

# Pneumococcal vaccination for healthy elderly: a comment

W.J.H.M. van den Bosch

Department of General Practice, University Medical Centre St Radboud, Nijmegen, the Netherlands

## INTRODUCTION

**In contrast to many other Western countries there is still a debate in the Netherlands about whether pneumococcal vaccination is of benefit for healthy elderly people. In 1982 the Health Council of the Netherlands issued a report on this subject and concluded that there was no scientific background for vaccinating people only based on age over 65 years.<sup>1</sup> In the meantime pneumococcal vaccination for the elderly has been introduced in a number of Western countries and this was the reason for preparing a new report within the Health Council.<sup>2</sup>**

Pneumococcal vaccination was introduced before the Second World War.<sup>3</sup> Vaccination has been very successful in younger populations with healthy individuals living in special conditions with a high incidence of pneumococcal disease, such as young miners in South Africa and people living in the highlands of New Guinea.<sup>4</sup> Later on, there appeared to be more difficulties in elderly people and people with conditions influencing their immune status. Early vaccine was based on 2-4 pneumococcal serotypes. Later 6-13 and 14-valent vaccines were developed. At this moment, 23-valent polysaccharide vaccines are mainly used. For children a special vaccine has been developed with an antigen conjugated to protein. A 7-valent conjugate vaccine is currently being used. It will probably not be possible to develop a more than 10-valent vaccine in the near future.

After vaccination, protection against infection starts after two to three weeks. The duration of the protection is uncertain. In healthy adults, antibody is present up to five years after vaccination.

Local erythema and pain at the site of injection occur frequently.<sup>5</sup> Systematic reactions are rare. These side effects are more frequent in patients who have had a pneumococcal vaccination with an earlier vaccination within three years and in patients with a history of a pneumococcal infection during the three years before the vaccination.<sup>6</sup>

Pneumococcal vaccination is often combined with vaccination against influenza. The latter is given each year, pneumococcal vaccination every five years. There is no problem in giving both vaccinations at the same time if different injection sites are used.

It could be that adding pneumococcal vaccination to the regular vaccination against influenza in the Netherlands would lower the adherence to the influenza vaccination programme. Opstelten and colleagues did a pilot study in Dutch general practices and found no significant decline in the number of older patients coming for their yearly flu vaccinations.<sup>7</sup>

## SPECIAL INDICATIONS FOR PNEUMOCOCCAL VACCINATION

A small but important group of patients that is at high risk for serious pneumococcal disease is the group of patients without a (functional) spleen.<sup>8</sup> The number of asplenic patients in the Netherlands is unknown, but every year approximately 1000 splenectomies are performed after a trauma or due to disease. One out of 20 asplenic patients will have a life-threatening infection once in

their lives. More than 50% of these patients will die due to these infections within two days after the first symptoms.<sup>9</sup>

In the earlier advice of the Dutch Health Council in 1982 pneumococcal vaccination was pressingly recommended for asplenic patients. Revaccination should take place every five years. Besides pneumococcal vaccinations these patients should have antibiotics available to take in cases of fever.<sup>8</sup>

Pneumococcal vaccination is also recommended for patients with sickle-cell anaemia who can have a functional spleen function due to multiple spleen infarctions and patients with leakage of cerebrospinal fluid.

Vaccinations should be considered for patients with Hodgkin's and non-Hodgkin's lymphoma disease, patients with HIV, myeloma, chronic lymphatic leukaemia, autoimmune disease, renal disease, alcoholism, cirrhosis and patients receiving immunosuppressants or recipients of transplants of organs or bone marrow.

#### IMPLEMENTATION OF INFLUENZA VACCINATION IN THE ELDERLY

In the Netherlands, vaccination against influenza has been implemented successfully. Before 1994, influenza vaccination was only recommended for patients at high risk. Vaccination was carried out in patients with chronic lung disease, diabetes and chronic heart disease. Most vaccinations were given by GPs. However, there was no structured programme to identify all patients at risk and to invite them to receive their vaccinations. In 1994 the Minister of Health advised vaccinating all persons of 65 years and older. A national programme was introduced to help GPs to identify patients at risk using their computer systems. A reasonable imbursement was given to all GPs involved. In the following years, the vaccination rate increased to up to 76% of the patients at risk in 2000.<sup>10</sup> In that year 17.1% of the total population in the Netherlands was vaccinated.

#### EVIDENCE FOR THE EFFICACY OF PNEUMOCOCCAL VACCINATION

The ideal way to prove that pneumococcal vaccination gives protection against death or serious morbidity due to pneumococcal disease would be the randomised clinical trial (RCT). To address the question as to whether pneumococcal vaccination should be introduced in the Netherlands for otherwise healthy persons of 65 years and older together with a vaccination against influenza, there is only one RCT that can be used for this special population.<sup>11</sup> In this study only a subgroup of patients with other related

risk factors had benefit from pneumococcal vaccination. Assendelft and co-workers of the Dutch Cochrane Centre performed an assessment of the available literature. In this issue of this journal they report their results with their conclusions that there is insufficient convincing evidence in favour of the introduction of the pneumococcus vaccination as a supplement to the influenza vaccination for healthy persons 65 years of age or older.<sup>12</sup>

This does not mean that it is proven that pneumococcal vaccinations have no benefit. There still is circumstantial evidence that there are benefits. In a recent large retrospective cohort study with almost 50,000 patients there was a reduction in the risk of pneumococcal bacteraemia (hazard ratio 0.56 (0.33 - 0.93)) although there was a small increase in the number of patients who needed hospitalisation for pneumonia.<sup>13</sup> Only a large randomised controlled trial in this special population using the right endpoints can be conclusive.

Now discussion becomes a question of belief. Do we harm a number of people when we do not vaccinate them or are we using our energy and money for the wrong purpose?

In many countries there are official recommendations for pneumococcal vaccination of the elderly.<sup>14</sup> Therefore in these countries placebo-controlled studies are hardly possible due to ethical considerations.

In the United States an 18% decline in the number of cases of invasive pneumococcal disease in people older than 65 years of age has recently been reported.<sup>15</sup> This might be due to the introduction of the conjugate pneumococcal vaccine for children (herd immunity), but these ideas are not based on data.<sup>16</sup>

#### THE HEALTH COUNCIL REPORT 2003

Based on the results of the meta-analysis of the Dutch Cochrane Centre and after numerous and extensive deliberations the Health Council of the Netherlands decided that there is no conclusive evidence for the effectiveness of pneumococcal vaccination in addition to influenza vaccination in healthy persons 65 years or older.<sup>2</sup> The council recommended starting a prospective study in the Netherlands with healthy elderly vaccinated for influenza who are randomised to receive an additional pneumococcal vaccination. The results of this study or comparable studies could provide the argument to make new recommendations.

The success of the influenza vaccination programme in the Netherlands performed in general practice shows that if enough evidence does become available for pneumococcal vaccination in the future, general practice will be the best place to execute this additional vaccination programme.

## NOTE

Professor Van den Bosch was a member of the Committee of the Health Council of the Netherlands that prepared the recent report on pneumococcal vaccination.<sup>2</sup>

## REFERENCES

1. Gezondheidsraad. Advies inzake pneumococce-immunisatie. The Hague 1082/14.
2. Gezondheidsraad. Vaccinatie tegen pneumokokken bij ouderen en risicogroepen (Pneumococcal vaccination for elderly and people at risk). The Hague 2003/10.
3. Kaufman P. Pneumonia in old age; active immunization against pneumonia with Pneumococcus Polysaccharide; results of a 6-year study. *Arch Intern Med* 1947;79:518-31.
4. Austrian R, Douglas RM, Schiffman, G, et al. Prevention of pneumococcal pneumonia by vaccination. *Trans Assoc Am Physicians* 1976;89:184-94.
5. Anonymous. Prevention of pneumococcal disease. Recommendations of the advisory committee on immunization practices. *MMWR Morb Mortal Wkly Rep* 1997;46(RR08):1-24.
6. Sankilampi U, Honkanen PO, Pyhälä R, et al. Association of pre-vaccination antibody levels with adverse reaction to pneumococcal and influenza vaccines administered simultaneously in the elderly. *Vaccine* 1997;15:1133-7.
7. Opstelten W, Hak E, Verheij TJ, Essen GA van. Introducing a pneumococcal vaccine to an existing influenza immunization program: vaccination rates and predictors of noncompliance. *Am J Med* 2001;111:474-9.
8. Melles DC, Marie S de. Prevention of infections in hyposplenic patients: an update. *Neth J Med* 2004;62:45-52.
9. Lynch AM, Kapila R. Overwhelming postsplenectomy infection. *Infect Dis Clin North Am* 1996;10:693.
10. Koivula I, Sten M, Leinonen M, et al. Clinical efficacy of pneumococcal vaccine in the elderly: a randomized, single blind population-based trial. *Am J Med* 1997;103:281-90.
11. Assendelft WJJ, Scholten RJPM, Offringa M. Pneumococcal vaccination for the elderly in the Netherlands: assessment of the quality and content of available comparative studies. *Neth J Med* 2004;62:36-44.
11. Tacken M. LINH data. Influenza vaccination 2000. *Huisarts Wet* 2002;45:5.
12. Jackson JA, Neuzil KM, Onchee YU, et al. Effectiveness of pneumococcal polysaccharide vaccine in older adults. *New Engl J Med* 2003;348:1747-55.
13. Whitney CG. Preventing pneumococcal disease. ACIP recommends pneumococcal polysaccharide vaccine for all adult age > or = 65. *Geriatrics* 2003;58:20-2.
14. Whitney CG, Farley MM, Hadler J, et al. Decline in invasive pneumococcal disease after the introduction of protein-polysaccharide conjugate vaccine. *New Engl J Med* 2003;348:1737-46.
15. Edwards KM, Griffin MR. Great expectations for a new vaccine. *New Engl J Med* 2003;349:1312-4.