

---

# A RECONSTRUCTION OF THE CONTROVERSY OF PANDEMRIX

---

AN EXPLORATORY STUDY ON THE LEGITIMACY OF THE  
VACCINATION IN THE NETHERLANDS

---

---



**Bachelor thesis Science and Innovation Studies**  
**By: Annemarie Buth**  
**Supervisor: Jarno Hoekman**





## SUMMARY

---

### *English*

After mass vaccinations during the swine flu pandemic in 2009 and 2010, it was notified that some people who were vaccinated with the vaccine Pandemrix started to suffer from a rare chronic neurological sleeping disorder called *narcolepsy*. Although the association of an adverse drug reaction to the vaccine appears to be strong, until today researchers have been unable to find hard scientific evidence proving that narcolepsy is actually caused by the vaccine. This has initiated a public and still ongoing controversy expressed in media channels, voicing disagreements between scientists and society.

The aim of this thesis is to unravel the controversy around Pandemrix. This is important since on the one hand the occurrence of scientific controversies is on the rise and on the other hand the tolerance towards adverse drug events is declining, both influencing the legitimacy of a vaccine in a negative way.

This thesis is an exploratory case study and provides an event-history analysis including the most important claims from scientists as well as from the users (lay people) of the vaccine and aims to understand the social interplay between both parties. A dataset is constructed existing from Dutch newspaper articles, scientific articles and regulatory articles, after which a combination of quantitative and qualitative inductive analysis is used to investigate how the construction of scientific claims about side-effects of Pandemrix influences the legitimacy of the technology in the Dutch media.

This research proves that it is likely that uncertainty among scientists causes distrust among the users of the vaccine, negatively influencing the legitimacy. The results of this research provide an insight in the social interplay and differences in interpretation which can provide a much needed reflectivity into the communication between scientists and lay people.

### *Nederlands*

Na massale vaccinaties gedurende de Mexicaanse griep pandemie in 2009 en 2010 werd opgemerkt dat enkele mensen die ingeënt waren met het vaccin Pandemrix de symptomen begonnen te vertonen van de zeldzame chronische slaapziekte *narcolepsie*. Hoewel de associatie tussen narcolepsie en het vaccin sterk lijkt te zijn, is er tot op heden geen bewijs gevonden dat de ziekte daadwerkelijk veroorzaakt wordt door Pandemrix. Dit heeft geleid

tot een publieke controverse in de media die nog steeds gaande is, waarbij verdeeldheid tussen wetenschappers en de maatschappij geuit wordt.

Het doel van deze scriptie is om de controverse rondom Pandemrix te ontrafelen. Dit is van belang omdat enerzijds wetenschappelijke controverses steeds vaker voorkomen, en anderzijds omdat de tolerantie ten opzichte van bijwerkingen van vaccins afneemt. Deze twee effecten hebben beiden een negatieve invloed op de legitimiteit van een vaccin.

Deze scriptie is een exploratieve casestudy en verschaft een analyse van evenementen en geschiedenis waarin de meest belangrijke claims van zowel wetenschappers als de gebruikers (leken) worden gepresenteerd, en tracht het sociale samenspel tussen beide partijen te begrijpen. Een dataset wordt geconstrueerd met daarin Nederlandse krantenartikelen, wetenschappelijke artikelen en regulatoire artikelen. Hierna wordt een combinatie van kwalitatieve en kwantitatieve inductieve analyse gebruikt om te onderzoeken hoe de constructie van wetenschappelijke claims over de bijwerking van Pandemrix de legitimiteit van de technologie beïnvloedt in de Nederlandse media.

Dit onderzoek toont aan dat het waarschijnlijk is dat onzekerheid onder wetenschappers onderling zorgt voor wantrouwen bij de gebruikers van het vaccin, wat een negatieve invloed heeft op de legitimiteit. De resultaten van dit onderzoek verschaffen een inzicht in het sociale samenspel tussen partijen en verschillen in interpretatie, en leveren hiermee een bijdrage aan de veelgevraagde reflectie op communicatie tussen wetenschap en leken.

## TABLE OF CONTENTS

---

1. Introduction.....	7
2. Theory .....	9
2.1 Social Construction of Technologies .....	9
2.1.1 Relevant social groups.....	9
2.1.2 Interpretative flexibility .....	9
2.1.3 Closure and stabilization.....	10
2.1.4 Wider context.....	11
2.2 Regulatory sciences.....	11
2.3 Media and legitimacy.....	11
2.4 Media discourse and scientific findings.....	12
3. Methodology.....	12
3.1 Research design .....	12
3.2 Data collection.....	13
3.2.1 Scientific articles.....	13
3.2.2 Media articles .....	13
3.2.3 Regulatory science articles.....	13
3.3 Data analysis .....	14
4. Results.....	16
4.1 Historical reconstruction .....	16
4.1.1 Background sketch.....	16
4.1.2 Reconstruction of publications.....	17
4.2 Event-history analysis.....	20
5. Conclusion .....	22
6. Discussion.....	23
7. Literature list.....	25
Appendix - List of abbreviations.....	27

Amount of words: 7274 (excluding table of contents, titles, graphs, references, appendix)



## 1. INTRODUCTION

---

In April 2009 the H1N1 influenza pandemic arose, commonly known as swine flu. Large populations were vaccinated against this flu with a vaccine called Pandemrix, produced and patented by the pharmaceutical company GlaxoSmithKline (GSK). By March 2010, researchers in Finland and Sweden received several alarming notifications from patients who were injected with Pandemrix, who started to show symptoms of severe fatigue and excessively disturbed sleeping patterns. The patients were diagnosed with a rare chronic neurological disorder called *narcolepsy*, involving disturbed sleep-wake cycles (NINDS, 2015).

Since the first notifications of narcolepsy as a side-effect of the vaccine Pandemrix, researchers have been investigating a possible link between the vaccine and the sleeping disorder. Although the mutual association between the two appears to be strong, there is still no hard scientific evidence that the side-effect is actually caused by the vaccine. This has initiated a public discussion expressed in media channels voicing disagreements between scientists and society, engendering a public controversy<sup>1</sup>. The still ongoing controversy involves that the users/patients have been reporting side-effects of Pandemrix, whereas the scientific front is still uncertain about a relationship between the side-effects and the vaccine since scientific supporting evidence is lacking.

The controversy involves scientific claims which are not providing strong enough evidence to stabilize the controversy and to put an end to it. This fact makes this scientific controversy an interesting case to study in the perspective of social construction of technologies. The claims of two main parties are discussed in this thesis: the claims of scientists and the claims of users/patients, also known as lay people<sup>2</sup>. The aim of this thesis is to unravel the controversy around Pandemrix which was caused by diverging claims distributed through the media attention, regulatory statements and scientific reports and articles. This research aims to understand how different actors give meaning to the vaccine by using the theory of Social Construction of Technology by Pinch and Bijker (1984).

By providing an event-history analysis, in which the most important claims about the vaccine expressed in the media are contrasted with important claims in scientific publications and public regulatory health statements about the adverse drug reaction narcolepsy, this thesis investigates how the scientific claims about the side-effects influence the legitimacy of Pandemrix in society. The legitimacy<sup>3</sup> of the vaccine is defined as: the acceptance of whether the vaccine is safe to use in society. Since the lay people are the users of the vaccine, legitimacy of the vaccine has to be established among

---

<sup>1</sup> A controversy is: "A disagreement, often a public one, that involves different ideas or opinions about something" (Cambridge Dictionaries Online, 2015)

<sup>2</sup> A lay person is: "someone who is not an expert in or does not have a detailed knowledge of a particular subject" (Cambridge Dictionaries Online, 2015).

<sup>3</sup> Legitimacy is: "The quality of being reasonable and acceptable" (Cambridge Dictionaries Online, 2015)

them. The legitimacy is measured by the publication of media articles, acting for the claims of lay people. The theory section of this thesis will elaborate on this phenomenon.

The two aforementioned parties are important to distinguish as the claims about narcolepsy made by scientists and lay people do not correspond with one another (Prymula, 2013). Nonetheless despite the diverging claims, the two parties still ought to come to a consensus in order to reach rhetorical closure<sup>4</sup> which is needed to obtain legitimacy for Pandemrix. Controversies can affect the positive acceptance of the vaccine in society (Prymula, 2013). This case provides more insight in the scientific and societal interplay during a controversy about vaccine safety, which is needed as this sort of controversy is on the rise since globally more people are getting vaccinated and fear of adverse reactions is growing (Prymula, 2013).

Several works of literature have been published on public controversies about vaccines or drugs (Casper & Carpenter, 2008; Geels et al., 2007; McGoey, 2009; Abraham, 1994). None of these studies have specifically focused on the construction of claims about side-effects from scientists as well as users by explicitly using the theory of social constructivism. Although other technologies than drugs have been examined with use of this theory, drugs differ from these technologies as they balance on a thin ethical line since they directly involve people's health. Consequently, the approach of this thesis is novel as it focuses on claims from different actors and how these claims influence the legitimacy of the vaccine.

The scope of this research is narrowed down to the Netherlands, enabling the research to be more accurate. This leads to the following research question:

*How did the construction of scientific claims about side-effects of Pandemrix influence the legitimacy of the technology in the Dutch media?*

Firstly, this thesis presents a theory section in which the theoretical framework is described which will be used to frame the case of the Pandemrix controversy. After the theory section a methodological section will be presented, followed by the results. Lastly, a conclusion and discussion will be presented in order to provide an answer to the research question.

---

<sup>4</sup> Rhetorical closure refers to the risk benefit ratio of the vaccine being stabilized and consensus between both parties being formed about whether the vaccine is safe to use in society or not. An explanation is given in paragraph 2.2.3.



## 2. THEORY

---

The theory section of this thesis provides relevant theories which are required to find an answer on the research question of this thesis. To this end, two main theories will be discussed in this chapter, respectively the Social Construction of Technologies by Pinch and Bijker (1984) and the theory about media discourse in relation to scientific findings (Weingart, 2000). Furthermore, the two relevant concepts legitimacy and regulatory sciences are explained in further detail.

### 2.1. Social Construction of Technologies

The theory of Social Construction of Technologies by Pinch and Bijker (1984) is used in this thesis to reflect upon the claims being made by different stakeholders concerning the side-effect caused by Pandemrix. The term social constructivism was originally introduced by Berger and Luckmann in 1966. This concept combines sociological and philosophic theories and aims at answering the question of how subjective meaning becomes a social fact (Berger & Luckmann, 1966).

In light of this theory, the two authors Pinch and Bijker started to focus on technologies leading to a sociology of technology called social construction of technology (SCOT), illuminating how social structures can influence the development of a technology by attributing different meanings to technologies (Klein & Kleinman, 2002). The SCOT theory consists of four basic concepts which contribute to a multi-dimensional conceptual model: relevant social groups; interpretative flexibility; closure and stabilization and wider context. This model proposes that the design of a technology is an open process, which is capable of producing different outcomes that can be influenced by the social circumstances of development, affecting the claims regarding a technology (Klein & Kleinman, 2002). The complete model is explained below.

#### 2.1.1 Relevant social groups

The first component of the SCOT theory is the concept of relevant social groups, which is simplified by Pinch and Bijker as the representatives of specific interpretations, as: “all members of a certain social group that share the same set of meanings, attached to a specific artifact” (Pinch & Bijker 1984, p. 30). In this thesis, the safety of the vaccine is to be considered the artifact. Hence a social group is defined by making the same claims about the vaccine. The representatives of the specific interpretations are as previously mentioned the lay people and the experts, thereby forming the relevant social groups of this research.

#### 2.1.2 Interpretative flexibility

The second component of the model is interpretative flexibility, implying that scientific findings are open to more than one interpretation (Pinch & Bijker, 1984). The side-effects of the vaccine are

differently interpreted by both social groups, as lay people claim that there is an existing relation between the side-effect narcolepsy of the vaccine whereas the epidemiologists, biologists and virologists (the ‘experts’ or scientists) claim that no proof of causality can be found. This engenders the controversy. The legitimacy of the vaccine among patients/users, measured by news articles, is expected to be influenced by the scientific claims distributed through scientific journals. Thus in the light of social constructivism, the following two processes will be dealt with:

- *The scientific claim*: referring to the claims being made by the scientists also referred to as the ‘experts’. This includes the association (the side-effects) and the understanding of the association (the scientific explanation of the efficacy of the vaccine and the side-effects).
- *The legitimacy*: referring to the way how the vaccine is experienced by society also referred to as lay people.

These two processes, each involving different social groups, are schematically represented in figure 1. In this thesis, the effect of the scientific claim upon the legitimacy is examined, indicated by the arrow.

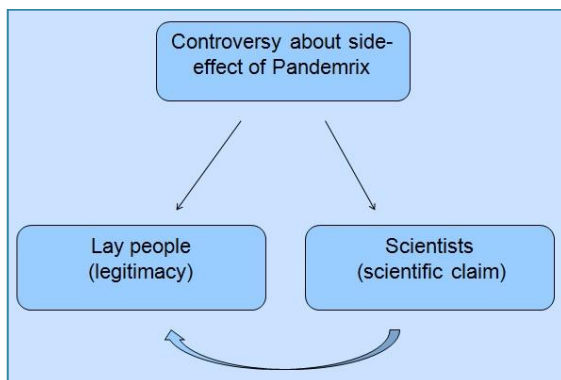


FIGURE 1, THE INTERPRETATIVE FLEXIBILITY OF THE CONTROVERSY ABOUT THE SIDE-EFFECTS OF PANDEMRIX

### 2.1.3 Closure and stabilization

The third component is closure and stabilization and enhances the stabilization of an artifact by creating consensus about the artifact. As the second component shows, multiple actors can give different meaning to a certain artifact leading to conflicting interpretations and claims. Closure and stabilization achieves solved conflicts and a closed artifact design, in other words: the controversy is stabilized and consensus is obtained about the legitimacy of the vaccine. The aim and final stadium of the controversy is the achievement of the status of closure, thus implying the obtainment of consensus between the experts and lay people. This connotes that consensus is achieved about the decision to accept the use of the vaccine in society or not: legitimacy of the vaccine is either reached or not. There are two types of closure mechanisms mentioned by Pinch and Bijker: rhetorical closure and redefinition of the problem. According to Pinch and Bijker (1984) rhetorical closure means: “some

'crucial' experimental result, 'definitive' proof, or 'knockdown' argument which has the effect of closing the debate on some controversial issue" (p. 425). Redefinition of the problem refers to the invention of a new problem which is being solved by the technology of conflict, distracting the focus from the original conflict.

#### **2.1.4 Wider context**

The fourth component which is added to the SCOT theories is wider context, referring to the political and socio-cultural milieu in which the development of the artifact takes place (Klein & Kleinman, 2002). It encompasses the background conditions of group interactions, such as factors contributing to differences in power or the relations to each other.

### **2.2 Regulatory sciences**

As mentioned briefly in the introduction, not only media and scientific articles will be investigated but a third type of article is examined likewise: regulatory science articles. Scientific expertise and regulatory policy are so closely related that they suggest the concept of 'regulatory science' (Irwin, 1997). In this type of science, the norm of scientific proof is less demanding than the norm in academic science (Weinberg, 1985). Moghissi et al. (2014) define the concept as: "the application of science to support policy notably regulatory objectives" (p. 156). Since academic science and regulatory science articles are so closely related to one another, the publications of regulatory articles is also examined in this thesis and are regarded as a contribution to the scientific claim, which is investigated in this thesis. The regulatory scientific articles used in this research include publications from national and international health authorities.

### **2.3 Media and legitimacy**

To examine the legitimacy of the vaccine among lay people, the media is used to measure the legitimacy. The media play an important role within the component of relevant social groups; journalists are determining actors for the news coverage and play a crucial role in shaping the meaning about an artifact given by a social group (Cowan, 1983; Prymula, 2013). For this reason, the publications of claims in newspaper media are investigated in the results section of this thesis to frame how the meaning of the lay people about the vaccine is shaped. Also, this implies that legitimacy is measured and investigated by analyzing media articles related to the controversy since legitimacy is measured among the lay people.

Two factors of the scientific articles which are expected to influence the legitimacy are investigated in the results section. Firstly, it is examined whether the articles support the association of causality between Pandemrix and narcolepsy or not, which is measured by using an indicator. Secondly, the

influence of scientific proof is measured by using an indicator to state whether the media article directly refers to or mentions a scientific article. In this way, the influence of the content of scientific proof on the legitimacy can be examined.

#### **2.4 Media discourse and scientific findings**

Firstly, it is important to mention that to investigate media articles this research focuses on newspaper articles only to narrow the scope of the research. To investigate the effect of scientific claims on the legitimacy in the Dutch media, several aspects of scientific claims which are expected to influence media claims have to be discerned. Discerning these relevant factors in advance enables an accurate and thorough analysis allowing the results to find an answer on the research question. Besides that, it empowers the establishment of adequate quantitative indicators in the results section. Before media covers a scientific article, the finding has to be a newsworthy issue before it becomes attractive to publish (Weingart, 2000). According to Weingart et al. (2000) “newsworthiness increases if identifiable events can be linked to a scientific issue or if a threat to human life is involved” (p. 263). As such, the novelty of the findings is investigated for the most important publications in the event-history analysis. It is expected that findings which are relevant for the safety or health of a society will be published in the media, whereas publications including less newsworthy updates on the controversy will not trigger media attention. This implies that scientific or regulatory publications focused on the Netherlands are more likely to evoke media coverage than more broadly and internationally orientated publications.

### **3. METHODOLOGY**

---

In this chapter the appropriate research methods and design are explained and insight will be given in how this research will be conducted.

#### **3.1 Research design**

Since this thesis investigates the influence of the controversy caused by the side-effects of the vaccine Pandemrix on the legitimacy of this vaccine, this research entails solely one case as the study of interest. This case has to be analyzed intensively and in a detailed manner, thus for this research the best fitting research design is an explorative case study (Bryman, 2008), combining a quantitative and qualitative inductive content analysis approach.

## 3.2 Data collection

For the result section of this thesis, a dataset is created from articles related to narcolepsy and Pandemrix, which is analyzed in order to investigate the impact of articles on one another. As discussed in the theory section, two main processes are illuminated with regard to social constructivism: a reconstruction of the scientific claim by epidemiologists, biologists and virologists of the vaccine (the ‘experts’ or scientists), and the claims in the media, representing the legitimacy of the vaccine in society. The first process is investigated by analysis of articles in scientific journals and regulatory statements, whereas the second process is investigated by analysis of media articles in Dutch newspapers. The time frame for all articles ranges from April 2009 until now, as the onset of narcolepsy was reported in April 2009 and the controversy is still taking place momentarily. The created dataset consists of the abstracts and full text of all collected articles. These articles are characterized on a number of aspects reflected in table 1. Different methods of data collection are used for the realization of the dataset, which are explained below.

### 3.2.1 Scientific articles

The scientific claims that influence the legitimacy are extracted from academic database Web of Science. The scope of scientific research is not national as relevant scientific research is not boundary restricted, thus for the publications that are depicted in the overview English will be used as language of search. Key words which are used for this include: “Pandemrix narcolepsy”, “influenza narcolepsy”, “influenza vaccination narcolepsy” and “side-effect Pandemrix”. These key words are used as they cover the most relevant aspects which are to be investigated, and the combination of these key words leads to the most complete set of relevant articles. The studies that are included consist of all studies related to the key words, leading to a dataset of all articles linked to Pandemrix and the association with narcolepsy.

### 3.2.2 Media articles

For investigating the legitimacy, newspaper articles are derived from the database Lexis Nexis. The subject of this thesis is the legitimacy of Pandemrix in the Netherlands, resulting in the use of the following Dutch key words: “bijwerking slaapziekte griep”, “bijwerking Mexicaanse griep vaccinatie” and “narcolepsie Pandemrix”. Similar to the scientific articles these key words were chosen as they lead to the most complete set of relevant data.

### 3.2.3 Regulatory science articles

The third type of articles that is added to the dataset consists of regulatory sciences articles, as explained in section 2.4. The national health authorities that are included are from the countries where the side-effects of Pandemrix caused public controversy, like Sweden, Finland, Norway, France, Great-Britain and the Netherlands (ECDC, 2013). The international health authorities include the

World Health Organization (WHO), the European Medicines Authority (EMA) and the European Center for Disease Prevention and Control (ECDC). These articles are acquired directly from the websites of the forementioned authorities.

**3.3 Data analysis**

After the gathering of the data, the articles are analyzed to observe the effect of the scientific claims on the media articles and to find out if and if so, how the status of closure and stabilization is reached. Two effects of the scientific claims of the legitimacy are investigated in the data analysis: the timing of the claims and the content of the scientific claims.

An event-history analysis is constructed in order to figure out possible relationships between the publication of scientific articles and the media coverage in the Netherlands. For this event-history analysis, an event is classified as the notification in the media of an outcome of a scientific study on the association between Pandemrix and narcolepsy. To enable the event-history analysis, all publications that are of importance for the development of the controversy are incorporated in a timeline, in which the different types of articles are depicted in different colors, enabling a clear overview of the bigger picture. A publication is classified as important when the content of the publication changes the course of the controversy, triggers the publication of more than five other articles based upon that article or is capable of changing the course of the controversy due to significant novel findings. Neither the amount of words nor sources of the publications play a role in this, just the content. Furthermore, the timeline also contains several events which are not related to publications about the association of causality, yet which are necessary to provide a historical reconstruction to interpret the occurrence of events during the course of the controversy justly.

With use of the program Excel, all articles found in LexisNexis, Web of Science and derived from national and international health authorities are labeled with detailed information about several relevant characteristics, depicted in table 1. The articles are labeled with letters, followed by the number of the article attached to a Word file including the full text or abstract and a list of all characteristics. The media articles are coded with the letter M, the scientific articles with the letter S and the regulatory sciences articles with the letter R. The complete dataset can be found in the Appendix. The overview of the characteristics enables the detection of high-profile links between publications and to detect possible trends between the characteristics.

TABLE 1, CHARACTERISTIC OF SCIENTIFIC ARTICLES IN THE DATASET

<i>Characteristic of scientific articles influencing the legitimacy of Pandemrix</i>	
<i>Characteristic:</i>	<i>Sub aspect:</i>
<b>Association narcolepsy &amp; Pandemrix main</b>	-

<b>focus</b>	
<b>Reference to scientific article</b>	-
<b>Supporting association</b>	-
<b>Regional</b>	-
<b>National</b>	-
<b>International</b>	-
<b>Document type</b>	Article
	Meeting abstract
	Review
	Letter
<b>Country</b>	Sweden
	Finland
	England
	Germany
	Netherlands
	USA

The characteristics shown in table 1 are chosen as the impact of these characteristics is expected to influence the publication of other articles. In order to filter out all relevant articles, a rough dataset is created, consisting of all articles found with the key words mentioned earlier. After this rough dataset is created, the data is filtered on the characteristic ‘association narcolepsy & Pandemrix main focus’. Solely articles which have the association of narcolepsy with Pandemrix as main focus are selected for further analysis. The criteria for this main focus is that for scientific and regulatory articles the main outcome of the research has to concern the association of Pandemrix with narcolepsy, and for media articles the main subject has to be Pandemrix related to narcolepsy. For the media articles the characteristics ‘reference to scientific article’ and ‘regional’, ‘national’, ‘international’ are used. The first characteristic indicates that there is a direct link between a scientific article and the media article, implying that the article is important for the answering of the research question. The latter characteristics indicate features that provide insight in the reach of the media article. The characteristic ‘supporting association’ is chosen as this indicates the main position of the article towards Pandemrix, which is important to take into account as it is likely to influence the legitimacy. The sub aspects related to ‘document type’ and ‘country’ are chosen as they represent the most common characteristics according to Web of Sciences. Since these sub aspects are also used in the scientific database Web of Science, an accurate and correct labeling of the articles is enabled.

The articles are ordered in historical order, starting from the oldest articles and ending with the most recent scientific publications, statements and newspaper articles. By providing an oversight of all articles plotted in historical order below each other, relations between the articles can be notified. The publication of a certain regulatory or scientific article could lead to the release of a related press article

for example. The expectation of this event-history analysis is that increases in the amount of newspaper articles are witnessed when novel statements or scientific journals are published.

The influence of the content of the scientific claims on the legitimacy of Pandemrix is measured by conducting inductive qualitative research. After the structuring of the data in the Excel sheet, the articles which seem to relate to one another are read and the content of the data is used to draw connections between the articles. After this, a timetable with the most relevant scientific and regulatory articles is depicted and the content of these articles is discussed. The outcome of the content analysis is then related to the theory of this thesis by investigating which role interpretative flexibility played in the construction of scientific claims influencing the legitimacy of the vaccine in the media.

## 4. RESULTS

---

This section provides a historical reconstruction and a timeline based on the articles in the dataset, containing the articles found in the dataset that appear to count as changing points in the history of the Pandemrix controversy. The bold highlighted articles in the historical reconstruction section are incorporated in the timeline. Upon this, the content of the articles is discussed to analyze the particular articles which are important for the process of the controversy, and to find out why certain articles function as turning points in the course of the controversy.

### 4.1 Historical reconstruction

First, a short sketch of the situation is given. The following events cannot be notified in the dataset, since the dataset is filtered on the association between Pandemrix and narcolepsy and these events are not related to the association of causality; the side-effect had not occurred by that time yet. Nonetheless, they are important as background information to fully comprehend the controversy and interpret the dataset with publication of regulatory statements, media and scientific articles justly.

#### 4.1.1 Background sketch

On 4 April 2009, the first case of severe influenza A(H1N1) is noted in Veracruz, Mexico, upon which on April the 25<sup>th</sup> the WHO declares a novel influenza A (H1N1) outbreak in Mexico and US (ECDC, 2010). On the 11<sup>th</sup> of June 2009, the WHO publishes a statement declaring swine flu the official status of a full scale world pandemic. Soon after the declaration of the WHO the pharmaceutical company GlaxoSmithKline starts with the development of a vaccine against the swine flu, which acquires approval of the EMA on the 25<sup>th</sup> of September 2009 (ECDC, 2010). Mass vaccination for children, adults and elderly starts in October 2009 in the countries Finland and Sweden. In other European countries such as the Netherlands, Germany, France and Great



Britain, only risk groups (children and elderly) are vaccinated with Pandemrix (ECDC, 2010). During the first half of 2010, the pandemic gradually declines and on 10 July the end of the pandemic is officially declared by the WHO General Director (ECDC, 2010). Meanwhile, large populations have received the vaccine.

#### 4.1.2 Reconstruction of publications

The first regulatory statement was published on the 15<sup>th</sup> of June 2010 by the France authorities (R29), in which the investigations between adverse side-effects were presented. No side-effects were found. Yet not much later, on August 18<sup>th</sup> 2010, the Finnish Medical Products Agency (MPA) announces the first public health statement in which Pandemrix is associated with six cases of narcolepsy as suspected adverse drug reaction following Pandemrix vaccination, titled: “The MPA investigates reports of narcolepsy in patients vaccinated with Pandemrix” (R16). No conclusions are drawn, yet the suspicion of a possible association has arisen. The Dutch media does not pay much attention to the MPA statement, only the national newspaper ‘NRC Handelsblad’ publishes a short article on the statement on the 28<sup>th</sup> of August 2010 (M160). On that same day, the WHO and EMA announce the start of further review on the vaccine and ask other countries to check their pharmacovigilance databases for any reports of narcolepsy (R12). Although the WHO recommends continuing the vaccinations, Finnish and Swedish authorities give the advice not to use the vaccine (R17). In the successive months uncertainty remains extant. This is noticeable through various regulatory reports being published by Finnish and Swedish authorities (R2; R3) and the WHO (R11) expressing that scientists are unable to clarify the causality between the vaccination and the adverse drug reaction.

On 1 November 2010 the first scientific article concerning Pandemrix is published (S107). The outcome of the research is that no inducement for an association between narcolepsy and the vaccination can be found. On 3 February 2011, the Dutch Press Agency (ANP) releases an article (M158) replying on the article published two days earlier by Finnish National Institute of Health and Welfare (R2), announcing further investigations in the Netherlands. The article is taken over by several national and regional newspapers, and seems to be the onset of a series of press releases; in the following weeks tens of media articles with similar contents are published in national as well as regional newspapers. A week after the latest press release related to the ANP article, an emotional story about a Dutch boy suffering from narcolepsy after the vaccination is published in a regional newspaper (M132), which is taken over by national and multiple regional newspapers spread through the Netherlands. The article is no response to a scientific outcome or regulatory statement, but reads as a sensational story about a boy whose mother suspects the vaccination to be responsible.

Followed by the chain of news articles on the subject, a period with less novel information on the association and media articles arises. On the 19<sup>th</sup> of April 2011, the national newspaper ‘De Telegraaf’ publishes a large article (M197) in response to the EMA statement (**R10**) published on the 15<sup>th</sup> of April officially declaring that the use of Pandremix is accompanied with a higher risk of narcolepsy for children and adolescents. Nonetheless, ‘De Telegraaf’ is the only newspaper which pays attention to the statement of the EMA. The first statement of the Dutch Medicines Evaluation Board Lareb is published on the 1<sup>st</sup> of July 2011 (**R22**). The content of the Dutch statement is similar to other national authority statements of European countries: no link can be identified. However, no media articles are published in the weeks followed by the public statement of Lareb.

On the 21<sup>st</sup> of July 2011, the EMA publishes an announcement (**R15**) of the outcomes of a review by the Committee for Medicinal Products for Human Use<sup>5</sup> (CHMP) in which the EMA recommends restricted use of the vaccine; Pandemrix should only be used if no other vaccines are available and the patient is in a vulnerable position (e.g. when the person is at risk of the complications of infection). This precautionary advice is given after consultation of various experts by the CHMP, since risk cannot be completely ruled out. Nevertheless, the overall the benefit-risk balance of Pandemrix remains positive according to the EMA. Once again no media attention is followed by the statement. On September 1 2011, Chinese researchers publish a research (**S96**) with a novel outcome on the association, stating that narcolepsy is not caused by the vaccine but is likely to be triggered by the influenza virus itself. It is noted by the weekly paper ‘Elsevier (M123)’, but the article is small and so are the three articles in the newspapers followed by the weekly.

The conclusions of the ca. 25 studies being published between the 22<sup>nd</sup> of September 2011 (S97) and the 6<sup>th</sup> of February 2013 (S75) repeatedly head towards the same outcomes: no plausible explanations can be found and further research is needed. Some articles however, indicate the possibility of a causal relationship (S25; S79), but only when the data from Finland and Sweden is used. Other articles on the other hand state that no causality can be found as causality only exists in Finland and Sweden (S24; S23; S110), thus although making use of the same available data, the findings are differently interpreted. This is important to note, since uncertainty among scientists indicates the presence of interpretative flexibility amongst scientists. In this year only sporadic media articles appear in response to routine updates on the international research status by international authorities. On the 26<sup>th</sup> of February 2013, an article finally identifies causality in another country than Sweden or Finland, namely in Great-Britain (**S23**). It is for the first time a scientific article finds a relationship outside these borders. Immediately after this, the United

---

<sup>5</sup>The Committee for Medicinal Products for Human Use (CHMP) is: “the committee at the European Medicines Agency that is responsible for preparing opinions on questions concerning medicines for human use” (EMA, 2015).

Kingdom's Health Protection Agency publishes a statement about the scientific findings (R27). No media articles are followed.

From the beginning of 2013 until April 2014, hardly any media and regulatory sciences articles are published and only scientific articles are published, of which none fully confirm the direct association between Pandemrix and narcolepsy. The outcomes of the researches are divided, as some claim the relationship to be unlikely (S65) whereas others claim that there is a strong association (S66). The findings of the Chinese research (S96) are often mentioned in the scientific articles as a reason for the uncertainty about the cause of the side-effect. On the 7<sup>th</sup> of April 2014 Lareb publishes an update on the Dutch status of reports of narcolepsy after vaccination (R30) and the possible connection between victims and the vaccine. The ANP notices the public statement and releases a press article on the day after the update, resulting in an outbreak of press articles in regional and national newspapers.

After several months without novel information found by scientists, an interesting press article (M161) is published in the 'NRC Handelsblad' on August 4 2014. It mentions that a research conducted by scientists from Stanford University has been retracted, which claimed that narcolepsy was triggered by an auto-immune response. The authors state that they had been unable to repeat a key finding thus validity could not be confirmed. Not only can this retraction be seen as a setback for a field struggling to find an answer, the retraction can also be interpreted as an important characteristic for a controversy. Multiple controversies about societal debates in the past have been marked by retracted articles, such as the MMR vaccine controversy<sup>6</sup>. The retraction creates inducement for people to doubt about scientific provision of information: what is first presented as scientific truth proves to be untrue after a certain time.

Another update of Lareb on the 13<sup>th</sup> of November of 2014 (R31) comes out and the controversy receives some more media attention again. The amount of people registered with narcolepsy after vaccination has risen to 20 people in the Netherlands. On the 28<sup>th</sup> of May 2015 (M116), a message is published in a regional newspaper about the possible causality, triggering a wave of media attention. There had not been an incentive for this wave in the form of a scientific or regulatory publication.

---

<sup>6</sup> The MMR vaccine controversy started in 1988 with an article published in the medical journal The Lancet, linking the MMR vaccine (measles, mumps and rubella) to colitis and autism. In 2010, the article was retracted but the impact of the article had been large.

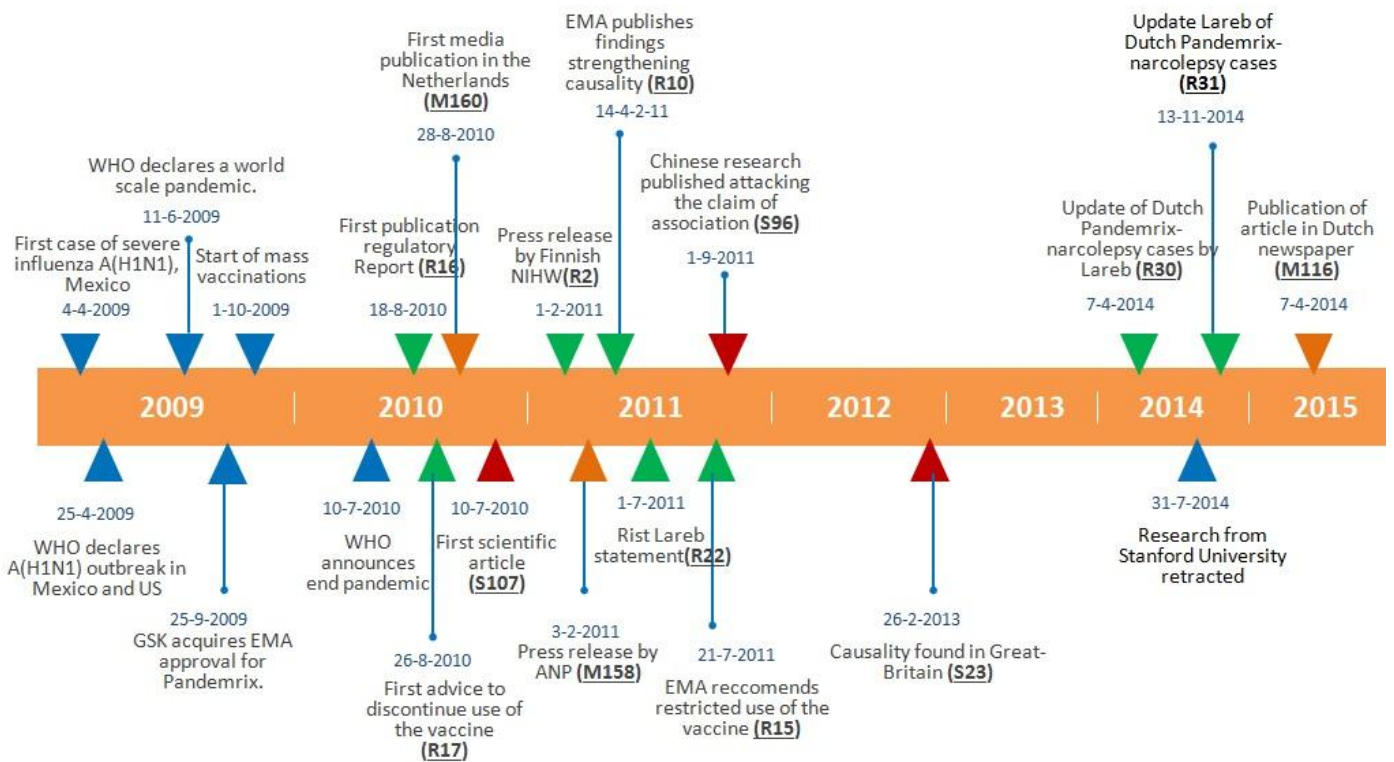


FIGURE 2, TIMELINE OF IMPORTANT EVENTS FOR THE PANDEMRIX-NARCOLEPSY CONTROVERSY

#### 4.2 Event history analysis

Based on the reconstruction in the preceding paragraph, this section examines the reasons why some articles are important for the media coverage about the controversy, based on the indicators presented in table 1. An explanation is sought for why some articles trigger media attention and other important articles do not. In order to create a clear oversight of the important events, a table with the most important events and associated indicators is reflected in table 2.

TABLE 2, IMPORTANT EVENTS AND INDICATORS

Date	Reference	Supportin	Regional	National	Internatio	Document type					Country					Novelty	Media followe	
						Article	Abstract	Review	Letter	Sweden	Finland	England	Germany	Netherlan	USA			
R16	18-8-2010	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	yes	no
R17	26-8-2010	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	yes	no
M160	28-8-2010	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	yes	no
S107	1-11-2010	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	yes	no
R2	1-2-2011	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	yes	no	no	no	no	no	yes
M158	3-2-2011	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	yes	yes
R10	15-4-2011	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	yes	no
R22	1-7-2011	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	no	no	no	yes	no	yes	no
R15	21-7-2011	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	yes	no
S96	1-9-2011	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	yes	no
S23	26-2-2013	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	yes	no	no	no	yes	no
R30	7-4-2014	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	yes	no	yes	yes
R31	13-11-2014	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	yes	no	yes	yes
M116	28-5-2015	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	no	yes

The event R16 indicates the start of the controversy as the Medical Product Agency of Sweden publishes a report about the possible causality between the vaccine and narcolepsy. The degree of novelty of the article is high, as well as that of R17 and M160, yet media attention remains absent. Indicators show that both articles are published in Sweden, which could account for the lack of attention. After the publication of R2 by the Finnish National Institute of Health and Welfare (THL), the ANP releases an article in the Dutch press which is taken over by many newspapers. The novelty of the news is low, yet a wave of media attention follows. The country of origin is Finland, which does not explain why R2 receives attention whereas R16 and R17 do not. The other indicators neither suggest why R2 receives media attention; no significant attributing factor can be found. Interestingly, the media articles followed by R2 do not all refer to the THL press release but also include sensational stories, indicating that not all articles following in the media wave have the regulatory statement as point of focus. Nonetheless, sometimes press releases are directly linked and mention the regulatory statement as inducement of the article, such as R10.

During the eight months following the latest press release, several significant important events happen (R22; R15; S96). Media attention remains absent, for which no plausible explanation can be found. R15 and S96 are international publications, which could be a reason for the absence of attention, yet R22 is an important event in the Netherlands and receives no attention either.

When novel scientific news arises on the 27<sup>th</sup> of February about causality found in the United Kingdom (S23), no media attention follows. This is improbable as the newsworthiness of this statement is much higher than the routine updates by authorities which do occasionally receive media attention in the antecedent months.

Following important events are R30 and R31, both updates by Lareb on the status of narcolepsy victims after Pandemrix vaccination in the Netherlands and both triggering media attention. R30 updates that 8 Dutch people have been hit by the sleeping disorder so far; by the time R31 gets published the amount has risen to 20 reports. The fact that the Lareb updates receive much media attention can be assigned to the country of publication and the focus on the Dutch society; as it is particularly relevant for Dutch people it is newsworthy for the Dutch press to publish the update. However, the most newsworthy aspects of the Lareb updates are not mentioned in any of the media articles, namely that the age of the Dutch victims is lower than the victims abroad. The fact that this information is left out indicates that the media articles are not specifically focused on scientific novelties. This can be seen several times during the controversy, such as with M132 and M116.

Another wave of media publications is followed by the publication of M116. However, similar to R2 the indicators point out that despite the media attention, the novelty of the event is low. In contrast

with R2, M116 is a regional publication whereas R2 is international. The reason for why M116 triggers the publication of multiple other media articles remains unclear after analysis, since indicators nor content of the article show a motive for this.

---

## 5. CONCLUSION

---

This section aims to find an answer on the research question of this thesis: “*How did the construction of scientific claims about side-effects of Pandemrix influence the legitimacy of the technology in the Dutch media?*” The construction of scientific claims about side-effects of Pandemrix influences the legitimacy of the technology in the Dutch media in three ways. The points are explained below and simultaneously summarize the main findings of this research.

Firstly, it is likely that uncertainty among scientists causes distrust among the users of the vaccine, influencing the legitimacy in a negative way. This finding emerged from the reconstruction of publications. The uncertainty among scientists is expressed through the publication of different interpretations of results and through the retraction of scientific articles. Accompanying the expression of uncertainty, the credibility of scientific evidence is endangered. This distrust is enhanced by the regulatory statements that are published by national and international authorities. The contents of the statements differ from each other and contain confusing information for the users, since the statements claim that although it is not recommended to use the vaccine, the overall risk-benefit balance of Pandemrix remains positive (R15). Reflecting on the theory provided in the introduction, this implies that not the interpretative flexibility *between* relevant social groups influences the controversy, but the interpretative flexibility *within* social groups. Consequently, instead of reaching consensus between the different social groups, it is important to reach consensus between scientists before the status of closure and stabilization, thus legitimacy, can be reached (Pinch & Bijker, 1984).

Secondly, it can be seen that media articles do not always respond on scientific novelties. This can be concluded based on the lack of media attention after the publication of several significant important scientific breakthroughs concerning the causality of the vaccine and narcolepsy, for example after the publications of R15, R22, R27, R30, R31 and S96. This finding is contradictory to the theory by Weingart et al. (2000) presented in the introduction, claiming that this aspect of scientific claims is likely to influence media publications. After investigation of the contents of the scientific and regulatory articles which provoke considerable amounts of media publications and comparing these with breakthrough articles which do not provoke media attention, it is hard to state which factors contribute to this phenomenon. What can be said after this observation is that generally, the influence of the content of scientific articles on the legitimacy is low.

Thirdly, it can be seen, however, that the publication of regulatory articles triggers the overall media attention about the subject, resulting in media articles which are not directly linked to the concerning regulatory article. The publication of regulatory articles thus proves to be of a relatively larger influence on the legitimacy than the influence of scientific articles, since the publication of scientific articles lacks this effect. Despite this, the content of the regulatory article is not in all media articles of importance, thus the influence of scientific content in the regulatory articles is relatively small. It appears that the direct connection between scientific claims and media attention is very weak (as mentioned in the paragraph above) and the connection between regulatory articles and media is weak. Weinberg (1985) stated that the norm of scientific proof is less demanding than the norm in academic science. The effect of this could be that this type of scientific articles is more accessible for lay people, resulting in more media publications.

---

## 6. DISCUSSION

---

Although the author of this research used the best efforts to ensure a high level of validity of this research, some points ought to be discussed which could have influenced the validity. Due to the fact that this research has been performed by only one researcher, the interpretation of some indicators might be debatable. Also, the theory of this thesis could have been influenced by the interpretation of the researcher. Not only these aspects which might have influenced the validity of the research may be questioned, other limitations have come forward too.

For the sake of simplification, this research has added the claims from regulatory statements to the scientific claims to measure the effect on the legitimacy. In the results and conclusion came forward that the effect of regulatory statements on media articles is not the same as the effect of scientific publications. This outcome could therefore be an interesting topic for future research, and could result in a more advanced cooperation between scientific and regulatory sciences to influence the legitimacy of vaccines positively. Simultaneously, this provides an incentive for political sciences to elaborate on the effect of regulatory sciences on the legitimacy of technologies, enabling adaptive strategies for policy makers.

Since this study was a study of explorative nature, only print newspaper media articles have been investigated. However, an important attribution to contemporary media is the attribution of online media, such as websites and social media, which has not been taken into account while conducting the research. To add this kind of media articles a different data collection strategy should have been used, since the reach of the internet and social media is extensive and complicated to map as it extends

borders. Although this requires much more extensive research, the data could show deviant results than this research solely implying newspaper articles.

Lastly, this research used the four concepts of the SCOT theories to investigate the research question. The focus lay on mainly three concepts: relevant social groups; interpretative flexibility and closure and stabilization. However, little attention has been paid to the fourth component: wider context. The influence of the socio-cultural and political environment of the social groups, forming and shaping the meaning of the relevant social groups, has remained largely overlooked in this thesis due to choice of focus. For example, an indication came forward during the research that the overall risk tolerance towards vaccines is considerably low. This emerged during the quantitative inductive analysis and was seen in the form of a high amount of media articles which were associated with other side-effects than narcolepsy, which came forward in the rough dataset. The effect of this overall low risk-tolerance has not been taken into account while conducting the research. Although this forms a limitation of the research, it also provides an interesting inducement for future research.

The theoretical relevance of this research is to be found in the attempt to decrease the gap in literature concerning research on the social construction of claims towards side-effects of vaccines. Side-effects of drugs are a much investigated subject amongst researchers, yet the shaping of meaning by scientists and users through scientific and media claims has remained little exposed. Nonetheless, this is important to take into account since it adds to the knowledge of political science concerning the acceptance of vaccines.

The results of this research provide an insight in the social interplay and differences in interpretation between different social groups, which provides a much needed reflectivity into the communication between scientists and lay people. This is of societal importance since on the one hand the occurrence of scientific controversies is on the rise and on the other hand the tolerance towards adverse drug events is declining (Prymula, 2013). This exploratory research helps to create more insight in how meaning of the users of vaccines are influenced by scientific publications, which can be taken into account for creating more legitimacy of vaccines in the future.



## 7. LITERATURE LIST

---

- Abraham, J. (1994). Distributing the benefit of the doubt: scientists, regulators, and drug safety. *Science, Technology & Human Values*, 19(4), 493-522.
- Berger, P. and Luckmann, T. (1966) *The Social Construction of Reality*, Garden City, N.Y.; Doubleday.
- Berkhout, F. (2006). Normative expectations in systems innovation. *Technology Analysis & Strategic Management*, 18(3-4), 299-311.
- Borup, M., Brown, N., Konrad, K., & Van Lente, H. (2006). The sociology of expectations in science and technology. *Technology analysis & strategic management*, 18(3-4), 285-298.
- Bryman, A. (2008). *Social research methods*. Oxford university press.
- Cambridge Dictionaries Online (2015). Retrieved on May 10<sup>th</sup>, 2015, available at: <http://dictionary.cambridge.org/dictionary/business-english/layperson>
- Cambridge Dictionaries Online (2015). Retrieved on May 19<sup>th</sup>, 2015, available at: <http://dictionary.cambridge.org/us/dictionary/american-english/controversy>
- Cambridge Dictionaries Online (2015). Retrieved on May 22<sup>nd</sup>, 2015, available at: <http://dictionary.cambridge.org/dictionary/british/legitimacy>
- Casper, M. J., & Carpenter, L. M. (2008). Sex, drugs, and politics: the HPV vaccine for cervical cancer. *Sociology of health & illness*, 30(6), 886-899.
- Callon, M. (2009). *Acting in an uncertain world*. MIT press.
- Centers for Disease Control and Prevention (2011). Ten Great Public Health Achievements - United States, 2001-2010 *MMWR Morb Mortal Wkly Rep*. 2011; 60(19);619-623
- Cowan, R. S. (1983). *More work for mother: The ironies of household technology from the open hearth to the microwave* (Vol. 5131). Basic Books.
- Eisenhardt, K. M., & Zbaracki, M. J. (1992). Strategic decision making. *Strategic management journal*, 13(S2), 17-37.
- European Medicines Association, 2015. Committee for Medicinal Products for Human Use (CHMP). Retrieved on June 19<sup>nd</sup>, 2015, available at: <http://www.ema.europa.eu/>
- European Centre for Disease Prevention and Control (ECDC)(2012). Narcolepsy in association with pandemic influenza vaccination (a multi-country European epidemiological investigation) Stockholm: ECDC; September 2012
- European Centre for Disease Prevention and Control (ECDC)(2010). European 2009 Influenza Pandemic Timeline. Stockholm: ECDC; August 2010
- Geels, F. W., Pieters, T., & Snelders, S. (2007). Cultural enthusiasm, resistance and the societal embedding of new technologies: psychotropic drugs in the 20th century. *Technology Analysis & Strategic Management*, 19(2), 145-165.
- Irwin, A., Rothstein, H., Yearley, S., & McCarthy, E. (1997). Regulatory science—towards a sociological framework. *Futures*, 29(1), 17-31.

- Klein, H. K., & Kleinman, D. L. (2002). The social construction of technology: Structural considerations. *Science, Technology & Human Values*, 27(1), 28-52.
- Konrad, K. (2006). The social dynamics of expectations: the interaction of collective and actor-specific expectations on electronic commerce and interactive television. *Technology Analysis & Strategic Management*, 18(3-4), 429-444.
- McGoey, L. (2009). Pharmaceutical controversies and the performative value of uncertainty. *Science as Culture*, 18(2), 151-164.
- Moghissi, A. A., Straja, S. R., Love, B. R., Bride, D. K., & Stough, R. R. (2014). Innovation in regulatory science: evolution of a new scientific discipline. *Technology & Innovation*, 16(2), 155-165.
- National Institute of Neurological Disorders and Stroke (NINDS). Retrieved on May 5<sup>th</sup>, 2015, available at: [http://www.ninds.nih.gov/disorders/narcolepsy/narcolepsy\\_fs.pdf](http://www.ninds.nih.gov/disorders/narcolepsy/narcolepsy_fs.pdf)
- Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social studies of science*, 399-441
- Prymula, R. (2013). Controversies in Vaccination. *European Review*, 21, 56-S61. doi:10.1017/S1062798713000227.
- Rao, H., Monin, P., & Durand, R. (2003). Institutional Change in Toque Ville: Nouvelle Cuisine as an Identity Movement in French Gastronomy1. *American journal of sociology*, 108(4), 795-843.)
- Weinberg, A. M. (1985), Science and its limits: the regulator's dilemma, *Issues in Science and technology*, Fall, II, 68.
- Weingart, P., Engels, A., & Pansegrau, P. (2000). Risks of communication: discourses on climate change in science, politics, and the mass media. *Public understanding of science*, 9(3), 261-283.
- WHO/UNICEF. Retrieved on May 4<sup>th</sup>, available at: [http://www.who.int/immunization/monitoring\\_surveillance/data/g\\_s\\_gloprofile.pdf](http://www.who.int/immunization/monitoring_surveillance/data/g_s_gloprofile.pdf)

## APPENDIX I - LIST OF ABBREVIATIONS

---

ANP	Algemeen Nederlands Persbureau
CHMP	Committee for Medicinal Products for Human Use
DTP	Diphtheria, Tetanus and Poliomyelitis
ECDC	European Center for Disease Protection and Control
EMA	European Medicines Agency
GSK	GlaxoSmithKline
MPA	Medical Products Agency
SCOT	Social Construction of Technologies
THL	Finnish National Institute of Health and Welfare
WHO	World Health Organization
WHO	World Health Organization

## APPENDIX II – DATASET

ID	Date	Associati	Reference to	Supporting	Regional	National	Internatic	Document type				Country						
								Article	Abstra	Review	Letter	Sweder	Finland	Englan	Germa	Nether	USA	
M66	4-11-2009	yes	no	no	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
R29	15-6-2010	yes	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no
R16	18-8-2010	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
R17	26-8-2010	yes	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
M160	28-8-2010	yes	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
R12	28-8-2010	yes	no	no	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
R5	8-9-2010	yes	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	yes	no	no	no	no	no
S108	23-9-2010	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	yes	no	no	no	no	no	no
R11	23-10-2010	yes	no	no	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
S107	1-11-2010	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no
R3	24-1-2011	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	yes	no	no	no	no	no
R2	1-2-2011	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	yes	no	no	no	no	no
M158	3-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M159	3-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M145	4-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M146	4-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M147	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M148	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M149	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M150	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M151	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M152	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M153	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M155	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M156	4-2-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M157	4-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M5	4-2-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S105	9-2-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no
M132	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M133	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M134	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M135	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M136	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M137	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M138	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M139	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M140	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M141	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M142	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M143	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M144	10-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M127	11-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M128	11-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M129	11-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M130	11-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M131	11-2-2011	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M126	12-2-2011	yes	no	no	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M198	15-2-2011	yes	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S103	3-3-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no
R18	28-3-2011	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
R9	28-3-2011	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
R10	15-4-2011	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
S104	18-4-2011	yes	N.A.	N.A.	no	no	yes	no	yes	no	no	no	no	yes	no	no	no	no
M197	19-4-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
R1	21-4-2011	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
S102	25-5-2011	yes	N.A.	N.A.	no	no	yes	no	yes	no	no	no	no	no	no	no	no	no
S100	1-6-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
S101	1-6-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no
S32	1-6-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
R14	27-6-2011	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
R7	30-6-2011	yes	yes	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
R8	30-6-2011	yes	yes	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no	no
S106	30-6-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	yes	no	no	no	no	no	no
S31	30-6-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	yes	no	no	no	no	no	no
R22	1-7-2011	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	yes	no
M125	19-7-2011	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
R13	21-7-2011	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
R15	21-7-2011	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no
M124	26-7-2011	yes	yes	no	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
R4	1-9-2011	yes	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	yes
S96	1-9-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	yes
S98	1-9-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	yes
M123	10-9-2011	yes	yes	no	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M195	10-9-2011	yes	yes	no	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M196	10-9-2011	yes	yes	no	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M122	15-9-2011	yes	yes	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S97	22-9-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
S99	30-9-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
S30	12-10-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no	no
S95	12-10-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no	no
R34	23-10-2011	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no
S93	14-11-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
R28	16-11-2011	yes	no	no	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no	no

S91	1-12-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	yes
S92	1-12-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	yes
S94	21-12-2011	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S90	1-1-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S28	28-3-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S29	28-3-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S85	28-3-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S86	28-3-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S88	16-4-2012	yes	N.A.	N.A.	no	no	yes	no	no	yes	no	no	no	no	no	no	no
S84	1-7-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S112	1-8-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	yes	no	no
S83	1-8-2012	yes	N.A.	N.A.	no	no	yes	no	no	yes	no	no	no	no	no	no	yes
S27	1-9-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S82	1-9-2012	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	yes	no	no	no
S81	4-9-2012	yes	N.A.	N.A.	no	no	yes	no	yes	no	no	no	no	no	no	no	no
R6	20-9-2012	yes	no	no	no	no	yes	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M194	21-9-2012	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S111	1-10-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	yes	no	no
M2	13-10-2012	yes	no	no	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S26	15-10-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S79	15-10-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
M193	1-12-2012	yes	no	no	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S78	14-12-2012	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	yes
S24	1-1-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S25	1-1-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S75	6-2-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S23	26-2-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	yes	no	no	no
R27	27-2-2013	yes	no	no	yes	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no
S110	1-3-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S87	1-3-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
R25	26-3-2013	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	yes	no	no	no	no	no
S22	1-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S71	1-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S73	1-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S74	1-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S72	2-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S70	11-4-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S69	17-4-2013	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	no	no	no	yes
S68	1-5-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S76	13-5-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
R21	23-5-2013	yes	no	yes	yes	yes	no	N.A.	N.A.	N.A.	N.A.	no	yes	no	no	no	no
S67	1-6-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	yes
S66	1-8-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S65	8-8-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S21	8-9-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S19	1-10-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S20	1-10-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S64	1-10-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	yes	no	no
S18	1-11-2013	yes	N.A.	N.A.	no	no	yes	no	no	yes	no	no	no	yes	no	no	no
R26	2-11-2013	yes	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	no
S63	22-11-2013	yes	N.A.	N.A.	no	no	yes	no	no	yes	no	no	no	no	yes	no	no
S62	20-12-2013	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
M121	21-12-2013	yes	yes	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
S61	1-1-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S60	14-1-2014	yes	N.A.	N.A.	no	no	yes	no	no	yes	no	no	no	no	no	no	no
S15	1-2-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	yes	no	no	no	no
S16	1-2-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S17	1-2-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	yes	no	no	no
S59	1-2-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S14	1-3-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	no	no	no	no	no	no
S13	24-3-2014	yes	N.A.	N.A.	no	no	yes	yes	no	no	no	yes	no	no	no	no	no
S56	1-apr	yes	N.A.	N.A.	no	no	yes	no	no	no	yes	no	no	yes	no	no	no
R30	7-apr	yes	no	yes	no	no	yes	N.A.	N.A.	N.A.	N.A.	no	no	no	no	no	yes
M191	8-4-2014	yes	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M170	9-4-2014	yes	no	yes	no	yes	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M171	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M172	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M173	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M174	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M175	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M176	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M177	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M178	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M179	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M180	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M181	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M182	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M183	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M184	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M185	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M186	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M187	9-4-2014	yes	no	yes	yes	no	no	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



## APPENDIX III – LIST OF ARTICLES

### Media articles:

Label	Title	Authors/Source
M1	Narcolepsie is een autoimmuunziekte	NRC Handelsblad
M2	Huisartsen al jaren misleid ; HANS VAN DER LINDE	De Telegraaf
M3	De Week: Kennis	Elsevier
M4	Geen verband GBS; Vaccinatie Mexicogriep	Volkskrant
M5	Ernstige bijwerking vaccin Mexicaanse griep	NRC Handelsblad
M6	Meer klachten over griep prik	De Stentor
M7	Meer klachten over griep prik	
M8	Meer klachten over griep prik	
M9	Meer klachten over griep prik	
M10	Meer klachten over griep prik	
M11	Meer klachten over griep prik	
M12	Meer klachten over griep prik	
M13	Mexicaanse griep maakt in Zeeland niet zo veel indruk	Provinciale Zeeuwse Courant
M14	Ná de prik, niet dóór de prik: Griep Analyses van bijwerkingen van vaccins tegen Mexicaanse griep tonen geen grote risico's aan	De Volkskrant
M15	Het lelijke eendje van de farma-industrie	Het Financieel Dagblad
M16	Dood van kinderen niet door griepvaccin	De Stentor
M17	Twee jongetjes niet overleden door inenting	
M18	Dood van kinderen niet door griepvaccin	De Stentor
M19	Dood van kinderen niet door griepvaccin	Regionaal
M20	Dood van kinderen niet door griepvaccin	Regionaal
M21	Dood van kinderen niet door griepvaccin	Regionaal
M22	Dood van kinderen niet door griepvaccin	Regionaal
M23	Dood van kinderen niet door griepvaccin	Regionaal
M24	Dood van kinderen niet door griepvaccin	Regionaal
M25	Dood van kinderen niet door griepvaccin	Regionaal
M26	Geen relatie dood kinderen en vaccin	Reformatorisch Dagblad
M27	Geen relatie dood kinderen en vaccin	Regionaal
M28	Geen relatie dood kinderen en vaccin	Regionaal
M29	Griepafname, maar we steken de vlag niet uit	Algemeen Nederlands Persbureau ANP
M30	Klachten over koorts na griep prik	Algemeen Nederlands Persbureau ANP
M31	Een derde kinderen krijgt koorts na prik (2)	Algemeen Nederlands Persbureau ANP
M32	Hoge koorts kinderen na griep prik	Brabants Dagblad
M33	Kleine kinderen krijgen vaak hoge koorts na griep prik	Dagblad De Limburger
M34	Hoge koorts kinderen na griep prik	Twentse Courant Tubantia
M35	MEXICAANSE GRIEP - Peuters krijgen koorts na prik	De Stentor
M36	Strak geregisseerde inentingscampagne GGD werkt ook in de praktijk	Brabants Dagblad
M37	Hoge koorts kleine kinderen na griep prik	De Gelderlander
M38	Hoge koorts kleine kinderen na griep prik	Regionaal
M39	Hoge koorts kleine kinderen na griep prik	Regionaal
M40	Hoge koorts kleine kinderen na griep prik	Regionaal
M41	Hoge koorts kleine kinderen na griep prik	Regionaal
M42	Hoge koorts kleine kinderen na griep prik	Regionaal
M43	Hoge koorts kleine kinderen na griep prik	Regionaal
M44	Hoge koorts kleine kinderen na griep prik	Regionaal
M45	Hoge koorts kleine kinderen na griep prik	Regionaal
M46	Hoge koorts kleine kinderen na griep prik	Regionaal
M47	Hoge koorts kleine kinderen na griep prik	Regionaal
M48	Hoge koorts kleine kinderen na griep prik	Regionaal
M49	Hoge koorts kleine kinderen na griep prik	Regionaal
M50	Bijwerking na griep prik	De Stentor
M51	Bijwerking na griep prik	Regionaal
M52	Bijwerking na griep prik	Regionaal
M53	Bijwerking na griep prik	Regionaal
M54	Bijwerking na griep prik	Regionaal
M55	Bijwerking na griep prik	Regionaal
M56	Bijwerking na griep prik	Regionaal
M57	Bijwerking na griep prik	Regionaal

M58	Bijwerking na grieprik	Regionaal
M59	Kwart heeft last bijwerking grieprik	Regionaal
M60	Kwart heeft last bijwerking grieprik	Regionaal
M61	Nu nog de spookverhalen ontcrachten; Hoe Klink tot zijn besluit kwam	NRC Next
M62	Een besluit voor de hele bevolking; Spookverhalen vaccin zitten Klink dwars	NRC Handelsblad
M63	Vaccinatieangst overspoelt Nederland	Volkskrant
M64	Kans op ernstige bijwerking 'miniem'	Volkskrant
M65	Immunoloog: Middel is een van de veiligste die ik ken - 'Stoppen met vaccinatie van baby's is beslist geen optie'	Algemeen Dagblad
M66	Vooraf lichte bijwerkingen	Alphen
M67	'Veel onzin over de bijwerking'	BN/De Stem
M68	Prikken? Opnieuw is er ophef	Brabants Dagblad
M69	'Veel onzin over de bijwerking'	Twentse Courant Tubantia
M70	'Veel onzin over de bijwerking'	Stentor
M71	Verspreiden van vaccins is gestart	De Gelderlander
M72	'Veel onzin over de bijwerking'	Stentor
M73	Beperkte bijwerking grieprik	De Gooi en Eemlander
M74	Gevecht tegen indianenverhalen	De Gooi en Eemlander
M75	'Veel onzin over de bijwerking'	De Stentor
M76	'Veel onzin over de bijwerking'	Regionaal
M77	'Veel onzin over de bijwerking'	Regionaal
M78	'Veel onzin over de bijwerking'	Regionaal
M79	'Veel onzin over de bijwerking'	Regionaal
M80	'Veel onzin over de bijwerking'	Regionaal
M81	'Veel onzin over de bijwerking'	Regionaal
M82	'Veel onzin over de bijwerking'	Regionaal
M83	'Veel onzin over de bijwerking'	Regionaal
M84	'Veel onzin over de bijwerking'	Regionaal
M85	Voorkomen/remmen Griep is gevaarlijker dan vaccin	Het Parool
M86	Beperkte bijwerking grieprik	
M87	Beperkte bijwerking grieprik	
M88	Gevecht tegen indianenverhalen	Leidsch Dagblad
M89	Een moeizaam gevecht tegen indianenverhalen	Nederlands Dagblad
M90	'Veel onzin over de bijwerking'	Provinciale Zeeuwse Courant
M91	Vaccinatie pas laat op gang; Arts lang bezig met bereiding vaccin	NRC Handelsblad
M92	Een paracetamolletje volstaat	De Groene Amsterdammer
M93	Broeders en zusters moeten tóch die grieprik halen	NRC Next
M94	Verpleger zonder vaccin brengt patiënt in gevaar; Op internetfora is veel onzin te lezen	NRC Handelsblad
M95	Bang voor enge ziektes door die prik; kennis / griepvaccin	De Volkskrant
M96	Bijwerking kan ernstig uitpakken	De Gooi en Eemlander
M97	Bijwerking kan ernstig uitpakken	
M98	Bijwerking kan ernstig uitpakken	
M99	Bijwerking kan ernstig uitpakken	
M100	Griepvaccinatie wordt een mega-operatie	Algemeen Dagblad
M101	Nut griepvaccin moet nog blijken	Trouw
M102	RIVM walst alle bezwaren altijd weg; Vertrouwen in vaccinatie niet gediend bij één instituut dat plant, uitvoert en controleert	NRC Handelsblad
M103	Mexicaanse griep	Twente Courant Tubantia
M104	Mexicaanse griep	Regionaal
M105	Mexicaanse griep	Regionaal
M106	Mexicaanse griep	Regionaal
M107	Mexicaanse griep	Regionaal
M108	Mexicaanse griep	Regionaal
M109	Mexicaanse griep	Regionaal
M110	Mexicaanse griep	Regionaal
M111	Mexicaanse griep	Regionaal
M112	Mexicaanse griep	Regionaal
M113	De MAN met de HAMER	Dagblad de Limburger
M114	Mexicaanse Griep	Regionaal
M115	De MAN met de HAMER	Regionaal
M116	Mexicaanse Griep	Regionaal
M117	Mexicaanse Griep	Regionaal



M118	Mexicaanse Griep	Regionaal
M119	Mexicaanse Griep	Regionaal
M120	Genetisch gevoelig voor griepinenting	Trouw
M121	Narcolepsie is een autoimmuunziekte	NRC Handelsblad
M122	Geen titel	De Gelderlander
M123	De Week: Kennis	Elsevier
M124	Geen titel	NRC Handelsblad
M125	Risico slaapziekte na griepvaccin; Geneesmiddelenbureau acht verband waarschijnlijker	De Telegraaf
M126	Mexicaanse Griep	Dagblad van het Noorden
M127	Kleuter krijgt slaapziekte na grieprik	De Gooi en Eemlander
M128	Kleuter krijgt slaapziekte na grieprik	Regionaal
M129	Kleuter krijgt slaapziekte na grieprik	Regionaal
M130	Kleuter krijgt slaapziekte na grieprik	Regionaal
M131	Kleuter krijgt slaapziekte na grieprik	Regionaal
M132	Grieprik veranderde leven van Willem	Dagblad van het Noorden
M133	Grieprik veranderde leven van Willem	Regionaal
M134	Grieprik veranderde leven van Willem	Regionaal
M135	Willem (5) kreeg slaapziekte na grieprik	De Stentor
M136	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M137	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M138	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M139	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M140	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M141	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M142	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M143	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M144	Willem (5) kreeg slaapziekte na grieprik	Regionaal
M145	Ernstige bijwerking vaccin Mexicaanse griep	NRC Handelsblad
M146	Twee ingeënte kinderen hebben slaapziekte	Algemeen Dagblad
M147	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M148	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M149	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M150	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M151	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M152	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M153	Twee ingeënte kinderen hebben slaapziekte	Regionaal
M154	Slaapziekte	De Telegraaf
M155	Link met slaapziekte	Almere
M156	Vaccin Mexicaanse griep onder de loep	Noordholland Dagblad
M157	Vijf doden door Mexicaanse griep	Reformatorisch Dagblad
M158	Onderzoek bijwerking vaccin Mexicaanse griep	Algemeen Nederlands Persbureau
M159	Onderzoek bijwerking vaccine Mexicaanse griep	NRC Handelsblad
M160	Onderzoek naar vaccin van GSK	NRC Handelsblad
M161	Narcolepsie-onderzoek teruggetrokken	NRC Handelsblad
M162	Slaapziekte bij kinderen na griepvaccinatie	Leeuwarder Courant
M163	Slaapziekte bij kinderen na griepvaccinatie	Regionaal
M164	Slaapziekte bij kinderen na griepvaccinatie	Regionaal
M165	Slaapziekte bij kinderen na griepvaccinatie	Regionaal
M166	Slaapziekte bij kinderen na griepvaccinatie	Regionaal
M167	Slaapziekte bij kinderen na griepvaccinatie	Regionaal
M169	Genetisch gevoelig voor griepinenting	Trouw
M170	Slaapziekte na vaccin tegen griep	Algemeen Dagblad
M171	Slaapziekte na vaccin tegen griep	Regionaal
M172	Slaapziekte na vaccin tegen griep	Regionaal
M173	Slaapziekte na vaccin tegen griep	Regionaal
M174	Slaapziekte na vaccin tegen griep	Regionaal
M175	Slaapziekte na vaccin tegen griep	Regionaal
M176	Slaapziekte na vaccin tegen griep	Regionaal
M177	Slaapziekte na vaccin tegen griep	Regionaal
M178	Slaapziekte na vaccin tegen griep	Regionaal
M179	Slaapziekte na vaccin tegen griep	Regionaal
M180	Slaapziekte na vaccin tegen griep	Regionaal
M181	Slaapziekte na vaccin tegen griep	Regionaal

M182	Slaapziekte na vaccin tegen griep	Regionaal
M183	Slaapziekte na vaccin tegen griep	Regionaal
M184	Slaapziekte na vaccin tegen griep	Regionaal
M185	Slaapziekte na vaccin tegen griep	Regionaal
M186	Slaapziekte na vaccin tegen griep	Regionaal
M187	Slaapziekte na vaccin tegen griep	Regionaal
M188	Slaapziekte na vaccin tegen griep	Regionaal
M189	Slaapziekte na vaccin tegen griep	Regionaal
M190	Slaapziekte na vaccin tegen griep	Regionaal
M191	Slaapziekte na vaccin tegen griep	Regionaal
M192	Slaapziekte na vaccin tegen griep	Regionaal
M193	Vaccineren	Dagblad van het Noorden
M194	Slaapziekte door griepvaccinatie	De Telegraaf
M195	De Week: Kennis	Elsevier
M196	Oorzaak slaapziekte is griep zelf, niet de prik	Volkskrant
M197	Risico slaapziekte na griepvaccin; Geneesmiddelenbureau acht verband waarschijnlijk	De Telegraaf
M198	WILLEM niet de enige	De Telegraaf

### Scientific articles:

S1	ADR Reporting by the General Public: Lessons Learnt from the Dutch and Swedish Systems	Harmark, Linda; van Hunsel, Florence; Grundmark, Birgitta
S2	Narrating Narcolepsy - Centering a Side Effect	Britta Lundgren
S3	Polysomnographic and actigraphic characteristics of patients with H1N1-vaccine-related and sporadic narcolepsy	Anniina Alakuijala, Tomi Sarkanen, Markku Partinen
S4	Antigenic Differences between AS03 Adjuvanted Influenza A (H1N1) Pandemic Vaccines: Implications for Pandemrix-Associated Narcolepsy Risk	Outi Vaarala et al.
S5	Clinical features of narcolepsy in children vaccinated with AS03 adjuvanted pandemic A/H1N1 2009 influenza vaccine in England	Anne Marie Winstone, Lesley Stellitano, Christopher Verity, Nick Andrews, Elizabeth Miller
S6	Genetic study of Pandemrix-associated narcolepsy	Izaura Lima Bomfim et al.
S7	Contradictory data on type 1 diabetes in a recently published article 'Risks of neurological and immune-related diseases, including narcolepsy, after vaccination with Pandemrix: a population- and registry-based cohort study with over 2 years of follow-up'	Andersson, L
S8	DID NARCOLEPSY OCCUR FOLLOWING ADMINISTRATION OF AS03-ADJUVANTED A(H1N1) PANDEMIC VACCINE IN ONTARIO, CANADA? A REVIEW OF POST-MARKETING SAFETY SURVEILLANCE DATA	T Harris, K Wong, L Stanford, J Fediurek, N Crowcroft, S L Deeks
S9	Narcolepsy patients have antibodies that stain distinct cell populations in rat brain and influence sleep patterns	P Bergman et al.
S10	The adjuvant component $\alpha$ -tocopherol triggers VIA modulation of Nrf2 the expression and turnover of hypocretin IN VITRO and its implication to the development of narcolepsy	Sanita Masoudi, Daniela Ploen, Katharina Kunz, Eberhard Hildt
S11	A/H1N1 antibodies and TRIB2 autoantibodies in narcolepsy patients diagnosed in conjunction with the Pandemrix vaccination campaign in Sweden 2009–2010	Alexander Lind et al.
S12	Investigation of an association between onset of narcolepsy and vaccination with pandemic influenza vaccine, Ireland April 2009-December 2010	D O'Flanagan
S13	Computing limits on medicine risks based on collections of individual case reports	Ola Caster, G Niklas Norén and I Ralph Edwards
S14	Narcolepsy and A(H1N1)pdm09 vaccination: shaping the research on the observed signal	Unknown
S15	Childhood narcolepsy with cataplexy: comparison between post-H1N1 vaccination and sporadic cases	Fabio Pizza, Hanna Peltola, Tomi Sarkanen, Keivan K. Moghadam, Giuseppe Plazzi, Markku Partinen
S16	Risks of neurological and immune-related diseases, including narcolepsy, after vaccination with Pandemrix: a population- and registry-based cohort study with over 2 years of follow-up.	Persson , F. Granath , J. Askling, J. F. Ludvigsson, T. Olsson & N. Feltelius
S17	A scientific sequel to Stieg Larsson: relationship between Pandemrix - pandemic influenza vaccine - and the subsequent development of narcolepsy.	Unkown
S18	Narcolepsy and H1N1 vaccination: a link?	Thebault, Simon; Vincent, Angela; Gringras, Paul
S19	The autoimmune basis of narcolepsy	Josh Mahlios, Alberto K De la Herrán-Arita, Emmanuel Mignot
S20	Incidence of narcolepsy in Norwegian children and adolescents after vaccination	M.S. Heier, K.M. Gautvik, E. Wannag, K.H. Bronder,

	against H1N1 influenza A	E. Midtlyng, Y. Kamaleri
S21	No Serological Evidence of Influenza A H1N1pdm09 Virus Infection as a Contributing Factor in Childhood Narcolepsy after Pandemrix Vaccination Campaign in Finland	Krister Melén et al.
S22	Increased childhood incidence of narcolepsy in western Sweden after H1N1 influenza vaccination	Szakács, Attila MD; Darin, Niklas MD, PhD; Hallböök, Tove MD, PhD
S23	Risk of narcolepsy in children and young people receiving AS03 adjuvanted pandemic A/H1N1 2009 influenza vaccine: retrospective analysis	<i>Elizabeth Miller et al.</i>
S24	Hypocretin Deficiency Develops During Onset of Human Narcolepsy with Cataplexy	Andri Savvidou et al.
S25	The Pandemrix - narcolepsy tragedy: how it started and what we know today	Käll, Anna
S26	A patient with both narcolepsy and multiple sclerosis in association with Pandemrix vaccination	Magnus Vrethem, Kristina Malmgren, Jonas Lindh
S27	Incidence of narcolepsy in Norwegian children and adolescents after vaccination against H1N1 influenza A	Heier MS, Gautvik KM, Wannag E, Bronder KH, Midtlyng E, Kamaleri Y, Storsaeter J
S28	AS03 Adjuvanted AH1N1 Vaccine Associated with an Abrupt Increase in the Incidence of Childhood Narcolepsy in Finland	Hanna Nohynek et al.
S29	Increased Incidence and Clinical Picture of Childhood Narcolepsy following the 2009 H1N1 Pandemic Vaccination Campaign in Finland	Markku Partinen
S30	Neurological and autoimmune disorders after vaccination against pandemic influenza A (H1N1) with a monovalent adjuvanted vaccine: population based cohort study in Stockholm, Sweden	<i>Carola Bardage</i>
S31	Swedish Medical Products Agency publishes report from a case inventory study on Pandemrix vaccination and development of narcolepsy with cataplexy	European Centre for Disease Prevention and Control, Stockholm, Sweden
S32	Pharmacovigilance study of influenza A H1N1 vaccination during the 2009-2010 season in France	Montastruc JL
S33	Pandemrix <sup>®</sup> , (H1N1)v influenza and reported cases of narcolepsy	Jean-Louis Montastruc <sup>*</sup> , Geneviève Durrieu, Olivier Rascol
S35	Psychiatric Comorbidity and Cognitive Profile in Children With Narcolepsy With or Without Association to the H1N1 Influenza Vaccination	Szakács A, Hallböök T, Tideman P, Darin N, Wentz E
S36	Is narcolepsy a classical autoimmune disease?	María-Teresa Arango, Shaye Kivity, Yehuda Shoenfeld
S38	Influenza A (H1N1) pandemic vaccination – an underlying risk factor for many CNS complications in Brazil	Unknown
S39	Heterologous prime-boost vaccination using an AS03B-adjuvanted influenza A(H5N1) vaccine in infants and children <3 years of age	Unknown
S40	Narcolepsy and influenza A(H1N1) pandemic 2009 vaccination in the United States	Jonathan Duffy, Eric Weintraub, Claudia Vellozzi, Frank DeStefano
S41	Neuroimmunology: Disease mechanisms in narcolepsy remain elusive	Ilkka Julkunen & Markku Partinen
S42	The roles of influenza virus antigens and the AS03 adjuvant in the 2009 pandemic vaccine associated with narcolepsy needs further investigation	Johansen, Kari
S43	Update on hypersomnias of central origin	Drakatos, Panagis <sup>a</sup> ; Leschziner, Guy D
S44	Enhanced and persistent antibody response against homologous and heterologous strains elicited by a MF59 <sup>®</sup> -adjuvanted influenza vaccine in infants and young children	Terry Nolan et al.
S45	Risk of Narcolepsy Associated with Inactivated Adjuvanted (AS03) A/H1N1 (2009) Pandemic Influenza Vaccine in Quebec	Jacques Montplaisir, Dominique Petit, Marie-Josée Quinn, Manale Ouakki, Geneviève Deceuninck, Alex Desautels, Emmanuel Mignot, Philippe De Wals
S46	DID NARCOLEPSY OCCUR FOLLOWING ADMINISTRATION OF AS03-ADJUVANTED A(H1N1) PANDEMIC VACCINE IN ONTARIO, CANADA? A REVIEW OF POST-MARKETING SAFETY SURVEILLANCE DATA	T Harris, K Wong, L Stanford, J Fediurek, N Crowcroft, S L Deeks
S47	Relative efficacy of AS03-adjuvanted pandemic influenza A(H1N1) vaccine in children: results of a controlled, randomized efficacy trial	Nolan T
S48	Pandemic influenza A H1N1 vaccines and narcolepsy: vaccine safety surveillance in action	Dr Charlotte I S Barker, Matthew D Snape
S50	The diagnosis and management of common sleep disorders in adolescents	Reiter, Joel Rosen, Dennis
S51	Narcolepsy as an autoimmune disease: the role of H1N1 infection and vaccination	Prof Markku Partinen
S52	The adjuvant component $\alpha$ -tocopherol triggers <i>via</i> modulation of Nrf2 the expression and turnover of hypocretin <i>in vitro</i> and its implication to the development of narcolepsy	Sanita Masoudi <sup>a, 1</sup> , Daniela Ploen <sup>a, 1</sup> , Katharina Kunz <sup>a</sup> , Eberhard Hild <sup>a, b</sup> .

S53	Narcolepsy, 2009 A(H1N1) pandemic influenza, and pandemic influenza vaccinations: What is known and unknown about the neurological disorder, the role for autoimmunity, and vaccine adjuvants	S. Sohail Ahmed, Peter H. Schur, Noni E. MacDonald, Lawrence Steinman
S55	Influenza viruses: update on epidemiology, clinical features, treatment and vaccination	Kidd, Mike
S56	Narcolepsy risk after A/H1N1 2009 influenza vaccination	Simon B Drysdale
S57	Pandemic influenza A H1N1 vaccines and narcolepsy: vaccine safety surveillance in action	Dr Charlotte I S Barker, Matthew D Snape
S58	GaLA-AF, an Emulsion-Free Vaccine Adjuvant for Pandemic Influenza	Christopher H. Clegg , Richard Roque, Lucy A. Perrone, Joseph A. Rininger, Richard Bowen, Steven G. Reed
S59	Childhood narcolepsy and H1N1 vaccination: stirring up a sleeping menace?	Sona Nevsimalova
S60	Narcolepsy as an Immune-Mediated Disease	Alberto K. De la Herrán-Arita and Fabio García-García
S61	DQB1 locus alone explains most of the risk and protection in narcolepsy with cataplexy in Europe.	Tafti M et al.
S62	Swine Flu Connection Provides Clues About Narcolepsy	Gretchen Vogel
S63	Targeted Vaccine Selection in Influenza Vaccination	Wutzler, P; Hardt, R; Knuf, M; Wahle, K
S64	Genome Wide Analysis of Narcolepsy in China Implicates Novel Immune Loci and Reveals Changes in Association Prior to Versus After the 2009 H1N1 Influenza Pandemic.	Han, Fang; Faraco, Juliette; Dong, Xiao Song; et al
S65	No Serological Evidence of Influenza A H1N1pdm09 Virus Infection as a Contributing Factor in Childhood Narcolepsy after Pandemrix Vaccination Campaign in Finland	Krister Melén ,Markku Partinen,Janne Tynell, Maarit Sillanpää, Sari-Leena Himanen, Outi Saarenpää-Heikkilä
S66	Increased risk of narcolepsy in children and adults after pandemic H1N1 vaccination in France	Yves Dauvilliers , Isabelle Arnulf , Michel Lecendreux , Christelle Monaca
S67	Genetic association, seasonal infections and autoimmune basis of narcolepsy	Abinav Kumar Singh, Josh Mahlios, Emmanuel Mignot
S68	Implications of narcolepsy link with swine-influenza vaccine	Kelly Morris
S69	Is the adjuvant solely to blame?	<i>Theodore Tsai et al.</i>
S70	PREVAILING EFFECTIVENESS OF THE 2009 INFLUENZA A(H1N1)PDM09 VACCINE DURING THE 2010/11 SEASON IN SWEDEN	K Widgren
S71	Association between H1N1 vaccination and narcolepsy–cataplexy: Flu to sleep	Kothare, Sanjeev V. MD; Wiznitzer, Max MD
S72	Increased childhood incidence of narcolepsy in western Sweden after H1N1 influenza vaccination	Szakács, Attila MD; Darin, Niklas MD, PhD; Hallböök, Tove MD, PhD
S73	Systems level immune response analysis and personalized medicine.	Brodin P <sup>1</sup> , Valentini D, Uhlin M, Mattsson J, Zumla A, Maeurer MJ.
S74	Decreased incidence of childhood narcolepsy 2 years after the 2009 H1N1 winter flu pandemic	Fang Han MD <sup>1</sup> , Ling Lin MD, PhD <sup>2</sup> , Jing Li B.S. <sup>1</sup> , Xiao Song Dong MD <sup>1</sup> and Emmanuel Mignot MD, PhD
S75	The incidence of narcolepsy in Europe: Before, during, and after the influenza A(H1N1)pdm09 pandemic and vaccination campaigns	Wijnans, Leonoor; Lecomte, Coralie; de Vries, Corinne; et al.
S76	Is the risk of narcolepsy also increased with non-adjuvanted flu vaccines?	By: Waldenlind, Lennart; Grundmark, Birgitta; Azarbayjani, Faranak; et al.
S77	Long-term tolerability and maintenance of therapeutic response to sodium oxybate in an open-label extension study in patients with fibromyalgia	Michael Spaeth, Cayetano Alegro, Serge Perrot, Youyu Grace Wang, Diane R Guinta, Sarah Alvarez-Horine, Irwin Jon Russell
S78	No association between influenza A(H1N1)pdm09 vaccination and narcolepsy	Young June Choe <sup>1</sup> , Geun-Ryang Bae, Duk-hyoung Lee

	in South Korea: An ecological study	
S79	A patient with both narcolepsy and multiple sclerosis in association with Pandemrix vaccination	Magnus Vrethem , Kristina Malmgren , Jonas Lindh
S80	Use of population based background rates of disease to assess vaccine safety in childhood and mass immunisation in Denmark: nationwide population based cohort study	Rasmussen, Thomas A.; Jorgensen, Martin R. S.; Bjerrum, Stephanie; et al.
S81	Increased incidence of narcolepsy after the A/H1N1 pandemic influenza vaccination campaign in the Nordic countries	M. Partinen
S82	Influenza vaccines and immunopathology	Sarah C Gilbert
S83	Assessing the Safety of Influenza Vaccination in Specific Populations Children and the Elderly	Ali Rowhani-Rahbar; Nicola P Klein; Roger Baxter
S84	Early IVIg treatment has no effect on post-H1N1 narcolepsy phenotype or hypocretin deficiency	Knudsen, Stine
S85	AS03 Adjuvanted AH1N1 Vaccine Associated with an Abrupt Increase in the Incidence of Childhood Narcolepsy in Finland	Hanna Nohynek
S86	Increased Incidence and Clinical Picture of Childhood Narcolepsy following the 2009 H1N1 Pandemic Vaccination Campaign in Finland	Markku Partinen
S87	Post H1N1 vaccination narcolepsy–cataplexy with decreased CSF beta-amyloid	Ulf Kallweit , Hildegard Hidalgo, Alice Engel, Christian R. Baumann, Claudio L. Bassetti, Norbert Dahmen
S88	Vaccines for preventing influenza in healthy children.	Jefferson T <sup>1</sup> , Rivetti A, Harnden A, Di Pietrantonj C, Demicheli V.
S89	First Attack of Kleine-Levin Syndrome Triggered by Influenza B Mimicking Influenza-associated Encephalopathy	Minori Kodaira, Kanji Yamamoto
S90	Narcolepsy after A/H1N1 vaccination	Mirian Fabiola Studart Gurgel Mendes, Dirceu de Campos Valladares Neto, Rosângela Aparecida de Azevedo, and Paulo Caramelli
S91	Narcolepsy with hypocretin/orexin deficiency, infections and autoimmunity of the brain	Birgitte Rahbek Kornum, Juliette Faraco, Emmanuel Mignot
S92	Explorations of clinical trials and pharmacovigilance databases of MF59®-adjuvanted influenza vaccines for associated cases of narcolepsy: A six-month update.	CRUCITTI, ANTONIO, TSAI, THEODORE F
S93	Estimation of the Health Impact and Cost-Effectiveness of Influenza Vaccination with Enhanced Effectiveness in Canada	David N. Fisman ,Ashleigh R. Tuite
S94	National Campaign of Vaccination against the flu A (H1N1)v: National Follow-up of Pharmacovigilance.	Durrieu G <sup>1</sup> , Caillet C, Lacroix I, Et al.
S95	Neurological and autoimmune disorders after vaccination against pandemic influenza A (H1N1) with a monovalent adjuvanted vaccine: population based cohort study in Stockholm, Sweden	Bardage, Carola; Persson, Ingemar; Ortqvist, Ake; et al
S96	Narcolepsy onset is seasonal and increased following the 2009 H1N1 pandemic in china	Han, Fang; Lin, Ling; Warby, Simon C.; et al.
S97	Waking Up to Narcolepsy	Stephen L. Hauser MD and S. Claiborne Johnston MD, PhD
S98	Explorations of clinical trials and pharmacovigilance databases of MF59®-adjuvanted influenza vaccines for associated cases of narcolepsy	Tsai, Theodore F.; Crucitti, Antonio; Nacci, Pantaleo; et al
S99	Narcolepsy with cataplexy associated with H1N1 vaccination	Haba-Rubio, J.; Rossetti, A. O.; Tafti, M.; et al.
S100	Pharmacovigilance study of influenza A H1N1 vaccination during the 2009-	Montastruc JL; Réseau Français des Centres Régionaux

	2010 season in France	de Pharmacovigilance.
S101	Association between Narcolepsy and H1N1 Exposure	Carole L. Marcus
S102	Vaccines: The real issues in vaccine safety	Roberta Kwok
S103	Pandemrix®, (H1N1)v influenza and reported cases of narcolepsy	Jean-Louis Montastruc, Geneviève Durrieu, Olivier Rascol
S104	New findings on H1N1 vaccine prompt revised prescribing advice	Geoff Watts
S105	WHO backs further probes into possible link between H1N1 vaccine and narcolepsy in children	John Zarocostas
S106	SWEDISH MEDICAL PRODUCTS AGENCY PUBLISHES REPORT FROM A CASE INVENTORY STUDY ON PANDEMRIX VACCINATION AND DEVELOPMENT OF NARCOLEPSY WITH CATAPLEXY	Eurosurveillance editorial team
S107	Post-H1N1 Narcolepsy-Cataplexy	Yves Dauvilliers
S109	EUROPEAN MEDICINES AGENCY UPDATES ON THE REVIEW OF PANDEMRIX AND REPORTS OF NARCOLEPSY	Eurosurveillance editorial team
S110	Adverse events with the influenza A(H1N1) vaccine Pandemrix® at healthcare professionals in Portugal.	Marques JI, Ribeiro Vaz I, Santos C, Polónia J
S111	High effectiveness of pandemic influenza A (H1N1) vaccination in healthcare workers from a Portuguese hospital	José Torres Costa, Rui Silva, Margarida Tavares, Albert Nienhaus
S112	Serological response to influenza A H1N1 vaccine (Pandemrix) and seasonal influenza vaccine 2009/2010 in renal transplant recipients and in hemodialysis patients	Undine Ott, Andreas Sauerbrei, Jeannette Lange, Anna Schäfler, Mario Walther, Gunter Wolf, Peter Wutzler, Roland Zell, Andi Krumbholz
S113	AS03 <sub>B</sub> -Adjuvanted H5N1 Influenza Vaccine in Children 6 Months Through 17 Years of Age: A Phase 2/3 Randomized, Placebo-Controlled, Observer-Blinded Trial	Pope Kosalaraksa, Robert Jeanfreau, Louise Frenette, Mamadou Drame, Miguel Madariaga, Bruce L. Innis, Olivier Godeaux, Patricia Izurieta and David W. Vaughn
S114	HLA-DPB1 and HLA Class I Confer Risk of and Protection from Narcolepsy	Ollila, Hanna M.; Ravel, Jean-Marie; Han, Fang; et al
S115	Narcolepsy with cataplexy: an autoimmune disease?	Jacob L, Dauvilliers Y
S116	A phase II study of an investigational tetravalent influenza vaccine formulation combining MF59®: adjuvanted, pre-pandemic, A/H5N1 vaccine and trivalent seasonal influenza vaccine in healthy adults.	Herbinger KH, von Sonnenburg F, Nothdurft HD, Perona P, Borkowski A, Fragapane E, Nicolay U, Clemens R

### Regulatory sciences articles

R1	Statement on narcolepsy and vaccination	World Health Organization
R2	Increased risk of narcolepsy observed among children and adolescents vaccinated with Pandemrix	THL, Finnish National Institute of Health and Welfare
R3	Pandemrix vaccine probably caused narcolepsy, but not alone	THL Vaccine Department Head
R4	CDC statement on narcolepsy following Pandemrix influenza vaccination in Europe	Centers for Disease Control and Prevention
R5	Swedish Narcolepsy Cases Not Linked to H1N1 Vaccine	Sweden's Medical Products Agency (MPA)
R6	Technical Report - Narcolepsy in association with pandemic influenza vaccination	European Centre for Disease Prevention and Control (ECDC)
R7	Occurrence of narcolepsy with cataplexy among children and adolescents in relation to the H1N1 pandemic and Pandemrix vaccinations	MPA Sweden
R8	SWEDISH MEDICAL PRODUCTS AGENCY PUBLISHES REPORT FROM A CASE INVENTORY STUDY ON PANDEMRIX VACCINATION AND DEVELOPMENT OF NARCOLEPSY WITH	ECDC



	CATAPLEXY	
R9	A registry based comparative cohort study in four Swedish counties of the risk for narcolepsy after vaccination with Pandemrix	MPA Sweden
R10	European Medicines Agency recommends interim measures for Pandemrix	European Medicines Agency (EMA)
R11	Available evidence does not confirm a link; more research needed The European Medicines Agency's	EMA
R12	Pandemic influenza vaccine Pandemrix under review	WHO
R13	Pandemrix safety profile updated due to narcolepsy reports	WHO
R14	Statement on narcolepsy and Pandemrix	WHO
R15	European Medicines Agency recommends restricting use of Pandemrix	EMA
R16	The MPA investigates reports of narcolepsy in patients vaccinated with Pandemrix	MPA
R17	Current information on the investigation of cases of narcolepsy after vaccination with Pandemrix	MPA
R18	A Swedish registry based cohort study provides strengthened evidence of an association between vaccination with Pandemrix and narcolepsy in children and adolescents	MPA
R19	Update on narcolepsy cases associated with Pandemrix vaccination in 2009 in the Netherlands	ECDC
R20	Increased risk of narcolepsy lasted for two years after Pandemrix vaccination	THL
R21	Increased risk of narcolepsy observed also among adults vaccinated with Pandemrix in Finland	THL
R22	Overview of Dutch cases of narcolepsy associated with Pandemic influenza vaccine (Pandemrix® )	Lareb
R23	Update of Overview of Dutch cases of narcolepsy associated with Pandemrix®.	Lareb
R24	Update of Overview of Dutch cases of narcolepsy associated with Pandemic influenza vaccine (Pandemrix®)	Lareb
R25	Registry study confirms increased risk of narcolepsy after vaccination with Pandemrix in children and adolescents and shows an increased risk in young adults	Lareb
R26	GlaxoSmithKline's full statement to W5 on Pandemrix	GlaxoSmithKline
R27	Pandemic flu vaccination linked to narcolepsy in UK children	United Kingdom's Health Protection Agency
R28	HSE Statement Narcolepsy / Pandemrix	Ireland public health services
R29	Safety surveillance of Influenza A(H1N1)v Monovalent vaccines during the 2009-2010 mass vaccination campaign in France	French Health Authorities
R30	Update van Nederlandse meldingen van narcolepsie na vaccinatie met Pandemrix®	Lareb
R31	Update van Nederlandse meldingen van narcolepsie na vaccinatie met Pandemrix® (nov 2014)	Lareb