Combination Vaccines

There are parents and there certainly are children – perhaps even some nurses and physicians – who think we give kids too many vaccines, and we would all like to reduce the pain of immunization. On the other hand, we can now prevent 16 diseases that used to ravage children of previous generations. Can we have our cake and eat it too? The answer, to a limited extent is, “Yes we can – with combination vaccines.”

Some vaccine combinations have been around so long that we don’t even think of them as combinations: DTaP is the best such example, combining protection against diphtheria, tetanus, and pertussis in a single package, and diphtheria, tetanus and pertussis vaccines are not available separately; MMR contains the antigens for measles, mumps, and rubella. Others are less obvious: polio vaccine mixes three polio types, pneumococcal conjugate vaccine has thirteen pneumococcal types, and influenza vaccine contains three influenza strains. The CDC excludes these, defining combinations as “a product whose components can be equally divided into independently available routine vaccines.”

So what are some examples of CDC-defined combination vaccines? Pentacel® [diphtheria-tetanus-pertussis-Haemophilus influenza b (Hib)-polio (IPV)], Pediarix® [DTP-hepatitis B-IPV], Comvax ®[Hib-hepatitis B], and Proquad® [measles-mumps-rubella-varicella] are among them. Use of some combination vaccines may result in extra doses of one or more components; thus Pediarix given at 2, 4, and 6 months may give an extra hepatitis B dose; use of Pentacel at 2,4, 6, and 15 months administers an extra dose of polio. These extra doses are considered acceptable by CDC.

CDC states that:

"To minimize the number of injections children receive, parenteral combination vaccines should be used, if licensed for the patient's age, instead of their equivalent component vaccines."

Provider assessment should include the number of injections, vaccine availability, likelihood of improved coverage, likelihood of patient return, and storage and cost consideration. ACIP statement in MMWR 2006;55(RR-15):3.
While neither CDC nor any other group would say that one must use combination vaccines, CDC lists some of their advantages:

1) Combination vaccines are a practical way to overcome the constraints of multiple injections, especially for starting the immunization series for children behind schedule.
2) The use of combination vaccines improves timely vaccination coverage, according to several studies.
3) Some immunization providers and parents object to administering a large number of injectable vaccines during a single visit because of a child's fear of needles and pain and because of unsubstantiated concerns regarding safety.
4) Combination vaccines may reduce the cost of stocking and administering separate vaccines,
5) Combination vaccines may reduce the cost for extra health-care visits,
6) Combination vaccines may facilitate the addition of new vaccines into immunization programs.

There has only been one safety issue involving a combination (as compared with individual vaccines): Proquad, the MMRV vaccine, has been associated with a small increase in febrile seizures over MMR and varicella (VZV) separately when administered during the second year of life. Thus CDC expresses no preference for MMRV or MMR and VZV given separately. In all other instances, combination vaccines are preferred, including a preference for MMRV at 4-6 years of age.

Financial reimbursement to practices currently is greater when vaccines available as combinations are given separately, but this perverse incentive will disappear on January 1, 2011. In 2010 and previously, insurers have paid practices based on the number of separate injections (or nasal or oral doses) given. Beginning in 2011, vaccine administration fees will be based on the number of antigens administered.

In an example published in the American Academy of Pediatrics’ newsletter, AAP News, a 2-month old child given Pentacel (5 components), hepatitis B (one component), the pneumococcal conjugate vaccine (one component), and rotavirus vaccine (one component), would be paid for the eight components administered, rather than for four doses given as at present.

Both individual vaccines and combination vaccines are available through the Vaccines for Children program.

For Further Information
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