

Adult immunization schedule. The general practitioner's perspective and new tools for a better practice

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Key words

Adult immunization • General practice • Population health management

Summary

Vaccine-preventable disease significantly contributes to the morbidity and mortality of adults worldwide. The rates of vaccination against influenza, pneumococcal disease and tetanus in adults and in high-risk group of people are far from the optimal coverage as suggested by Minister of Health. General Practitioners (GPs) can contribute to increase immunization in adults and

in elderly people because these age groups attend frequently the surgery of their family doctors for reasons related to their chronic diseases. The GPs, on their side, can proactively involve patients through informatics tools that supply lists of specific patients and electronic alerts in patient records.

Introduction

Every time we discuss about immunization program in adult and in elderly people, we should consider two important changes that happened in our current society: the increasing ageing of population and a different old age compared with the past. It has been estimated that since 2005 to 2030 world population over 65 will double (from 500 million to 1 billion) [1]. In 2030 elderly people will be 40% of all population and in Italy in the next 10 years elderly people will be the double compared with 0-14 population.

A different paradigm

Elderly people showed some social and demographic characteristics in the past decades:

- in the end of working life few years remained to live;
- the end of working life coincided with exclusion of every role in social or recreational activities;
- in the most of cases after-work activities were domestic (particularly for women);
- younger generations took care of elderly, usually inside the same home.

Today we are witness to a new paradigm:

- usually a 65 years old person doesn't feel old;
- usually life expectancy at the time of retirement is long;
- most of retired people are included in social and recreational activities;
- elderly people claim quality of life;
- over 80 people are increasing in number and usually they live with comorbidity and they represent a high cost for each health service.

Epidemiological scenery

Every year, influenza is responsible of 40,000 deaths in Europe, most of them in elderly people and with chronic diseases [2].

Pneumococcal infections and B hepatitis cause about 45,000 deaths in USA [3]. The economic burden to manage these preventable diseases with adult immunization, other than year-of-life lost, is more than 10 billion dollars every year [4]. In spite of availability of effective and safe vaccines for these diseases, they are underused. Which are the reasons to immunize adult people with vaccines? At least one of these issues is a good reason to immunize them:

1. because they didn't have immunization in childhood;
2. because at present time new vaccines are available;
3. because human immune system gets old and acquired immunity can decline;
4. because elderly people and people with chronic diseases have more susceptibility to diseases preventable with vaccines (influenza, pneumococcal pneumonia).

The lists of immunizations for adults and high risks subjects are reported in Tables I and II.

Immunizations in adults and elderly people

Tetanus, diphtheria and pertussis (TdP) immunization is strongly recommended because in Italy the most of cases of tetanus are in adults who didn't receive any other dose after childhood. About pertussis in Italy, as in other countries, the immunization is very spread in childhood population, but the immunity related to vaccine declined in the next 6 years and so young adults, adults and elderly become susceptible to disease another time [5]. We

recommend that every time patients request tetanus immunization or when we suggest tetanus immunization, we can propose the booster with TdP immunization. Influenza vaccine has been available since 1940s in an injectable, inactivated form. The high degree of antigenic shift and drift in circulating influenza strains leads to the periodic introduction of strains with high susceptibility in the population, resulting in pandemic spread of disease as in 2009. Influenza vaccine is effective and safe to prevent influenza and complications and to decrease related mortality in high-risk group (patients with chronic diseases, older people and those in contact with high-risk persons). Furthermore, it is important to consider that 2014-2015 season quadrivalent influenza vaccine was available to cover incidental mismatching in co-circulating virus B-strains. All GPs should remember they can combine influenza with pneumococcal vaccine. *Streptococcus pneumoniae* is a widespread airway transmittable bacterium causing severe diseases as pneumonia and meningitis. Pneumococcal infections can be the complications of other respiratory infections as influenza and they usually occur in wintertime. Everyone can take a pneumococcal disease but over 65 and patients with chronic diseases have higher mortality rate. Overall pneumococcal infections offer the growing rate of

antibiotic resistance: immunization is one of the main weapon of prevention against these diseases. One-third of people that had a previous infection with varicella zoster virus, will develop a clinical herpes zoster. The herpes zoster vaccine is recommended in adults over 60 years and older, regardless of their history of herpes zoster [6].

Health professional policy commentary

In current competences all General Practitioners (GPs) must integrate in their daily practice the immunization policies of the National Health Service. Regional and Local Health Services organize the mandatory immunization acting in accordance with the National Immunization Plan [7]. These immunizations are mainly addressed to infants. GPs' duty is to orient, counsel and give recommendations on vaccines characterizing and selecting population groups at high-risk. We can suggest immunization in adults according to age-group (young adult, adult or old people) (Tab I) or according to risk-group (patients with chronic disease, immunocompromised conditions, pregnancy) (Tab. III) or for employment categories (health care professionals and social care professionals) or for lifestyle (international travelers, history of drug abuse or sexual transmit-

Tab. I. Vaccination schedule for adults broken down age group.

IMMUNIZATION SCHEDULE	AGE GROUPS		
	19-49 years	50-64 years	> 65 years
Tetanus, diphtheria, pertussis	Booster every ten years		
Measles, rubeola, mumps	One or two doses	One dose	
Chickenpox	Two doses		
Influenza			One dose every year
Polyvalent Pneumococcus			One dose
Hepatitis A	Two doses		
Hepatitis B	Three doses		

■ Recommended when there are other risk factors (chronic disease, occupational, behavior).

Tab. II. Adult Immunizations for high-risk groups and categories.

Vaccine	Pregnancy	Immuno-deficiency, Cancer, steroid therapy	Diabetes, Cardiac Diseases, Pulmonary Diseases, Hepatic Diseases	Asplenic Patients	Chronic Renal Disease	Hiv Infections	Health Care Professional
Tetanus, diphtheria	One dose every ten years						
Measles, rubeola, mumps			One or two doses				
Chickenpox			Two doses				
Influenza	One dose every year						
Pneumococcus (polyvalent)		One or two doses					
Hepatitis A	Two doses						
Hepatitis B	Three doses				Three doses		
Meningococcus	One dose			One dose	One dose		

■ Recommended when there are other risk factors (chronic disease, occupational, behavior).

■ Contra-indicated.

ted diseases). It's possible, in this way, to have agenda about age groups or about risk categories. The mission of our College works in the following directions:

1. education to vaccines and immunization policy;
2. immunizations belong to GPs' daily practice and their scientific knowledge;
3. to offer tools of education and information;
4. to invite pharmaceutical industries make information service to primary care doctors;
5. to provide GPs innovating tools to value own practice, understand the weakness and criticism and supply solving to improve immunizations in adults and in elderly people.

A governance tool for immunizations

MilleGPG (Mille General Practice Governance) is an informatic tool able to have an active interaction with the most spread electronic patient data record (Millewin®) in Italy. This application has been developed in collaboration with Italian College of General Practitioners (SIMG). MilleGPG provides GPs with a series of "dashboards" by which they can check several performance indicators. More than 200 performance indicators (epidemiological, ongoing and outcome) are embedded MilleGPG encompassing three main domains (clinical audit, appropriateness and risk management [8]). All indicators have been conceived according to international clinical guidelines during several meetings involving GPs and specialists. These indicators allow the verification of the GP's activities. When GP wants to analyze the cohorts of patients with chronic disease (for example patients with chronic obstructive pulmonary disease or with diabetes or with heart failure) in the domain "Risk Management & Prevention", it's possible to have the list of patients under 65 years old that should receive influenza vaccine. This list can be clean from patients that already have received the vaccine. The other can be recall or in a proactive way (every time patient comes in office for a prescription, the nurse or the doctor receive an alert on the patient record) or call the patient by mail or e-mail. This model can be replicated for other immunizations and in this way each GP (or group) can act a real governance of immunizations.

Conclusions

Currently, every medical performance can be measured and improved. GP should adopt a systematic approach to immunization programs that includes educating patients and office staff using reliable sources of information, standing protocols during patient encounters and all practice management resources. Recall and reminder systems have resulted in increases of up to 20 percent in rate of vaccination [9]. Synergic policies of education, information and professional tools can improve the competences and behaviours for benefit to patients and society.

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■ Received on December 23, 2014. Accepted on January 25, 2015.

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