

CONSENSUS

Consensus document for the prevention of respiratory infections in adults



KEYWORDS

Prevention;
Respiratory
infections;
Pneumonia;
Flu vaccination;
Pneumococcal
vaccination

PALAVRAS-CHAVE

Prevenção;
Infeções
respiratórias;
Pneumonia;
Vacina da gripe;
Vacina pneumocócica

Abstract Infectious diseases are one of the principle causes of morbidity, mortality and drain on health resources worldwide. In recent years there has been an increase in the impact of respiratory infections, particularly in the Portuguese population. It is for this reason that the Portuguese Respiratory Society has presented a series of recommendations for the prevention of respiratory infections in adults. These recommendations include both general measures and vaccinations for flu and pneumococcal pneumonia.

© 2013 Sociedade Portuguesa de Pneumologia. Published by Elsevier España, S.L. All rights reserved.

Documento de Consenso para a prevenção das infeções respiratórias no adulto

Resumo As infeções respiratórias são uma das principais causas de morbilidade, mortalidade e consumo de recursos de saúde a nível global. Nos últimos anos tem-se assistido a um crescente impacto das infeções respiratórias, nomeadamente na população portuguesa. Assim, a Sociedade Portuguesa de Pneumologia apresenta um conjunto de recomendações para a prevenção das infeções respiratórias no adulto. Estas recomendações englobam medidas gerais e de vacinação antigripal e antipneumocócica.

© 2013 Sociedade Portuguesa de Pneumologia. Publicado por Elsevier España, S.L. Todos os direitos reservados.

Respiratory infections are among the principal causes of morbidity, mortality and of demands on health resources at a global level.¹ Apart from the direct and indirect costs, what is of major concern is the associated high consumption of antimicrobial drugs and the consequent increased growth in resistance to this class of medicines, which could affect the use of some types of antibiotics in the near future.

In continental Portugal, recently published data relating to the period of 2000–2009 document the significant impact of respiratory infections and, in particular, of pneumonias. In this period hospital admissions for Community Acquired

Pneumonia (CAP) represent 3.7% of the total number of adult hospital admission for all causes in National Health Service institutions.² In the age groups ≥ 50 and ≥ 65 , hospitalization for CAP represents 5.5% and 7.0% of total admissions respectively.²

Given this national situation, there is a general consensus about the necessity for a rapid implementation of measures to prevent respiratory infections in adults.

These preventive measures against respiratory infection cover general measures and specific measures: vaccination against flu and antipneumococcal.

Table 1 Recommendations for adult antipneumococcal vaccination.

Age	Groups at risk of invasive pneumococcal disease	VPC13		VPP23
		Vaccination	Vaccination	Revaccination (after 5 years)
≥18	<i>Immunocompromised:</i> Congenital or acquired immunodeficiency HIV/AIDS Chronic renal failure Nephrotic syndrome Neoplastic diseases (e.g., haematological malignancies, lymphomas, multiple myeloma) Iatrogenic immunosuppression (e.g., long-term systemic corticotherapy, chemotherapy and radiotherapy) Solid organ transplant	Recommended	Recommended	Recommended
	<i>Anatomical or functional asplenia</i> (e.g., sickle cell anaemia and other hemoglobinopathies, congenital or acquired asplenia)	Recommended	Recommended	Recommended
	Cerebrospinal fluid leaks	Recommended	Recommended	Recommended
	Cochlear implants	Recommended	Recommended	Recommended
≥50	<i>Chronic co-morbidities:</i> Chronic respiratory diseases (includes chronic asthma under inhaled corticosteroid) Chronic cardiac diseases (excludes hypertension alone) Chronic liver diseases (e.g., cirrhosis) Diabetes mellitus (excludes patients controlled by diet only)	Recommended	Recommended	Recommended
≥65	<i>Individuals aged ≥65</i>	Recommended	Recommended	Not recommended

General measures

In the general measures, related to host defences, the following are recommended³:

- smoking cessation;
- control of chronic illnesses (diabetes mellitus, COPD, congestive heart failure, chronic renal failure, chronic liver disease, HIV/AIDS infection, etc.);
- judicious use of immunosuppressive therapies (including corticosteroids);
- alcohol counselling (including acute intoxication and chronic alcoholism);
- advice about dealing with cases of drug addiction;
- adequate nutritional status;

- gamma globulin IV immunotherapy in selected patients (IgG deficiency, multiple myeloma, chronic lymphocytic leukaemia, transplant patients).

Anti-flu vaccination

This endorses the Directorate-General of Health recommendation for vaccination against seasonal flu for the current season.⁴ Health professionals and other professionals involved in front-line health care are a priority group for vaccination, because of the increased risk of contracting the illness and transmitting it to their families and their patients. Setting an example and the counselling about vaccination given by health professionals represent one of the principle success factors in keeping to vaccination targets.

Table 2 Recommendations for antipneumococcal vaccination in specific circumstances (adapted from^{1,13}).

Condition	Vaccination recommendations (individuals not vaccinated)
HIV/AIDS	Early, preferably with lymphocytes TCD4 ⁺ ≥ 200/mm ³ ; if TCD4 ⁺ < 200/mm ³ , vaccinate without waiting for immune reconstruction and consider revaccination after TCD4 ⁺ ≥ 200/mm ³
Surgical splenectomy	In elective surgery, at least 2 weeks before surgery; in unplanned surgery, vaccinate 2 weeks after surgery
Autoimmune diseases	Early and before starting immunosuppressive therapy
Waiting for a solid organ transplant	Early, at least 2–4 weeks before transplant
Solid organ transplant	Start vaccination 6 months after transplant
Transplant of hematopoietic cells	Start vaccination 3–6 months after transplant
Neoplastic diseases in chemotherapy and/or radiotherapy	10–14 days before treatment or 3 months after finishing chemotherapy or radiotherapy. If the vaccine is administered during the course of chemotherapy consider whether to revaccinate 3 months after finishing treatment

Pneumococcal vaccination

In Portugal two pneumococcal vaccines are available for adults aged 18 and above, a pneumococcal polysaccharide vaccine 23-valente [(Pneumo 23®) VPP23] with 23 serotypes (1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, 33F) and a pneumococcal conjugate vaccine 13-valente [(Prevenar 13®) VPC13] with 13 serotypes (1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F). Both vaccines are intramuscular and VPP23 can also be administered subcutaneously.^{5,6}

For adults, vaccines are indicated for the prevention of invasive pneumococcal diseases by the serotypes included in the vaccine. The bacteraemia secondary to pneumonia is the main manifestation of invasive pneumococcal disease in adults, representing about 75% of cases of invasive disease in the adult population⁷ and more than 80% in those ≥65.⁸

At the present time, we are waiting for the results of studies about the efficacy of VPC13 in the prevention of pneumonia in adults.

Epidemiological surveillance programmes on invasive pneumococcal disease and its serotypes at a national level are crucial for the evaluation of the effectiveness of anti-pneumococcal vaccines and recommendations for their utilization. According to the latest data available at a national level, relating to the period 2006–2008, from a total of 1100 isolates of *Streptococcus pneumoniae* in adults with an invasive pneumococcal disease, 68% of the serotypes identified were included in VPC13 and 84% in VPP23.⁹

Table 1 presents recommendations for antipneumococcal vaccinations according to the risk of invasive pneumococcal disease.^{7,8,10–13}

In adults who are indicated for antipneumococcal vaccination, the following dosing schedule is suggested¹⁰:

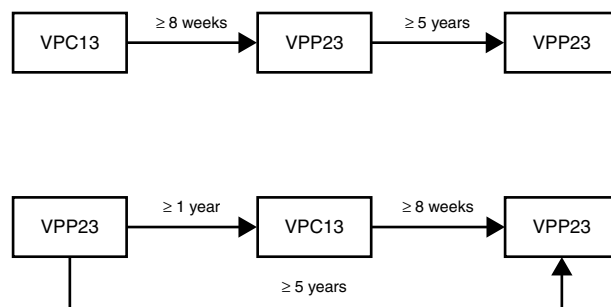


Figure 1 Schedule for antipneumococcal vaccination in non-vaccinated individuals or previously vaccinated with VPP23.

- adults who have not previously been vaccinated should first receive VPC13 followed by a dose of VPP23 at least 8 weeks later;
- adults who have already been vaccinated with VPP23 should only receive VPC13 at least one year after the last vaccination of VPP23;
- for adults with indication for revaccination with VPP23, the second dose must only be given at least 5 years after the first dose of VPP23 and at least 8 weeks after administration of VPC13.

Revaccination with VPC13 is not recommended and in the case of VPP23, revaccination should only be done once (Fig. 1).

Pneumococcal vaccines should be administered at the most propitious time for the immune system to respond; Table 2 presents an optimization calendar of vaccinations for certain clinical conditions (adapted¹³).

The influenza and pneumococcal vaccines can be given at the same time, preferably in different arms.

Conclusions

The recommendations presented in this document should be subject to clinical judgement in relation to the individual cases.

This document will be subject to periodic revisions in order to include the scientific evidence of future studies and knowledge about other measures and vaccines like, for example, the whooping cough which is available and recommended in some European countries.^{14,15}

References

- Mandell LA, Wunderink RG, Anzueto A, Bartlett JG, Campbell GD, Dean NC, et al. Infectious Diseases Society of America/American Thoracic Society consensus guidelines on the management of community-acquired pneumonia in adults. *Clin Infect Dis.* 2007;527–72.
- Froes F, Diniz A, Mesquita M, Serrado M, Nunes B. Hospital admissions of adults with community-acquired pneumonia in Portugal between 2000 and 2009. *Eur Respir J.* 2013;41:1141–6.
- Froes F, Diniz A, Henriques J, Ramalho de Almeida A, Alves C, Amado J, et al., editors. *Recomendações de abordagem diagnóstica e terapêutica da pneumonia da comunidade em adultos imunocompetentes.* Sociedade Portuguesa de Pneumologia, Comissão de Infecçologia Respiratória. *Rev Port Pneumol.* 2003;IX:435–61.
- Direcção-Geral da Saúde. Vacinação contra a gripe sazonal com a vacina trivalente para a época 2012/2013. Direcção-Geral da Saúde; 2012 Sep 24;013/2012.
- INFARMED. RESUMO DAS CARACTERÍSTICAS DO MEDICAMENTO: Pneumo 23. INFARMED [Internet]. INFARMED; 2012 Jan 11. Available from: http://www.infarmed.pt/infomed/detalhes.php?med_id=9930&dci=&nome_comer=UG5ldW1vIDlz&dosagem=&cnpem=&chnm=&forma_farmac=&atc=&disp=&estado_aim=&pesquisa.titular=&cft=&grupo_produto=&pagina=1
- INFARMED. Resumo das Características do Medicamento: Prevenar 13. INFARMED [Internet]; 2013 Jul. Available from: <http://www.infarmed.pt>
- Muhammad RD, Oza-Frank R, Zell E, Link-Gelles R, Narayan KMV, Schaffner W, et al. Epidemiology of invasive pneumococcal disease among high-risk adults since the introduction of pneumococcal conjugate vaccine for children. *Clin Infect Dis.* 2013;56:e59–67.
- Jansen AGSC, Rodenburg GD, de Greeff SC, Hak E, Veenhoven RH, Spanjaard L, et al. Invasive pneumococcal disease in the Netherlands: syndromes, outcome and potential vaccine benefits. *Vaccine.* 2009;27:2394–401.
- Horácio AN, Diamantino-Miranda J, Aguiar SI, Ramirez M, Melo-Cristino J. Serotype changes in adult invasive pneumococcal infections in Portugal did not reduce the high fraction of potentially vaccine preventable infections. *Vaccine.* 2012;30:218–24.
- Centers for Disease Control and Prevention. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine for adults with immunocompromising conditions: recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morb Mortal Wkly Rep.* 2012;61:816–9.
- Kyaw MH, Rose CE, Fry AM, Singleton JA, Moore Z, Zell ER, et al. The influence of chronic illnesses on the incidence of invasive pneumococcal disease in adults. *J Infect Dis.* 2005;192:377–86.
- Naucler P, Darenberg J, Morfeldt E, Ortqvist A, Henriques Normark B. Contribution of host, bacterial factors and antibiotic treatment to mortality in adult patients with bacteraemic pneumococcal pneumonia. *Thorax.* 2013;68:571–9.
- Sociedades Españolas de Medicina Preventiva, Salud Pública e Higiene. Recomendaciones de Vacunación Antineumocócica en el Adulto por Indicación Médica. PROTOCOLOS DE LA SEMPHSPH [Internet]; 2012. Available from: <http://www.sempsh.com/es/noticias/vacunacion-antineumococica>
- Campins M, Moreno-Pérez D, Gil-de Miguel A, et al. Tos ferina en España. Situación epidemiológica y estrategias de prevención y control. *Recomendaciones del Grupo de Trabajo de Tos ferina. Enferm Infecc Microbiol Clin.* 2013;31:240–53.
- Zepp F, Heininger U, Mertsola J, Bernatowska E, Guiso N, Roord J, et al. Rationale for pertussis booster vaccination throughout life in Europe. *Lancet Infect Dis.* 2011;11:557–70.

F. Froes*, A. Diniz, C. Robalo Cordeiro, M. Serrado, A. Ramalho de Almeida

Working Group for the Commission of Respiratory Infections of the Portuguese Pulmonology Society, Portugal

*Corresponding author.

E-mail address: filipe.froes@gmail.com (F. Froes).