

# Vaccine Preventable Illnesses in IBD: Role of the Gastroenterologist



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*Post-DDW 2010*

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# IBD-Specific Guidelines

- IBD itself should not impact vaccine response
- IBD is rare < age 5, so most with IBD have gotten routine vaccinations already
- Impact in adults: Influenza and pneumococcal
- At diagnosis, evaluate for 'routine vaccinations', ask about varicella exposure and check if in doubt
- Avoid live virus vaccines if immunosuppressed

# Outline

- Hot from DDW
  - Adherence to guidelines, quality improvement
- Patient-reported vaccine uptake
- Current recommendations for specific vaccines
- Travel
- Household Contacts
- MMR Myths

# Do Gastroenterologists [in the UK] Advise Their Susceptible Patients Appropriately About Immunization?

- 100 patients 'at risk' (immunosuppression, CLD)
- Assessed for flu, pneumococcal, HAV, HBV
- Only 1/3 had received at least 1 vaccine
  - 11% of those vaccinated were referred by gastroenterologist prescribing the medications or treating the CLD

# What do gastroenterologists know about vaccines?

- Survey of 1000 GIs; 11% response rate
  - Most would recommend flu, pvx appropriately
  - 20-30% would recommended live vaccines to immunosuppressed
  - 65% thought internists should determine what to give
  - 83% thought internists should administer
  - 50% 'too busy' or 'forgot' to recommend influenza

# European audits of ECCO guidelines (Germany, England)

- Survey of IBD patients on immunosuppression
  - 16% influenza
  - 10% HBV
  - 2% pneumococcal vaccine
  - 0% varicella, HPV
  
- 1 new case of HCV identified based on screening

DDW 2010, T1316 Elliott et al, Irving  
DDW 2010, W1210 Volckens et al.

# Can we do better?

- Quality improvement project at DHMC – “PDSA”
- Assessed ‘flow’ and ‘processes’ before and after
- 1-page questionnaire
  - “Are you on immunosuppressive therapy?”
  - Did you receive a flu shot last year, or PVX in 5 yrs?
- Significantly improved rates of vaccination
  - Influenza: 54% → 81%
  - Pneumococcal: 31% → 54%

# Bordetella Pertussis (Whooping cough)

- Airborne bacteria, highly contagious
- Childhood vaccination required
- Immunity wanes after 10 years or so
  - Adults therefore not adequately protected
- Outbreaks every few years
- Infants <6m are at greatest risk
- 2005: DTaP *booster* vaccine recommended 11-64

[www.whoopingcough.net/cough-child-muchwhooping.waw](http://www.whoopingcough.net/cough-child-muchwhooping.waw)

# Pertussis

- June 15, 2010: “Pertussis is now an epidemic in California, which may be experiencing the largest outbreak in over 30 years”  
*(Mark Horton, MD director of CDPH)*
  - 910 confirmed cases, 600+ suspected
  - ‘insufficient vaccination’ partly to blame



# INFLUENZA!

## ALL PERSONS

Excepting Physicians and Nurses, are Forbidden,  
Under Penalty of Law, of Entering or Leaving  
This House, Without Written Permission  
from the BOARD of HEALTH.



1918



2009

# 'Seasonal' Influenza

- “Spanish Flu” 1918-9 – 50 million deaths
- 36,000 die in US each year from “the flu”
  - Similar guidelines (ACIP)
    - Children up to 18 years
    - Adults 50 and older
- High risk groups
- HCW and other ‘potential transmitters’

# Influenza – Who Should Get Vaccinated?

- High risk groups
  - Cardiac, renal, pulmonary disorders, diabetes mellitus, cancer,
  - immunodeficiency, immunosuppression (underlying disease and/or therapy)
  - renal disease anemia or hemoglobinopathy
  - Residents of nursing homes
  - People  $\geq 65$  years of age
  - Morbid obesity (BMI  $> 40$ )
  - Healthy pregnant women
- “Potential Transmitters” of the flu
  - Healthcare workers, community workers
  - Household contacts of high risk group

# Influenza and IBD

- 80 pediatric patients 2002-2004
  - 51 IBD (IFX/IM=16, IM=20, AI=14)
  - 29 healthy controls
- ‘Response’ = post-vaccination titer > 40
- Overall, patients fared worse for 1 antigen
- IFX/IM fared worse for 2 antigens
- Flu shot did not adversely affect disease activity

# Influenza and IBD

- 146 children with UC/IC/CD
- No difference between immunosuppressed and non-immunosuppressed
- Sub-analysis of those not seroprotected at baseline showed IS were less likely to respond to 1 of 3 antigens
- No healthy controls
- Vaccine was safe

# Do Flu Shots Cause Flare of IBD?

- 2 case reports – UC flare after influenza vaccination
- No epidemiologic IBD studies
- 1 study of 51 children – no increased disease
- MS and rheum studies
  - No evidence for increased disease activity following various vaccinations
- Must be careful to weigh benefits:risks (Sands)

Kwon OS. Korean J Gastroenterol. 2007 May;49(5):327-30.

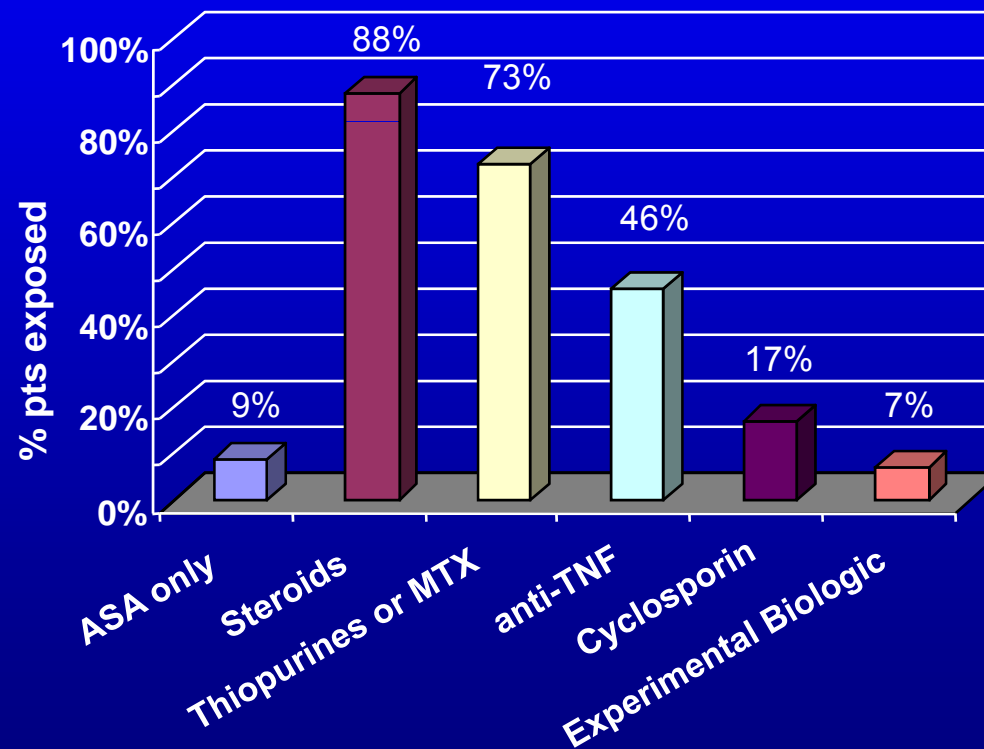
Fields S et al. IBD. Epub. Oct 2008

Sand BE. IBD. Epub. Oct 2008

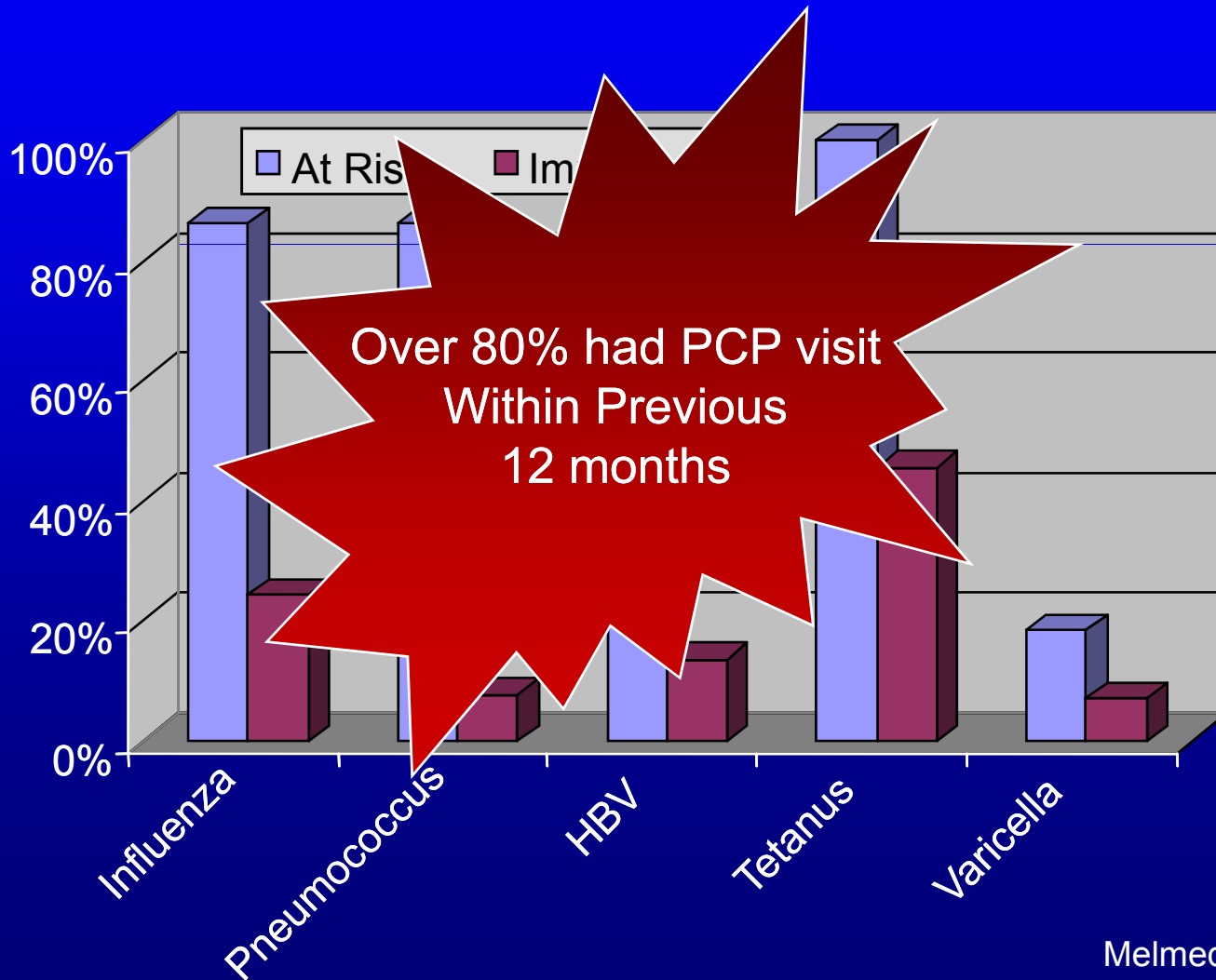
# Survey of Vaccination Risk

- 200 patients with IBD at CSMC
- Asked about risk factors for
  - Influenza, pneumococcal vaccination
  - Hepatitis B
  - Varicella
  - Tetanus
- Over 80% had at least annual PCP visits

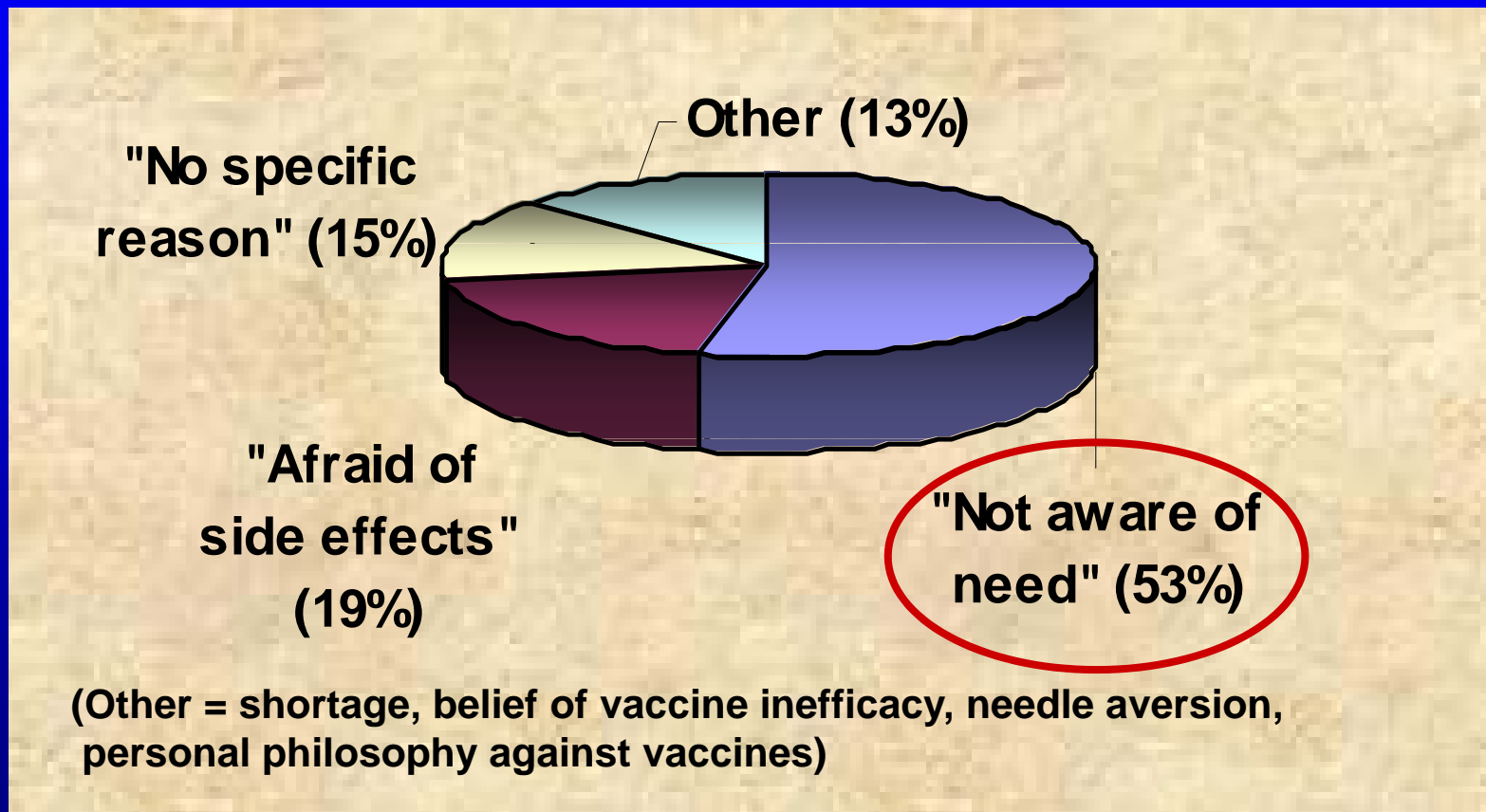
# Medication Exposure (Ever)



# A Minority of 'At Risk' Patients are Immunized



# “Why didn't you get the Flu Shot?”



# 2009 H1N1 Influenza

- WHO  
‘pandemic’ =  
worldwide
- Symptoms same  
as ‘seasonal’  
influenza
  - Cough, fever,  
malaise, nausea,  
diarrhea



# 2009 H1N1

- Prevention
  - Precautions, precautions, precautions
  - Vaccination
    - Live attenuated nasal vs injection
    - Similar 'at-risk' groups for seasonal flu
- Treatment
  - Oseltamivir (Tamiflu ®), zanamivir (Relenza ®)
  - Hospitalized or 'at-risk' (i.e. immunocompromised)
  - Post-exposure prophylaxis vs early rx

# Pneumococcal Vaccination

## **INFLUENZA**

FREQUENTLY COMPLICATED WITH

## **PNEUMONIA**

IS PREVALENT AT THIS TIME THROUGHOUT AMERICA.

THIS THEATRE IS CO-OPERATING WITH THE DEPARTMENT OF HEALTH.

### **YOU MUST DO THE SAME**

IF YOU HAVE A COLD AND ARE COUGHING AND  
SNEEZING. DO NOT ENTER THIS THEATRE

**GO HOME AND GO TO BED UNTIL YOU ARE WELL**

Coughing, Sneezing or Spitting Will Not Be Permitted In The Theatre. In case you must cough or Sneeze, do so in your own handkerchief, and if the Coughing or Sneezing Persists Leave The Theatre At Once.

This Theatre has agreed to co-operate with the Department Of Health in disseminating the truth about Influenza, and thus serve a great educational purpose.

**HELP US TO KEEP CHICAGO THE  
HEALTHIEST CITY IN THE WORLD**

**JOHN DILL ROBERTSON  
COMMISSIONER OF HEALTH**

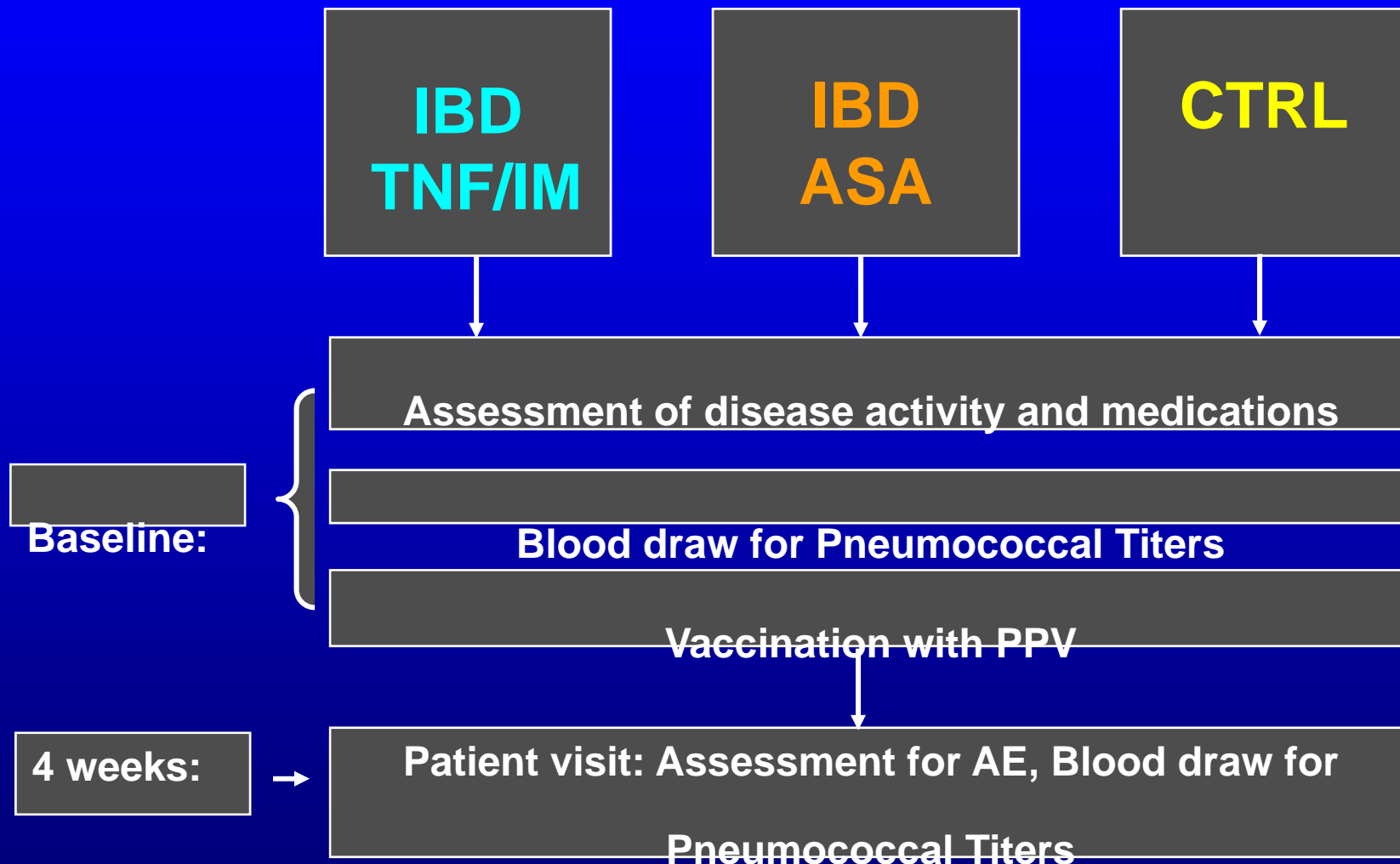
# Pneumonia / Pneumococcal Vaccine in IBD

- Risk of pneumonia in IBD patients is unknown
- CDC guidelines advocate vaccination against *S. pneumoniae* in at-risk populations<sup>1</sup>
- IBD-specific guidelines endorse ‘standard immunization guidelines’<sup>2</sup>
  - check for response if possible

<sup>1</sup>Centers for Disease Control and Prevention. 1997;46(RR-8):1–24.

<sup>2</sup>Sands BE, et al *Inflamm Bowel Dis*. 2004 Sep;10(5):677-92.

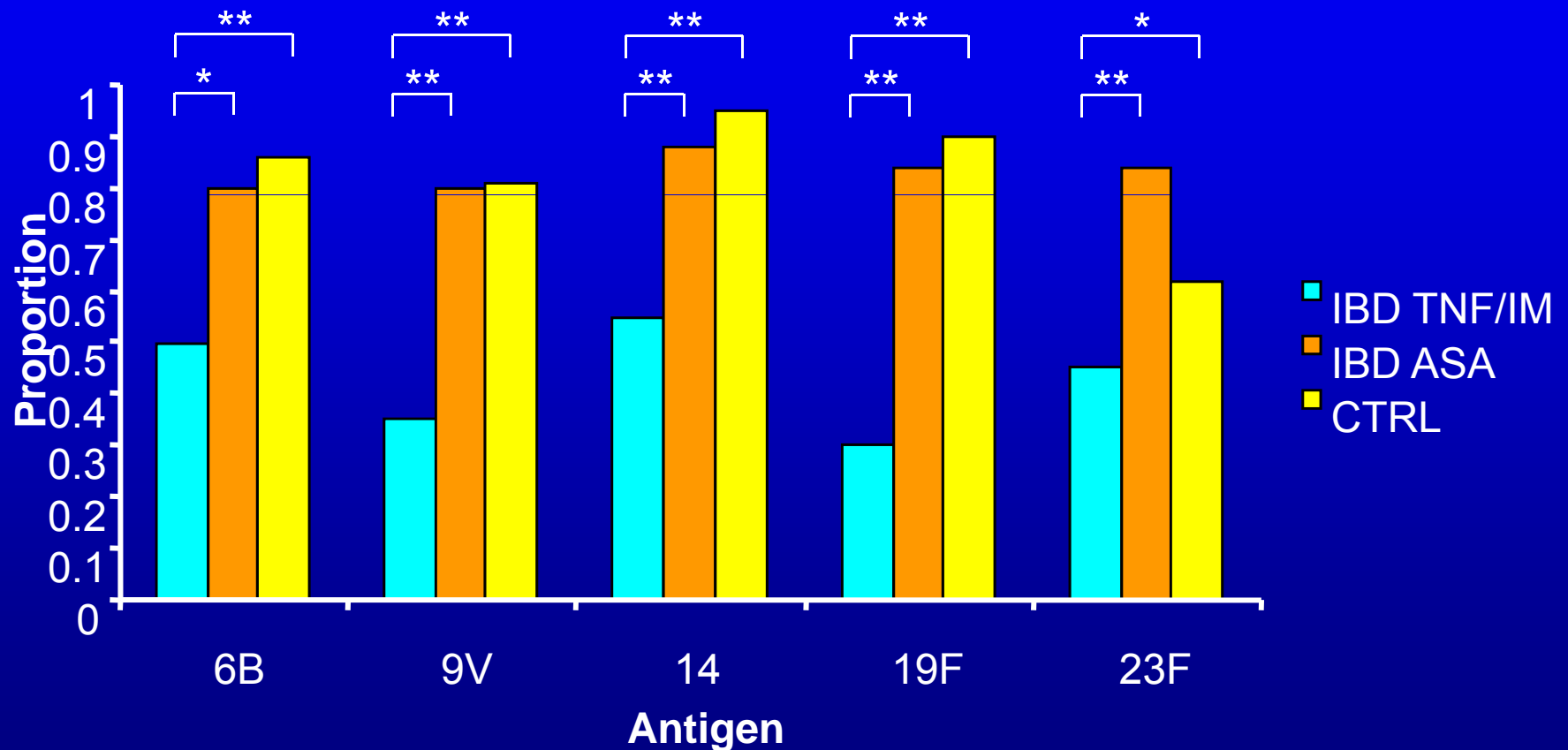
# PPV\* Response in IBD



\*PPV=Pneumococcal Polysaccharide Vaccine

Melmed GY et al. *Am J Gastro.* Sept 2009

# Individual Antigens: GMT > 1 ug/mL



\*p<0.05, \*\*p<0.01

# Our conclusions

- Patients with IBD on TNF blockers with concurrent immunomodulators have impaired antibody responses to pneumococcal polysaccharide vaccine
- Given the likelihood for future immunosuppression, all patients with IBD should receive pneumococcal vaccination at the time of diagnosis, prior to starting immunosuppressive therapy

# Hepatitis B

- Reports of fulminant / fatal HBV in IFX recipients, including '**reactivated HBV**'
- Indications for vaccination
  - HCW
  - Hi risk behaviours (MSM, IVDU, multiple partners)
  - Multiple transfusions/tattoos

24 yf with CD on IFX  
and 'HPV positive' for one of the  
cancer-causing serotypes, wants to  
know about the HPV vaccine  
*Do you recommend vaccination?*

1. No, HPV vaccine is contraindicated on IFX
2. No; horse is out of the barn and HPV vaccine is ineffective
3. Yes; some protection better than none

# Human Papilloma Virus (HPV)

- HPV linked with cervical and anal cancers
- Women with IBD have an increased risk for abnormal Pap smear
  - Increased risk with >6m IM use
  - Higher risk for HPV serotypes 16, 18
- HPV vaccine available and safe in IS, but no specific guidelines for IBD

28 yf UC on 6MP, does not recall  
'Chicken pox' as a child nor  
vaccination

*Which is appropriate?*

1. Vaccinate now against varicella
2. Check VZV titer and vaccinate only if negative
3. Check VZV titer but don't vaccinate even if negative

# Live Virus Vaccines

- Generally contraindicated in the immunosuppressed
  - Common Sense Caveat:
    - Unless the risk of natural infection is greater than the risk of immunization
- Includes varicella, yellow fever, anthrax, BCG, MMR, smallpox, adenovirus, live cholera, influenza virus vaccine (intranasal), HZV, shingles vaccine

# Varicella

- Mortality in adults in 20/100,000 cases
- Disseminated disease in **30%** of immunocompromised patients
- Vaccination issues:
  - Hold steroids if possible
  - Household vaccination probably ok
  - If exposed – VZIG, acyclovir
  - *Careful risk:benefit if at risk, but naïve*



*Aedes aegypti*

21 yf with CD on 6MP

Wants to go to Brazil, an endemic area  
for yellow fever.

*What do you advise?*

1. Get the vaccine before you go
2. The vaccine is contraindicated, so go to Brazil without it
3. Don't go to Brazil

# Travel

- Hepatitis A
- Hepatitis B
- Yellow fever –
  - Vaccine can be lethal in the immunosuppressed
  - Endemic regions in Africa, South America
  - If possible – DON'T GO
  - If not possible - educate risks from mosquitoes
    - Needs special letter of exemption from vaccination

24 yf with CD on IFX, with a newborn  
*Which vaccines are ok for the baby?*

- A. MMR
- B. Oral Polio Vaccine
- C. Varicella
- D. Rotavirus
- E. All ok except B
- F. None are ok as they are all live virus vaccines

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# Household Contacts

- Live influenza virus
  - Can shed up to 3 days
  - Secondary transmission rare, not reported in IS
- Varicella
  - “Probably ok”, but watch for rash in recipient
- Rotovirus
  - Benefits probably outweigh risks; wash hands
- OPV and smallpox – reported to be harmful

# MMR and CD/autism

- (1998, Lancet) Wakefield et al. Reported 11 children with autism and ‘enterocolitis’ within 2 weeks of MMR

*“further investigations are needed to examine this syndrome and its possible relation to this vaccine.”*

# MMR and CD/autism

- (1998, Lancet) – 4 critical letters
  - *No evidence to support conclusion*
  - *Wrong reference ranges of labs for kids*
  - *'L.N.H' is not (necessarily) abnormal*
  - *Biased sample*

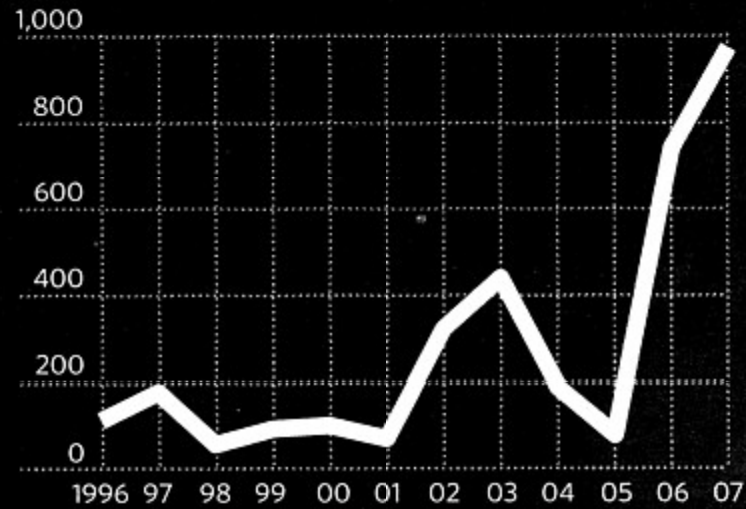
# MMR and CD

- (2003, Gut) Seagroatt and Goldacre. British cohort of 4000 hospitalized IBD, comparing those pre- and post-measles vaccination 1988. No association found.
  - *Replicated in at least 5 other international cohort/case control studies; no association found between CD and MMR or single measles vaccine.*

# The rise of measles

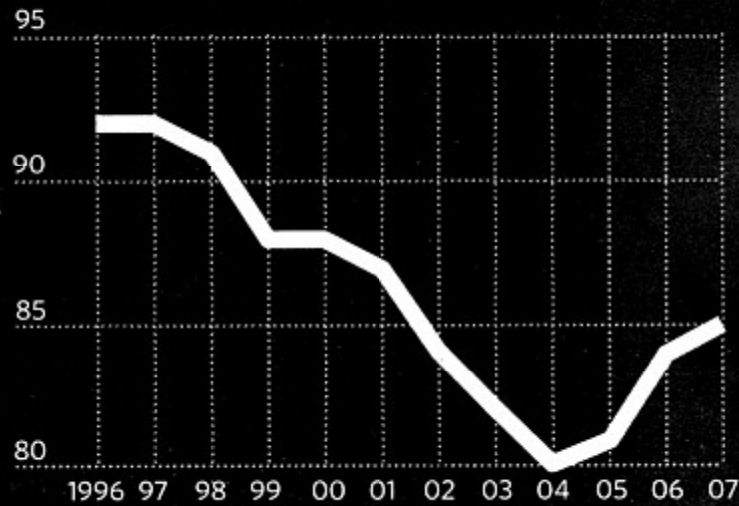
## CONFIRMED CASES OF MEASLES

ENGLAND AND WALES



## CHILDREN INOCULATED AGAINST MMR

% COMPLETED PRIMARY COURSES AT TWO YEARS OF AGE IN ENGLAND



## 2004, *The Sunday Times*

- No informed consent
- IRB approval for different study
- Kids were invited to participate, not ‘consecutive’
- Kids part of a study (by Wakefield) looking for grounds for class action lawsuit (not disclosed)

## 2004, *Lancet*

- “**Formal Retraction**” by 10 of 12 authors of the “interpretation” that there might be a causal link between MMR vaccine and autism.
- Richard Horton, editor
  - “...had we appreciated the full context reported...by Wakefield and colleagues...publication would not have taken place in the way that it did.”

# February, 2010

- Wakefield was found to be "dishonest", "unethical", "irresponsible" and "callous" by a disciplinary panel of the UK General Medical Council (GMC), following up on 2004 reports.
- Paper was "Fully Retracted" by Lancet
  - Children were not "consecutively referred"
  - There was no "ethical approval"

# The Upshot

- Vaccines do not cause or exacerbate IBD
- Patients with IBD have unpredictable likelihood for immune suppression
- Vaccination against influenza and pneumonia can save lives



# The Upshot

- Vaccines may not work well if immunosuppressed, so consider early in disease course
- Make sure YOU (and YOUR STAFF!) are immunized appropriately!
  - Influenza, pneumonia, HBV
  - pertussis



# Questions?

