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Adult Vaccination: A Public Health Priority

29-30 August 2017, London, United Kingdom

Contents

Introduction	2
Vaccination, ageing and non-communicable diseases	3
How do co-morbidities affect older people at risk of developing vaccine-preventable diseases?	4
Barriers to increasing adult vaccination uptake rates	5
Inequalities in access to healthcare	5
Awareness of and misconceptions about vaccination.....	6
A successful vaccine program for older people	7
.....	7
Low uptake rates for vaccination in disease-specific groups.....	7
Older people and vaccines – the new narrative	8
Role of health care professionals.....	8
Lack of consistent monitoring of vaccination uptake rates	8
Examples of good practice in adult vaccination	9
Key messages	10
Next Steps	11
Conclusion.....	13
Acknowledgements.....	13
Appendix A : UK Routine Immunisation Schedule Autumn 2017	15

Adult Vaccination: A Public Health Priority

Expert Meeting Report

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Introduction

Ageing increases the risk and severity of infectious diseases, especially when chronic diseases are present.¹ As such, a comprehensive approach to improving the uptake rates of adult vaccination is essential to an inclusive public health infrastructure that supports healthy ageing, and enables older people to do what they value. This approach is especially important when considering rapid population ageing globally, and the significant and increasing impact of vaccine-preventable diseases (VPDs).

The World Health Organization World Report on Ageing and Health (2015) states that by 2030, older people are expected to account for more than 25 per cent of the population in Europe², a demographic shift largely explained by decreasing fertility rates and increasing life expectancy in the region.³ As far-reaching impacts of population ageing continue to emerge as political, social and economic priorities, the fundamental approach to adult vaccination must change from being reactive, to a pro-active intervention that contributes to the maintenance of health and functional ability at all ages.

Prioritization of adult vaccination in public health requires strengthening of connections among those who have a stake in the outcomes – namely the consumer and their families, public health agencies, health care professionals (HCPs), at-risk patient groups, civil society, academia, scientists and the government.

The Adult Vaccination: A Public Health Priority meeting stimulated prompt discussion among twenty-nine experts in these fields, many of whom are working with or for at-risk older people and their families. The objectives were to gain an improved understanding of the:

- Imperatives of improving rates of adult vaccination in the context of a rapidly ageing global population;
- Unique challenges experienced by older people with complex chronic comorbidities, especially in the face of increased risk from VPDs;
- Role of public health agencies in increasing uptake rates of adult vaccination among vulnerable groups;
- Examples of good practice on vaccine availability, funding and coverage rates;
- Intersections between vaccination, ageing and non-communicable diseases (NCDs), and improving adult vaccination rates;
- Emerging patterns and trends in the story around the poor uptake rates of adult vaccination in Europe and;
- Realistic steps going forward to continue the dialogue toward changing the adult vaccination landscape.

¹ Mcelhaney, J.E., et al. "The role of vaccination in successful independent ageing." *European Geriatric Medicine*, vol. 7, no. 2, 2016, pp. 171–175., doi:10.1016/j.eurger.2016.01.007.

² United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Ageing 2015 - Highlights* (ST/ESA/SER.A/368).

³ "Europe's Shrinking, Aging Population." *Stratfor Worldview*, 13 June 2012, worldview.stratfor.com/article/europes-shrinking-aging-population. Accessed 6 Sept. 2017.

A central theme to the meeting was the transformative conversation on how the intrinsic capacity and functional ability⁴ of the ageing population in Europe can be bolstered by strengthening the relationship between the fields of vaccinations, ageing, public health, and NCDs to create a unified front advocating for a cohesive strategy to increase adult vaccination uptake rates, which remain below target levels despite documented proof of the burden of VPDs.⁵

Acknowledged are the pervasive barriers to improving uptake rates including: inequalities in vaccine access; misperceptions about the need to be vaccinated; variation in what is defined as a successful vaccine program for older people; low awareness of the existence of vaccines; and a lack of cohesive messaging about the importance of adult vaccination.

On the other hand, opportunities do exist to create a strong coalition of experts making the case for adult vaccination, one such opportunity being the specific narrative around at-risk older people with chronic comorbid conditions.

Vaccination, ageing and non-communicable diseases

The double threat of infectious diseases and NCDs continues to have an impact globally.⁶ Despite the significant impact of NCDs on older people, preventive health policies and strategies rarely invest adequate resources in this sub-population and the links between the rising prevalence and population ageing are rarely acknowledged.⁷ According to Professor Tom Wilkinson, little attention is paid to how NCDs increase the risk of developing co-occurring medical conditions as one ages, or the complexities of delivering public health programs that address this risk (Ramsay, 2017).

Regarding a life course approach to healthy ageing⁸, Professor Diana Kuh drew attention to the political and scientific priority of increasing the number of healthy and active older people in order to relieve the costs associated with an ageing population, and to enhance individual and societal well-being. Embracing a life course approach means examining factors across life that can affect health as one ages including developing NCDs, and the prevention of VPDs.

The rate of NCDs has seen a steady increase globally in the last decade.⁶ The major NCDs – cardiovascular diseases, cancer, chronic obstructive pulmonary disease (COPD), and diabetes – have significant consequences within the WHO European region, accounting for nearly 86% of deaths and 77% of the disease burden in the region.⁹ When combined with the fact that death from influenza is considerably more common in older people and those with co-occurring conditions (such as heart disease and chronic lung disease),¹⁰ and that in Western Europe the highest mortality rates for pneumonia are in older people aged 80 years and over,¹¹ understanding the connections between NCDs,

⁴ World Health Organization. *World report on ageing and health*. World Health Organization, 2015.

⁵ Ozisik, Lale, et al. "Perceptions and Attitudes of Patients About Adult Vaccination and Their Vaccination Status: Still a Long Way to Go?" *Medical Science Monitor*, vol. 23, 29 June 2017, pp. 3178–3184., doi:10.12659/msm.901856.

⁶ "Rise of Non-Communicable Diseases." Futures Centre, 17 Oct. 2016, www.thefuturescentre.org/trend-cards/152/rise-non-communicable-diseases. Accessed 6 Sept. 2017.

⁷ *Ageing and noncommunicable diseases: Opportunities for the EU to respond*, HelpAge International, Brussels, BE, 2016.

⁸ Kuh D & Ben-Shlomo Y (editors) (2004) *A Life Course Approach to Chronic Disease Epidemiology*. Oxford, UK: Oxford University Press

⁹ Farrington, Jill L., and Sylvie Stachenko. "Country capacity for noncommunicable disease prevention and control in the WHO European Region." *Preliminary report [Electronic resource]*. Copenhagen: WHO Regional Office for Europe (2010).

¹⁰ "Disease facts about seasonal influenza." *European Centre for Disease Prevention and Control*, 15 June 2017, ecdc.europa.eu/en/seasonal-influenza/facts. Accessed 6 Sept. 2017.

¹¹ Tong, Nga. *Background Paper 6.22 Pneumonia*. World Health Organization, 2013

VPDs, and population ageing becomes imperative toward finding a solution that will positively impact the largest number of people.

Dr Julio Ramirez indicated that the link between mortality and a person who has suffered from a VPD (e.g. pneumonia) is often only made in the immediate aftermath of diagnosis and treatment of the VPD. For those who may suffer complications from pneumonia, but whose health decline/death is not immediate, the enduring effects brought on by pneumonia and/or other comorbid conditions are not being adequately recognized or addressed. Therefore, it would seem reasonable that the links between VPDs, NCDs and preventable death of older people need to be more widely recognized by HCPs in their deliberations.

How do co-morbidities affect older people at risk of developing vaccine-preventable diseases?

In addition to immunosenescence, defined as the natural decline of immune function as one ages (Gavazzi, 2017), additional comorbidities can affect an older person's ability to cope with VPDs. It was noted by Prof. Kuh (2017) that according to the MRC National Survey of Health and Development, 22% of those assessed at 68 years of age have three or more doctor diagnosed health conditions, which can contribute to increased vulnerability to VPDs.

Dr Ramirez, on the intersections of infection, ageing, and mortality, called attention to the incidence of pneumonia in those with comorbid conditions (obesity, diabetes, congestive heart failure (CHF), COPD, and stroke). He described through several recent studies (Aliberti et al., 2008; Ramirez et al., 2008; Peyrani and Ramirez, 2013) the acute impact of VPDs on those individuals with NCDs. The combination of increasing age and presence of comorbidities increases the likelihood of contracting pneumonia which in turn leads to a decline in functional ability and an increase in frailty over time. Building the case for adult vaccination requires a significant understanding of the ramifications of VPDs over time which are intrinsically linked to communicable disease trajectories.

The correlation between NCDs and VPDs was also highlighted by Mr Simon O'Neill (Diabetes UK), who described how the impact of diabetes on the immune system makes it harder to fight off infectious diseases. This impact was also acknowledged by Dr Stefania Maggi, who discussed using the overarching barometer of frailty (Morley et al., 2013) – which can occur as the result of a range of diseases or medical conditions – to measure vulnerability to VPDs. Conceptualizations of frailty encompass a broad range of biological, psychological and social factors that can contribute to susceptibility to VPDs, factors that are often not considered, but which need to be incorporated into a broader definition of healthy ageing.

Dr Maggi specified that the main objective of geriatric medicine is to reduce preventable death, morbidity, disability, and improve quality of life, which may also mean embracing a more holistic approach to healthy ageing that takes into account the variability in experiences of ageing. However, Dr. Maggi underlined the need for a life-long approach to healthy aging, based on the three main pillars of health promotion and disease prevention (nutrition, physical activity and vaccination) that constitute the pro-active approach to the prevention of frailty at older ages.¹²

Patterns of health disparities also exist across socioeconomic status and in turn contribute to the disproportionate prevalence of NCDs for different social groups¹³. A variety of external factors contribute to the development of NCDs which affect people of all ages and across the life course. These

¹² Chhetri, Jagdish K. "Immunisation of older adults: where are the frail?" *The Lancet Public Health* 2.10 (2017): e449.

¹³ Kako, Reeve, et al. *MonWHO 2016 Noncommunicable Diseases*. MonWHO, Montreal, QC, 2016.

include lifestyle risk factors such as tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol, all behaviours that increase the risk of NCDs.¹⁴ In fact, the compounding behavioural and environmental factors add to the risk of developing complications from VPDs. Mr O’Neill (2017) indicated that those with Type 2 diabetes, for example, are more likely to be obese which can lead to poorer outcomes from influenza.

Dr Wilkinson highlighted the increased susceptibility of those with respiratory diseases, including COPD, to VPDs, by drawing attention to a survey of 15,000 people with COPD in the United Kingdom, where identified factors that positively influence vaccine uptake included: increasing age, perceived poor health, being an ex-smoker¹⁵, and having been seen by a general practitioner.

Barriers to increasing adult vaccination uptake rates

Inequalities in access to healthcare

Overall health disparities exist both between and within countries in Europe for a variety of reasons including the widening socioeconomic gaps across generations¹⁶ but it may well be that ageism and age discrimination also contribute to inequalities in access to healthcare.

A dialogue about ageism revealed the need for a more thorough examination of whether age-related discrimination impacts the vaccination approval process which incorporates the social and economic value, age cohort and timing of vaccines.

Infectious diseases in older populations, according to Dr Gavazzi, reveal the heterogeneity in older peoples’ lived experiences. Immune responses can vary among older people because those of the same chronological age are not necessarily of the same biological age.¹ However, Dr Mark Jit on the economics of infectious diseases revealed that stringent quality of life measures continue to be used to evaluate vaccine costs and economic burden versus health burden, which do not necessarily accurately capture this diversity of experience.

If promotion of healthy ageing was to start earlier in life, as Prof. Kuh remarked, and continue across the whole of life, recognition of different life circumstances could happen earlier, and incorporate preventive methods in response to vulnerability to NCDs and VPDs.

A 2017 World Health Organization (WHO) fact sheet on NCDs reports that people of lower socioeconomic status are more vulnerable and die sooner from NCDs because they are exposed to more risk factors and have limited access to healthcare services.¹⁴ It was evident through studies described that low socioeconomic status is a predictor of worse health outcomes, particularly regarding the development of comorbidities such as respiratory disease, and the access to preventative and primary healthcare services.

Professor Gualtiero Ricciardi from the Italian Institute of Public Health remarked that although the Italian government has the role of overseeing the development of healthcare in Italy, the different regions are responsible for organizing and delivering primary, secondary, tertiary, and

¹⁴ “Noncommunicable diseases.” *Media centre*, World Health Organization, www.who.int/mediacentre/factsheets/fs355/en/. Accessed 6 Sept. 2017.

¹⁵ Hsu, Douglas, et al. “Identification of Barriers to Influenza Vaccination in Patients with Chronic Obstructive Pulmonary Disease: Analysis of the 2012 Behavioral Risk Factors Surveillance Survey.” *Chronic Obstructive Pulmonary Diseases: Journal of the COPD Foundation*, vol. 3, no. 3, 2016, pp. 620–627., doi:10.15326/jcopdf.3.3.2015.0156.

¹⁶ Action Plan. “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Solidarity in health: Reducing health inequalities in the EU.” *European Commission* (2009).

preventative/health promotion services. These jurisdictional differences in nature and varied quality of services significantly impacts individuals.

Likewise, Dr Ramirez acknowledged that in the city of Louisville, Kentucky, socioeconomic status (i.e. living in a low-income neighbourhood) has been proven to contribute to increased individual risk of developing pneumonia.

Addressing low socioeconomic status as a barrier to healthcare access, and as a risk factor for developing NCDs and VPDs, is important in forming a holistic strategy for increasing adult vaccination uptake rates in Europe that takes into account the heterogeneity of populations.

Awareness of and misconceptions about vaccination

Populations most vulnerable to VPDs, including older people and people with NCDs, need to be part of a special target group for public health messages and actions about vaccines. From the perspective of Greece, Dr Kostas Athanasakis said that the organized state could improve its performance in notifying people about vaccination eligibility and availability. There is great variability in adult vaccine schedules for older people, which creates inherent obstacles for HCPs in being able to communicate the most up to date thinking to those who are most vulnerable. Evidence also suggests that older people have a relatively poor awareness of adult vaccines or the seriousness of VPDs such as pneumococcal pneumonia.¹⁷ While vaccinations may be free to a certain age cohort, this information is only useful insofar as it is disseminated effectively, and the population takes action.

Mr O'Neill and Dr Heidi Larson reported that some sub populations who refused vaccinations did so because they felt they were not at risk or that even if they were at risk, the illness that resulted from a VPD would not be severe.¹⁸ Others refused vaccinations because they were afraid of adverse side effects and/or did not believe that the vaccine was safe. These beliefs are pervasive and call for more effective evidence-based strategies underpinning public health campaigns. Further work is urgently required to understand the nature of the message that prompts an adult to seek advice from their health practitioners, and / or to take action. HCPs have a responsibility to discuss both the benefits and risks of vaccination with their patients, and more importantly, the multiple risks of choosing to forego a vaccination, especially for people with comorbidities. In order to do this, HCPs also require ongoing education and the integration of novel approaches with the aim of informing HCPs on vaccination and related topics.¹⁹ HCPs also need to ensure that they receive vaccination to limit the spread of disease and ensure that they are available to care for others during epidemics²⁰.

The occurrence of these misconceptions about safety also speaks to the strength and prevalence of anti-vaccination sentiments that can manifest in vaccine hesitancy (Larson, 2017). Clear and candid conversations are necessary to combat ongoing fears about vaccine safety, risks associated with vaccination and VPDs as a mechanism to mitigate the persistent anti-vaccination lobbies.

¹⁷ Ipsos MORI. "PneuVue Adult Pneumonia Vaccine Understanding in Europe: A New View into Pneumonia among Older Adults." 2016. Document.

¹⁸ Karafillakis & Larson (2015). Analysis of public concerns and perceptions related to benefits and risks of vaccines. ADVANCE D1.4 Report

¹⁹ Torre, Giuseppe La, et al. "Knowledge, Attitude and Behaviours towards Recommended Vaccinations among Healthcare Workers." *Healthcare*, vol. 5, no. 1, 7 Mar. 2017, pp. 13–30., doi:10.3390/healthcare5010013.

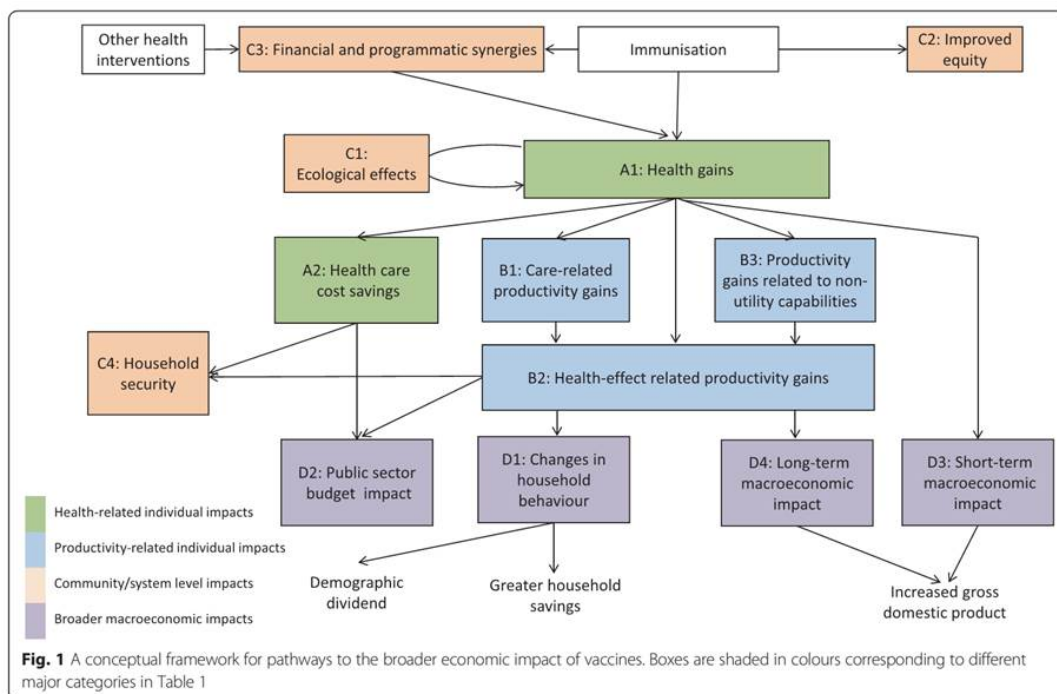
²⁰ "Protect yourself against flu this winter." *Working with doctors Working for patients*, General Medical Council, 6 Oct. 2016, www.gmc-uk.org/publications/29808.asp.

A successful vaccine program for older people

Actions to foster healthy ageing built around the concepts of intrinsic capacity and functional ability should include the promotion of adult vaccinations. Underpinned by the capability approach (Sen, 1999) the WHO life course approach is at the core of parameters (Dr Mark Jit, 2017) that measure values essential to a well-rounded view of healthy ageing. Despite innovations in such metrics, policy makers are more likely to use narrow parameters like Quality-adjusted life years (QALYs) or Disability-adjusted life years (DALYs) to assess health and well-being in older people, including the effectiveness of vaccinations like influenza, pneumonia, and herpes zoster (shingles) which differentially affect the at-risk and older population.

Further work is also needed to understand the incidence of viral infection in older people and disease-specific groups such as COPD to make the health economic case to policy makers for vaccination against respiratory viruses such as rhino synthial virus (RSV) (Donaldson, 2017). For example, some viruses can be present at low copy levels in the lungs that may not trigger signs of acute infection (sub-clinical infection) but still contribute to increased airway inflammation and faster decline in lung function.²¹ These examples demonstrate that there is, in fact, significant value in adult vaccination that is not considered in established economic valuations of vaccines (Jit, 2017).

Fig 1. A conceptual framework or pathways to the broader economic impact of vaccines. (Jit et al., 2015)²²



Low uptake rates for vaccination in disease-specific groups

A lack of vaccine uptake in disease-specific groups such as diabetes is significant. Despite research proving that people with diabetes who have been vaccinated experience lower rates of hospital

²¹ Wilkinson TM, Donaldson GC, Johnston SL, Openshaw PJ, Wedzicha JA. Wilkinson, T M, et al. "Respiratory syncytial virus, airway inflammation and FEV1 decline in patients with COPD." *American Journal of Respiratory and Critical Care Medicine*, vol. 173, no. 8, 15 Apr. 2006, pp. 871–876., doi:10.1164/rccm.200509-1489OC.

²² Jit, Mark, et al. "The broader economic impact of vaccination: reviewing and appraising the strength of evidence." *BMC medicine* 13.1 (2015): 209.

admissions, health complications or even death, only 65.5% of eligible people with diabetes in the UK under 65 years of age have accessed the flu vaccine, and even fewer (56.3%) have ever been vaccinated against pneumonia (O’Neill, 2017).

Mr O’Neill reported that these numbers are the highest among people with enduring conditions in the United Kingdom. While the reasons for poor uptake rates of vaccination among at-risk groups are complex, it is clear that there is a lack of knowledge of the greater risk associated with VPDs for people with NCDs such as diabetes, resulting from a lack of outreach to disease-specific groups regarding vaccination.

Older people and vaccines – the new narrative

As the demographic landscape changes with increased life expectancy and lower fertility rates, positioning adult vaccination as a critical element in a broader public health strategy is an important distinction. Many myths and misperceptions exist around the contribution and capacity of people as they age, and both are often underestimated. There is a need to create a new narrative around growing older which speaks not to the burden but to the social and economic contributions that people make across their life.

While there is a general trend to increased life expectancy in good health there is also a misperception that vaccines such as that for herpes zoster, influenza and pneumonia are not necessary. As chronological age does not fully represent the intrinsic nature of the human condition, taking into consideration comorbid conditions and socio-economic status, chronological age could be viewed as a flawed benchmark on which to determine vaccine schedules. “People do not want to think about disease when they are well” reported Mr Howard Catton (International Council of Nurses), and many will use their health status as a reason not to be vaccinated.

In order to reach this growing audience, the public health narrative needs to move away from catastrophizing growing older, to one of maintaining and promoting functional ability.

Role of health care professionals

Health care professionals are trusted resources of health-related information to patients and act as important guides and gateways through the decision-making process. Therefore, it is imperative that vaccination across the life course is integrated into the curriculum of medical and HCP training, and into standard practice in healthcare environments.

Frontline professionals, such as doctors, nurses and pharmacists, have the opportunity to be a cornerstone of vaccination health promotion and to coordinate with other HCPs to ensure patients are receiving vaccination information – but, as Dr Maggi asserted, frontline contacts need to be strengthened, and priority needs to be given to frontline education on vaccination and vaccine-preventable diseases.¹⁹

Dr Larson demonstrated through her research that HCPs have the potential to “keep the conversation about vaccines going” in cases where people are hesitant. They can also empower and assist older people to make decisions that are beneficial to their health through the building of a trusting relationship. This is especially true in cases where distrust may be already high with older people who are marginalized within the healthcare system. In order to facilitate this, continuous re-education of HCPs on up-to-date vaccination information and practices is crucial.

Lack of consistent monitoring of vaccination uptake rates

In Europe, vaccine surveillance (the capabilities and systems) varies from country to country. Absent or inadequate surveillance results in insufficient data to provide the necessary evidence for vaccination as

a cost-effective strategy. Inadequate surveillance is however, not only a European problem, but a problem that persists the world over.

The non-existence or lack of clarity in national vaccine action plans, and an absence of systematic monitoring, including the absence of vaccination cards for adults in their respective countries are 'red flags' for any country that has committed to fostering a healthy ageing society. The lack of surveillance prevents sound policy decisions because the necessary data cannot be gathered on vaccine uptake, effectiveness and safety or other dimensions including healthcare costs and savings.

Examples of good practice in adult vaccination

The Italian government has recently committed to improve vaccination uptake rates across the life course after a dramatic decrease in vaccine confidence rates prompted an outbreak of measles in 2017. Since the outbreak and in the face of declining vaccination rates, Italy has introduced compulsory vaccinations in children for measles and nine other diseases,²³ and is working on improving their adult vaccination schedule as well.

The government has also undertaken the implementation of a new national vaccination plan aimed at improving health and reducing the burden of infectious diseases, through reducing inequalities and coordinating efforts between regional health systems to increase vaccination uptake. This new plan focuses on promoting vaccination among older people and at-risk groups through free vaccines, including pneumococcal and herpes zoster. This new vaccine calendar demonstrates action that governments and public health agencies can take to promote health through vaccination across the life course.

Dr Athanasakis also described improvements in Greece's national vaccine program. In spite of significant economic challenges experienced in the region in 2011 and 2015²⁴ there was an increase in the number of vaccines provided to people with comorbidities, and the expansion of a vaccine plan for adults to include herpes zoster and pneumococcal vaccines.

The availability of vaccines is not causative to an improvement in uptake rates, public buy-in is necessary. According to Dr Athanasakis, public health messaging around the importance of herd immunity, and the act of vaccination as 'giving back' to the community, helped foster enduring positive vaccine sentiment in Greece, specifically among adults who wanted to protect their families.

For Italy and Greece, good practices were implemented under circumstances of increased austerity and vaccine skepticism, and helped to positively influence the vaccine landscape. Understanding the strategy and actions which led to shaping and influencing the adult vaccine policy space is critical to scaling up and replication of aspects of campaign models. Public health agencies continue in both countries to find ways to integrate new vaccines and employ more cost-effective strategies.

Knowledge platforms such as conferences, summits, seminars, webinars and town hall meetings are critical in bringing together experts to discuss good practices like the aforementioned that have been effective in increasing the vaccination uptake rate among vulnerable populations. These platforms are also important vehicles through which information can be used to help influence and shape vaccine-related policy.

²³ Editorial Board. "Which vaccines are mandatory in Italy?" *Vaccines Today*, 7 Aug. 2017, www.vaccinestoday.eu/stories/vaccines-mandatory-italy/. Accessed 11 Sept. 2017.

²⁴ Finnegan, Gary. "Greece: Adult vaccination in an age of austerity." *Vaccines Today*, 12 Dec. 2016, www.vaccinestoday.eu/stories/greece-adult-vaccination-in-an-age-of-austerity/. Accessed 12 Sept. 2017.

Key messages

Improving uptake rates of adult vaccination is highly complex from a scientific, social and economic perspective. There is no doubt that adult vaccination should be an important element of a comprehensive public health strategy spanning the life course, yet there remain unanswered questions as to how to build the necessary case, and then how to catalyse older people into action.

Unifying messages emphasize the need to forge ahead in creating an action plan that will enable continuing dialogue around vaccination in older people and at-risk groups.

Adult vaccination is central to a life course approach to healthy ageing. The success of vaccinations in preventing global health crises is well-documented; however, vaccinations continue to be seen widely as a necessity for children only.²⁵ A life course approach to vaccination implies that the freedom to remain as a healthy, functioning member of society is in part facilitated through vaccination.²⁶

The WHO through its various agencies has implied the importance of vaccination for people of all ages, including older people and those at most risk of VPD. Within the Global Vaccine Action Plan 2011–2020 (WHO 2013) the WHO mandates to ‘improve health by extending by 2020 and beyond the full benefits of immunization to all people, regardless of where they are born, who they are, or where they live’.

The WHO’s Global Strategy and Action Plan on Ageing and Health (WHO 2016) has designed interventions including vaccination to prevent disease but also to influence trajectories of individuals’ intrinsic capacity. A key area for action on healthy ageing is to ‘ensure access and affordability of medical products, vaccines, and technologies’ as part of integrated care for people in their second half of life.

Furthermore, goal 3 of the United Nations Sustainable Development Goals (United Nations 2015) is to ‘ensure healthy lives and promote well-being **for all at all ages**’, and includes a target of ‘access to safe, effective, quality and affordable essential medicines and vaccines **for all**’.²⁷

Universally it appears to be acknowledged that older people and those in at-risk groups will benefit and have the right to access vaccines against such preventable diseases.

Greater attention for older people and at-risk groups around vaccines. The positioning of vaccination as reactive only after an older at-risk person is ill does a disservice to older people seeking to maintain their health, and contributes to a culture wherein healthy older people are less often informed of vaccinations, or feel that vaccination is only necessary after they are in poor health, at which point it is too late.

Encouraging the maintenance and improvement of health and functional ability of older people requires a coordinated effort from frontline HCPs, especially physicians, who have a powerful impact on the general public and patients who are unsure if they should have a particular vaccine. Yet, HCPs are in a position to make a value judgement ahead of time and sometimes fail to inform patients about available vaccines. Changing this pattern would mean a shift away from ageist beliefs that devalue the contributions of older people and toward a unified goal involving public health promotion and prevention aimed at older at-risk people that starts before their immune systems begin to decline.²⁶

²⁵ Gusmano, Michael K., and Jean-Pierre Michel. “Life course vaccination and healthy aging.” *Ageing Clinical and Experimental Research*, vol. 21, no. 3, 20 Apr. 2009, pp. 258–263. doi:10.1007/bf03324907.

²⁶ “About us.” Promoting health through the life-Course, World Health Organization, 2017, www.who.int/life-course/about/en/. Accessed 11 Sept. 2017.

²⁷ “Progress of Goal 3 in 2017.” *Sustainable Development Knowledge Platform*, United Nations, 2017, sustainabledevelopment.un.org/sdg3. Accessed 26 Sept 2017.

Engagement with at-risk populations to develop guidelines that underpin the need to increase adult vaccination uptake rates is a critical step to improved awareness and actions.

Ageism and age discrimination may well impact the uptake rates of adult vaccination. Vaccination rates for adults remain relatively low compared with rates for children – in fact, currently more adults die from VPDs every year than children.¹⁵ Systematic rigour in healthcare systems does not exist to boost adult vaccination uptake rates, and even less attention is paid to vaccination in at-risk groups, where factors such as socioeconomic status can compound risks, despite the ability of vaccines to reduce complications related to NCDs.

Beyond acknowledging these discrepancies, a unified push for action is necessary from an alliance of HCPs, government, representative patient organisations and non-governmental organizations (NGOs) asserting publicly their belief in the functional capacity of older people, and the power of vaccines to protect and reinforce the health of those at-risk.

It is appropriate and timely in the context of the UN Resolution 65/182 on 21 December 2010 for member states to consider the existing international framework of the human rights of older persons and identify possible gaps and how best to address them, including by considering, as appropriate, the feasibility of further instruments and measures so that age-based discrimination in healthcare be challenged with a call for attention to incongruities in public health messaging that omit or misrepresent the risk of VPDs for older at-risk people.

The narrative about older adults and vaccines. In older at-risk populations, vaccines can do more than stop infections; they can also prevent or lessen the impact of severe consequences that may arise from these infections.¹⁵ Despite these and many other benefits, there is evidence showing that many adults either are unaware of what vaccines are available to them, or do know but remain non-compliant.²⁸ Public health strategies including incentivizing HCPs and free vaccines have fallen short of improving adult vaccination uptake rates significantly.

Part of the problem is that embedded attitudes about vaccines and healthy ageing persist despite reports of the risks of VPDs,¹⁴ not only among the general public, but also among HCPs.²⁹ Vaccination needs to become a central part of public health philosophy in order to shift people's thinking – meaning communication from those working in government, and the fields of ageing, vaccination, and NCDs needs to include all forms of media and social media in a movement as coordinated as anti-vaccination campaign efforts have been.

Through facilitating the connection of experts and expertise, information and knowledge can be exchanged, synthesised and mobilised for dissemination.

Next Steps

The expert discussions and deliberations on older populations, at-risk groups, and adult vaccinations provided an essential platform from which four overarching themes of action have been formed. The detailed plan of action is expected to be commenced in 2018 with the guidance of a soon-to-be-established ad hoc expert committee.

1. *Vaccination is an essential component of the life course approach to healthy ageing*

²⁸ Span, Paula. "Older Adults Are Still Skipping Vaccinations." *The New York Times*, 2 Dec. 2016, www.nytimes.com/2016/12/02/health/shingles-vaccine.html?mcubz=0. Accessed 11 Sept. 2017.

²⁹ Yaqub, Ohid, et al. "Attitudes to vaccination: A critical review." *Social Science & Medicine*, vol. 112, July 2014, pp. 1–11., doi:10.1016/j.socscimed.2014.04.018.

Clear guidelines and targeted messages on the importance of adult vaccination across the life course must become an integral component of national public health strategy. As of yet this is usually not the case, and therefore requires a deeper understanding of the 'why not' as well as how to change the discourse.

2. *Special attention to at-risk population groups in the adult vaccine conversation.*

Notwithstanding the generally poor uptake rates of adult vaccination, there is an even more concerning fact that those patient groups representing at-risk sub populations (e.g. those with asthma, lung disease, diabetes and cardiovascular disease) do not readily recognise the dire consequences of VPD in their portfolio of education.

Patient groups that join a call to action to include adult vaccinations as part of their key messages to members recognise the increased mortality and long term ramifications of VPDs and implement a broader focus on health promotion and prevention.

3. *Challenging ageism and age discrimination*

Challenged with inadequate science regarding immunological age, there is a tendency for vaccines schedules for older adults to use the traditional (yet outdated) chronological age of around 60-65 years as a benchmark. Beyond the debate about commencing or stopping certain adult vaccines, the question of whether older people are discriminated against on the basis of age in terms of access to certain vaccines has not been well explored.

It is critical as the WHO launches its Global Campaign to Combat Ageism³⁰ that attention is given to starting the dialogue around the social and economic contributions older adults make across the life course, and the degree to which not vaccinating older people is based on the out-of-date ideology of burden of care.

4. *Multisectoral and multidisciplinary engagement through knowledge exchange and mobilisation*

Knowledge has greater value when shared and implemented, and changing health behaviour is complex. It requires an interactive, multi-stakeholder strategic approach to inform, educate, influence and shape policies and practice. A knowledge exchange and mobilisation strategy is critical in order to respond to the many questions and gaps related to why, even with education and information, older adults (and HCPs) are choosing not to be vaccinated.

Through fostering a culture of collaboration, and supporting co-production of research and knowledge it is envisaged that capacity and capability can be built across sectors and disciplines. This process and the outcomes of collaborations will then connect and feed into policy and practice-relevant research reported to decision makers.

Tools, pipelines and other communication vehicles include but are not limited to general and speciality meetings and conferences, reports, consensus statements and calls to action, e-newsletters, expert members centre spotlights, social media, podcasts, webinars and videos all of which will be stored within the portal of IFA's World Coalition on Adult Vaccination³¹ and the ILC-UK's European Adult Immunisation Hub.³²

³⁰ World Health Assembly resolution 69.3, *The Global strategy and action plan on ageing and health 2016–2020: towards a world in which everyone can live a long and healthy life*, A69/VR/8 (28 May 2016).

³¹ NGOs and academia, clinicians, public health and scientific experts and associations collaborating on a common agenda around a life course approach to vaccination with special attention to later life.

³² <http://www.adultimmunisation.eu/>

Conclusion

The Adult Vaccination: A Public Health Priority expert meeting concluded with an agreement to collaborate on a consensus paper outlining both the need for inclusion of at-risk groups in adult vaccination policy and practice, and actions that can be undertaken by stakeholders to ensure this.

Four broad actions for a framework for action were discussed, including: (1) Gain a deeper understanding of public health strategy as it relates to vaccination (2) Create a call to action that encourages patient groups to put vaccination on their agendas (3) Shift the discourse around older people as contributing members of society (4) Engage stakeholders through knowledge exchange and mobilisation.

Delegates also agreed that there is a continuing need for research and collection of information on vaccination, such as vaccination policies and their evaluation, country level coverage rates, availability of vaccines, prominence of NCDs, relationship of NCDs to vaccination uptake rates, and inclusion of at-risk populations in current country vaccination strategies.

This information will continue to be sought through additional international and country-level meetings on adult vaccination, along with online knowledge exchange platforms, reports on good practice, and the creation of an adult vaccination portal, which aims to be a point of connection of experts and expertise and resource hub for vaccination and ageing experts and those interested in learning about the life course approach to vaccination.

A life course approach to vaccination will not only improve the health and well-being of older populations, especially those most at risk, but will also help to change the perception of older people by acknowledging that ageing does not mean an acceptance of poor health, but a possibility to be proactive when it comes to the prevention of illness and the protection of health and functional ability at all ages.

Acknowledgements

The IFA and ILC-UK acknowledge and thank all delegates for their time and valuable contributions to the Adult Vaccination: A Public Health Priority meeting. All delegates generously took time to share their expertise, ask challenging questions, and propel forward the agenda of increasing adult vaccination uptake rates among older people and at-risk groups.

This meeting welcomed preeminent experts from various fields, including public health experts Dr Kostas Athanasakis, Dr Mary Ramsay, and Professor Gualtiero Ricciardi, who contributed to rich conversations around the role of public health in the promotion of vaccines in at-risk groups and the prevention of VPDs, and who kindly shared their respective successes in implementing and evaluating vaccination programs. Also, to Dr Gerhard Falkenhorst, who graciously explained his work in understanding the benefits and drawbacks of various influenza and pneumococcal vaccines, and discussed how this knowledge plays out in practice in Germany.

Dr Julio Ramirez travelled a long distance in order to share his extensive expertise on infectious diseases. His contributions were insightful, well-received and greatly appreciated. Together with Dr Ramirez, Professor Diana Kuh presented extensive background on the life course approach to healthy ageing; Professor Gaëtan Gavazzi situated vaccination within the purview of healthy ageing. All brilliantly set a positive and inquisitive tone for the rest of the meeting.

Mr Howard Catton and Dr Stefania Maggi helped establish the roles of their respective professions within the vaccination landscape, with Mr Catton providing great insight into how the nursing profession can be better equipped to act as allies on the forefront of vaccination efforts. As a geriatrician, Dr Maggi

highlighted the importance of understanding frailty as a predictor of complications from VPDs, and urged people to understand the lasting impacts of frailty on older people.

Thanks to Mr Simon O’Neill and Dr Tom Wilkinson, who understood the importance of representing disease-specific groups at Adult Vaccination: A Public Health Priority, and who gave delegates a clear depiction of the unique, and often compounded impacts of comorbidities in older people, especially in the face of VPDs.

Special thanks to Professor Peter Passmore, Dr Stefania Maggi, Ms Shirley Cramer, and Dr Jane Barratt for their skilled moderating and to Mr Dominique Jordan, Ms Elaine Rashbrook, Dr Gavin Donaldson, Dr Janet Scammell, and Dr Hannah Christensen for your attention, insight, and expertise throughout the meeting.

The IFA and ILC-UK once again thank all delegates for their continued dedication and contribution to efforts to improve adult vaccination uptake rates among at-risk groups.

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Appendix A

UK Routine Immunisation Schedule (Autumn 2017)³³

The routine immunisation schedule		from Autumn 2017		
Age due	Diseases protected against	Vaccine given and trade name		Usual site
Eight weeks old	Diphtheria, tetanus, pertussis (whooping cough), polio, <i>Haemophilus influenzae</i> type b (Hib) and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa	Thigh
	Pneumococcal (13 serotypes)	Pneumococcal conjugate vaccine (PCV)	Prevenar 13	Thigh
	Meningococcal group B (MenB)	MenB	Bexsero	Left thigh
	Rotavirus gastroenteritis	Rotavirus	Rotarix	By mouth
Twelve weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa	Thigh
	Rotavirus	Rotavirus	Rotarix	By mouth
Sixteen weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa	Thigh
	Pneumococcal (13 serotypes)	PCV	Prevenar 13	Thigh
	MenB	MenB	Bexsero	Left thigh
One year old (on or after the child's first birthday)	Hib and MenC	Hib/MenC	Menitorix	Upper arm/thigh
	Pneumococcal	PCV	Prevenar 13	Upper arm/thigh
	Measles, mumps and rubella (German measles)	MMR	MMR VaxPRO ² or Priorix	Upper arm/thigh
	MenB	MenB booster	Bexsero	Left thigh
Two to eight years old ¹ (including children in reception class and school years 1-4)	Influenza (each year from September)	Live attenuated influenza vaccine LAIV ³	Fluenz Tetra ²	Both nostrils
Three years four months old or soon after	Diphtheria, tetanus, pertussis and polio	DTaP/IPV	Infanrix IPV or Repevax	Upper arm
	Measles, mumps and rubella	MMR (check first dose given)	MMR VaxPRO ² or Priorix	Upper arm
Girls aged 12 to 13 years	Cervical cancer caused by human papillomavirus (HPV) types 16 and 18 (and genital warts caused by types 6 and 11)	HPV (two doses 6-24 months apart)	Gardasil	Upper arm
Fourteen years old (school year 9)	Tetanus, diphtheria and polio	Td/IPV (check MMR status)	Revaxis	Upper arm
	Meningococcal groups A, C, W and Y disease	MenACWY	Nimenrix or Menveo	Upper arm
65 years old	Pneumococcal (23 serotypes)	Pneumococcal Polysaccharide Vaccine (PPV)	Pneumococcal Polysaccharide Vaccine	Upper arm
65 years of age and older	Influenza (each year from September)	Inactivated influenza vaccine	Multiple	Upper arm
70 years old	Shingles	Shingles	Zostavax ²	Upper arm

1. Age on 31 August 2017.
2. Contains porcine gelatine.

3. If LAIV (live attenuated influenza vaccine) is contraindicated and child is in a clinical risk group, use inactivated flu vaccine.

³³ The complete routine immunisation schedule." GOV.UK, Public Health England, 28 July 2017, www.gov.uk/government/publications/the-complete-routine-immunisation-schedule.

UK Routine Immunisation Schedule (Autumn 2017)³³

Selective immunisation programmes

Target group	Age and schedule	Disease	Vaccines required
Babies born to hepatitis B infected mothers	At birth, four weeks and 12 months old ^{1,2}	Hepatitis B	Hepatitis B (Engerix B/HBvaxPRO)
Infants in areas of the country with TB incidence $\geq 40/100,000$	At birth	Tuberculosis	BCG
Infants with a parent or grandparent born in a high incidence country ³	At birth	Tuberculosis	BCG
Pregnant women	During flu season At any stage of pregnancy	Influenza	Inactivated flu vaccine
Pregnant women	From 16 weeks gestation	Pertussis	dTaP/IPV (Boostrix-IPV or Repevax)

1. Take blood for HBsAg at 12 months to exclude infection.

2. In addition hexavalent vaccine (Infanrix hexa) is given at 8, 12 and 16 weeks.

3. Where the annual incidence of TB is $\geq 40/100,000$ – see www.gov.uk/government/publications/tuberculosis-tb-by-country-rates-per-100000-people

Additional vaccines for individuals with underlying medical conditions

Medical condition	Diseases protected against	Vaccines required ¹
Asplenia or splenic dysfunction (including due to sickle cell and coeliac disease)	Meningococcal groups A, B, C, W and Y Pneumococcal Haemophilus influenzae type b (Hib) Influenza	Hib/MenC MenACWY MenB PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine
Cochlear implants	Pneumococcal	PCV13 (up to two years of age) PPV (from two years of age)
Chronic respiratory and heart conditions (such as severe asthma, chronic pulmonary disease, and heart failure)	Pneumococcal Influenza	PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine
Chronic neurological conditions (such as Parkinson's or motor neurone disease, or learning disability)	Pneumococcal Influenza	PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine
Diabetes	Pneumococcal Influenza	PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine
Chronic kidney disease (CKD) (including haemodialysis)	Pneumococcal (stage 4 and 5 CKD) Influenza (stage 3, 4 and 5 CKD) Hepatitis B (stage 4 and 5 CKD)	PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine Hepatitis B
Chronic liver conditions	Pneumococcal Influenza Hepatitis A Hepatitis B	PCV13 (up to two years of age) PPV (from two years of age) Annual flu vaccine Hepatitis A Hepatitis B
Haemophilia	Hepatitis A Hepatitis B	Hepatitis A Hepatitis B
Immunosuppression due to disease or treatment ²	Pneumococcal Influenza	PCV13 (up to two years of age) ² PPV (from two years of age) Annual flu vaccine
Complement disorders (including those receiving complement inhibitor therapy)	Meningococcal groups A, B, C, W and Y Pneumococcal Haemophilus influenzae type b (Hib) Influenza	Hib/MenC MenACWY MenB PCV13 (to any age) PPV (from two years of age) Annual flu vaccine