



Vaccination strategies in Chronic Disease in Children

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Introduction : pediatric aspects chronic disease

- Longer life expectancy in chronic disease (CD)
- Some CD are better controlled (ex.: asthma)
- Standard protocol on anti-viral and vaccination strategies must be included in health care in CD
- Most CD care is in hands of specialized “tertiary” centres (CF, diabetes)- CD children are not seen in primary care settings → risk to escape routine immunization
- “false” contraindications for immunization....



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J of Cystic Fibrosis 2005; 4: 77-87

Introduction : pediatric aspects chronic disease (2)

- CD children frequent hospitals, revalidation centers, specialized centers → increased risk for vaccine preventable infections
- No specific pediatric recommendations for most CD → **need for a specific "Consensus" in all chronic diseases**
- Routine vaccinations in CD children
- Need for "extra" vaccines
 - increased risk for infection
 - increased risk for complications



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- Advice on new vaccines in the future

J of Cystic Fibrosis 2005; 4: 77-87

General recommendations in CF

- Follow national routine vaccine schedules
- Indications for additional vaccines:
 - influenza (annual) > 6 months
 - hepatitis A (especially in CF)
 - **varicella**
 - **HPV** | **organ transplant**
- Special situations: fever, AB, corticotherapy, immunotherapy, immunosuppression, allergy



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General recommendations in CF: flu

Patients characteristics

	n	number infect. exacerbations	Median Age (range)	Sex (F/M)
All patients	75	170	17y 7m (2m- 46y 4m)	38/ 37
Influenza +	20	21 (12.4%)	20y 7m (11m- 37y 1m)	9/ 11

vaccine failure ?

General recommendations in CF: flu

Characteristics of influenza infections

	Influenza A	Influenza B	total
Number of episodes	19	2	21
Fever (>38.5°C)	13	1	14/ 21 (66.6%)
Prolonged O2-supplements	8	0	8/ 21 (38.0%)
Hospitalisation Mean: 11.7d (range: 5- 21d)	16	1	17/ 21 (81.0%)

flu morbidity !

Special situations



Pneumococcal immunization in children with increased risk for invasive pneumococcal disease



Overview: Increased risk for Invasive Pneumococcal Disease: 3 groups

1. Immunocompetent subjects with increased risk :

- Cochlear implants
- Cerebrospinal fluid leaks
- Chronic heart disease (requiring regular medication, congenital “cyanogenic” heart disease, heart failure, hypertension with cardiac complications)
- Chronic respiratory disease (bronchiectasis, CF, bronchopulmonary dysplasia BPD, interstitial lung fibrosis, neuromuscular disease, risk for aspiration, severe asthma requiring systemic steroids)
- Other metabolic diseases

- 1.2. Functionele asplenie, mildysfunctie (zoals homozygote sikkelcelziekte), of splenectomie



→ Kinderen met immuuncompromitterende aandoeningen:

Overview: Increased risk for Invasive Pneumococcal Disease: 3 groups (2)

2. Functional asplenia, dysfunction of the spleen (homozygous sickle cell disease), or splenectomy

3. Immunosuppressing disorders:

- Primary immune deficiency.
- Immunosuppressive therapy (list)
- Other acquired immunosuppressive diseases including leukemia, neoplasm, lymphoma, solid organ transplantation, bone marrow transplantation, HIV-infection
- Chronic kidney disease (nephrotic syndrome, chronic renal failure, kidney transplantation)
- Insufficiently controlled diabetes mellitus

Pneumococcal vaccination

- Principle:
 - priming with pneumococcal conjugate vaccine PCV13
 - followed by immunisation with pneumococcal polysaccharide vaccine (PPS23V).

vaccination schedule for Pneumococcal vaccines		
Age	PCV13	PPS23V
2-12 months	3 doses – interval 6 to 8 weeks booster ≥12 months	plus one dose ≥24 months
>12 months-5 years:	-complete routine vaccination in the past: PCV7+PCV7+(1y)PCV7 or PCV13+PCV13+(1y)PCV13	plus one dose ≥24 months (8 weeks interval between PCV13-PPS23V)
	-incomplete routine vaccination	plus one dose ≥24 months (8 weeks interval between PCV13-PPS23V)
>5 years	1 dose PCV13 (PCV13 is registered for adults)	plus one dose ≥24 months (8 weeks interval between PCV13-PPS23V)

Suggested schedule for immunisation with conjugate vaccines in individuals with splenic dysfunction and immunosuppression.			
Age at which asplenia or splenic dysfunction or immunosuppression is acquired	Vaccination schedule		
	Where possible, vaccination course should ideally be started at least two weeks before surgery or commencement of immunosuppressive treatment. If not possible, see advice in pneumo chapter.		
	Month 0	Month 2	Month 4
Under two years	Routine immunisation schedule should be followed.		
Over two to under five years (fully vaccinated including booster)	Booster dose of Hib/MenC vaccine Booster dose of PCV	Single dose of PPV	None
Over two to under five years (unvaccinated or partially vaccinated)	First dose of Hib/MenC vaccine First dose of PCV	Second dose of Hib/MenC vaccine Second dose of PCV	Single dose of PPV
Five years and older (and previously vaccinated with Hib, MenC, PCV vaccines)	Booster dose of Hib/MenC vaccine Single dose of PPV		
Five years and older (unvaccinated)	First dose of Hib/MenC vaccine Single dose of PPV	Second dose of Hib/MenC vaccine	

PCV = pneumococcal conjugate vaccine, PPV = pneumococcal polysaccharide vaccine

UK. Green Book 2011