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How close are countries of the WHO European Region to achieving the goal of vaccinating 75% of key risk groups against influenza? Results from national surveys on seasonal influenza vaccination programmes, 2008/2009 to 2014/2015

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ABSTRACT

Background: Influenza vaccination is recommended especially for persons at risk of complications. In 2003, the World Health Assembly urged Member States (MS) to increase vaccination coverage to 75% among older persons by 2010.

Objective: To assess progress towards the 2010 vaccination goal and describe seasonal influenza vaccination recommendations in the World Health Organization (WHO) European Region.

Methods: Data on seasonal influenza vaccine recommendations, dose distribution, and target group coverage were obtained from two sources: European Union and European Economic Area MS data were extracted from influenza vaccination surveys covering seven seasons (2008/2009–2014/2015) published by the Vaccine European New Integrated Collaboration Effort and European Centre for Disease Prevention and Control. For the remaining WHO European MS, a separate survey on policies and uptake for all seasons (2008/2009–2014/2015) was distributed to national immunization programmes in 2015.

Results: Data was available from 49 of 53 MS. All but two had a national influenza vaccination policy. High-income countries distributed considerably higher number of vaccines per capita (median; 139.2 per 1000 population) compared to lower-middle-income countries (median; 6.1 per 1000 population). Most countries recommended vaccination for older persons, individuals with chronic disease, healthcare workers, and pregnant women. Children were included in < 50% of national policies. Only one country reached 75% coverage in older persons (2014/2015), while a number of countries reported declining vaccination uptake. Coverage of target groups was overall low, but with large variations between countries. Vaccination coverage was not monitored for several groups.

Conclusions: Despite policy recommendations, influenza vaccination uptake remains suboptimal. Low levels of vaccination is not only a missed opportunity for preventing influenza in vulnerable groups, but could negatively affect pandemic preparedness. Improved understanding of barriers to influenza vaccination is needed to increase uptake and reverse negative trends. Furthermore, implementation of vaccination coverage monitoring is critical for assessing performance and impact of the programmes.

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1. Background

Seasonal influenza is an acute viral infection that occurs worldwide causing an estimated 3–5 million severe cases and up to 500

000 deaths every year [1]. Annual influenza epidemics in the northern hemisphere have been associated with increases in all-cause mortality [2,3], significant economic costs due to lost work-force productivity and increased demand on outpatient and inpatient health care services [4–8].

Influenza infection usually has a mild course, but can lead to severe disease and complications including acute myocardial infarction and cardiovascular death, primary viral and secondary bacterial pneumonia, renal failure, and neurological complications

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[9–11]. Particularly older people, pregnant women, infants, and persons with certain underlying comorbidities, including chronic cardiovascular and lung diseases, immunosuppression, and diabetes have a higher risk of hospitalization and severe disease, and are consequently priority groups for influenza vaccination [12]. Health care workers are also recommended to receive annual influenza vaccination due to a higher risk of infection and potential role in transmission of influenza to vulnerable patient groups [13–15].

Influenza vaccination remains the most effective means to prevent infection, severe disease and mortality, why increasing seasonal influenza vaccine coverage has long been on the global health agenda. In 2003, the World Health Assembly (resolution WHA 56.19) urged member states to increase influenza vaccination coverage of all people at high risk and to attain a coverage of $\geq 75\%$ among older people and persons with chronic illnesses by 2010 [16]. This motion was reaffirmed by a European Parliament declaration in 2005, calling on European Union (EU) and European Economic Area (EEA) member states to increase influenza vaccination in accordance with the WHO's 2010 goal, and extended in a 2009 European Council recommendation to reach 75% vaccination coverage in older age groups by 2015 [17]. Furthermore, the Global Action Plan (GAP) for influenza vaccines was launched by WHO in 2006 with the overarching goal to increase global influenza vaccine production and develop capacity to effectively deliver and administer vaccines in the event of a pandemic through an increased use of seasonal influenza vaccines, in particular in low- and middle income countries [18]. Since the adoption of GAP, global production capacity for seasonal vaccines has increased substantially; from 500 million to 1.5 billion doses in 2015, while the potential for producing pandemic influenza vaccines has increased from 1.5 to 6.4 billion doses in the same time period [19]. Although the GAP project formally ended in 2016, WHO's work to increase access to influenza vaccines in low resource countries is continuing under the Pandemic Influenza Preparedness (PIP) Framework that was endorsed in 2011 [20].

In the WHO European Region, which consists of 53 member states (Fig. 1), data on seasonal influenza vaccine use, recommendations and coverage is limited outside of the EU/EEA member states, where surveys have been conducted regularly beginning from the 2007/2008 influenza season [21]. In order to describe seasonal influenza immunization policies and to assess progress towards improved access to and use of seasonal influenza vaccines in the entire WHO European Region, we implemented a survey among countries outside of the EU/EEA and conducted an analysis of the combined data for the European Region covering the period 2008/2009 to 2014/2015.

2. Methods

Information on seasonal influenza vaccine recommendations, number of doses distributed and estimates of vaccination coverage by target group was obtained through two different mechanisms. First, data from 29 countries of the EU/EEA was extracted from survey reports published by the Vaccine European New Integrated Collaboration Effort (VENICE) consortium and the European Centre for Disease Prevention and Control (ECDC) [22–24]. The annual EU/EEA surveys were conducted using the same methodology. For each survey, a standard questionnaire was developed, piloted and placed on a secure website platform and national experts in each country were requested to complete the on-line questionnaire. The surveys included detailed questions on population groups recommended for influenza vaccination; mechanisms in place to monitor influenza vaccine uptake, including methodology; vaccination coverage by population groups; number of vaccine doses

distributed; payment and administration costs for influenza vaccines; health care settings where vaccination is typically provided; communication strategies to promote influenza vaccines; and information on planned policy or operational changes with regard to the national influenza immunization programme. Vaccination coverage was reported by the member states as proportions (data on numerator and denominator were not collected). Throughout the period surveyed, most countries used administrative methods (e.g. patient records or immunization registries) while some countries implemented population surveys (e.g. household, mail, or telephone) to obtain coverage data for certain target groups. A detailed description of the VENICE methodology has been published in the individual survey reports [22–24].

Second, in September 2015, the WHO Regional Office for Europe implemented a survey in the remaining 21 WHO European Region member states outside of the EU/EEA, including Croatia, which joined the EU in 2013, covering seven influenza seasons (2008/2009 to 2014/2015). Data were not requested from Andorra, Monaco, and San Marino. The survey (available in English and Russian) was distributed by email to the focal points for the national immunization programme under the Ministries of Health and included questions on: Quantity of seasonal influenza vaccine doses distributed; existence of national recommendations for vaccination of older people, children, pregnant women (including specification of whether this recommendation applied to certain trimesters and/or of presence underlying chronic illness), persons with chronic illness, residents of long-term care facilities (LTCF), health care workers, and non-health care occupational groups; and estimates of vaccination coverage by target group (including data on number of persons vaccinated and number of persons in target group). Information on which specific chronic medical conditions were included in the national recommendations was not requested in this survey.

Data from the different surveys (EU/EEA and non-EU/EEA) were combined into one dataset using Excel 2007 (Microsoft Corporation; Redmond, WA, USA) as of May 2017 for all member states of the WHO European Region for seven influenza seasons (2008/2009 to 2014/2015). Data for EU/EEA countries were based on data published at that time. Since data on influenza vaccine recommendations were not collected for the EU/EEA countries in the 2008/2009 season,¹ we used information from the 2007/2008 season [25] as a proxy for vaccination policies in 2008/2009 for these countries.

In addition, we obtained information on country total mid-year population and income category (low, lower-middle, upper-middle and high) based on GNI per capita in US\$ for the same period from the United Nations, Population Division (2015) [26] and the World Bank [27], respectively. This information was added to the dataset in order to calculate dose per capita in relation to country economic status.

Descriptive data analysis was performed using Tableau 9.2 (WA, USA) and STATA version 10.0 (StataCorp; College Station, TX, USA).

3. Results

Of the 50 countries surveyed, 49 provided data for at least one influenza season. Survey responses were provided for all seven years by 45 member states, although data on all variables were not always provided. Responses were not received for the following countries and years: Austria (2011/2012 and 2012/2013), Bosnia and Herzegovina (2008/2009–2014/2015),

¹ The 2008/2009 seasonal influenza vaccine survey was replaced by a survey on A (H1N1)pdm09 vaccine deployment. Information on vaccination coverage only for the 2008/2009 season was collected as part of the 2009/2010 seasonal influenza vaccine survey.

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