PNEUMOCOCCAL PNEUMONIA AND POLYSACCHARIDE VACCINES

MSD
MERCK SHARP & DOHME

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Published by

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Publisher's Note

This publication is intended to provide the physician with a convenient compilation of information about a major new vaccine, PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD), a clinical review of experience with polysaccharide vaccines for pneumococcal pneumonia, and a collection of selected reports from the medical literature that provides a background of general information about the disease and the evolution of various treatment regimens.

The publication is arranged in three major sections:

1. A review of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD), including a presentation of the full Prescribing Information
2. A clinical review of polysaccharide vaccines for pneumococcal pneumonia
3. Selected reports from the literature

The reader is asked to note the editorial comments at the beginning of each section that provide a perspective on the intended use of the information presented in that section.

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SECTION 1

Review of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD)

Note: The following section presents a concise review of clinical features and characteristics of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD).

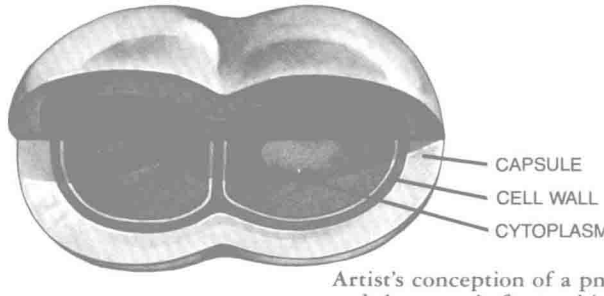
Information contained in this section, including the Prescribing Information, should be considered the approved recommendations for appropriate use of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD).

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent|MSD)

REVIEW OF CLINICAL FEATURES AND CHARACTERISTICS

Type of Vaccine

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) is a polysaccharide vaccine. It has been established that the purified capsular polysaccharides of pneumococci induce antibody production and that such antibody is effective in preventing pneumococcal disease. PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) contains soluble polysaccharide antigens derived from the capsules of the 14 individual types of pneumococci included in the vaccine.



Artist's conception of a pneumococcus and the capsule from which polysaccharides used in PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) are derived.

Efficacy

A single 0.5-ml injection affords highly effective protection against 14 capsular types accounting for at least 80% of all pneumococcal disease isolates in the United States.

In a recent study of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD), at least 90% of all adults showed a fourfold or greater increase in type-specific antibody for each vaccine capsular type.

Please refer to the clinical report on page 34 for further information on efficacy.

Onset of Protection

Various studies have demonstrated that a protective effect is achieved by the third week after vaccination.

Please refer to the clinical reports on pages 24 and 61 for further information on onset of protection.

When to Vaccinate

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) may be administered in any season of the year; it offers protection over a period of years. However, a febrile respiratory illness or other active infection is reason for delaying the vaccination, except when, in the opinion of the physician, withholding the agent entails even greater risk.

Intervals for Revaccination

The duration of protective effect of PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) is presently unknown, but it has been shown in previous studies with other pneumococcal polysaccharide vaccines that antibody induced by the vaccine may persist for as long as five years. Type-specific antibody levels induced by PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) have been observed to decline over a 20-month period of observation, but remain significantly above prevaccination levels in almost all recipients who manifest an initial response. Because of the decline in antibody levels, revaccination may be considered. Available data suggest that revaccination should not be carried out at less than three-year intervals so as to minimize the frequency and severity of local reactions, especially in persons who have retained high antibody levels. Long-term surveillance of antibody levels in immunized individuals is continuing.

Tolerability

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) may be administered to appropriate patients two years old or older, especially the elderly.

Most common side effects: local erythema and soreness at injection site (which usually subsides within 48 hours).

Occasionally, patients may experience low-grade fever (100.9°F) that is usually confined to the 24-hour period following vaccination.

Other Considerations

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) will not immunize against capsular types of pneumococci other than those contained in the vaccine. It cannot be expected to prevent pneumonia caused by organisms other than pneumococci. If the vaccine is used in persons receiving immunosuppressive therapy, the expected serum antibody response may not be obtained.

Indications

PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) is indicated for immunization against lobar pneumonia and bacteremia, caused by those types of pneumococci included in the vaccine, in all persons two years of age or older in whom there is an increased risk of morbidity and mortality from pneumococcal pneumonia. These include: (1) persons having chronic physical conditions such as chronic heart disease of any etiology, chronic bronchopulmonary diseases, chronic renal failure, and diabetes mellitus or other chronic metabolic disorders; (2) persons in chronic care facilities; (3) persons convalescing from severe disease; (4) persons 50 years of age or older.

Contraindications

Those hypersensitive to any component of the vaccine. Do not give to pregnant females. Children less than two years of age have been shown not to respond satisfactorily to the capsular types in PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) that are most often the cause of pneumococcal disease in this age group. Accordingly, PNEUMOVAX® (Pneumococcal Vaccine, Polyvalent, MSD) is not recommended in this age group at this time.

PNEUMOVAX®

(PNEUMOCOCCAL VACCINE, POLYVALENT, MSD)

Prescribing Information

DESCRIPTION

PNEUMOVAX* (Pneumococcal Vaccine, Polyvalent, MSD), is derived from the capsules of cultured pneumococci. This vaccine is indicated for immunization against infections caused by pneumococci. The vaccine affords protection against the 14 most prevalent capsular types accounting for at least 80% of pneumococcal disease isolates as determined by on-going surveillance.

PNEUMOVAX consists of polysaccharides isolated from the capsules of bacteria of the individual types and is manufactured according to methods developed by the MERCK SHARP & DOHME Research Laboratories. The vaccine is formulated so that each 0.5 ml dose contains 50 μg of each polysaccharide type dissolved in isotonic saline solution containing 0.25% phenol as preservative.

14 Pneumococcal Capsular Types Included in PNEUMOVAX

Nomenclature	Pneumococcal Types						
U.S.	1	2	3	4	6	8	9
	12	14	19	23	25	51	56
Danish	1	2	3	4	6A	8	9N
	12F	14	19F	23F	25	7F	18C

ACTIONS

Pneumococcal infection is a leading cause of death throughout the world[1] and a major cause of pneumonia, meningitis, and otitis media. The exact incidence of pneumococcal infection is not known. On the basis of the limited epidemiological data obtained from studies in municipal hospitals where the incidence might be higher than that found in the average population, it is estimated that there are annually 200,000 to 1,000,000 cases of pneumococcal pneumonia in the United States, and between 13,200 and 66,000 deaths resulting therefrom.[2] Thus, the attack rate for pneumococcal pneumonia is estimated to be between 1

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and 5 cases per 1,000 persons per year, and death is estimated to occur in about 1 of 15 cases.[2] Based on these same data, about 25% of all persons with pneumococcal pneumonia develop bacteremia. Death occurs in about 28% of these bacteremic patients more than 50 years of age.[5]

In the United States, pneumococcal meningitis occurs principally in young children, with annual rates of about 3 to 11 per 100,000 children less than 5 years old.[3] Within the first two years of life, about 15 to 20% of all children develop otitis media caused by pneumococci,[4] and 50% of all children develop such illness within the first 10 years of life (see under INDICATIONS).

Invasive pneumococcal disease causes high morbidity and mortality in spite of effective antimicrobial control by antibiotics.[5] These effects of pneumococcal disease appear due to irreversible physiologic damage caused by the bacteria during the first 5 days following onset of illness,[2,4] and irrespective of antimicrobial therapy.[4,8] Older persons, individuals with chronic debilitating diseases, and persons with absent or impaired splenic function, including those with homozygous sickle cell anemia and sickle thalassemia, are especially susceptible to severe pneumococcal disease.

Presently, there are 83 known pneumococcal capsular types. However, the preponderance of pneumococcal disease is caused by only some capsular types.[5-8] For example, a 10-year (1952-1962) surveillance at a New York medical center[5] showed that 56% of all deaths due to pneumococcal pneumonia were caused by 6 capsular types and that approximately 78% of all pneumococcal pneumonias were caused by 12 capsular types. Such unequal distribution of pneumococcal capsular types causing disease has been shown throughout the world.[6-8] It is on the basis of this information that the pneumococcal vaccine is composed of 14 capsular types.

It has been established that the purified pneumococcal capsular polysaccharides induce antibody production and that such antibody is effective in preventing pneumococcal disease.[2,9] PNEUMOVAX consists of 14 different capsular polysaccharides which represent at least 80% of pneumococcal disease isolates in the U.S.A. and Europe.[7] Studies in humans have demonstrated the immunogenicity (antibody-stimulating capability) of each of the 14 capsular types when tested in polyvalent vaccines. Adults