



Vaccination of Adult Patients With Renal Disease

Andrea Derban

Vaccine Educator

Epidemiology Services, BCCDC



Today

1. Background Information
2. Current Recommendations
3. Hepatitis B
4. Streptococcus Pneumoniae
5. Influenza
6. Conclusions



Why It's important

- Pts with renal disease have ↑ morbidity and mortality rates
- # 1 cause of death = CV disease
- # 2 cause of death = ID



Why It's Important

- Infections account for a large proportion of hospitalizations
 - On dialysis
 - Common cause of hospitalization among patients with earlier stages of CKD

Why is ID significant cause?

1. Unique exposures to pathogens
 - Vascular access catheters
 - Long term PD catheters
2. Immunosuppression
 - d/t uremic state
 - Post transplant

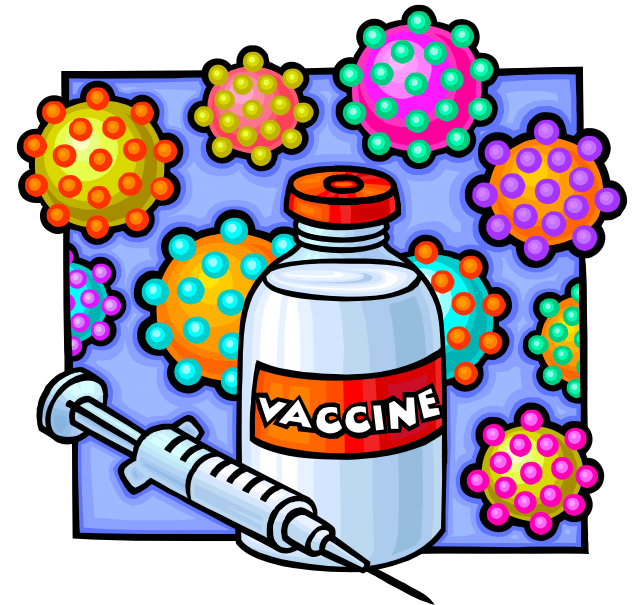
Increased risk
for infectious
complications

● ● ● | One Strategy to ↓ IDs =

Vaccination!!

For optimum immune response:

1. Special Vaccine Formulation (to increase)
2. Serology Testing (to ensure)
3. Schedules (to optimize)





Hepatitis B

- A virus that attacks the liver
- Can cause permanent damage and scarring
- # 1 cause of Liver CA
- 1/2 of people with virus have no S & S



Hepatitis B

- A public health issue in dialysis units since the 1960s
- Greater risk for acquisition ***and*** chronic carrier state
- Transmitted by percutaneous or mucosal exposure to infectious BBFs
- Relatively stable in the environment – viable on surfaces for at least 7 days



Hepatitis B

“Clinically significant HBV infections have been documented in hemodialysis patients who did not maintain protective levels”

CDC Atlanta ACIP 2005



Vaccination Strategies & HBV

- Have been questioned
 - Reduced efficacy in this population
 - Apparent low rate of HBV infection in most units
 - Cost of the vaccine
- However
 - Increase in HBV infection in HD units
 - Devastating consequences of HBV
 - Protective effect of successful vaccination strategy



Seventh Edition

Canadian Immunization Guide

Chronic renal disease and patients undergoing dialysis

Bacterial and viral infections are a major cause of morbidity and mortality in patients who have renal disease or who are undergoing chronic dialysis. Many of these infections are vaccine preventable. All the standard immunizations are required (see *Recommended Immunization Schedules*, page 93).

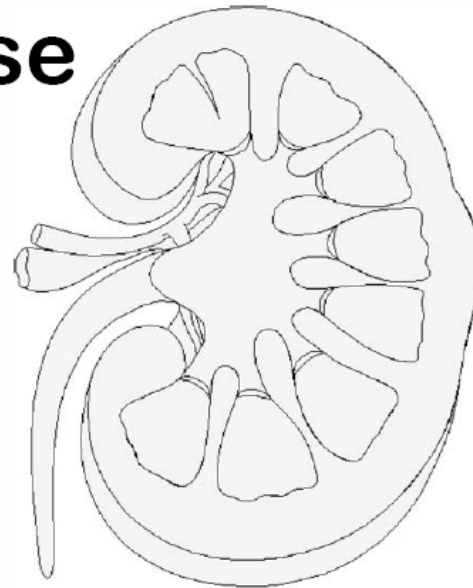
Particular attention should be paid to ensuring that there is optimal protection against varicella, hepatitis B, influenza and pneumococcal diseases.

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Guidelines for Vaccinating
Kidney Dialysis Patients and
**Patients with Chronic
Kidney Disease**



summarized from
**Recommendations of the Advisory Committee on
Immunization Practices (ACIP)**





Low Antibody Response

- Antibody response is lower in patients with renal failure (60 – 70%)
- Antibody levels in dialysis patients decrease rapidly after immunization



What can we do??



“Earlier is Better”

- Pts with uremia who were vaccinated before they required dialysis had higher antibody titres
- Higher level of kidney function (measured by GFR) = better immune response to HBV
 - “The level of kidney function was an *independent predictor* of seroconversion”



Implications

- ✓ Give HBV as early in stage of dx as possible
- ✓ Special vaccine formulation
- ✓ Frequent serology testing

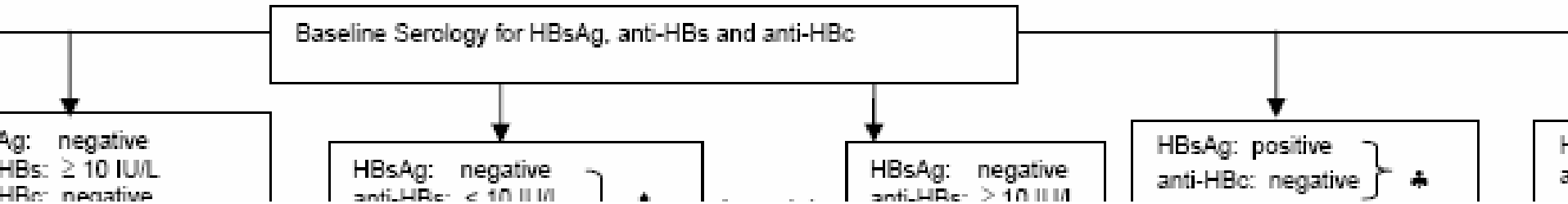
Hepatitis B Vaccine Program for Chronic Kidney Disease Clients

Chronic hemodialysis clients are at high risk for HBV infection because the process of hemodialysis requires vascular access for prolonged periods. In an environment where multiple clients receive dialysis concurrently, repeated opportunities exist for person-to-person transmission of infectious agents, directly or indirectly via contaminated devices, equipment and supplies, environmental surfaces or hands of personnel. Furthermore, hemodialysis clients are immunosuppressed, which increases their susceptibility to infection.


PRE-DIALYSIS AND DIALYSIS CLIENTS ① ②

	RECOMBIVAX HB™			Engerix®-B		
Age	Dose	Volume	Schedule	Dose	Volume	Schedule
≥ 20 years	40 mcg ③	1.0 ml	0, 1 and 6 months	40 mcg	2.0 ml	0, 1, 2 and 6 months

ALGORITHM FOR HEPATITIS B VACCINATIONS FOR PATIENTS WITH CHRONIC KIDNEY DISEASE



Section 10 – Appendices



Streptococcus Pneumoniae (Pneumococcus)

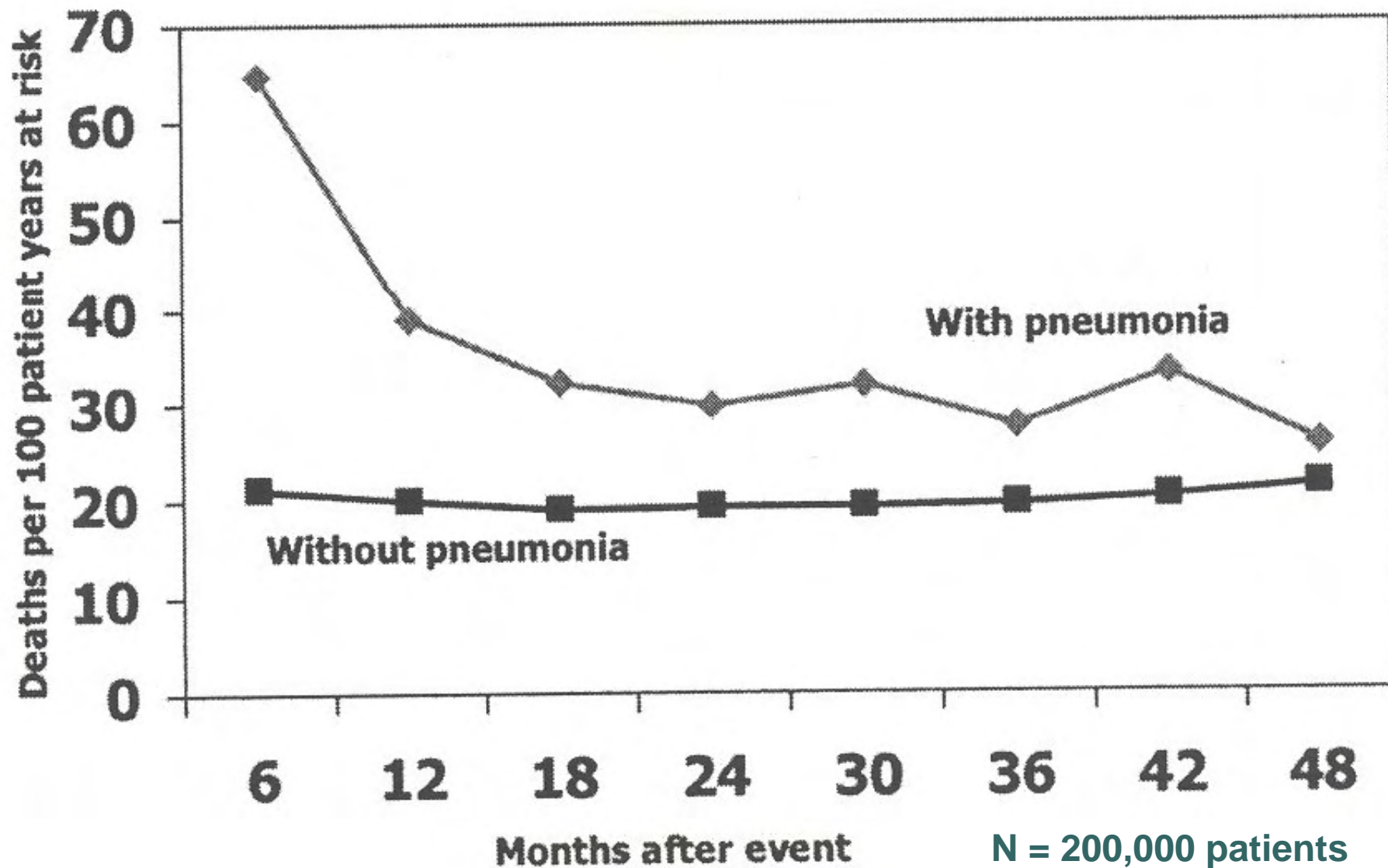
- A bacteria that can cause meningitis, bacteremia and pneumonia
- Is most common in the very young, the elderly and high risk groups
- Spread via nasopharyngeal secretions such as kissing, coughing or sneezing
- A vaccine exists to protect against 23 of the most common strains



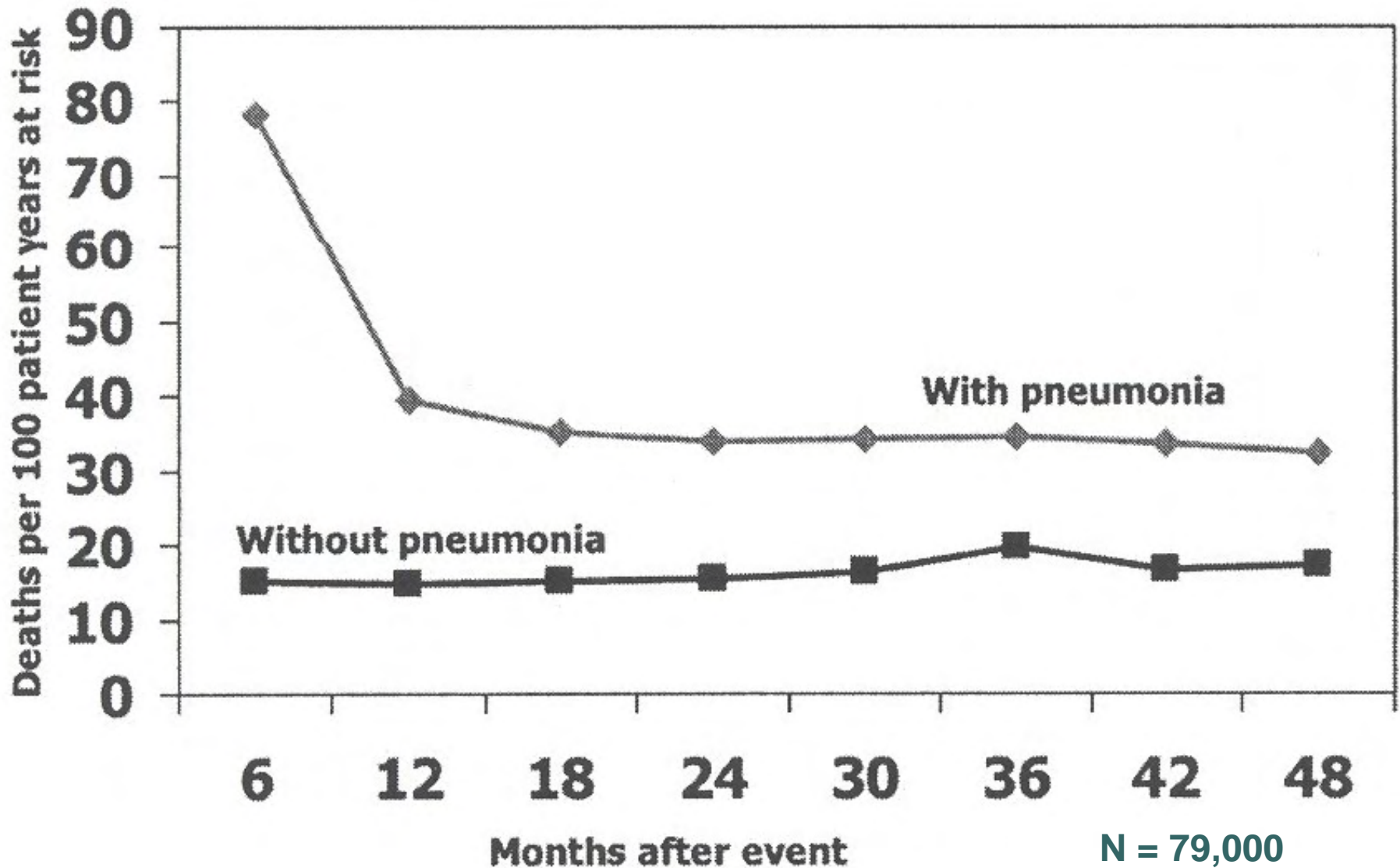
S. Pneumoniae

- Pneumonia is a major cause of morbidity and mortality in patients with renal disease
- S. Pneumoniae is responsible for over HALF of reported pneumonias in dialysis patients!
- Mortality rates in dialysis patients AFTER pneumonia episode remain high (14 – 16 X higher than gen pop)
- Relative risk for CV events is also greater

Adjusted Mortality Rates in Dialysis Patients After the First Pneumonia Event (Dinitz-Pensey et al 2005)



Adjusted CV Event Rates in Dialysis Patients After the First Pneumonia Event (Dinits-Pensey et al 2005)





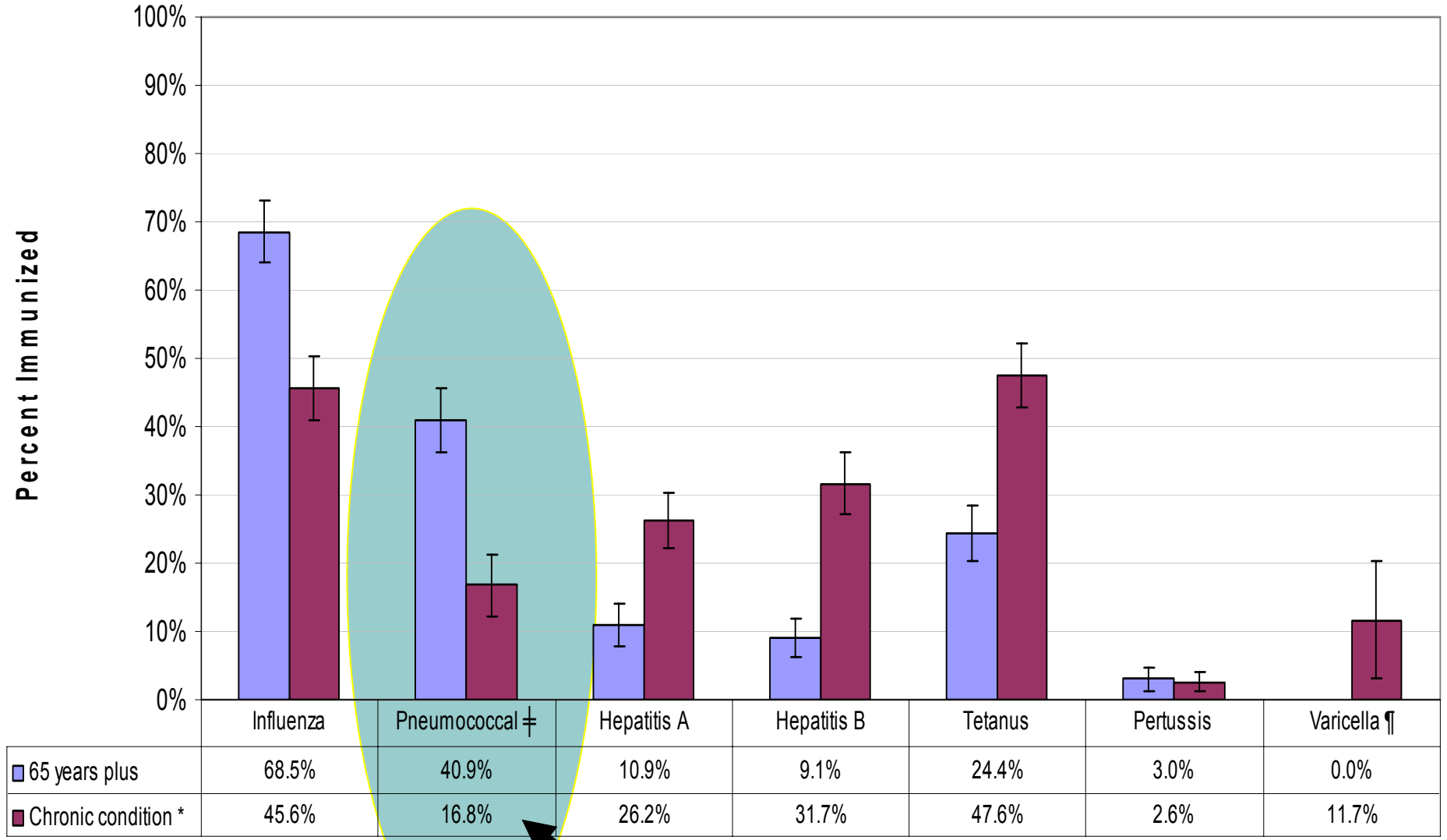
Despite High Mortality and CV Rates

- Immunization rates with Pneumococcal vaccine remains low
- Canadian data 2001:

Risk Group	National Target Immunization Coverage Rate	Proportion Ever Immunized
18 – 64 years of age at High Risk	80%	15.4%

BC Data

Adult Immunization Coverage Rates, British Columbia 2006 Adult National Immunization Coverage Survey



Percent Immunized for High Risk = 16.8%



Implications

- Ensure ALL CKD patients are immunized
- Ensure ALL CKD patients receive their once only revaccination 5 years after their first dose



Influenza

- An infection of the nose, throat and lungs caused by one of the Influenza viruses
- 2002 in Canada est 700 – 2500 deaths
- “Note Influenza often does NOT = “flu”
- The vaccine is ~ 70% effective d/o matching strain and immunocompetence

Sibbald, B. Estimates of flu-related deaths rise with new statistical models. CMAJ. 168 (6), 2003.



Your Patients

- Receiving dialysis are at greater risk for influenza-related mortality
- Study of Medicare data in US – hemodialysis patients vaccinated against influenza were much less likely to be hospitalized or die compared to unvaccinated patients
- Influenza vaccination associated with significant decrease in risk for MI, cardiac death, and hospitalization for heart disease

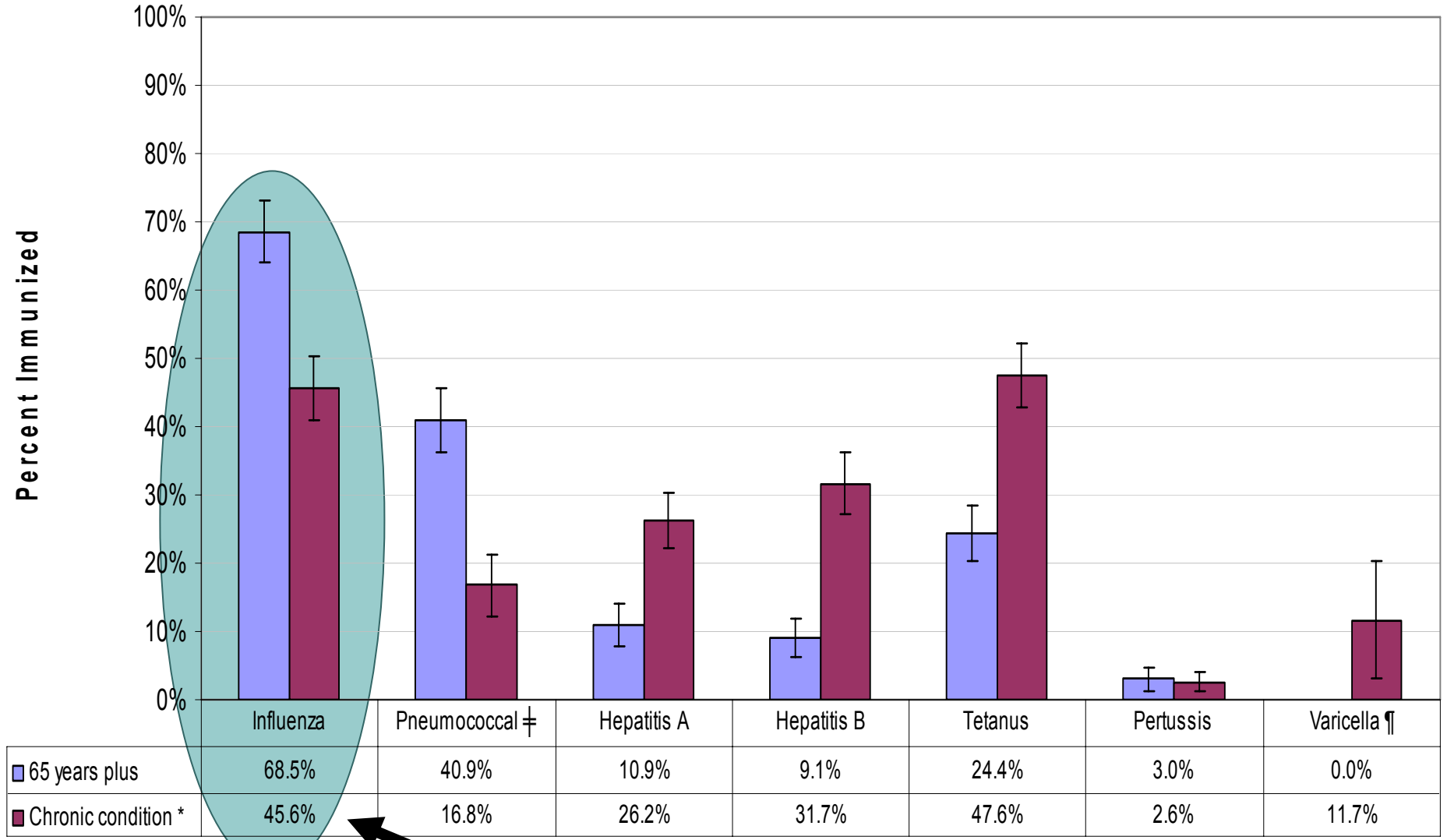


Again look at our stats

- Canadian Data:

Risk Group	National Target Immunization Coverage Rate	Proportion Ever Immunized
18 – 64 years of age at High Risk	70%	38.4%

Adult Immunization Coverage Rates, British Columbia 2006 Adult National Immunization Coverage Survey



Percent Immunized for High Risk = 45.6 %



Implications

- Annual Influenza Vaccination!!
- These people fall through the cracks!
- “Not my job”
- Protect their house hold contacts as well



Please Note!!



All of these vaccines
are provided for
FREE!!



In Conclusion

- Vaccines remain an underused tool for the prevention of infectious complications in CKD patients
- Successful vaccination is possible
- We need to have a team approach



Many Thanks To:

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BCCDC