Pneumococcal Vaccines

The Impact of Conjugate Vaccine
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Robert Austrian, M.D., died on March 25, 2007, just before his ninety-first birthday. Since it was largely through his efforts that pneumococcal disease was recognized to be a continuing problem in the antibiotic era, and that the first licensed pneumococcal vaccine was developed, it seems fitting that this book be dedicated in his honor. Dr. Austrian had a remarkable career. His nearly 7-decade assault on the pneumococcus was best summarized by the words of Lewis Thomas, M.D., in the forward to Dr. Austrian’s book, *Life with the Pneumococcus*.

The major figures in American biomedical research come in several quite different classes. There are those who shift swiftly from problem to problem, sometimes leaping freely from one biological discipline to another and then back again, lighting finally on a soluble problem as though by accident. There are others who meditate on a single puzzle for years at a time, scarcely moving, and then, obsessed overnight by the idea of a lifetime, swoop down like nightowls on the single answer.

And there are those who pick out the one problem that will preoccupy them for an entire career of hard work and then just keep at it, year after year. This may seem the safest way to live a life in science, but it is actually, in real life, the chanciest of all gambles, like putting all your chips on a single number, play after play, until all your money runs out.

Robert Austrian’s career has been this last kind. He became fascinated by a single microorganism, *Streptococcus pneumoniae*, long ago, and simply stuck with it. As the years went by, some of his colleagues came to believe that he was simply stuck with it. Finally, not as a result of good luck or any nocturnal revelation or unforeseen laboratory accident, but as the uncommon reward for steady, meticulous, logical experimentation, he got what he was after: a polyvalent vaccine against pneumococcal infection.
The papers in this book are a nice historical record of how science goes when it is going slowly but going well. They are also a lesson in what most savvy investigators take on faith: if you can learn enough new things about living things at a fundamental level, sooner or later you may have the chance, as Austrian has had, to turn basic science onto applied science and, at last, into a useful product.

In fact, after this passage was written and the book appeared in 1985, Dr. Austrian spent another 22 years, until the day prior to his death, monitoring the evolution of pneumococcal types. It was my pleasure to work with him at the same institution over the last 15 of these years while he continued his work as an emeritus professor. While there are many treasured memories and lessons gained from interacting with this grand gentleman of medicine, one seems especially fitting for this book. Dr. Austrian’s career spanned the use of serum therapy, chemotherapy, antibiotics, and two generations of vaccines, each of which was initially believed to offer a final solution to the problem. The pneumococcus, however, has proven to be a particularly elusive and adaptable foe. Dr. Austrian would caution us to neither underestimate it nor be overly confident that the quest is complete.

Jeffrey N. Weiser, M.D.
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Preface

The first pneumococcal conjugate vaccine (PCV) was licensed 7 years ago in the United States and has now been introduced into general use in many countries in Europe and the rest of the world. Its dramatic impact on the target population was anticipated by the results of efficacy trials. The magnitude of herd immunity provided to unimmunized individuals of all ages was not, and has enormously enhanced the public health impact of the vaccine.

The introduction of this exciting vaccine has invigorated the field and stimulated a great many studies in multiple areas including animal models; immunologic mechanisms; conjugation methods; epidemiology of pneumococcal disease; serotype distributions and antibiotic resistance in many geographic areas; diagnostic methods; antibody response measurements; PCV immunogenicity in healthy and high-risk individuals; impact on colonization, invasive disease, otitis media, and pneumonia; and effectiveness studies of direct and indirect protective effects.

This book seeks to summarize, for professionals in academia, public health, government, or industry, the current state of the art of pneumococcal vaccines, with particular emphasis on the years after introduction of the conjugate vaccine.

George R. Siber
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