



OPINION ARTICLE FOR ADVANTAGE JA WEB

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VACCINES IN FRAIL PEOPLE

Introduction

The Commission issued in April 2018 a set of recommendations for how the EU can strengthen cooperation in the fight against diseases that can be prevented by vaccines.

The Commission's recommendations on vaccine-preventable diseases build on a number of existing EU policies and projects in area of vaccination. These include the 2009 Council Recommendation on seasonal influenza vaccination, the Joint Procurement Agreement, established by the serious cross-border health threats Decision (1082/2013/EU), and a Joint Action on vaccination co-funded by the Health Programme 2014-2020, which will start in the months to come, addressing vaccine hesitancy amongst other topics [1].

In the referred documents no specific mention is made about vaccination for frail and pre-frail people. This situation stimulated the authors to review specific literature to identify in the current state of the art how to proceed with frail people in the area of vaccines.

Methodology

We conducted a search for vaccines in older and frail people using as source for information peer-reviewed articles in Medline via PubMed. We also reviewed the Commission documents available online.

Results

Age-related changes of the immune system contribute to increased incidence and severity of infections in the older people. Vaccination is the most effective measure to prevent infections and vaccination recommendations in most countries include specific guidelines for the older people. Most currently used vaccines are less immunogenic and effective in older people compared to younger adults. Potential strategies to improve their immunogenicity include higher antigen dose, alternative routes of administration, and the use of adjuvants, which were all implemented for influenza vaccines, and induce moderately higher antibody concentrations [2].

When focusing on frail population only the following vaccines have been investigated for frail people: influenza; pneumococcal.

- A) There is not conclusive result about the effectiveness of influenza vaccine in frail people. A number of studies have not found significant changes in vaccine effectiveness estimations [3]. Other studies have indicated that effectiveness of standard influenza vaccines decreases but it was associated with increased rates of influenza [4]. Furthermore, a recent clinical trial which analyses the effectiveness of vaccine in



different subgroups of patients (which includes frailty) have shown greater efficacy in high-dose inactivated influenza vaccine over the standard-dose vaccine. However, their results revealed no significant evidence of vaccine efficacy modification by increasing age, high-risk comorbidities, or frailty [5]. A systematic review show Influenza vaccination in frail adults could reduce clinical appearance of pneumonia and of death due to pneumonia or influenza [6, 7].

- B) There is evidence that the effectiveness of the pneumococcal vaccine decreases in frail people [8, 9]. In a clinical trial in older people, pneumococcal had a significantly lower number of episodes of infections with vaccine-type pneumococcal pneumonia and invasive pneumococcal disease, with persistent vaccine efficacy throughout the mean follow-up around four years. Adverse events and mortality were similar in the vaccinated and the control groups [10].

On one hand, when we compare vaccines effectiveness in older people, we realise that they are less effective than in younger people. This effect is bigger in frail people, for whom the vaccine effectiveness is lower than for robust people, even though they still can trigger the immune system. This circumstance is believed to be related to a number of factors: changes associated with heightened inflammatory state; decreased proliferation of the peripheral blood mononuclear cells; upregulated monocyte expression of specific stress-responsive inflammatory pathway genes in frail [11]. In addition, frailty may be a cause of deficient immunity [12].

On the other hand, respiratory infections are one of the most common cause of associated disease that frail and older people can suffer and thus the timely use of preventable vaccines is more than adequate despite the reduce inefficacy in these target groups [13].

Recommendations for vaccination in frail and pre-frail people

- For the above mentioned reasons, experts recommend vaccination for the frail people in the same way and circumstances that they are recommend for older people.
- The first step towards optimal protection of the older people is the comprehensive use of existing vaccines. Vaccination recommendations for adults and the older differ from country to country. Taking regional differences such as e.g. epidemiological parameters into account is of course necessary for optimal vaccine recommendations, but the diversity of recommendations e.g. throughout Europe can be confusing and might be interpreted as uncertainty. Therefore, increased efforts of harmonization would be desirable. [1]
- In this regard the role of the Commission calling for stronger EU cooperation against preventable diseases is welcome, although we would appreciate that the frailty group of the population would have been mentioned in their rationale and recommendations for action.
- Further studies are needed to make more specific recommendations (doses, combining of live and killed vaccine formulations, use of antivirals) and development of more immunogenic vaccines for frail and older people [13].
- Frail and pre-frail patients should be referred regularly to their Primary Health Care Centre to update regularly their vaccination calendar.

1. Vaccination overview. https://ec.europa.eu/health/vaccination/overview_en (visited 1 July 2018)



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