccination with Cervarix and an increased risk of chronic fatigue syndromes. This has now also been further demonstrated in more comprehensive epidemiological studies.

Vaccine 31 (2013) 4961–4967



Contents lists available at [ScienceDirect](#)

Vaccine

Journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)



## Bivalent human papillomavirus vaccine and the risk of fatigue syndromes in girls in the UK

Katherine Donegan, Raphaele Beau-Lejdstrom, Bridget King, Suzie Seabroke, Andrew Thomson, Philip Bryan\*

Vigilance and Risk Management of Medicines, Medicines and Healthcare products Regulatory Agency, London, UK



**UK**

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Vigilance and Risk Management of Medicines, Medicines and Healthcare products Regulatory Agency, London, UK

**Norway**

Contents lists available at ScienceDirect

**Vaccine**

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

### HPV vaccination and risk of chronic fatigue syndrome/myalgic encephalomyelitis: A nationwide register-based study from Norway

Christine Reinert<sup>a,\*</sup>, Ida Hauke<sup>a</sup>, Inger Jonanne Bakken<sup>b</sup>, Magrethe Cveklund<sup>c</sup>, Vegard Bruun Wyller<sup>d</sup>, Siri E. Mørland<sup>e</sup>, Per Magnus<sup>f</sup>, Elin Trogstad<sup>a</sup>



**No evidence of an association with chronic fatigue**

### Finland

Vaccine 36 (2018) 5926–5933

Contents lists available at ScienceDirect

**Vaccine**

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

### The association of adverse events with bivalent human papilloma virus vaccination: A nationwide register-based cohort study in Finland

Jozica Skufca<sup>a</sup>, Jukka Ollgren<sup>a</sup>, Miia Artama<sup>b,\*</sup>, Esa Ruokokoski<sup>a</sup>, Hanna Nohynek<sup>a</sup>, Arto A. Palmu<sup>b</sup>

<sup>a</sup>Department of Health Security, Infectious Diseases Control and Vaccinations Unit, National Institute for Health and Welfare (THL), Helsinki, Finland

<sup>b</sup>Department of Public Health Solutions, Public Health Evaluation and Projection Unit, National Institute for Health and Welfare (THL), Tampere, Finland



### The Netherlands

Vaccine 36 (2018) 6796–6802

Contents lists available at ScienceDirect

**Vaccine**

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

### No evidence found for an increased risk of long-term fatigue following human papillomavirus vaccination of adolescent girls

T.M. Schurink-van't Klooster<sup>a,\*</sup>, J.M. Kemmeren<sup>a</sup>, N.A.T. van der Maas<sup>a</sup>, E.M. van de Putte<sup>b</sup>, M. ter Wolbeek<sup>c</sup>, S.L. Nijhof<sup>b</sup>, A.M. Vanrolleghem<sup>d</sup>, J.A. van Vliet<sup>a</sup>, M. Sturkenboom<sup>e</sup>, H.E. de Melker<sup>a</sup>

<sup>a</sup>Center for Infectious Diseases Control, National Institute for Public Health and the Environment, Bilthoven, the Netherlands

<sup>b</sup>Department of Paediatrics, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands

<sup>c</sup>Department of Woman & Baby, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands

<sup>d</sup>Department of Medical Informatics, Erasmus Medical Center Rotterdam, Rotterdam, the Netherlands

<sup>e</sup>Julius Global Health, University Medical Center Utrecht, the Netherlands



# From CFS....to POTS

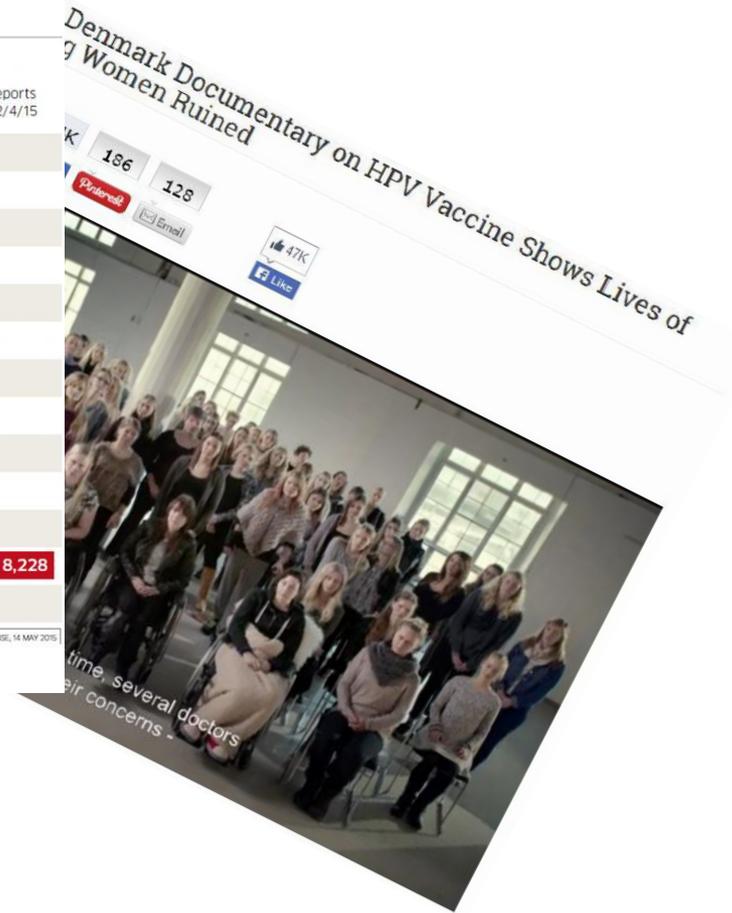


**DRUG REACTIONS**

Total number of UK spontaneous suspected adverse drug reaction (ADR) reports in association with [routine immunisation] vaccines between 1/1/05 and 22/4/15

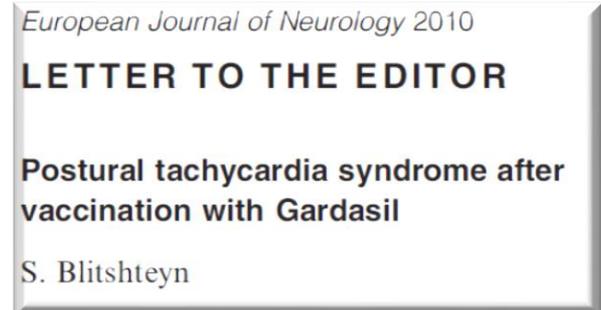
Diphtheria, tetanus, pertussis, polio and haemophilus influenza type B	1,309
Tetanus, diphtheria and polio	1,076
Diphtheria, tetanus, pertussis and polio	1,190
Rotavirus (Rotarix)	412
Pneumococcal disease (PCV)	1,560
Meningococcal group C disease (Men C)	769
Haemophilus influenza type B /Meningitis C	279
Measles, mumps and rubella (MMR)	1,594
Pneumococcal disease (PPV)	963
Fluenz Tetra	872
Shingles (Zostavax)	626
Human papillomavirus (HPV)	8,228
Influenza virus	2,994

SOURCE - MEDICINES AND HEALTHCARE PRODUCTS REGULATORY AGENCY FREEDOM OF INFORMATION RESPONSE, 14 MAY 2015



# POTS

- POTS – postural orthostatic tachycardia syndrome
  - lack of awareness/diagnosis prior to 2008
  - excessive tachycardia on standing, associated with other symptoms of orthostatic intolerance and autonomic dysfunction
  - Up to 5x more common in females
  - Established overlap with CFS diagnoses (~40%) –
    - POTS symptoms possibly a sign of deconditioning in some CFS patients
- Cases in association with HPV vaccine first appeared ~2010
  - Individual case reports in literature
  - Increasing cases via passive surveillance from 2012



# Impact on vaccine uptake

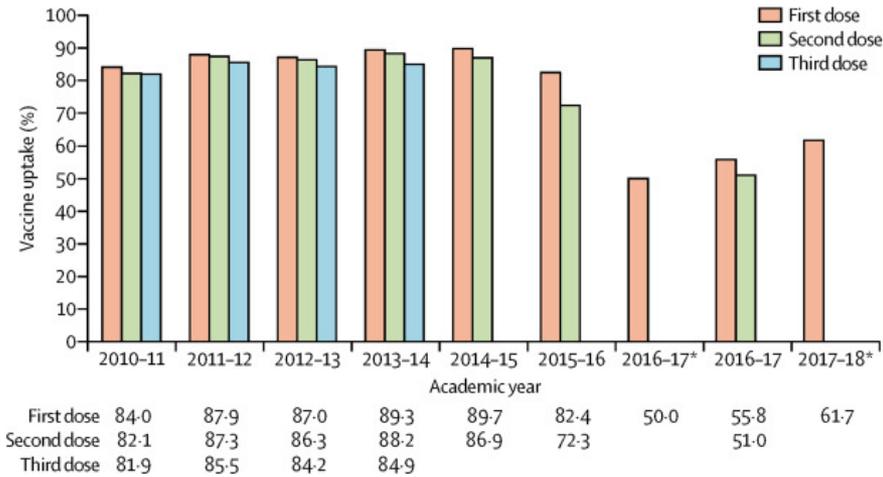


Figure HPV vaccine uptake by academic year in Ireland, from 2010-11 to 2017-18

**Ireland**

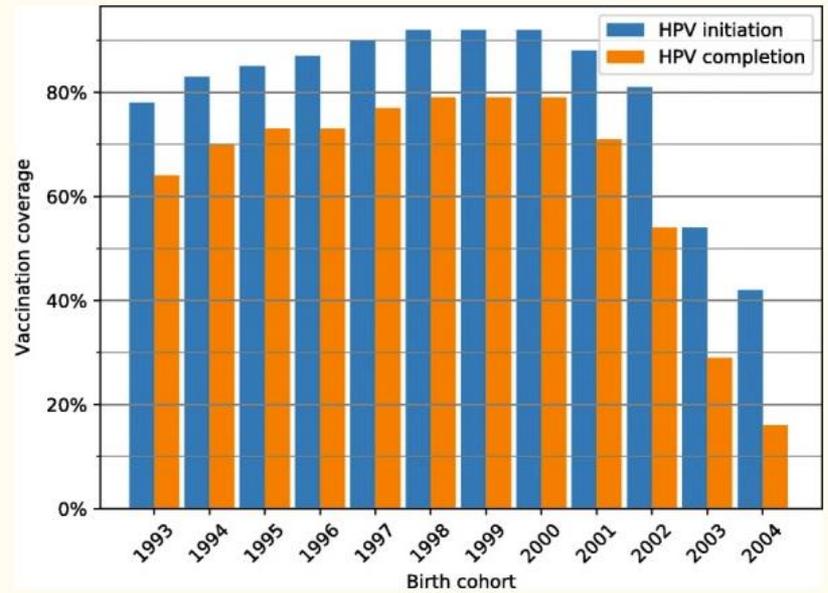


Fig. 1

HPV-vaccination in birth cohorts 1993-2003, Denmark. HPV-vaccination initiation and completion for girls in the childhood vaccination programme, Denmark birth cohorts 1993-2003. Three-dose vaccination schedule from 2009 until August 2014. Two-dose schedule from August 2014 until 14 October 2016. Data extracted June 2017

**Denmark**

# POTS or CFS? Or both?

## Is Chronic Fatigue Syndrome/Myalgic Encephalomyelitis a Relevant Diagnosis in Patients with Suspected Side Effects to Human Papilloma Virus Vaccine?

### Abstract

The quad rivalent human papilloma virus vaccine (Q-HPV-vaccine) was included into the Danish childhood vaccination program in 2009. During the past years possible side effects have been described in several countries encompassing a collection of symptoms consistent with pronounced autonomic dysfunction coupled with severe non-migraine-like headache, excessive fatigue, cognitive dysfunction, gastrointestinal discomfort and widespread pain of a neuropathic character.

### Research Article

Volume 1 Issue 1 - 2015

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EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH

5 November 2015  
EMA/714950/2015

Review concludes evidence does not support that HPV vaccines cause CRPS or POTS  
Reports of CRPS and POTS after HPV vaccination are consistent with what would be expected in this age group

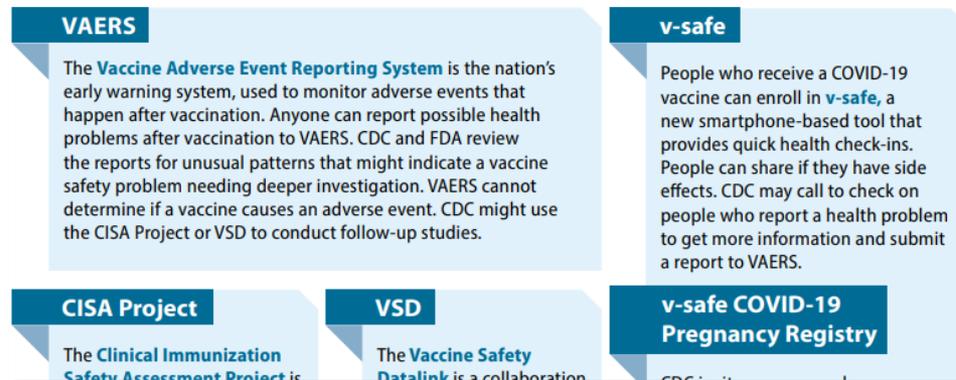
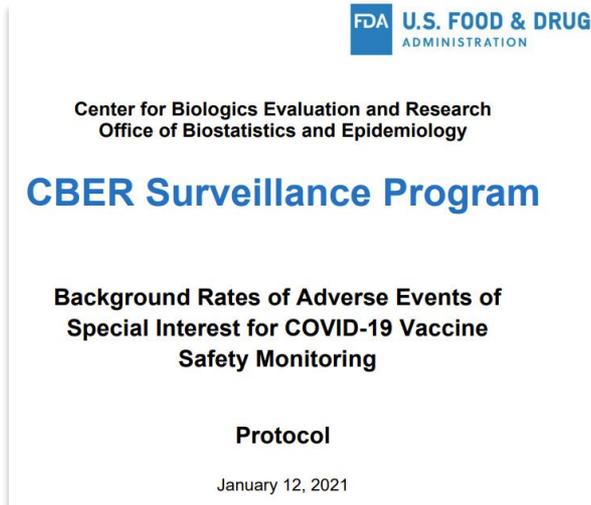
referred due to orthostatic intolerance and symptoms compatible with autonomic dysfunction occurring in a close temporal association to vaccination with the Q-HPV vaccine. We found that 34 (87%) and 35(90%) of the patients fulfilled the diagnostic criteria for CFS/ME regarding to the Canadian and the IOM (Institute of Medicine) criteria respectively and suggest that CFS/ME may be a suitable diagnosis for patients with severe and persistent suspected side effects to the Q-HPV vaccine.

- Anticipation of CFS and associated planning was crucial groundwork to refute the association with POTS and dysautonomia with a strong evidence base

# Case study – COVID vaccines US



Passive Surveillance  
Active Surveillance  
BEST  
CMS  
Summaries of Monitoring Efforts



COVID-19 Vaccines Safety Technical Work Group (VaST)

- US (FDA/CDC) approach
- <https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/covid-19-vaccine-safety-surveillance>
- <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html>

# COVID - EMA approach



EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH

EMA/333964/2020

Pharmacovigilance Plan of the EU Regulatory Network for COVID-19 Vaccines

EMA establishes task force to take quick and coordinated regulatory action related to COVID-19 medicines [Share](#)

Press release 09/04/2020

27 May 2020

UMC Utrecht and Utrecht University will lead European project

## Monitoring the benefits and safety of the new corona vaccines

Utrecht scientists will lead a European project that is funded by the European Medicines Agency (EMA) with the aim to create European preparedness to monitor the benefits and safety of the new corona vaccines, when they come to the market. The project called ACCESS (*v*accine *C*ovid-19 *m*onitoring *R*eadin*ESS*)

## CONSIGN – Covid-19 infectiOn aNd medicineS In pregnancy

**Overarching goal:** To provide adequate data on the impact of COVID-19 in pregnancy to guide decision-making about vaccine indications, vaccination policies, and treatment options for COVID-19 disease and associated complications.

### Comirnaty

(BioNTech and Pfizer)

Status as of 1/12/2021

479,000,000

Doses given to people in the EU/EEA

471,824\*

Reports of suspected side effects in the EU/EEA (see [www.adrreports.eu](http://www.adrreports.eu))

\* Reported cases concern suspected side effects, i.e. medical events that have been observed after vaccination, but which are not necessarily related to or caused by the vaccine.

[Read latest safety update](#)

### Vaxzevria

(AstraZeneca)

Status as of 1/12/2021

68,800,000

Doses given to people in the EU/EEA

223,295\*

Reports of suspected side effects in the EU/EEA (see [www.adrreports.eu](http://www.adrreports.eu))

\* Reported cases concern suspected side effects, i.e. medical events that have been observed after vaccination, but which are not necessarily related to or caused by the vaccine.

[Read latest safety update](#)

# COVID - UK approach

## Four main strands of our proactive vigilance

There are four strands to the MHRA's strategy, which combine to address the relative strengths and weaknesses of each form of vigilance.

**1. Enhanced passive surveillance – ‘observed vs expected’ analysis**

**2. Rapid Cycle Analysis and Ecological analysis**

**3. Targeted active monitoring – Yellow Card Vaccine Monitor**

**4. Formal epidemiological studies**

Research and analysis

## Report of the Commission on Human Medicines Expert Working Group on COVID-19 vaccine safety surveillance

The MHRA has developed, and now has in place, a four-stranded approach to vigilance, which is summarised in this report.



Medicines & Healthcare products  
Regulatory Agency



**Coronavirus Vaccines - summary of Yellow Card reporting**

<https://www.gov.uk/government/publications/report-of-the-commission-on-human-medicines-expert-working-group-on-covid-19-vaccine-safety-surveillance>

# COVID - collaboration

VAC4EU



About

## COVID-19 vaccine monitoring

Download the protocols:



Cohort event monitoring to assess safety of COVID-19 vaccines using patient reported events, a protocol template from the ACCESS project



Rapid assessment of COVID-19 vaccines safety concerns through electronic health records- a protocol template from the ACCESS project



Protocol ACCESS Safety Evaluation EHR



Safety Protocol for Hospital Case-Based Monitoring of Specific Adverse Events Following COVID-19 Vaccines- A Protocol Template from the ACCESS project



**Brighton Collaboration is working diligently to fight the coronavirus disease (COVID-19) pandemic.**

The Coalition for Epidemic Preparedness Innovations (CEPI) has partnered with the Brighton Collaboration (BC), through the Task Force for Global Health (TFGH), to harmonize the safety assessment of CEPI-funded vaccines via its [Safety Platform for Emergency vAcCines \(SPEAC\) Project](#). SPEAC is creating resources and tools to facilitate COVID-19 vaccine safety clinical trials and pharmacovigilance. Each is described briefly below, along with a link to the specific content page for all AESI. Further information regarding availability for each AESI is provided at the content page.

<https://vac4eu.org/covid-19-vaccine-monitoring/>

<https://brightoncollaboration.us/covid-19/>

# COVID - collaboration

Key Resources for COVID-19 Vaccine Safety Analyses

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Brighton Collaboration: Key Resources for COVID-19 Vaccine Safety Analyses

Type	Category	Country	Host	Website (hyperlink)
Vaccine	General	UK	London School Tropical General & Hygiene	<a href="#">COVID-19 vaccine landscape</a>
Vaccine	General	US	New York Times	<a href="#">COVID-19 vaccine tracker</a>
Vaccine	General	WHO	World Health Organization (WHO)	<a href="#">COVID-19 vaccine candidates &amp; draft landscape</a>
Vaccine	Recommendations	UK	UK Gov., Department of Health and Social Care	<a href="#">JCVI (Joint Commission on Vaccines &amp; Immunizations): advice on priority groups</a>
Vaccine	Recommendations	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">U.S. CDC ACIP (Advisory Committee on Immunization Practices) COVID-19 vaccine recommendations</a>
Vaccine	Recommendations	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">Clinical considerations of authorized COVID-19 vaccines</a>
Vaccine	Regulatory Approvals	EU	European General Agency (EMA)	<a href="#">Pfizer/BioNTech vaccine initial recommendation</a>
Vaccine	Regulatory Approvals	EU	European General Agency (EMA)	<a href="#">Moderna vaccine authorisation</a>
Vaccine	Regulatory Approvals	UK	Generals and Healthcare products Regulatory Agency	<a href="#">Pfizer/Biontec vaccine regulatory approval</a>
Vaccine	Regulatory Approvals	UK	Generals and Healthcare products Regulatory Agency	<a href="#">AstraZeneca vaccine regulatory approval</a>
Vaccine	Regulatory Approvals	UK	Generals and Healthcare products Regulatory Agency	<a href="#">Moderna vaccine regulatory approval</a>
Vaccine	Regulatory Approvals	US	U.S. Food & Drug Administration (US FDA)	<a href="#">Pfizer/Biontec vaccine emergency use authorization</a>
Vaccine	Regulatory Approvals	US	U.S. Food & Drug Administration (US FDA)	<a href="#">Moderna vaccine emergency use authorization</a>
Vaccine	Regulatory Approvals	EU	European General Agency (EMA)	<a href="#">Core requirements for Risk Management Plans (RMP)</a>
Vaccine	Regulatory Approvals	EU	European General Agency (EMA)	<a href="#">COVID-19 mRNA risk management plans (RMP)</a>
Databases	AEFI/AESI Surveillance - General	WHO	World Health Organization (WHO)	<a href="#">COVID-19 Vaccines: Safety Surveillance Manual</a>
Databases	AEFI/AESI Surveillance - General	General	European General Agency (EMA)	<a href="#">Pharmacovigilance Plan of the EU Regulatory Network for COVID-19 Vaccines</a>
Databases	AEFI/AESI Surveillance - General	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">U.S. CDC Vaccine Safety &amp; Monitoring</a>
Databases	AEFI/AESI Surveillance - General	US	New York University Langone Health	<a href="#">NeuroCOVID project: database / biobank</a>
Databases	AEFI/AESI Surveillance - Passive	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">U.S. CDC Mortality and Morbidity Weekly Report</a>
Databases	AEFI/AESI Surveillance - Passive	EU	European General Agency (EMA)	<a href="#">Eudravigilance - European Database of Suspected Adverse Drug Reaction Reports</a>
Databases	AEFI/AESI Surveillance - Passive	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">U.S. Vaccine Adverse Event Reporting System</a>
Databases	AEFI/AESI Surveillance - Active	Int'l	Global Vaccine Data Network	<a href="#">Global Vaccine Data Network</a>
Databases	AEFI/AESI Surveillance - Active	EU	VAC4EU	<a href="#">COVID-19 Vaccine Monitoring Protocols</a>
Databases	AEFI/AESI Surveillance - Active	US	Biologics Effectiveness and Safety (BEST) initiative	<a href="#">COVID-19 Vaccine Safety Surveillance: Active Monitoring Protocol</a>
Databases	AEFI/AESI Surveillance - Active	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">Clinical Immunization Safety Assessment (CISA) Project</a>
Databases	AEFI/AESI Surveillance - Active	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">VSD (Vaccine Safety Datalink)</a>
Databases	Vaccine Exposure - Administration	WHO	World Health Organization (WHO)	<a href="#">WHO/UNICEF joint reporting process</a>
Databases	Vaccine Exposure - Administration	Int'l	Our World in Data	<a href="#">COVID-19 vaccinations tracker by country</a>
Databases	Vaccine Exposure - Administration	US	U.S. Centers for Disease Control and Prevention (US CDC)	<a href="#">COVID-19 vaccinations tracker in the U.S.</a>
AEFI/AESI	General	Int'l	Brighton Collaboration	<a href="#">Brighton Collaboration COVID-19 resources and tools</a>

**Thank you!**

**Muchas gracias !**

# Questions & Answers session (in Spanish)

