



share and move to face nasty bugs

## WP 2 - Study and Analysis Gender issues in pandemics and epidemics

ASSET Project • Grant Agreement N°612236

# ASSET

Action plan on SiS related issues in Epidemics And Total Pandemics

7<sup>th</sup> RTD framework programme

Theme: [SiS.2013.1.2-1 Sis.2013.1.2-1]

Responsible partner: **European Institute of Women's Health**

Contributing partners: **Istituto Superiore di Sanita**

Nature: **Report**

Dissemination: **PU**

Contractual delivery date: **2014-12-01 (m1)**

Submission Date: **2014-12-01 (m11)**

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 612236



co-funded by the EU. GA: 612236

[www.asset-scienceinsociety.eu](http://www.asset-scienceinsociety.eu)



## DOCUMENT MANAGEMENT

PROJECT FULL TITLE	Action plan on SiS related issues in Epidemics And Total Pandemics
PROJECT ACRONYM	ASSET
	Coordination and Support Action: project funded under Theme SiS.2013.1.2 "Mobilisation and Mutual Learning (MML) Action Plans"
GRANT AGREEMENT	612236
STARTING DATE	01/01/2014
DURATION	48 months

WP 2: Study and Analysis – Report – Gender Issues in pandemics and epidemics

Task: T2.5

Leader: European Institute of Women's Health (EIWH) – Other contributors: Istituto Superiore di Sanita (ISS)

### History of changes:

Vn	Status	Date	Organisation / Person responsible	Reason for Change
V1	Draft			
Vf	Final	01/12/14	EIWH	



## Table of Contents

1. INTRODUCTION.....	4
1.1 Background.....	4
1.2 An overview of epidemics and pandemics.....	4
1.3 Gender.....	6
1.4 Life course approach.....	8
2. METHODOLOGY.....	9
2.1 Aims, objectives and key questions .....	9
2.2 Research design .....	9
2.2.1 Research Methods.....	9
2.2.1 Data collection.....	10
2.3 Data analysis.....	10
3. LITERATURE REVIEW .....	12
3.1 Search methods.....	12
3.2 Findings.....	12
3.2.1 Sex differences in influenza and vaccinations.....	12
3.2.2 Pregnancy and children.....	13
3.2.3 Care giving .....	14
3.2.4 Underlying medical conditions .....	15
3.2.5 Hard to reach groups.....	16
3.2.6 Older persons .....	18
3.2.7 Distrust of vaccinations.....	19
4. STAKEHOLDER INTERVIEWS.....	21
4.1 Findings.....	21
4.1.1 Gender .....	21
4.1.2 Pregnancy.....	22
4.1.3 Communication.....	22
4.1.4 Hard to reach groups.....	23
4.1.5 Health care workers and caregivers .....	23
4.1.6 Older women.....	24
CONCLUSIONS AND RECOMMENDATIONS .....	25
Appendix A - Interview Schedule.....	27
BIBLIOGRAPHY.....	28



## 1. INTRODUCTION

### 1.1 Background

The ASSET project (Action Plan on Science in Society in Epidemics and Total Pandemics) is a 48-month long project with the aim to address scientific and societal challenges raised by the occurrence of pandemics and epidemics.

The main objectives of ASSET are to (i) establish baseline knowledge about influenza epidemics and pandemics and their wider societal implications (ii) the extent of research and innovation into epidemics and pandemics (iii) the existing operational and regulatory environments across Europe.

This report aims to look at gender differences that effect exposures to infectious diseases as well as access to, information on, and use of, vaccinations in pandemics and epidemics. By using a targeted gender approach, as well as including different population groups for example by age, socioeconomic status, minority status, and gender, a societal perspective is presented that connects with a scientific approach. This also helps highlight existing inequalities in health, as well as focus on prevention and viewing issues across the lifespan and not in isolation.

Highlighting evidence-based issues of gender in pandemics and epidemics fits in to the overall ASSET objective by investigating the societal challenges that exist in these areas. This report is divided into two parts, a literature review and a section of interviews with relevant stakeholders.

The literature review aims to systematically study the available literature regarding gender issues in pandemics and epidemics. The goal is to gather information on current research as well as to identify gaps where more research is needed.

Interviews were conducted with stakeholders from various areas concerned with pandemics, epidemics, and vaccinations, in order to gain more insight into gender issues. Methods and findings from these make up the second part of this report.

### 1.2 An overview of epidemics and pandemics

Influenza is caused by a type A or type B influenza virus. The influenza virus circulates in the human population leading to seasonal outbreaks of influenza; if a virus strain changes into a new subtype and spreads across the world, it is then an influenza pandemic (Asgary 2012).

A seasonal influenza outbreak that is unusually severe and where large amounts of people fall ill can be described as an epidemic. Flegal (2006) describes an epidemic as “the occurrence in a community or region of cases of an illness or other health related events clearly in excess of normal expectancy” (p. 72). A pandemic, on the other hand, occurs when a new influenza virus emerges and spreads globally, and most people do not have immunity against it. In 2009, the H1N1 influenza virus emerged as a pandemic influenza. Estimates of worldwide deaths associated with the 2009 pandemic influenza H1N1 during the first year that the virus circulated are between 151,700 and 575,400 (Dawood et al 2012).



Influenza is the third leading cause of death for infectious diseases in the world, after AIDS and tuberculosis (Damiani et al 2007). Numbers vary between countries and can be hard to estimate, however it is believed that influenza affects up to 30% of the world's population each year (Endrich et al 2009). Each year there are approximately 140,000 hospitalisations and 36,000 deaths from influenza in the US; 75,000 hospitalisations and 6,000 deaths in Canada; 11,000 deaths in the UK; 400 deaths in Denmark; and 2,000 deaths in the Netherlands (Damiani et al 2007).

90% of all deaths from influenza occur in adults aged over 65 years, or among well-defined risk groups such as children under the age of 5, or those with underlying medical conditions (Nagata et al 2011). The WHO estimates that annual influenza epidemics result in between three and five million cases of severe illness and between 250,000 and 500,000 deaths worldwide (Ryan et al 2006). The impact of a medium size pandemic could increase the burden of seasonal influenza by a factor of 5-10 (Endrich et al 2009).

The burden and economic impact of influenza epidemics is often underestimated, as it takes a significant toll on societies in terms of morbidity, mortality and financial resources. Its impact is due to both its short-term incapacitating symptoms, and to complications directly and indirectly arising from having influenza which increases demands on health care systems; long-term illness; and mortality (Ryan et al 2006). It is estimated that influenza costs the US economy \$87 billion annually (Logue et al 2011).

A number of non-pharmacological interventions (NPIs) are recommended both to stop the spread of influenza, and to compliment vaccination. These can be simple steps such as promoting personal hygiene (for example hand washing), social distancing, respiratory etiquette, or use of facemasks, to closing schools and work places and limiting travel (Tell Me 2012b).

Vaccination is widely recognised as the most effective way to prevent influenza infection by creating a protective immune response to influenza (Zhang et al 2011). Immunisation against influenza is considered the most important public health intervention to control both seasonal and pandemic influenza (Nagata et al 2011). Immediate access to an influenza vaccine is regarded as a major component of pandemic preparedness planning – studies show that timely provision of pandemic influenza vaccine is a possible and cost-effective strategy to protect against a pandemic influenza strain (Asgary 2012).

In the European Union, those over 65 years old, healthcare workers, those with underlying conditions and children are most likely to receive influenza vaccinations – several factors, including age, sex, socioeconomic status and occupation contribute to the likelihood of receiving the seasonal influenza vaccine (WHO 2010a).

There are a number of different influenza vaccines, as a result of the annual update of vaccines and the pressure of producing the vaccine in large quantities in a limited amount of time, particularly during a pandemic. However, whether these varying vaccines affects the influenza vaccine efficacy differently for males and females has not been adequately addressed, despite a multitude of research findings that show the responses to and outcomes of some influenza vaccines differ between the sexes (Klein and Pekosz 2014).



Policy makers and health care officials are often faced with having to decide between what protection programmes to offer, and what medications and/or procedures to subsidise for protecting people against pandemic influenza (Asgary 2012). In the 2009 pandemic, vaccines were rapidly developed and introduced in more than 75 countries, of which many had vaccination programmes. However, the results were very variable and generally reports suggested that vaccine uptake was suboptimal, with less than half of the target population opting for vaccination (Bish et al 2011). Much research is devoted to analysing the various causes of low vaccine uptake, and how to increase vaccinations. This review will focus on this research from a gender perspective.

### 1.3 Gender

Gender refers to socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women. Sex refers to the biological and physiological characteristics that define men and women, boys and girls. The role of gender and sex disparities in immunization coverage has been subject to much debate in recent years with terminology often used interchangeably (WHO 2010b).

Differences based on sex and gender are important for understanding and improving outcomes and uptake rates for vaccination. A gender-specific focus can be described as “research [that] comes from an approach that is considerate of the multifaceted nature of gender” (Beetham and Demetriades 2007, p. 199). Gender in health care research is, while almost always present as a variable, not necessarily clearly recognised or accurately analysed.

Gavi, the international vaccine alliance, funded the comprehensive 2010 WHO report Gender and Immunisation. This report found that across the globe, sex discrepancies do not seem to be a widespread problem related to vaccination. Nevertheless, a woman’s choice of health systems and health seeking behaviour is shaped by her experiences with the health system; consequently, improving the status of women in the family is critical to improving child vaccination status. Information and communication messages must be adapted to acknowledge local health beliefs and views to ensure the message is both understandable and acceptable. Programmes should target fathers and families and not only mothers, to avoid reinforcing gender biases in vaccination and childcare (WHO et al 2010). This study was focused on worldwide vaccinations, however the core message of its recommendations also rings true for developed countries.

In their systematic review of influenza vaccination Nagata et al (2011) showed that some studies have found that men are more likely to be vaccinated in comparison with women; other studies found that differences between genders became smaller with age and statistically insignificant; while others again found no difference by gender. Seale et al found no association between gender or level of education and intention to receive the H1N1 vaccine (2010), while Bish et al found that amongst both the general population and health professionals, men were more likely to intend to be vaccinated and to be vaccinated than women (2011).

Despite some research arguing the opposite, a vast number of studies show gender as being a significant variable or co-variable in influenza vaccination. A Spanish study found that men received





influenza vaccination in a significantly higher proportion than women in five health surveys conducted between 1995 and 2006 - being male independently predicted higher level of influenza vaccination (Jiménez-García et al 2010). Jiménez-García et al also contend that several predictors may explain the lower compliance with preventive practices among women, such as access difficulties, size of household, cognitive and functional status, insurance type and sex of the attending physician (2010).

These examples of research with very varied results are generally down to differences in data collection, methods of analysis or depth of information present in the data. They clearly show gender is not sufficiently or correctly analysed as a variable.

In terms of biological differences, Klein et al state that despite data supporting a role for sex in the response to vaccines, most studies do not document sex-specific effects in vaccine efficacy or induced immune responses (2010). This lack of documenting sex-specific divergences is mirrored in gender differences and vaccination.

Women have been shown to be more likely than men to adopt protective and avoidant measures to avoid influenza infection, such as hand washing, respiratory hygiene, mask wearing, and washing after touching contaminated surfaces (Tell Me 2012a). However, the same report also highlights the fact that women are less likely to accept vaccination, or show intention to vaccinate, than men.

Gender does not only influence vaccination uptake, but also the behaviour around it. Mamelund and Riise Bergsaker (2011) found that if a married man had previously been vaccinated, his probability of being vaccinated again was highly dependent on his wife's vaccination behaviour – the vaccine uptake was significantly higher if the wife also had a history of vaccination.

Mamelund and Riise Bergsaker also highlighted that women who had not previously been vaccinated were more likely to vaccinate against influenza if their husband had a previous history of vaccination. This, they argue, indicate that among married couples more women than men take action to protect their spouse from influenza, and show the role gender plays in certain kinds of decision-making processes (2011).

Other gender-specific health care behaviour did not bring with it similar overall improvements. Studies have observed that patients who make the greatest number of visits to their general practitioner, particularly if it is always the same practitioner, have a higher possibility of being vaccinated. Jiménez-García et al (2010) stated that women had higher prevalence of physician visits in the last 4 weeks than men, nevertheless their data also pointed out that women were less likely to be vaccinated against influenza. This could be explained, they argued, by a number of different factors such as unconscious health-care provider bias, or women being less receptive to follow a physician's recommendation. Even so, findings such as these again show that the different behaviours and outcomes for women for vaccination need to be viewed and analysed in terms of gender.



## 1.4 Life course approach

The subject of epidemics, pandemics and vaccinations are an issue for the duration of a person's life course. In analysing the gender perspective of these matters, the approach taken is one that considers influenza awareness and vaccination as something present throughout the life span, and not just relevant during certain periods – a life-course approach.

A life-course approach to vaccination is the view that vaccinations should be a part of the life trajectory of an individual, and not relegated solely to early childhood or later old age. The approach goes through the various stages of life that are relevant to women such as decision making for family health issues, or care giving, and that which is an experience unique to females, such as pregnancy. For example, studies have shown that living in a household with one or more children is associated with a higher level of vaccination, suggesting that compliance with pandemic vaccination campaigns is higher in families with children (Tell Me 2012a). This supports the finding that parent's health behaviours affect the rates of children's vaccination (Tell Me 2012b), and also supports the need for a life-course approach.

A life-course perspective also calls upon policymakers, civil society, and health professionals to invest in the various stages of a woman's life, particularly during phases when risks to well-being and health are the greatest – this should reduce many of the problems faced by older women as a result of poverty and disadvantage (Davidson et al 2011).





## 2. METHODOLOGY

### 2.1 Aims, objectives and key questions

As stated in the introduction of this report, the core focus of the ASSET project is to establish baseline knowledge about influenza epidemics and pandemics, the extent of research and innovation into epidemics and pandemics, and the existing operational and regulatory environments across Europe. For this particular piece of research, the aims and objectives of ASSET are analysed through a gender perspective – in other words, the issue of gender is put at the forefront of influenza epidemics, pandemics, and vaccinations.

Key questions relating to gender issues and influenza pandemics, epidemics and vaccinations are:

- (i) What communication strategies and information policies exist for epidemics/pandemics and vaccination take-up from a gender perspective?
- (ii) What awareness exists of gender differences in vaccination?
- (iii) What interactions are there with groups with particular needs in terms of gender, for example pregnant women, older women, health care workers, caregivers?
- (iv) What emphasis is put on hard to reach groups, and to what extent is a gender perspective present?
- (v) To what extent is a life-course strategy adopted?
- (vi) What information and research gaps exist from a gender perspective?

### 2.2 Research design

The search methods for the literature review are outlined at the start of chapter 3. As for the stakeholder interviews, the philosophical discourse guiding the interview section of this research is one of exploration: of wanting to get as much detailed information about stakeholder knowledge and opinion as possible. It was therefore decided that a qualitative approach of an in-depth nature was the most suitable for this project, as it is an additional option for grasping attitudes and experiences.

#### 2.2.1 Research Methods

The method most suitable for data collection in this study was believed to be semi-structured in-depth interviews. In-depth interviews facilitate understanding the interviewee's perspectives as expressed in their own words (Kumar 2005). Moreover, in-depth interviews are "particularly well suited to research that requires an understanding of...responses to complex systems, processes or experiences because of the depth of focus and the opportunity they offer for clarification and detailed understanding" (Ritchie 2003, pp. 36-37). By their nature, qualitative can be a way of exploring different aspects of awareness and knowledge (Arksey and Knight 1999), which in the case of this



research was the particular gender issues present in influenza pandemics, epidemics and vaccination.

The semi-structured approach was chosen as it provides a frame while at the same time is flexible and allows the structure to change. It gives freedom to explore topics not anticipated that might surface during the interview, and allows both participant and researcher to elaborate points of interest (Denscombe 2007). While the researchers had a set interview schedule, the semi-structured approach allowed for varying the format and for following up on responses that were seen as especially significant (Bryman 2008). The questions were of an open-ended nature, which allowed the subjects space to answer in natural and unconstrained manner, as well as giving the researcher an opportunity to analyse the depth in the answers.

### **2.2.1 Data collection**

The questions in the interview schedule were based on areas where gender was an issue as identified in the literature reviewed, and developed by the researchers through discussion and debate. A list of suitable stakeholders was compiled by the researchers, based on the reach of the organisations and the stakeholder's involvement in the issues of influenza epidemics, pandemics and vaccinations. These stakeholders were then contacted via email by the researchers, where the project was outlined and the stakeholder was invited to participate.

The researchers received eight positive replies – the stakeholders all chose to be interviewed via telephone rather than in person. The interviews were carried out by the researchers and recorded on a Dictaphone. The researchers then transcribed all interviews verbatim.

## **2.3 Data analysis**

The need to systematically prepare data for analysis is imperative in qualitative analysis, as there is a need to clarify the full research process (Lewis and Ritchie 2003). With this in mind, the methodology deemed to be the most appropriate for the data analysis in this report is Framework Analysis. Frameworks organise enquiry by identifying elements and relationships amongst these elements (Walt et al 2008). Also, due to the nature of this interview process, where a number of stakeholders were represented, framework analysis is particularly suited as it analyses the data methodically.

Framework analysis is based on observation and/or accounts of participants, allows change throughout the analysis as themes emerge, and is systematic, generating a methodical treatment of the data (Sirvastava and Thomson 2009). The method facilitates transparent data management, and ensures that all stages of analysis are conducted systematically (Ritchie, Spencer and O'Connor 2003).

In the data analysis stage of framework analysis, a five-step process was applied to the data:

- (i) Familiarisation – the researcher is immersed in the data



- (ii) Identifying a Thematic Framework – the data dictates the themes and issues that emerge, which form the basis of the thematic framework which is used to filter and classify the data
- (iii) Indexing – data is identified as relating to a specific theme
- (iv) Charting – data is arranged in charts of themes
- (v) Mapping and Interpretation – data is analysed, allowing key themes and characteristics guide the researcher in interpreting the data (Ritchie, Spencer and O'Connor 2003)

The grounded, dynamic, systematic, comprehensive and accessible nature of framework analysis makes it appropriate for generating recommendations or outcomes in regards to policy issues; it is a valuable tool to assess policies and procedures (Sirvastava and Thomson 2009). Thorough and systematic analysis and identifying thematic frameworks is crucial not only to extract meaning and information from the interview, but also to ensure that the data collected is analysed in a way that guarantees reliability and validity.

Reliability is the attempt to certify that the research is as robust as possible by carrying out internal checks on the interpretation of the data, as well as the quality of the data; also, by providing information about the research method, the reader is assured that the research has been performed according to a method (Lewis and Ritchie 2003). Validity is the process whereby the researcher shows that he or she is accurately reflecting the phenomena under study by analysing the choice of sample, the capture of the phenomena, labelling and identifying the phenomena, interpreting the data, and portraying the findings accurately in relation to the data gathered (Lewis and Ritchie 2003).

The need to systematically prepare the data for analysis is imperative in qualitative analysis, as there is a need to clarify not only the full research process, but also the process by which interpretation has been attributed or theory developed, and the reliability and validity of these (Lewis and Ritchie 2003). Also, another point when analysing the quantitative data is the fact that the analysis is the product of a process of interpretation, where researcher bias is always a possibility (Denscombe 2007). It is therefore important that the researcher provide as much information as possible regarding the technical details of research conduct and any potential bias, to clarify the objectivity of the research (Snape and Spencer 2003). Thus, based on the necessity of demonstrable reliability and validity, the researchers of this study has attempted to illustrate in detail the methods used to undertake the study, as well as clearly describe the reasoning and interpretation behind the reading and analysis of the data collected.



### 3. LITERATURE REVIEW

#### 3.1 Search methods

Searches were conducted to identify papers in peer-reviewed journals on the topic of gender, epidemics and pandemics.

Searches of databases included PubMed, Web of Science, Embase and CINHALL using search terms *gender*, *pandemic*, *influenza*, *vaccine*, and *epidemic* between Aug 5 and 10, 2014. No date restrictions were applied to the searches.

In addition, the databases of Eurostat, Centre for Disease Control (CDC), European Centre for Disease Prevention (ECDC), World Health Organisation (WHO), International Longevity Centre (ILC), and the European Medicines Agency (EMA) were searched as well as Google to find any additional grey literature.

#### 3.2 Findings

##### 3.2.1 Sex differences in influenza and vaccinations

One major biological difference between males and females that creates different outcomes of the infection and development of influenza is the response of the individual immune system. Sex differences in immune function are well established; for example, several genes that are responsible for immunological proteins are on the X chromosomes, and studies have shown that inflammatory immune responses are generally higher in females than in males (WHO 2010a).

Biologically, females and males differ in their immunological responses to seasonal influenza virus vaccines. Women, whether adult or as older persons, have higher antibody responses to influenza vaccinations – the antibody response of a woman to half a dose of influenza vaccine is equivalent to the antibody response of a man to the full dose (Klein et al 2010).

Women also report a worse reaction to vaccinations than men do. Several studies have showed that women report more local reaction such as swelling, tenderness, inflammation, and injection site pain. This may be due to increased pain sensitivity in women, however it may also be due to the fact that women are more likely to report adverse side effects than men (Klein and Pekosz 2014).

Klein and Pekosz (2014) also argue that the adverse reactions may be caused by the dose being too high, as vaccines with half the dose have proven to be as effective in women. More research is needed into this area; female reactions to vaccinations should be incorporated into clinical trials and sex and gender should be considered when evaluating the efficacy of antiviral treatments (WHO 2010a).



### **3.2.2 Pregnancy and children**

Women who are pregnant are more likely to have severe disease and hospitalisation with either seasonal or pandemic influenza, compared to the general population or compared to non-pregnant women of the same age group. During pandemics, the mortality rate for pregnant women is higher than non-pregnant women, however this is not the case with seasonal influenza unless the strain is particularly severe (WHO 2010a).

In terms of pandemics, pregnant women have an increased risk of severity of infection and a disproportionately high risk of mortality from H1N1 (Esteban-Vasallo et al 2011). In the first two months of the H1N1 flu pandemic in 2009 in the United States, a majority of the cases that were hospitalised were women (n=21/26), and of these women five were pregnant. During the pandemic, females of a reproductive age were much more likely to be hospitalised with critical illness than men in a number of countries (WHO 2010a).

There are a number of reasons why pregnant women are more at risk of influenza. Hormonal changes during pregnancy, chiefly oestrogen and progesterone, underlie some of the distinct immunological changes that accompany pregnancy (Klein et al 2010). The risk of complications from influenza increases in the second and third trimester, when the physiological changes accompanying pregnancy, such as increased demands on cardiovascular output, play a role. Also, the immune function change that is associated with pregnancy, which serves to prevent the woman's immune system from rejecting the foetus, reduces the capacity of the pregnant woman to mount the strong antiviral response that is needed to control a viral infection (Jamieson et al 2009).

Nevertheless, there appears to be very little risk of direct infection of the foetus if the mother contracts influenza, and the effect of fever resulting from the influenza does not appear to lead to foetal abnormalities (WHO 2010a). There is limited research done on vaccine safety in pregnant women, however studies suggest the vaccine is safe, and there are no indications that vaccination causes harm (ECDC 2012a). In general, vaccination of pregnant women serves to protect both the woman and the foetus (Klein et al 2010).

Existing studies on pregnant women who have taken the influenza vaccine show no adverse risks or side effects on the mother, foetus, or the child once it is born – rather, there is a good record of administering the vaccine, particularly in the second and third trimester (WHO 2010a).

The WHO recommends all pregnant women to receive vaccinations during the influenza season, and that they should be given highest priority among all the risk groups (WHO 2012). Yet, despite recommendations and despite the increased risk of illness and mortality that accompanies pregnant women getting influenza, vaccine covers of pregnant women tend to lag behind those seen in the general population (Klein and Pekosz 2014).

There are a number of reasons behind this low figure. Evidence points to pregnant women not knowing of the increased risks associated with pregnancy and influenza; also, many health care providers do not recommend pregnant women to take a pandemic or seasonal influenza vaccine due to concerns over giving a vaccine to a pregnant woman (WHO 2010a). Such inconsistent advice from relevant health care providers is an obvious obstacle to uptake of vaccination for pregnant women (ECDC 2013).





Data on pregnancy and vaccinations is scarce, and there is very little data on this from Europe. In terms of drivers and barriers for pregnant women, there is little evidence-based research resulting in weak information (ECDC 2013). It is not studied enough in human beings because of the risk to the mother and the foetus, but more research could be made on animals (Klein et al 2010). More research is needed to find the optimum dose of the vaccine, and to provide more data to firmly refute the hesitation towards giving pregnant women influenza vaccinations.

Very few studies have been done in Europe on influenza vaccine effectiveness in children – there is a paucity of research in this area (ECDC 2013). In terms of children, children younger than five years old showed the highest hospitalisation rate attributed to influenza; this age group also have the highest incidence of the disease in children under 18 years of age (ECDC 2012a).

Influenza vaccination is generally well tolerated in children, and any adverse reactions reported were usually mild or moderate. Influenza vaccines are not licensed in children younger than six months old – there is therefore a lack of alternatives to treat children in this age group, who are in the risk group for exposure to influenza – nevertheless, recent studies have shown that influenza antibodies from the mother are transferred to the child (ECDC 2012a).

### **3.2.3 Care giving**

Care giving has traditionally been a female area, both domestically and in the workplace. Due to the nature of influenza, healthcare workers and those in close contact with young children are at a greater risk of exposure to influenza viruses, both seasonal outbreaks and pandemic strains (Zhang et al 2011). Studies have generally shown compliance rates from as low as 10% to 40-50% among health care workers, with no clear pattern to ascertain why this is (Tell Me 2012b).

Women represent more than 50% of the healthcare workforce in many countries; also, in most countries nurses, teachers and childcare workers are mainly female (WHO 2010a). For example 80.2% of employees in the Irish health services are women, and women account for 92.1% of nurses (CSO 2013).

Front-line workers face disproportionate risks of illness and death during a pandemic; Godderis and Rossiter (2013) argue that this increased risk of illness and death is an issue that is both moral and gendered, and therefore fundamentally social in its nature and not just a medical issue. Studies in Greece and Canada have found that male health-care workers are more likely to have the intention to be vaccinated, and in Sicily to be vaccinated against H1N1 than female health-care workers (Bish et al 2011).

Another issue the responsibility for care giving in the home for both children and ill family members – this is a large risk factor for exposure to the influenza virus, and is a role predominantly occupied by women. It has been shown that women who work outside the home have a lower risk of developing a viral illness, suggesting that societal roles such as childcare is a risk factor in acquiring influenza. In addition to this, caregivers may not be able to seek adequate treatment because of their caring responsibilities, thereby leading to delayed treatment (WHO 2010a).





Women's care giving role often affects their workplace participation, which in turn contributes to poorer health in older age – also, women may not have been in the workforce long enough to accrue support in terms of for example retirement funds (Davidson et al 2011). Care giving thus creates a number of issues regarding vaccination, which affects women both at the time of an influenza infection and also potentially further on in the life course.

### ***3.2.4 Underlying medical conditions***

People with already existing conditions, such as cardiovascular diseases, diabetes, and pulmonary/respiratory disease, are at greater risk from influenza (Logue et al 2011). Women are more likely to have diabetes in their lifetime than men, and studies in the US show that women, particularly those in lower socioeconomic groups, receive less adequate diabetes care than men from the same socioeconomic group (WHO 2010a). Also, these women face more variability of the number of services received in addition to factors such as childcare and availability of transport, resulting in an unequal outcome between men and women.

Individuals with underlying medical conditions, for example cardiovascular problems, asthma, obesity, chronic lung disease, kidney disease, liver disease, immunosuppressant diseases, cancer, HIV, and diabetes, are one of the main risk groups of contracting influenza (WHO 2012). However, these groups are not necessarily all being vaccinated. The individual person may be managing their health condition successfully, and despite coping effectively with a condition, do not view themselves as being part of an at-risk group for influenza (International Longevity Centre UK 2011). Identification of the appropriate targets for influenza vaccination in these groups is often challenging, and require considerable effort and cost (WHO 2012). In Europe, vaccination compliance rates are relatively low among chronically ill persons compared to the U.S. (Tell Me 2012b).

Adults who are healthy may also need vaccination against influenza over their life trajectory without having an underlying medical condition. While influenza is most virulent among the very young and among older persons, biological and hormonal changes across the life span can affect the exposure to influenza and the severity of the infection. For example, women experience a five to 10 year period of changes in hormone patterns caused by menopause (WHO 2010a), which may make them more vulnerable to influenza infection.

The International Longevity Centre UK argue that vaccinations along the life course trajectory should be considered a normal part of adult life and not just childhood, and that emphasis on vaccination should include those over 50 years of age (2011). Lowering the age limit for vaccination may be effective in increasing vaccine uptake (ECDC 2013). A Spanish study found that among those under 65 years of age with chronic conditions, influenza vaccination figures are very low at approximately 30% (Jiménez-García et al 2010); changing the vaccination age limit to 50 and over may help increase this number.



### 3.2.5 Hard to reach groups

There are a number of groups that are especially vulnerable in terms of susceptibility to influenza and barriers to accessing vaccinations. This may lead to larger problems in case of a pandemic; for example, in the H1N1 2009 outbreak in Australia, indigenous Australians, a hard to reach group, were overrepresented in rates of hospitalisation (Seale et al 2010).

Hard to reach groups may have adverse health outcomes, and the complex interplay of gender and social and economic marginalisation makes this a particular issue for women (Davidson et al 2011). There are a number of minority groups in society which have adverse health outcomes and where women are particularly affected, such as the Roma community, Irish Travellers, isolated immigrant communities, and those in lower socioeconomic groups. Gender is one of the most critical variables in terms of health outcomes; women in hard to reach groups are therefore particularly marginalised. For example, older people are more likely to be poor than other groups, and women are more likely to be poor than men (Davidson et al 2011).

There are approximately 2.8 million Roma across the EU (Fundación Secretariado Gitano Health Area 2009). The Roma have a disproportionate burden of communicable diseases, which is linked to their overall living conditions, health inequalities, health perceptions and behaviours, and ingrained discrimination (ECDC 2011). The social exclusion and deprivation in which many Roma live contributes to under-vaccination or a complete lack of vaccinations, in a population which is already at disproportionate risk from an illness such as influenza.

One study found that 28% of Roma children in the EU do not follow any child vaccination programme – the figure is as low as 2.6% in the Czech Republic but a massive 45.7% in Romania, which also has the highest population of Roma at 1, 050,000 (Fundación Secretariado Gitano Health Area 2009). Among obstacles noted regarding Roma health prevention was negative attitude and mistrust between Roma and public institutions, low health literacy and poor access to health information, poor understanding of the risks of infectious diseases, and negative perceptions towards Roma from healthcare staff (ECDC 2011).

For Roma women, this difficult situation is even worse, as they are more likely to experience social exclusion than Roma men. They suffer the added disadvantages of limited access to education, employment, health services and social services, and are discriminated against on the basis of both ethnicity and gender (European Commission 2010).

The Traveller community in Ireland is another example of a hard to reach group. Compared to the general population, Travellers have a considerably higher mortality in all ages, both male and female. Travellers have excess cardiovascular morbidity, which puts them in the risk zone for influenza, both seasonal and pandemic (UCD 2010).

Although almost 95% of Traveller children have received vaccinations at the age of 5, Traveller children are nearly four times as likely to die as infants (children aged under 1) as the settled community. Overall, Traveller mortality is 3.5 times higher than in the settled community (UCD 2010).

Traveller women, much like the Roma women, face the double discrimination of both gender and minority status. Traveller women suffer disproportionately with depression and the level of non-



accidental injuries, chiefly through domestic violence, is also very high in Traveller women (Pilson 2011). Pilson argues that a traditionally patriarchal culture persists in the Travelling community at the expense of female autonomy – this is evident in a healthcare setting, where Traveller men may attempt to represent a family or a woman on health issues.

In communities such as the Roma or the Travellers, the barriers to health are many and the overall poor health performance of the communities makes the issue even more urgent. Coordinated efforts from local to EU level are necessary to create an environment where efforts from both health and social areas improve access to health, and health-seeking behaviour. This is especially relevant for the women of these groups. Davidson et al explain that “engaging in strategies to increase educational attainment in women and policies that address violence against women are important in redressing the social and economic inequities that contribute to adverse health outcomes” (Davidson et al 2011, p. 1038). Thus, a multi-pronged approach may address a number of issues at the one time.

Lower socioeconomic status tends to be associated with higher morbidity and mortality rates. Endrich et al (2009) found that social inequalities exist in the context of influenza vaccination; however, this was not true of all 11 European countries analysed in their study. As for gender, they found being male increased the chances of being vaccinated in France, Italy, Spain, UK, Czech Republic, Poland, and Portugal, but did not have any effect in Germany, Austria, Finland and Ireland (Endrich et al 2009). The various countries in the EU are thus demonstrably not homogenous in their experience in terms of vaccination.

Damiani et al (2011) also highlight the varying results that studies on socioeconomic disparities in influenza vaccination show; some find that certain variables, for example educational level, household income, and age group, influence vaccination rates, while in some findings, they do not. However, regardless of this, Damiani et al argue that an integrated interdisciplinary programme should exist where a systematic surveillance of trends in influenza uptake by socioeconomic groups is implemented: this would allow policy makers to identify trends and barriers limiting equitable uptake of influenza vaccinations.

Lorant et al found in their interesting 2002 study that influenza immunisation in Belgium was less likely between the bottom and third socioeconomic quintile of their sample. This result was reached by adding a variable termed ‘concentration of needs’, which reported that needs are more prevalent in lower socioeconomic groups. They define needs as “...use (health care or prevention) predicted by health status or sex-age group” (Lorant et al, 2002, p. 511), where the health care use or prevention was predicted by health status. By introducing needs into the variables analysed, they found a significant inequity gradient in prevention and health care where ignoring the distribution of needs for preventive care may ultimately conceal inequity in the provision, as needs are concentrated among the less well off.

In terms of health seeking behaviours of different socioeconomic groups, Lorant et al (2002) argue that more research needs to be done in the area, and that socioeconomic inequality in prevention can be explained by differences in help seeking, information gathering, and beliefs.



### 3.2.6 Older persons

Persons over the age of 65 have a higher risk for severe influenza-related complications and have the highest risk of mortality from influenza (Rubin 2011). Vaccination of older persons have traditionally been the main focus of influenza vaccine policy, and while vaccines are not as efficient in this population as in younger adults, it still remains the most effective public health tool to protect against influenza (WHO 2012). Vaccination recommendations vary slightly between countries in Europe, however almost all cover older people as a specific target group (Endrich et al 2009).

Among the over-65 group, those aged 75 years and over were more likely to vaccinate against influenza than those aged 65 to 74 years (Nagata et al 2011). Older people who suffer from a chronic disease or use medical services more frequently are more likely to get vaccinated (ECDC 2013).

Women live longer than men, and women's life expectancy has increased faster than that of men (Keskinoglu et al 2007). The increased frailness that comes with old age and the increase in ill health is thus a female problem by virtue of female longevity - for example, more women than men have dementia as the chief risk factor for developing dementia is old age (Cahill, O'Shea and Pierce 2012).

In their wide-ranging and resourceful review of age and gender, Davidson et al (2011) list a large number of issues concerning ageing women, referring to it as the feminisation of ageing. They found that women in general, and older women in particular, are underrepresented in clinical trials and research, thereby hindering any development of sex-specific treatments or policy guidelines. They call on more inclusive clinical research, as well as more research and data collection on older women's health in general.

Another way in which older women are at a disadvantage is widowhood. Davidson et al argue that widowhood has the potential to adversely affect a women's physical and mental health, in addition to health behaviours. The loneliness and depression that may accompany widowhood can lead to increased risk of physical and psychological illness, as well as the emotional toll the older widow may also find herself at a worse financial status due to the loss of spousal income (2011). In an Italian study, widowed and single persons over 65 years old were found to have a lower probability of receiving an influenza vaccination, compared to other persons in their age group (Damiani et al 2007).

Mamelund and Riise Bergsaker (2011) state that as mortality is higher for men than for women, more older women than men live in one-person households. They do not have the advantages that come with social support, and may therefore have a lower likelihood of being vaccinated for seasonal influenza. Their findings show that among married people, older women are active in ensuring their husband gets the influenza vaccine. They also found that older women getting the influenza vaccine were not dependent on their husband's prior history of vaccination, which was the case for males. However, Mamelund and Riise Bergsaker did not discuss whether this health-seeking behaviour continued when the woman had become a widow.

These gender-based issues are highly relevant in regards to help-seeking behaviour and the vulnerability of older people in general and women in particular of ill health. While Damiani et al



(2011) found that socioeconomic differences in influenza vaccination existed among adults in Italy but not among those over 65 years of age, the fact that older people are a major risk group for influenza still remains.

### **3.2.7 Distrust of vaccinations**

In the European Region today, nine out of ever 10 children receive at least a basic set of vaccinations during infancy (WHO 2014). However, there is a great difference between being under-vaccinated, which might be due to marginalisation or healthcare inequalities, and un-vaccinated. Despite a comparatively high level of vaccination, there exists scepticism and distrust of vaccinations in Europe - some lack awareness or interest in vaccinations, while some refuse it on philosophical grounds (WHO 2010c).

In 2013, the EU reported 31,685 cases of measles (WHO 2014) – the vast majority of cases of measles in Europe occurred amongst those who chose not to vaccinate (WHO 2010). This example shows that parents may chose not to vaccinate their children as a result of concern about the safety and efficacy of vaccinations, and the perceived notion that the child will have little risk of contracting a particular disease (ECDC 2013).

Suspicion towards a vaccine that protects against an illness that has not been seen on a widespread scale in Europe for many years, may in a large number of individuals lead to the vaccine being perceived as more dangerous than the illness itself. Seale et al argue that the acceptance of and adherence to public health measures by a population is largely dependent on the way individual persons perceive a threat (Seale et al 2010).

One well-known example is the false link made between the MMR vaccine and autism by David Wakefield in a (later retracted) article in the *Lancet*, which received great publicity causing vaccinations in the UK to drop. As the scientific basis of the MMR vaccine and autism connection was proven to be a falsification and wholly discredited, vaccination rates increased – however, damage was already done as the cases of measles in England increased due to the large number of children left unvaccinated (Miller and Reynolds 2009).

Communication and transparency are both at the centre of strategies dealing with distrust and scepticism towards vaccination. Various research findings suggest highlighting the risks of not being vaccinated, the benefits of vaccination, and explicitly acknowledging and tackling safety concern that might exist in relation to vaccinations (Bish et al 2011). The WHO European Vaccination Plan argues that as the success of vaccination programmes depends on individuals understanding the benefits and risks of vaccination, and that focus should be on engaging with stakeholders, developing and disseminating advocacy tools, a positive media environment, and ensuring risks and benefits are communicated in a way that enhances trust in vaccines, immunisation services and health authorities (2014).

A German study found that fear of side effects was the most frequently stated reason for rejecting pandemic vaccination; and conversely, believing that the pandemic vaccination was safe was significantly associated with the receipt of the pandemic vaccine in many countries worldwide. The





same study found that 8.5% of those who did not receive a pandemic influenza vaccination stated that they reject vaccinations in general. Appropriate addressing of vaccine safety concerns by public health authorities is thus an important factor to both gain and maintain public trust in national vaccination recommendations (Böhmer et al 2012). Also, using the same communication outlets as vaccine opponents, and working with vaccine resistant caregivers and avoiding strategies that will alienate them are important steps in reaching this group (Tell Me 2012b).

The role of the media, both traditional media and more recent social media, is crucial for disseminating information about pandemics, epidemics and vaccination. Healthcare providers tend to underestimate the power of the media to help promote health issues, while they at the same time fear the power of the media to instil fear and irrational behaviour among the general public (Tell Me 2012b). Interestingly, females are more likely than males to trust print media, the Internet, and television as a source of health information (ECDC 2012b). This has repercussions in terms of how to approach and connect with women who are sceptical about vaccinations. One systematic review (Tell Me 2012a) found that messages that consider demographic, ethnic and social differences allow for a more effective and targeted communications. Based on this, they argue that vaccination coverage and protective behaviours may both increase if such improved communication strategies were to be employed while dealing with various specific groups, such as gender.

In advance of a future pandemic there is a chance of evaluating current evidence and theory-based interventions to increase uptake of vaccinations among target groups. This would have the advantage of both informing future effective campaigns and developing a culture of high uptake of influenza vaccination (Bish et al 2011). Effective communication is key, as trust for institutions and satisfaction with received communications about influenza pandemics influence people's behaviour (Tell Me 2012a). For example, a British study found that people who trusted government adopted recommended preventive health behaviours (Tell Me 2012a). It is also imperative that clear definition of a vaccine programme goal is set at the outset – the approach may be significantly different if the goal is an individual case reduction or control of an epidemic/pandemic spread (Tell Me 2012b).





## 4. STAKEHOLDER INTERVIEWS

A total of eight stakeholders agreed to participate in interviews discussing gender perspectives of influenza epidemics/pandemics and vaccination. The stakeholders interviewed were:

- The Pharmaceutical Group of the European Union (PGEU)
- International Longevity Centre UK (ILC-UK)
- The Strategic Advisory Group of Experts (SAGE) on Immunisation, WHO
- European Centre for Disease Prevention and Control (ECDC)
- European COPD Coalition (ECC)
- Confederation of Meningitis Organisations (COMO)
- Irish Nurses and Midwives Organisation (INMO)
- European Federation of Nurses Associations (EFN)

### 4.1 Findings

A number of issues, prompted by the interview schedule (Appendix A), surfaced throughout the interviews.

#### 4.1.1 Gender

As seen from the large concern around influenza pandemics/epidemics and vaccination in pregnancy, female biological issues were identified as a concern. However, in terms of more social gender issues there was less recognition of potential shortcomings. Only one stakeholder reported having a specific focus on gender issues. ILC-UK reported having done a number of studies on ageing and gender, and stated they were “certainly very aware of the issues and challenges facing the different genders”.

The majority of stakeholders did not see gender as an important variable to be considered as part of pandemics/epidemics and vaccination strategies; for example, the EFN had no gender focus on a supranational level, but rather this was something for each individual country to deal with. The ECDC approach was typical of most stakeholders: “influenza touches everybody in society and it touches such large portions of society every year that it is really a whole of society issue, including all the age groups and both of the genders”. While this is a very valid point, such an approach leaves out the unique challenges presented by gender as detailed in the literature review. The PGEU were aware of their shortcomings in terms of gender awareness: “I have not come across a specific gender or women [policy], not only in vaccinations or pandemics preparation, but in any sense at all, which is obviously a failing I would say and something we need to look at”. The INMO were also aware of a lack of gender focus – while they were conscious of gender issues as 94% of their members are women, they did not have any written policies and were hoping to address this in the near future. Nevertheless, a purely medical model seemed to be the dominant discourse among the stakeholders, as this quote from the ECDC shows: “[ECDC have] nothing specific for older women or girls as opposed to boys or within some specific risk groups, it’s a very gender-balanced disease, it does not have a specific focus in that respect”.



This lack of insight into the problems and barriers presented by gender clearly demonstrates the need for more awareness and more knowledge on gender-specific issues.

#### **4.1.2 Pregnancy**

The issue of influenza in pregnancy, highlighted in the literature review, was also a main finding in the interviews. Our data shows that pregnancy was a large issue for influenza pandemics/epidemics and vaccinations. For example, the ECDC spoke about the need to issue new recommendations on pregnancy and influenza vaccination, as much new evidence on pregnant women as a risk group was reported during the 2009 influenza pandemic. Also, SAGE-WHO had recently appointed a person specifically to focus on vaccines and pregnant women, and in 2012 they changed their highest priority for influenza vaccine recommendation from people over 65 to pregnant women, as they are "...tremendously high risk, in not only pandemic but epidemic years, for both severe morbidity and mortality as well as their baby". The INMO did not have an expressed policy in place for this group, however they recognise the unique role that midwives and public health nurses play for pregnant women and breastfeeding women, and the far reach their role could have in influencing the community. Pregnancy as a complicating risk factor was thus well understood by the interviewed stakeholders.

#### **4.1.3 Communication**

Communicating issues around pandemic/epidemics and vaccination was a major issue identified by all participants. Inconsistencies in communication were highlighted by ILC-UK: "if you look across Europe there are slightly different guidelines, and this inconsistency isn't helpful for women wanting to know that there is a science-base behind what they are being asked to do". ILC-UK also identified effective and understandable communication with the general public as a major gap in knowledge around pandemic/epidemics and vaccination.

COMO also addressed the issue, stating that policymakers need to have a public voice that is not fragmented, but rather consistent over a number of platforms, and warned that getting the message wrong can be highly counterproductive in terms of vaccination behaviour.

In addition, COMO stressed the need for the active involvement of healthcare professionals, and the importance of them receiving proper training. This was echoed by the ECDC, who pointed out that when larger professional audiences across Europe are being targeted, language can be a problem as they only communicate in English. The PGEU mentioned the lack of clinical cooperation, and that the systematic cooperation between pharmacists and physicians and primary healthcare in general is almost non-existent in Europe.

SAGE-WHO has a vaccine hesitancy group, aimed at addressing the problem of people who do not vaccinate. They recognised the need to diversify the message depending on what group they were trying to reach, whether it be persons who do not believe in vaccinations or groups who are worried about vaccination safety. A tool has therefore been developed to identify what the underlying problem for non-vaccination is, recognising that the problems are not the same in each community, and that if



certain groups, including hard to reach groups, are approached in the right way they are often willing to have vaccinations.

The INMO discussed the role that nurses can play in communicating effectively with the general public, mainly for public health nurses and community nurses but also for nurses in hospital, who through interacting with patients and their families could do much in spreading the awareness of vaccinations. However, there was no specific policy for this.

All involved participants continuously and repeatedly stressed the importance of effective communication, thereby making it the largest issue identified in our data.

#### ***4.1.4 Hard to reach groups***

The issue of hard to reach groups was generally tied up with communication as a theme. The PGEU explained that while pharmacies are the most accessible local healthcare resource, “we like to think that we pick up those patients who don’t otherwise interface with the health system at all, but we don’t actually fully exploit that opportunity”. SAGE-WHO were aware that hard-to-reach groups do not access health care in the same way as the general population do, identifying the problem as one of suspicion, to be solved by increased interaction and communication strategies. The INMO was the only stakeholder who had successful contact with hard to reach groups, through nurses dealing with for example the homeless, and community nurses accessing hard to reach groups in deprived areas.

Thus, the struggle to access hard to reach groups, where women tend to have even more needs, is recognised by some stakeholders and the solution suggested is one of tailored and increased communication.

#### ***4.1.5 Health care workers and caregivers***

COMO, while stating that they do not consider vaccination to be a gender issue, still exhibited gendered thinking in their information strategies. Some of their members had specifically targeted men, as women tend to be the carers and the person who takes children into the surgery where they are exposed to information about vaccines, whereas men do not get the same exposure. ILC-UK was aware of the gender profile of healthcare workers and social care workers, noting that the overwhelming majority were female but that vaccination was a problem despite government recommendation – they stated that better communication might be one way to address this, as well as more clarity over reimbursement.

The INMO were very aware of this issue, as only 18% of nurses are vaccinated against influenza, despite being a risk group. The reasons for this are quite poorly understood – a number of possible explanations were suggested, for example the difficulty of getting time to vaccinate when working shift work, and the knock-on effect of labour laws in Ireland that recently decreased sick leave days, making it less likely for nurses to vaccinate in case they get sick from side effects of the vaccine.



#### **4.1.6 Older women**

Despite being a larger demographic group than men due to their longevity, and despite the increase in co-morbidities that come with age, there was a clear lack of focus on older women and pandemics/epidemics and vaccination by the stakeholders. The ILC-UK stated that they do not focus specifically on older women as a group, but they look at issues across the life course that will affect older women. However, the SAGE-WHO reply to the question on older women was representative of most stakeholders: “a woman is at no higher risk at 65 than a man is”.

There existed a strong awareness that the over-65 age group was a high-risk group for influenza, however the near absence of identified strategies or targeted messages for older women make this an area where much more emphasis and is needed.



## CONCLUSIONS AND RECOMMENDATIONS

Evidence compiled in this report from both the literature and the stakeholder interviews clearly show that there is a need for a more gendered approach to influenza pandemics/epidemics and vaccination. A life-course approach to influenza is important for all groups, however the specific needs detailed for women in general, and for particular groups, are crucial for the efforts to work towards more cohesive and effective protection against influenza pandemics and epidemics, and the increased reach of vaccinations. Suitable communication, identifying subgroups and their specific needs, and clear and properly directed health promotion strategies are needed if women's position relating to these issues is to be successfully addressed. Based on this, we wish to suggest the following recommendations:

- Health literacy should be considered in the development of all vaccination promotion initiatives at all levels and settings. Plain language should be the foundation of all materials and the ability required to understand and process the information.
- Provide clear communication strategies at the EU, national and regional level on influenza pandemics/epidemics and vaccination. Clear, consistent and targeted communication is essential to successfully provide information. Special attention should be given to vulnerable and marginalised groups providing specific communication campaigns targeting hard to reach groups. Information campaigns could be more effective if the target groups are involved in the design and distribution of the information.
- Promote increased awareness among health professionals of specific problems faced by women of all ages in relation to vaccination and the importance of consideration of a life course approach.
- Update, clarify and standardise influenza vaccination advice materials for pregnant women.
- More emphasis on the needs of older women and men should be included in national vaccination strategies.
- More research is needed into the gendered effect of influenza and vaccination on healthcare workers and carers, both tend to be predominantly female.
- Further research is needed into barriers to accessing information on vaccination from a gender perspective. Promote more gendered research into influenza pandemics/epidemics and vaccination to ensure that policy makers are better informed leading to high quality vaccination strategies and programmes and efficient delivery by health care professionals involved in pandemic and epidemics.
- Research that targets women's attitudes to influenza and vaccinations is recommended. This could be most effectively done by adopting a variety of research methods, including psychosocial, ethnographic and phenomenological, to complement biomedical and public health research to fully understand women's experiences, beliefs and what they consider



barriers to vaccination.

- Make the inclusion of women in clinical trials explicit and the numbers included statistically relevant to allow for systematic analysis of sex difference. In addition to including women in clinical trials, stratified analyses should be carried out separately for men and women to take into account the fact that a treatment may not only have a different effect in men and women, but that secondary factors may influence efficacy, and side effects may also be different.
- Prioritise the standardisation of data collection methods in a sex/gender-disaggregated. It is crucial to collect data in a format that can easily be processed and interchanged between local, national and EU levels. Templates with common indicators, capturing patterns of behaviour and access to resources, which can be utilised by health care delivery organisations and can be channelled through regional and national statistics to the EU level.
- Special attention should be given to vulnerable and marginalised groups to ensure that discrimination is recorded, and measures taken to counter the effects of equity. The quality of life of carers, lone parents, migrants, refugees, and those who are coping with chronic disease are all subjects for future research.





## Appendix A - Interview Schedule

1. How would you describe your communication strategy and/or your information policy in relation to vaccination take-up, and influenza epidemics/pandemics, from a gender perspective?
2. Does your organisation have any awareness strategy in relation to gender differences in vaccination strategy, or have you ever had one?
3. What are your organisation's policies on pregnant and breastfeeding mothers in relation to vaccinations? What is your general advice to pregnant/breastfeeding mothers in terms of vaccinations during influenza epidemics and pandemics?
4. How would your organisation inform older women and their specific needs in relation to influenza vaccination uptake?
5. Health care workers tend to be predominantly female. What particular emphasis does your organisation have on the female health care work force in terms of influenza vaccinations?
6. How does your organisation interact with health care workers such as GPs to avail of their role as advisors to the wider community regarding vaccinations during influenza epidemics/pandemics?



7. How does your organisation interact with caregivers from a gender perspective, and how do you engage specifically with them and their vaccination uptake in an influenza epidemic/pandemic?
8. How does you reach marginalised group/vulnerable groups in society in relation to vaccination uptake and gender specifics?
9. To what extent are you approaching vaccinations through a life-course strategy?
10. What information and research gaps do you see in epidemics and pandemics in terms of gender issues?

## BIBLIOGRAPHY

Asgary, A. (2012) 'Assessing households' willingness to pay for an immediate pandemic influenza vaccination programme', *Scandinavian Journal of Public Health*, 40(5), 412-417.

Arksey, Hilary and Knight, Peter (1999) *Interviewing for Social Scientists An Introductory Resource with Examples*, London: Sage Publications.

Beetham, G. and Demetriades, J. (2007) 'Feminist research methodologies and development: overview and practical application' *Gender & Development*, 15(2), 199-216.

Bish, A., Yardley, L., Nicoll, A., and Michie, S. (2011) 'Factors associated with uptake of vaccination against pandemic influenza: A systematic review' *Vaccine*, 29(38), 6472-6484.

Bryman, Alan (2008) *Social Research Methods, 3rd ed.*, Oxford: Oxford University Press.

Böhmer, M.M., Walter, D., Falkenhorst, G., Müters, S., Krause, G., and Wichmann, O. (2012) 'Barriers to pandemic influenza vaccination and uptake of seasonal influenza vaccine in the post-pandemic season in Germany', *BMC Public Health*, 12(938), 1-9.

Cahill S, O'Shea, E., Pierce, M. (2012) *Creating Excellence in Dementia Care A Research Review for Ireland's National Dementia Strategy*, Dublin and Galway: DSIDC, St James's Hospital, Trinity College Dublin and ICSG, NUI Galway.



Central Statistics Office (2013) *Women and Men in Ireland 2013*, available: [www.cso.ie/en/releasesandpublications/ep/p-wamii/womenandmeninireland2013/healthlist/health/d.en.65559](http://www.cso.ie/en/releasesandpublications/ep/p-wamii/womenandmeninireland2013/healthlist/health/d.en.65559) [accessed 15 August 2014].

Damiani, G., Federico, B., Visca, M., Agostini, F., and Ricciardi, W. (2007) 'The impact of socioeconomic level on influenza vaccination among Italian adults and elderly: A cross-sectional study', *Preventive Medicine*, 45(5), 373-379.

Davidson, P.M., DiGiacomo, M., and McGrath, S.J. (2011) 'The feminization of aging: how will this impact on health outcomes and services?' *Health Care for Women International*, 32(12), 1031-1045.

Dawood F.S., Iuliano, A.D., Reed, C., Meltzer, M.I., Shay, D.K., Cheng, P., Bandaranayake, D., Breiman, R.F., Abdullah Brooks, W., Buchy, P., Feikin, D.R., Fowler, K.B., Gordon, A., Tran Hien, N., Horby, P., Huang, Q.S., Katz, M.A., Krishnan, A., Lal, R., Montgomery, J.M., Mølbak, K., Pebody, R., Presanis, A.M., Razuri, H., Steens, A., Tinoco, Y.O., Wallinga, J., Yu, H., Vong, S., Bresee, J., and Widdowson, M-A. (2012) 'Estimated global mortality associated with the first 12 months of 2009 pandemic influenza A H1N1 virus circulation: a modelling story' *The Lancet Infectious Diseases*, 12(9), 687-695.

Denscombe, M. (2007) *The Good Research Guide for small-scale social research projects, 3rd ed.*, Berkshire: Open University Press.

European Commission (2010) *Vademecum - The 10 Common Basic Principles on Roma Inclusion*, Brussels: European Commission.

Endrich, M.M., Blank, P.R., and Szucs, T.D. (2009) 'Influenza vaccination uptake and socioeconomic determinants in 11 European countries', *Vaccine*, 27(30), 4018-4024.

Esteban-Vasallo, M.D., Dominguez-Berjon, M.F., Aerny-Perreten N, et al. (2012) 'Pandemic influenza A (H1N1) 2009 in Madrid, Spain: incidence and characteristics in immigrant and native population', *European Journal of Public Health*, 22(6), 792-796.

European Centre for Disease Prevention and Control (2011) *Meeting Report – Communicable disease prevention among Roma*, Stockholm: ECDC.



European Centre for Disease Prevention and Control (2012a) *ECDC scientific advice on seasonal influenza vaccination of children and pregnant women*, Stockholm: ECDC.

European Centre for Disease Prevention and Control (2013) *Review of scientific literature on drivers and barriers of seasonal influenza vaccination coverage in the EU/EEA*, Stockholm: ECDC.

European Centre for Disease Prevention and Control (2012b) *Communication on immunization – building trust*, Stockholm: ECDC.

Flegal, K.M. (2006) 'Commentary: The epidemic of obesity – what's in a name?', *International Journal of Epidemiology*, 35(1), 72-74.

Godderis, R. and Rossiter, K. (2013) "If you have a soul, you will volunteer at once": gendered expectations of duty to care during pandemics', *Sociology of Health & Illness*, 35(2), 304-308.

International Longevity Centre UK (2011) *Life Course Immunisation Improving adult immunisation to support healthy ageing*, London: International Longevity Centre - UK.

Jamieson, D.J., Honein, M.A., Rasmussen, S.A., Williams, J.L., Swerdlow, D.L., Biggerstaff, M.S., Lindstrom, S., Louie, J.K., Christ, C.M., Bohm, S.R., Fonseca, V.P., Ritger, K.A., Kuhles, D.J., Eggers, P., Bruce, H., Davidson, H.A., Lutterloh, E., Harris, M.L., Burke, C., Cocoros, N., Finelli, L., MacFarlane, K.F., Shu, B., and Olsen, S.J. (2009) 'H1N1 2009 influenza virus infection during pregnancy in the USA', *Lancet*, 8(374), 451-458.

Jiménez-García, R., Hernández-Barrera, V., Lopez de Andres, A., Jimenez-Trujillo, I., Esteban-Hernández, J., and Carrasco-Garrido, P. (2010) 'Gender influence in influenza vaccine uptake in Spain: Time trends analysis (1995-2006)', *Vaccine*, 28(38), 6169-6175.

Keskinoglu, P., Ucuncu, T., Yildirim, I., Gurbuz, T., Ur, I., and Ergor, G. (2007) 'Gender discrimination in the elderly and its impact on the elderly health', *Archives of Gerontology and Geriatrics*, 45(3), 295-306.

Klein, S.L., Jedlicka, A., and Pekosz, A. (2010) 'The Xs and Y of immune responses to viral vaccines', *The Lancet Infectious Diseases*, 10(5), 338-349.

Klein, S.L., and Pekosz, A. (2014) 'Sex-based Biology and the Rational Design of Influenza Vaccination Strategies', *Journal of Infectious Diseases*, 209, 114-119.



Kumar, R. (2005) *Research Methodology A Step-by-Step Guide for Beginners, 2nd ed.*, London: Sage Publications.

Lewis, Jane and Ritchie, Jane (2003) 'Generalising from Qualitative Research' in Ritchie, J. and Lewis, J. eds., *Qualitative Research Practice A Guide for Social Science Students and Researchers*, London: Sage Publications, 263-286.

Logue, E., Dudley, P., Imhoff, T., Smucker, W., Stapin, J., DiSabato, J., and Schueller, C. (2011) 'An opt-out influenza vaccination policy improves immunization rates in primary care', *Journal of Health Care for the Poor and Underserved*, 22(1), 232-242.

Lorant, V., Boland, B., Humblet, P., and Deliège, D. (2002) 'Equity in prevention and health care', *Journal of Epidemiology and Community Health*, 56(7), 510-516.

Mamelund, S-E, Riise Bergsaker, M.A. (2011) 'Vaccine history, gender and influenza vaccination in a household context', *Vaccine*, 29(51), 9441-9450.

Miller, L. and Reynolds, J. (2009) 'Autism and vaccination – the current evidence', *Journal for Specialists in Paediatric Nursing*, 14(3), 166-172.

Nagata, J.M., Hernández-Ramos, I., Sivasankara Kurup, A., Albrecht, D., Vivas-Torrealba, C., and Franco-Paredes, C. (2011) 'Social determinants of health and seasonal influenza vaccination in adults >65 years: a systematic review of qualitative and quantitative data', *BMC Public Health*, 13(388), 1-25.

Fundación Secretariado Gitano Health Area (2009) *Health and the Roma Community Analysis of the Situation in Europe Bulgaria, Czech Republic, Greece, Portugal, Romania, Slovakia, Spain*, Madrid: Fundación Secretariado Gitano Health Area.

Pilson, K. (2011) 'Cultural competence: an overview of the health needs of the Irish Traveller community', *Royal College of Surgeons in Ireland Student Medical Journal*, 4(1), 74-77.

Ritchie, Jane (2003) 'The Applications of Qualitative Methods to Social Research' in Ritchie, J. and Lewis, J. eds., *Qualitative Research Practice A Guide for Social Science Students and Researchers*, London: Sage Publications, 24-46.



Ritchie, J., Spencer, L., and O'Connor, W. (2003) 'Carrying Out Qualitative Analysis', in Ritchie, J. and Lewis, J. eds., *Qualitative Research Practice A Guide for Social Science Students and Researchers*, London: Sage Publications, 219-262.

Ryan, J., Zoellner, Y., Gradl, B., Palache, B., and Medema, J. (2006) 'Establishing the health and economic impact of influenza vaccination within the European Union 25 countries', *Vaccine*, 24(47-48), 6812-6822.

Seale, H., Heywood, A.E., McLaws, M-L., Ward, K.F., Lowbridge, C.P., Van, D., and Raina MacIntyre, C. (2010) 'Why do I need it? I am not at risk! Public perceptions towards the pandemic (H1N1) 2009 vaccine', *BMC Infectious Diseases*, 10(99), 1-9.

Sirvastava, A. and Thomson, S.B. (2009) 'Framework Analysis: A Qualitative Methodology for Applied Policy Research', *Journal of Administration and Governance*, 4(2), 72-79.

Snape, Dawn and Spencer, Liz (2003) 'The Foundations of Qualitative Research', in Ritchie, J. and Lewis, J., eds., *Qualitative Research Practice A Guide for Social Science Students and Researchers*, London: Sage Publications, 1-23.

Tell Me (Transparent communication in Epidemics: Learning Lessons from experience, delivering effective Messages, providing Evidence) (2012a) *D1.1 Systematic Review Report*, Brussels: European Commission.

Tell Me (Transparent communication in Epidemics: Learning Lessons from experience, delivering effective Messages, providing Evidence) (2012b) *D1.7 Population behaviour in Epidemics Summary Report*, Brussels: European Commission.

University College Dublin, School of Public Health (2010) *All Ireland Traveller Health Study Our Geels Summary of Findings*, Dublin: UCD, DCU, HSE, DoH, DoH NI.

Walt, G., Shiffman, J., Schneider, H., Murray, S.F., Brugha, R. and Gilson, L. (2008) "Doing" health policy analysis: methodological and conceptual reflections and challenges', *Health Policy and Planning*, 23(5), 308-317.

World Health Organisation (2010b) *Gender, women and primary health care renewal A discussion paper*, Geneva: World Health Organisation.





co-funded by the EU. GA: 612236



share and move to face nasty bugs

World Health Organisation (2010c) *European Immunisation Week Seven Key Reasons Why Immunisation must remain a priority in the WHO European region*, Geneva: WHO Regional Office Europe.

World Health Organisation (2014) *European Vaccine Action Plan 2015-2020*, Copenhagen: World Health Organisation.

World Health Organisation (2014) WHO recommendations for routine immunization - summary tables, available: [http://www.who.int/immunization/policy/immunization\\_tables/en/](http://www.who.int/immunization/policy/immunization_tables/en/) [accessed 04 December 2014]

World Health Organisation (2010a) *Sex, gender and influenza*, Geneva: World Health Organisation.

World Health Organisation (2012) *Vaccines against influenza WHO Position Paper*, Geneva: World Health Organisation.

World Health Organisation, Swiss Centre for International Health, Swiss Tropical and Public Health Institute (2010) *Gender and Immunisation Summary Report for SAGE*, Geneva and Basel: World Health Organisation.

Zhang, J., While, A.E. and Norman I.J. (2011) 'Nurses' knowledge and risk perception towards seasonal influenza and vaccination and their vaccination behaviours: A cross-sectional survey', *International Journal of Nursing Studies*, 48(10), 1281-1289.