Guideline for the Vaccination of HIV-infected Adolescents & Adults

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SAHCS

Declarations

Outline

- Introduction
- Guideline
- Vaccines with strong local evidence for use
- Vaccines that are recommended but local data lacking
- Vaccines with no recommendation

World Health Organization

Protected
Together
#VACCINESWORK

When **immunization rates are high,** the wider community is **protected** including:

Infants who are too young to receive their vaccines.

Older adults at risk of serious diseases.

People who take medication that lowers their immune systems.

Southern African HIV Clinicians Society

- Promotes evidence-based HIV Healthcare in Southern Africa
- Society supports & strengthens capacity of its members
  - Deliver high quality HIV prevention, care & treatment services
- Activities;
  - Journals and publications
  - **Practice Guidelines**
  - Meetings (CPD-accredited CME)
  - Conference
  - Clinical Resources
  - Policy and Advocacy
- Society is a NPC
- Membership includes doctors, nurses, pharmacists & other health care professionals

Introduction

THE AGE OF VACCINES

The advent of routine childhood vaccination has led to dramatic declines in many contagious diseases in the United States. Maintaining these gains there and spreading these success worldwide is challenge for public health. By **Tony Scully**.

A HISTORY OF DISEASE REDUCTION

An analysis of weekly disease surveillance recorded at the state level by the US Centre for Disease Control and Prevention reveals how many major threats to public health have been affected by the introduction of a vaccine; an estimated 103 million cases of childhood diseases since 1924.

Vaccines are now widely regarded as an effective and cheap tool for improving health

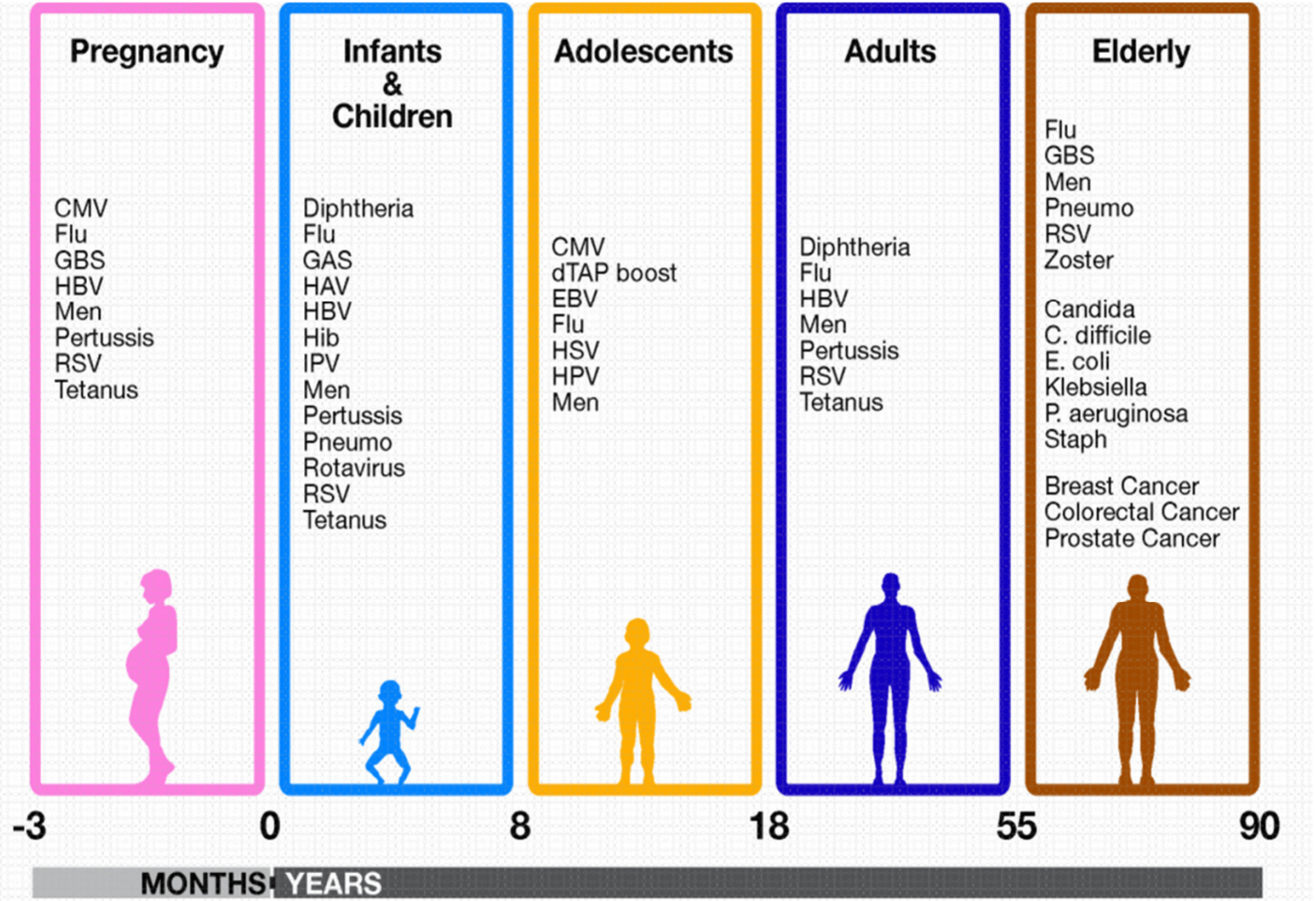
Importance of full immunization throughout life and its role in achieving the 2030 Sustainable Development Goals

Whole Life Approach to Immunization

- Importance of vaccination
  - Prevention to avert health spending
  - Prevention is a “best buy”
  - Vaccines seen as a solution for national & economic security
  - Dual function of vaccines

Vaccination essential element for promoting

- Health equity
- Economic equity (reducing medical & non-medical costs)
- Social equity –access to the health care system
- Vertical equity intervention- vaccines for diseases of poverty



R.Rappuoli, C. Mandl, S: Black , E. De Gregorio
Nature Reviews Immunology | November 2011; doi:10.1038/nri3085

Guideline Development

- Experts in the field of vaccination
  - Vaccines for Africa Initiative (VACFA)
- National Institute for Communicable Diseases (NICD)
- Academics
- Private Sector
- Rural health
- Pediatricians & Physicians
- South African Cochrane Centre

- Full day workshop
- Presentation of local data
- Discussion
- Recommendation
  - Consensus if no local data
- Draft of guidelines
  - Evidence based
  - Based on best international practice
  - Circulated and comments received
- **Review of guideline recommendation**
  - Every 3-5 years
  - **Identify gaps in local data –help inform future guidelines**

Southern African Journal of HIV Medicine
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Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

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Susan T. Meiring[8,9]
Charles S. Wiysonge[10,11]
Eric Hefer[12]
Muhangwi B. Mulaudzi[13]
James Nuttall[4]
Michelle Moorhouse[14]
Benjamin M. Kagina[15,16]

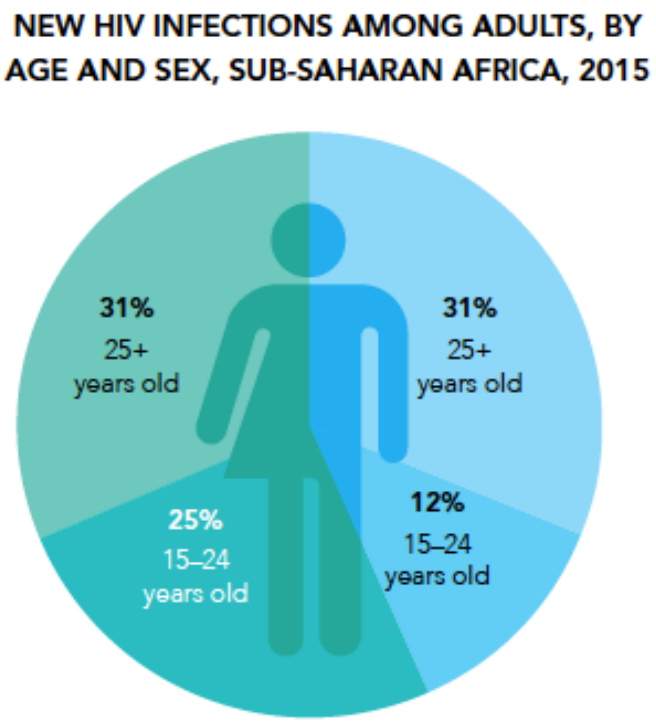
TABLE 1: Vaccination guidelines for HIV-infected adolescents and adults.

Vaccine	Indication	Safety CD4+ count	Doses for unvaccinated adults	Booster	Comments
MMR vaccine	Measles, mumps or rubella seronegative	⩾ 200 cells/mL	2 doses (28 days apart)	Protection likely lifelong	Mainly indicated in measles seronegative HIV-infected women of childbearing age Pregnancy should be avoided for 1 month after vaccination
Influenza	R	Any	1 dose	Yearly	-
Pneumococcal Conjugated (PCV13)	R	Any	1 dose	-	Given with PPV23 but must be given first
Pneumococcal Polysaccharide (PPV23)	RS	⩾ 200 cells/mL	1 dose	5–10 years	Given with PCV13 but given 8 weeks after PCV13 Can be given to patients with CD4 count < 200 cells/mL if on ART and VL suppressed Maximum 2 booster doses, 1 booster dose in patients > 65 years. Poor response if CD4+ cell count < 200 cells/mL and VL not suppressed
Hepatitis B	R	Any	4 doses (40 µg) or 3 doses (20 µg)	Not clear awaiting evidence	-
Hepatitis A	RS – travel, MSM, liver disease	⩾ 200 cells/mL	2 doses	10 years	-
Meningococcal	RS	Any	2 doses	5 years	-
Tetanus-diphtheria (Td)	R	Any	-	10 years	-
Pertussis-acellular	R	Any	1 dose	10 years	Given in pregnancy combined with tetanus-diphtheria (DTPa/dTpa)
Poliomyelitis-inactivated	RS	⩾ 200 cells/mL	3 doses	none	-
Human papilloma virus (HPV)	RS – females, MSM	Any	2 doses	none	-
Varicella	NR	-	-	-	May be considered if CD4+ count > 400 cells/mL
Zoster	RS	≥ 200 cells/mL	1 dose	none	Only use if CD4+ count ≥ 200 cells/µL

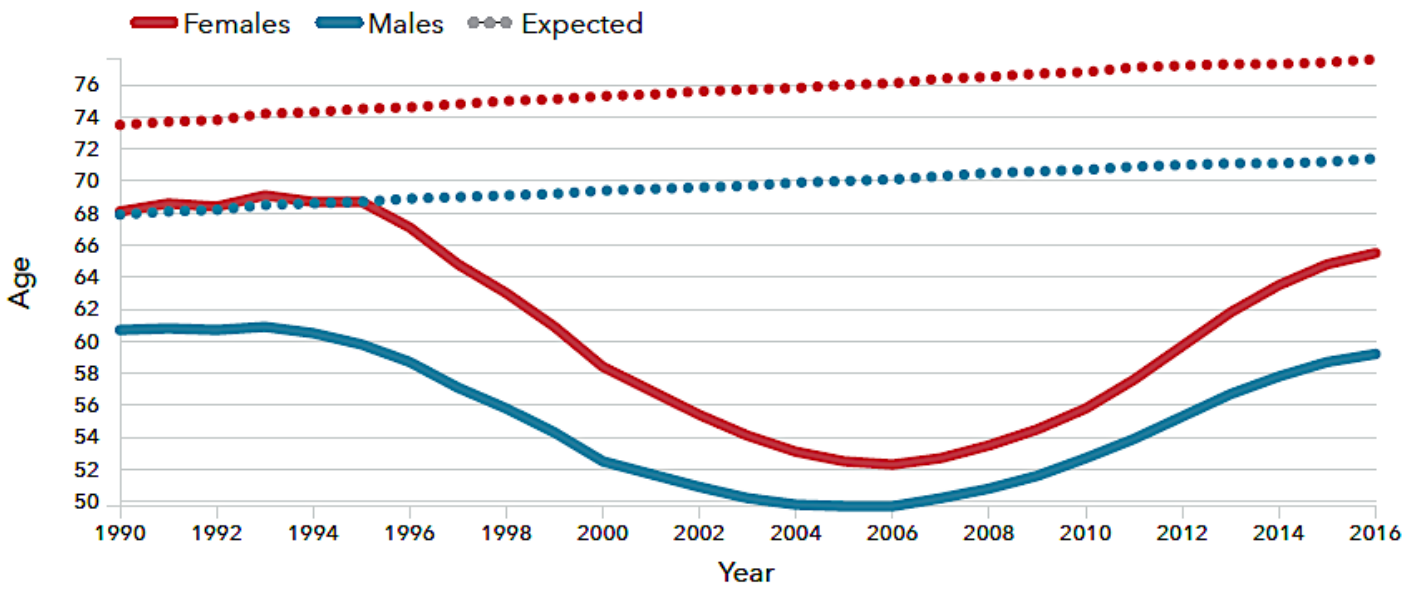
MMR, measles, mumps, and rubella; R, recommended; RS, recommended in selected individuals; NR, not recommended; VL, viral load; HBsAb, hepatitis B surface antibody; MSM, men who have sex with men.

S Afr J HIV Med 2018; 19(1)

South Africa



- **7 million South African are HIV-infected**
- **~ 3 million on ART**
- **Estimated ART coverage 42%**



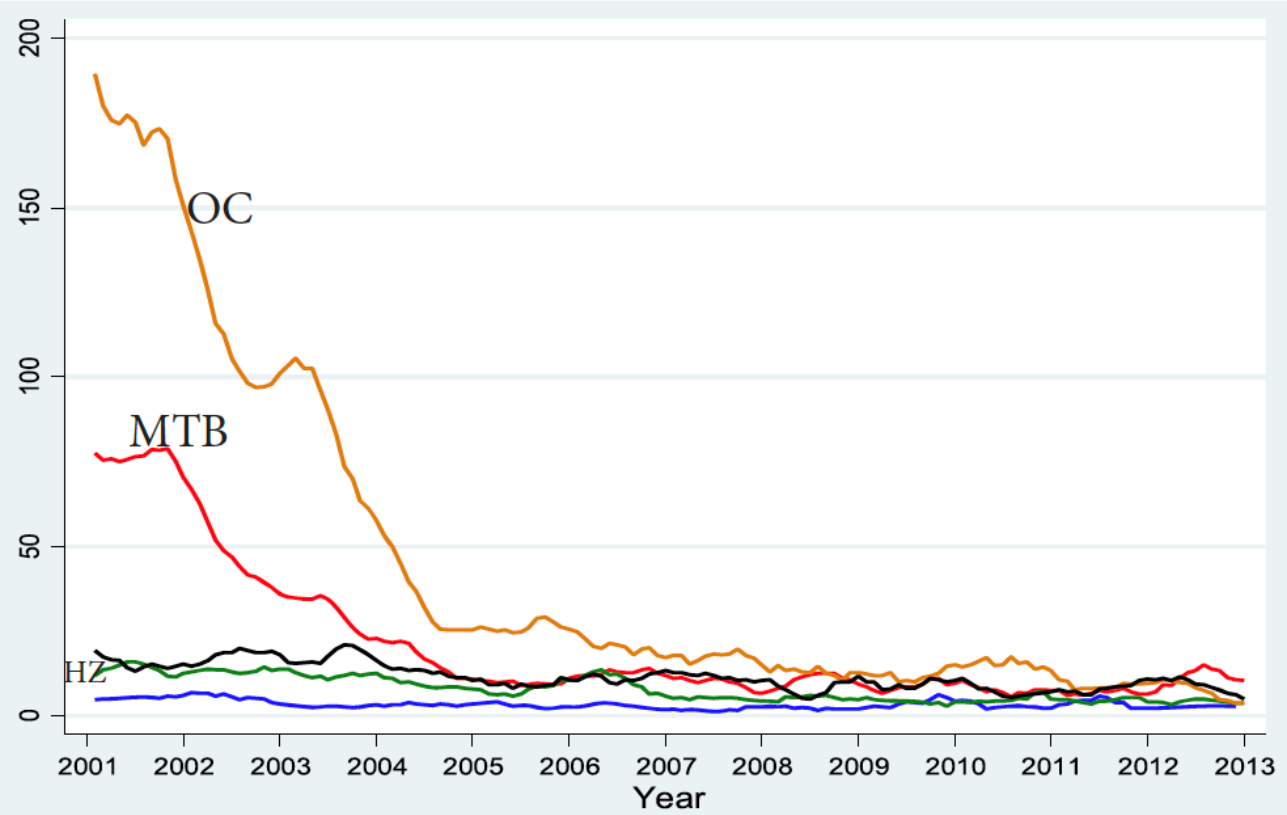
UNAIDS 2016 estimates

Rubaihayo *et al. BMC Infectious Diseases* (2015) 15:187
DOI 10.1186/s12879-015-0927-7

BMC
Infectious Diseases

RESEARCH ARTICLE Open Access

Trends in prevalence of selected opportunistic infections associated with HIV/AIDS in Uganda



WHY Vaccinate HIV population

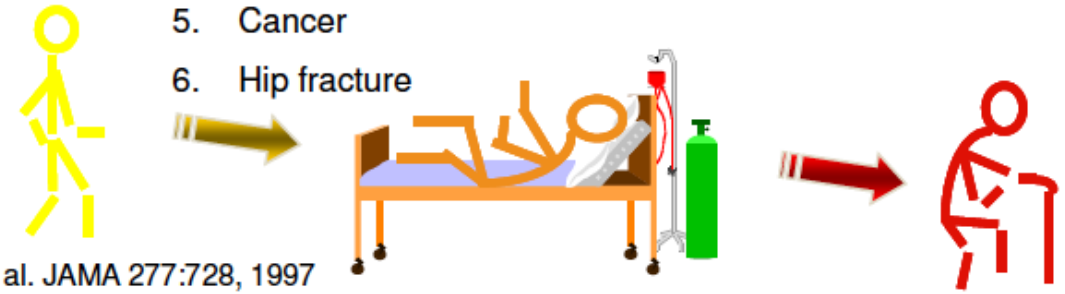
- Have impaired host defenses
- Increased risk of vaccine preventable diseases
- Prevent severe forms of disease
- Shared transmission routes (HIV)
- For specific risk behaviours or comorbidities

Vaccine Preventable Disability

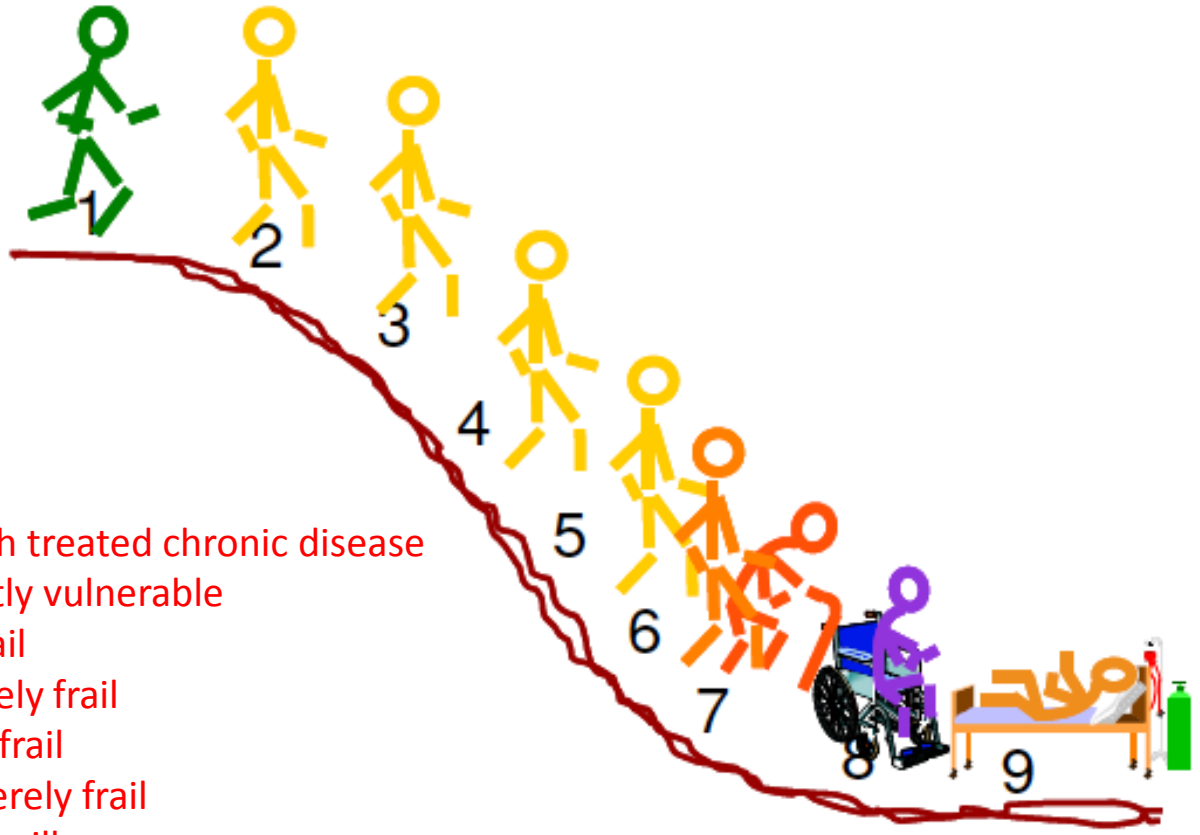
Catastrophic disability

- Defined as a loss of independence in ≥ 3 ADL
- 72% who experience catastrophic disability have been hospitalized
- Leading causes of catastrophic disability

1. Strokes
2. CHF
3. Pneumonia and influenza
4. Ischemic heart disease
5. Cancer
6. Hip fracture



Ferrucci et al. JAMA 277:728, 1997
Barker et al. Arch Int Med 158:645, 1998
Falsey et al. *N Engl J Med.* 2005;352:1749



1= Very fit
2= Well
3= Well, with treated chronic disease
4= Apparently vulnerable
5= Mildly frail
6= Moderately frail
7= Severely frail
8= Very severely frail
9= Terminally ill

Low Vaccine Coverage in HIV

- Coverage rates among HIV patients reportedly low
  - In US influenza vaccination coverage 25-43%
  - In France influenza coverage is 30.9%
- **Multifactorial**
  - Lack of knowledge of current vaccine recommendations
  - Lack of infrastructure in clinics to provide vaccines
  - Concerns about vaccine safety
  - Insurers not willing to pay for vaccines

AIDS PATIENT CARE and STDs
Volume 28, Number 8, 2014

Vaccine 2014; 32:4558-4564

Vaccines with strong local evidence for Use

Influenza

- Responsible for a 10-fold increased mortality rate
- In SA influenza kills between 6 000-11 000 people every year
  - Half of these deaths are in the elderly
  - About 30% in HIV-infected individuals
- Highest rates of hospitalization
  - The elderly (65 years and older)
  - **HIV-infected people**
  - Pregnant women
  - Children less than five years

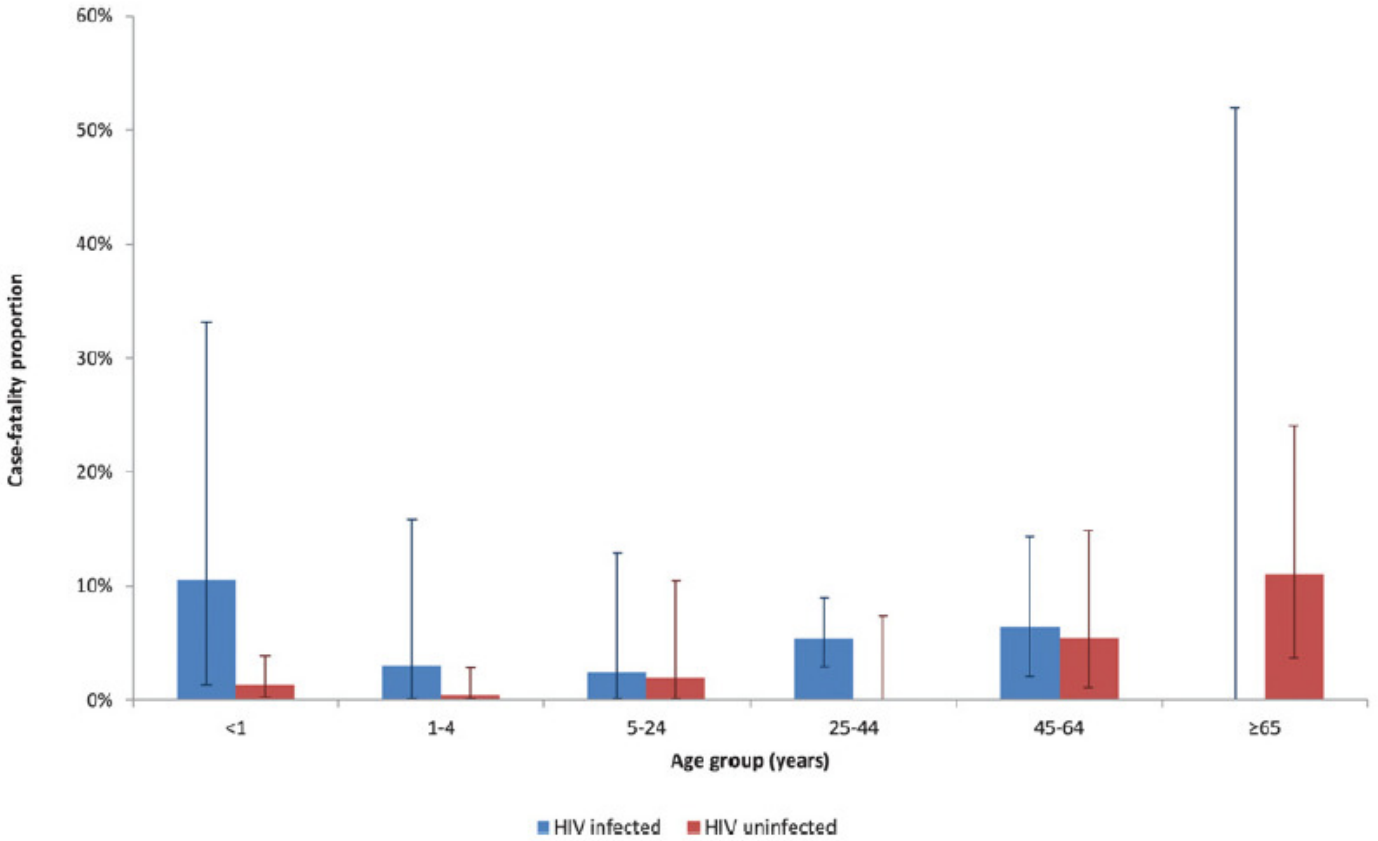


Fig 3. Case-fatality proportions by age group and HIV status amongst patients hospitalized with influenza-associated SARI at four sentinel surveillance sites in South Africa, 2009–2013 (n = 1039).

Key Points:

- Influenza causes substantial mortality in Soweto, South Africa.
- The peak burden of mortality experienced in children <1 year age and HIV-infected adults aged 25-64 years.
- HIV infected individuals experienced a higher estimated rate of death in all age groups
- Other risk factors for death were the presence of non-HIV underlying illness and co-infection with *S.pneumoniae*.

Influenza Vaccination of Pregnant Women and Protection of Their Infants

Shabir A. Madhi, M.D., Ph.D., Clare L. Cutland, M.D., Locadiah Kuwanda, M.Sc., Adriana Weinberg, M.D., Andrea Hugo, M.D., Stephanie Jones, M.D., Peter V. Adrian, Ph.D., Nadia van Niekerk, B.Tech., Florette Treurnicht, Ph.D., Justin R. Ortiz, M.D., Marietjie Venter, Ph.D., Avy Violari, M.D., Kathleen M. Neuzil, M.D., Eric A.F. Simões, M.D., Keith P. Klugman, M.D., Ph.D., and Marta C. Nunes, Ph.D., for the Maternal Flu Trial (Matflu) Team*

N Engl J Med 2014;371:918-31.

Influenza vaccination in HIV-infected individuals: Systematic review and assessment of quality of evidence related to vaccine efficacy, effectiveness and safety

Cornelius Remschmidt*, Ole Wichmann, Thomas Harder

Conclusion: This systematic review indicates that TIV is effective in preventing influenza infection in HIV-infected adults but not in young children. For both age-groups, only limited evidence exists for other outcomes, indicating a need for further studies.

Vaccine 2014; 32:5585-5592

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Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Influenza**
  - 1 dose yearly
  - Irrespective of CD4+ cell count, HIV viral load or pregnancy status

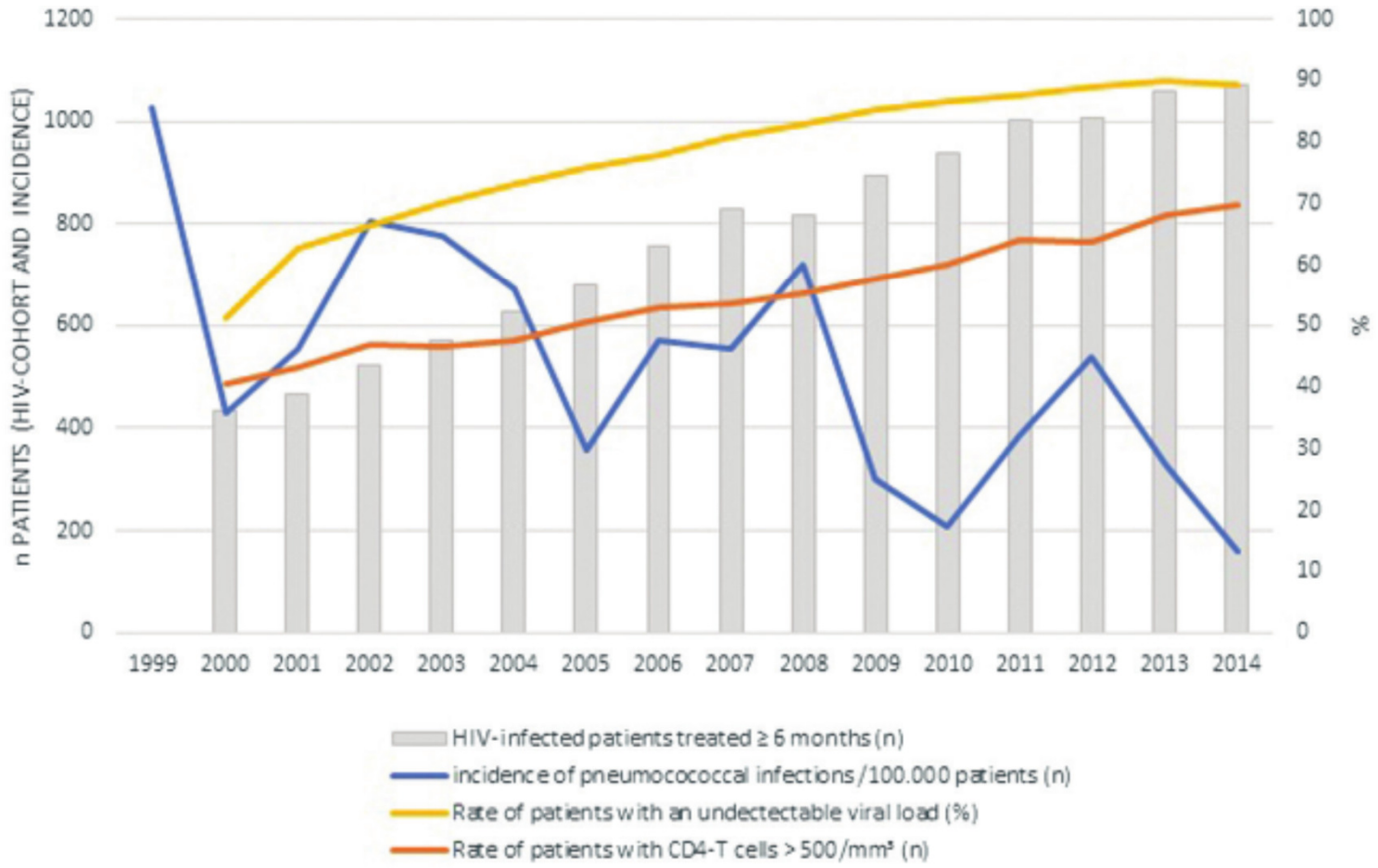
Pneumococcal

- HIV-infected individuals have a 35 to 60 fold increase of invasive IPD
  - Higher rates of bacteremia
  - Often at risk of recurrent pneumococcal infections
  - Associated with a 2-fold higher mortality rate
- Some good reasons why vaccination important in this population
- 3 main concerns previously
  - Lack of consensus on protective levels
  - Optimal timing of immunization
  - Durability of response and protection
- Vaccines available
  - Polysaccharide vaccine (PPV23)
  - Conjugate vaccine (PCV13)

Open Forum Infectious Diseases

MAJOR ARTICLE

Antiretroviral Therapy as Prevention of … Pneumococcal Infections?



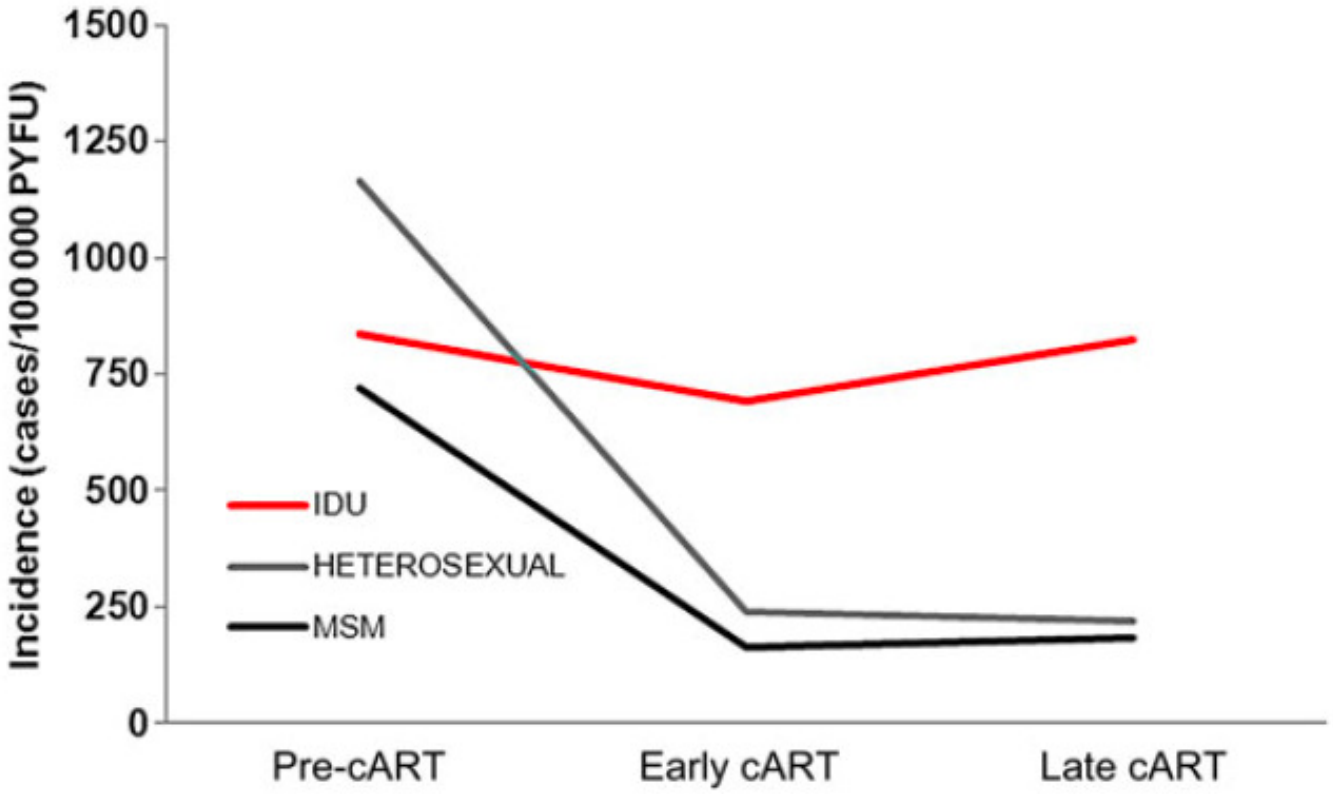


Figure 1. Incidence of invasive pneumococcal disease per 100 000 person-years of follow-up among HIV-infected patients by transmission group, Denmark, 1995–2012. Periods: pre–combination antiretroviral therapy (cART), 1995–1996; early cART, 1997–1999; late cART, 2000–2012. Abbreviations: cART, combination antiretroviral therapy; IDUs, injecting drug users; MSM, men who have sex with men; PYFU, person-years of follow-up.

RESEARCH ARTICLE Open Access

The persisting burden of invasive pneumococcal disease in HIV patients: an observational cohort study

Reed AC Siemieniuk[1,2], Dan B Gregson[3,4] and M John Gill[1,3*]

Conclusions: Despite universal access to intensive measures to prevent pneumococcal disease including the widespread use of HAART and PPV-23 immunization, the incidence of IPD remains high in HIV patients with its associated morbidity and mortality.

BMC Infectious Diseases 2011, 11:314

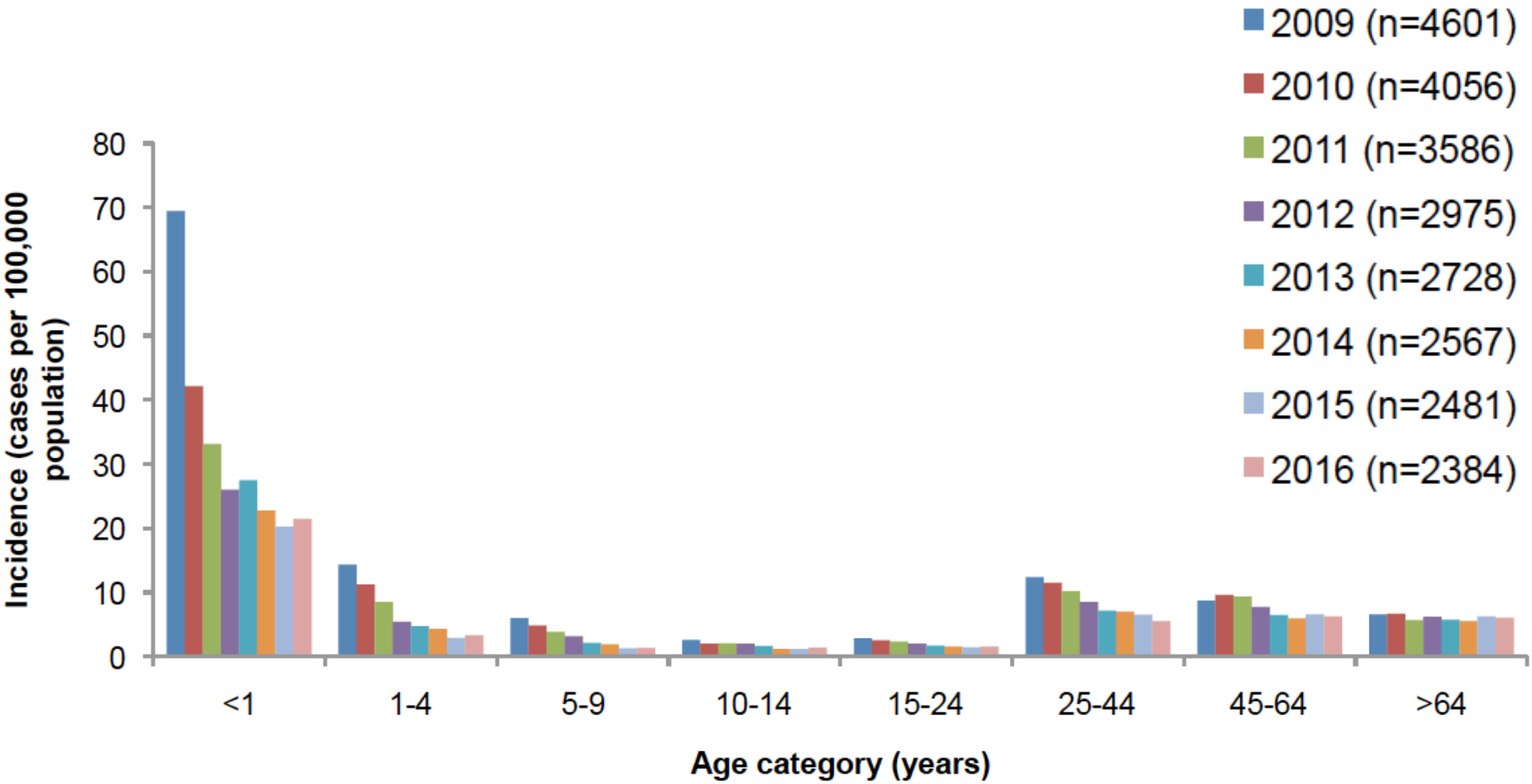
Persistent High Burden of Invasive Pneumococcal Disease in South African HIV-Infected Adults in the Era of an Antiretroviral Treatment Program

Marta C. Nunes[1], Anne von Gottberg[2], Linda de Gouveia[2], Cheryl Cohen[3], Locadiah Kuwanda[1], Alan S. Karstaedt[4], Keith P. Klugman[2,5], Shabir A. Madhi[1,2]*

Conclusion: Despite a stable prevalence of HIV and the increased roll-out of HAART for treatment of AIDS patients in our setting, the burden of IPD has not decreased among HIV-infected adults. The study indicates a need for ongoing monitoring of disease and HAART program effectiveness to reduce opportunistic infections in African adults with HIV/AIDS, as well as the need to consider alternate strategies including pneumococcal conjugate vaccine immunization for the prevention of IPD in HIV-infected adults.

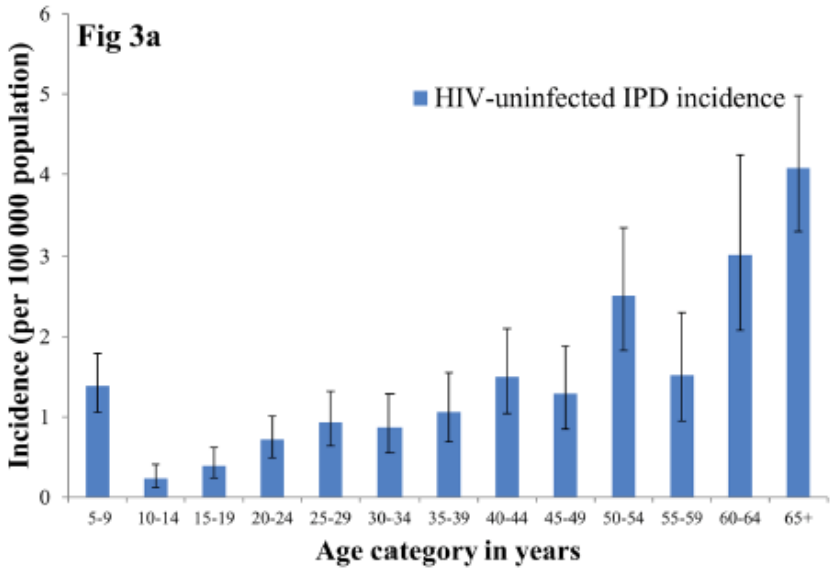
PLoS ONE 6(11):e27929

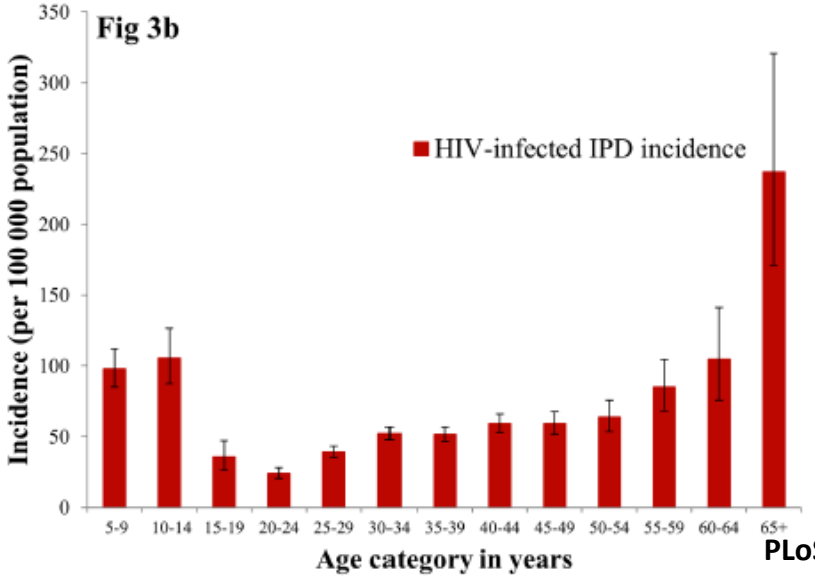
Age-specific incidence rates for Lab-confirmed IPD: GERMS-SA, South Africa, 2009-2016



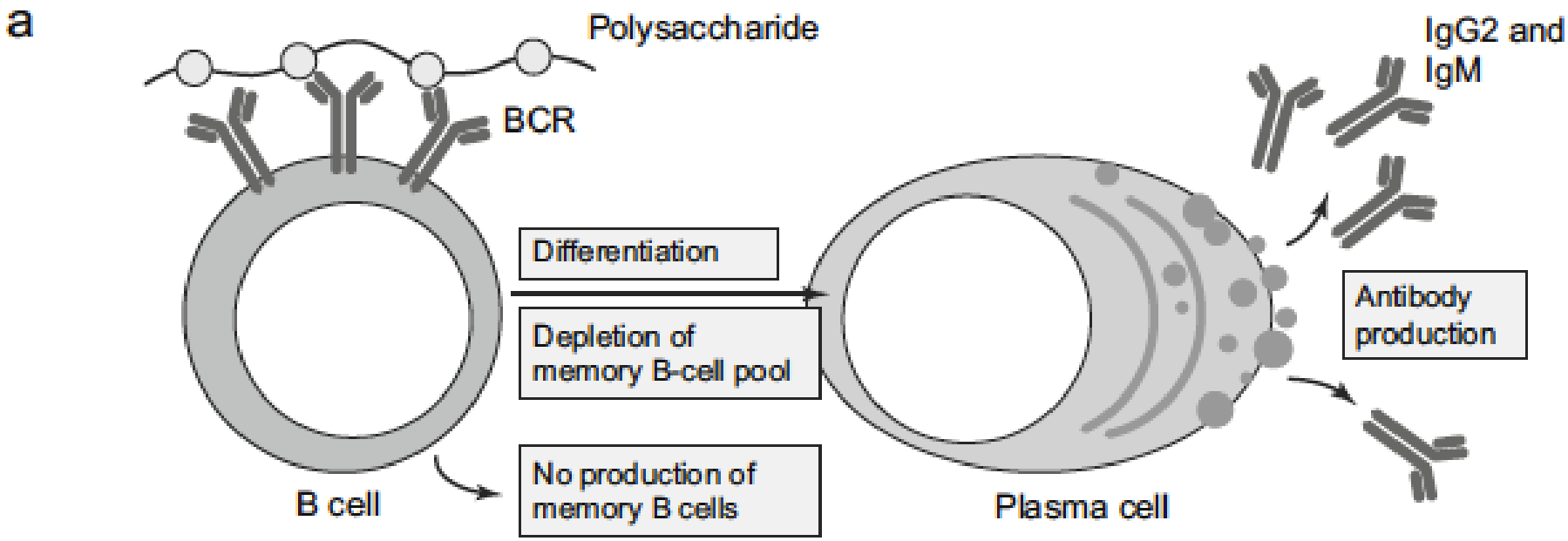
- **Risk factors for IPD- GERMS data**
  - **Diabetes mellitus (most common)**
  - Chronic lung disease
  - Heart disease
  - Renal disease
  - Liver disease
- **HIV-infection**
  - Most affected age 25-44 years (40% on ART)

Fig 3. Incidence of invasive pneumococcal disease (IPD) amongst HIV-uninfected and HIV-infected persons by age category, South Africa, 2008.

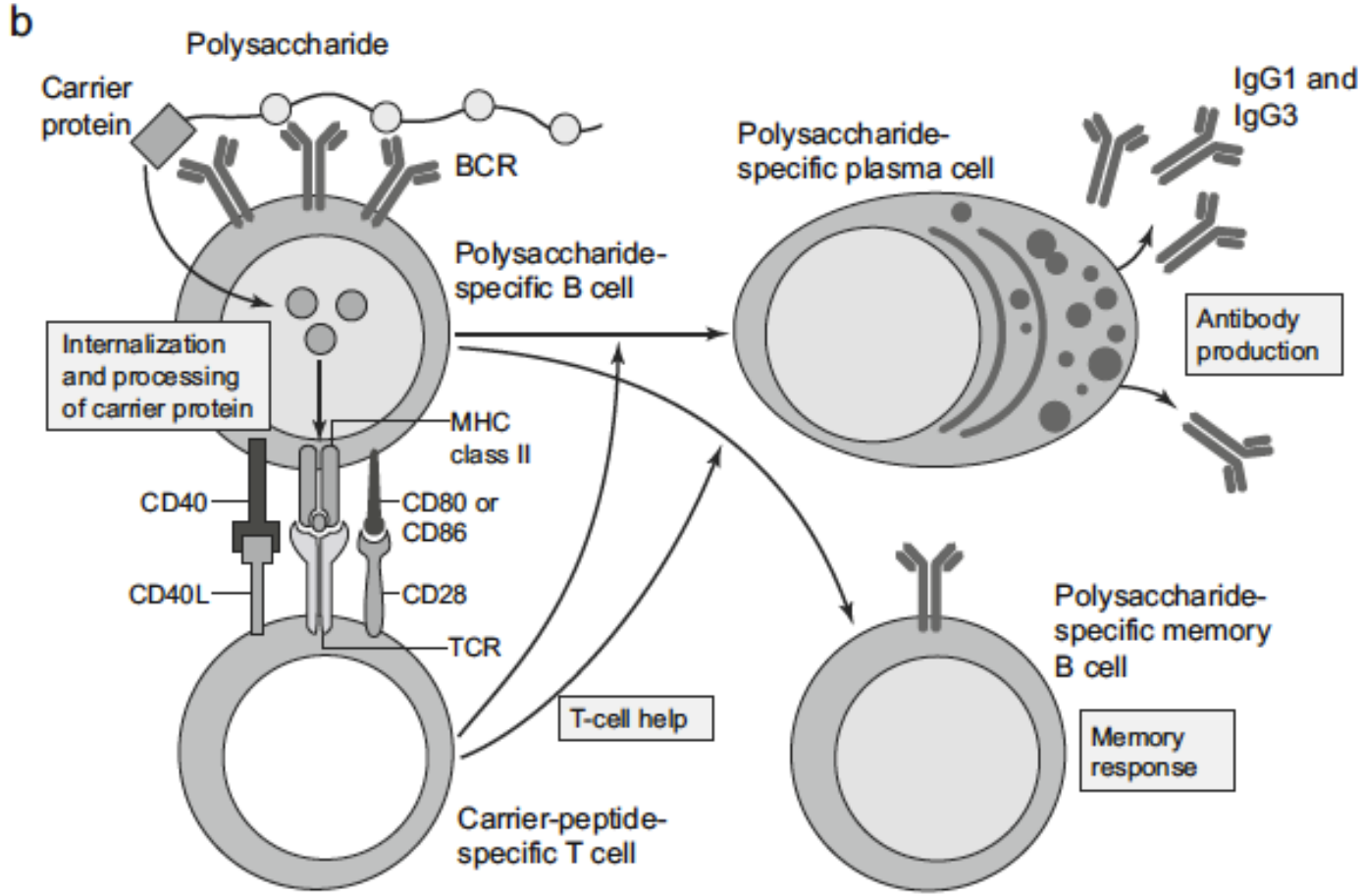




PLoS ONE 10(2):e0117716

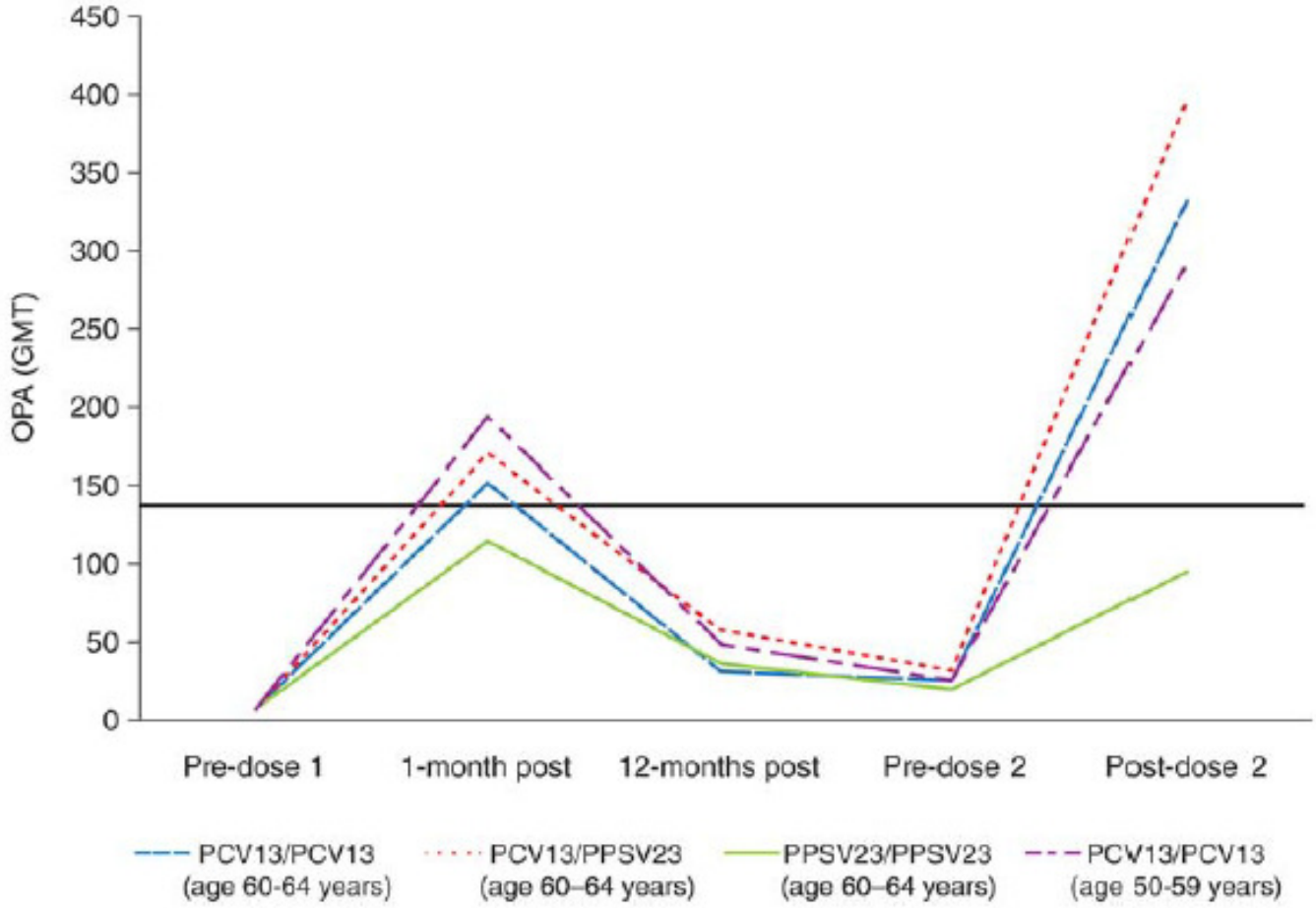


Eur J Clin Microbiol Infect Dis (2015) 34:19-31



Eur J Clin Microbiol Infect Dis (2015) 34:19-31

Immunogenicity: Opsonophagocytic Activity Following One and Two Doses of PCV13 and PPV23: Serotype 1



Paradiso PR. Clin Infect Dis 2012; 55: 259-64

Immunological efficacy of pneumococcal vaccine strategies in HIV-infected adults: a randomized clinical trial

C. Sadlier[1,2], S. O'Dea[1], K. Bennett[3], J. Dunne[4], N. Conlon[4] & C. Bergin[1,2]

This Study adds to evidence supporting current pneumococcal vaccination recommendations combining the conjugate and polysaccharide pneumococcal vaccines in the United States and Europe for HIV-infected individuals.

Sci. Rep. (2016) 6:32076

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Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Pneumococcal**
  - All HIV-infected regardless of CD4+ with suppressed viral load
  - Prime-boost approach
  - PCV13 followed by PPV23 eight weeks later
  - PCV13 alone is sufficient

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- **Hepatitis B**
  - Prevalence in HIV-infected individuals ranges 0.4%- 23%
  - Administration of vaccine shown to be safe
  - Four-double-dose regimen
  - Best responses in those with undetectable VL & CD4+ >200 cells/µL

Diphtheria Outbreaks in South Africa

- 15 cases occurred in eThekwini, KZN province 2015
  - most cases occurred in people who were not vaccinated or partially vaccinated
- 2 confirmed cases 2016- KZN
- Diphtheria kills 1, infects 3 in Western Cape – August 2017
  - 4 lab-confirmed cases & 1 asymptomatic carrier
- 3 cases (aged 20,11 & 10 yrs), KZN province since March 2018
  - 2 of the cases have demised
- Catch-up campaign

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- **Tetanus-diphtheria (Td)**
  - Vaccinated irrespective of CD4+ count
  - Booster vaccine every 10 years (until more data available)

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- **Human papilloma virus**
  - In SA HPV- preteen girls 9-13 yrs- regardless of HIV status
  - Recommended for all HIV-infected adult men (**MSM**) & **women**,
  - Can be given regardless of CD4+ count, ART use or viral load

Vaccines that are recommended but either local data lacking or warranted in select cases

Pertussis

The Pertussis Problem

Stanley A. Plotkin

Department of Pediatrics, University of Pennsylvania, Philadelphia

Pertussis is resurgent, and many cases are occurring in vaccinated children and adolescents. In countries using acellular vaccines, waning immunity is at least part of the problem. This article discusses possible improvements in those vaccines.

Clinical Infectious Diseases January 2014

EXPERT REVIEWS

Re-emergence of pertussis: what are the solutions?

Expert Rev. Vaccines 11(11), 1331–1346 (2012)

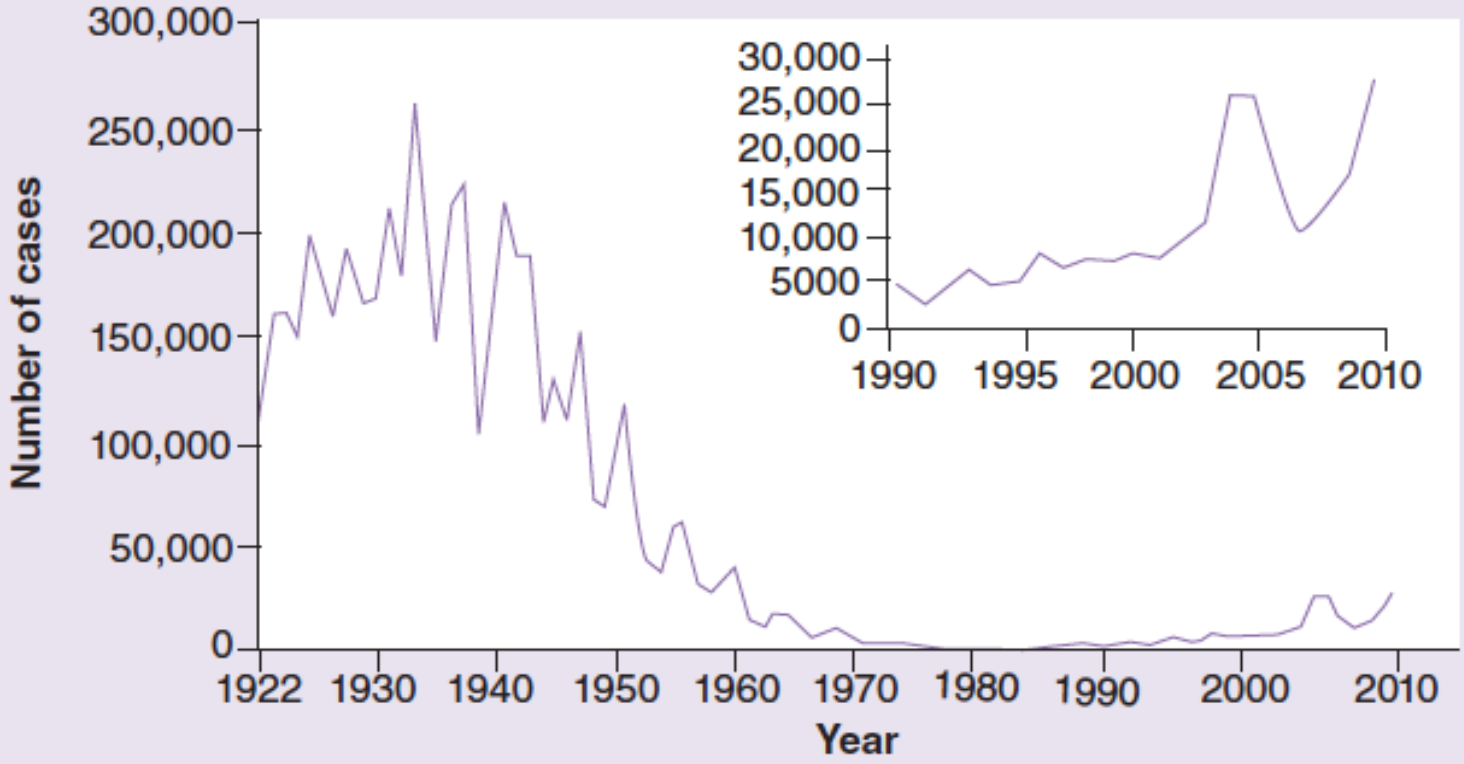


Figure 1. Pertussis cases by year in the USA from 1922 to 2010. The number of cases of whooping cough has been increasing steadily since the 1980s.
Reprinted with permission from [2], © Elsevier 2012.

Expert Rev Vaccines 2012: 11(11): 1331-1346

Clinical Infectious Diseases

SUPPLEMENT ARTICLE

Bordetella pertussis Infection in South African HIV-Infected and HIV-Uninfected Mother–Infant Dyads: A Longitudinal Cohort Study

Marta C. Nunes,[1,2] Sarah Downs,[1,2] Stephanie Jones,[1,2] Nadia van Niekerk,[1,2] Clare L. Cutland,[1,2] and Shabir A. Madhi[1,2,3]

Conclusions. *Bordetella pertussis* identification was common among young infants with respiratory illness, most of whom were too young to be fully protected through direct vaccination. Vaccination of pregnant women might be a valuable strategy in a setting such us ours to prevent *B. pertussis*–associated illness in women and their young infants. **Clinical Infectious Diseases® 2016;63(S4):S174–80**

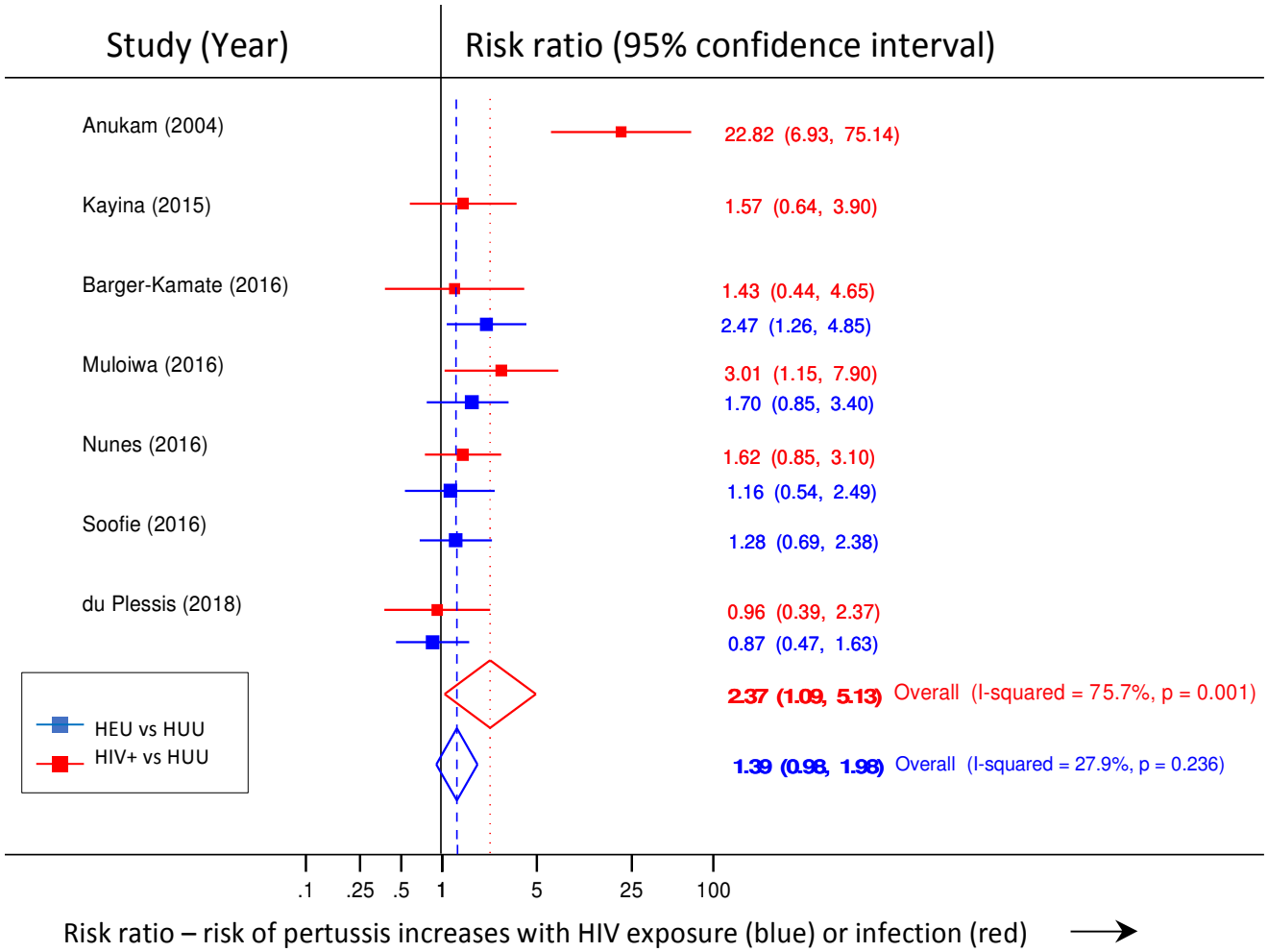
Review

Pertussis in Africa: Findings and recommendations of the Global Pertussis Initiative (GPI)

Rudzani Muloiwa [a], Nicole Wolter [b], Ezekiel Mupere [c], Tina Tan [d], A.J. Chitkara [e], Kevin D. Forsyth [f], Carl-Heinz Wirsing von König [g], Gregory Hussey [h,*]

Vaccine 36 (2018) 2385–2393

Risk of pertussis with HIV infection and exposure



Slide courtesy of Dr Muloiwa

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Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Pertussis**
  - Emerging epidemiological data on burden of pertussis in HIV endemic countries
  - Only pregnant women regardless of CD4+ count or viral load
  - Recommend acellular vaccine

Southern African Journal of HIV Medicine
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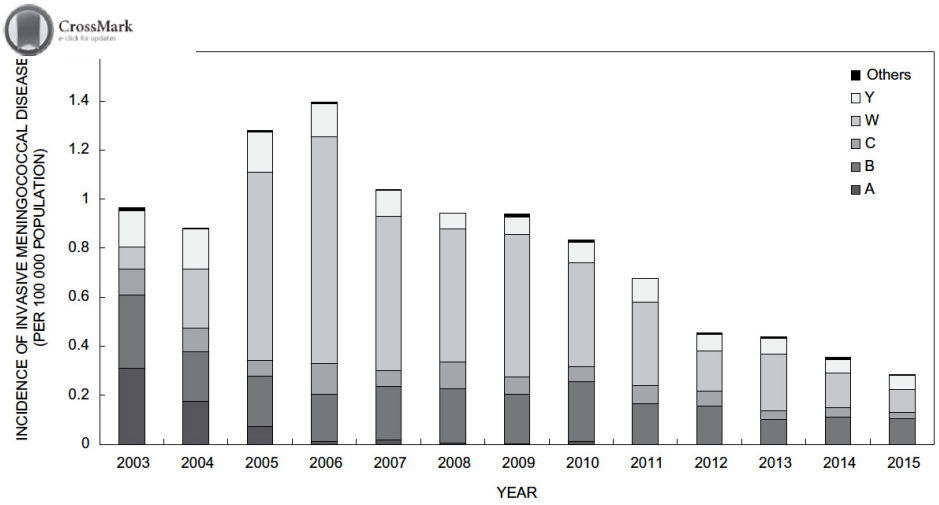
Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Meningococcal**
  - Should be considered
  - 2 dose schedule (12 weeks apart)
  - Booster every 5 years



- **Hepatitis A**
  - Recommended in high risk groups
    - **MSM, IV drug users, travel, chronic liver disease**
  - Ideally vaccinate those with CD4+ count >200

Vaccines with no recommendations

Systematic review

Hussey *et al. BMC Infectious Diseases* (2017) 17:717
DOI 10.1186/s12879-017-2815-9

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

Varicella zoster virus-associated morbidity and mortality in Africa – a systematic review

Hannah Hussey[1*], Leila Abdullahi[2], Jamie Collins[3], Rudzani Muloiwa[4], Gregory Hussey[2] and Benjamin Kagina[2,5]

Methods

-Developed search query

-Applied the search query in 9 databases:
(***PubMed, Web of Science, CENTRAL, Scopus, Africa-Wide, PDQ-Evidence, Wholis, Embase and CINAHL.)***

-Screened studies for eligibility

-Data extraction and analysis

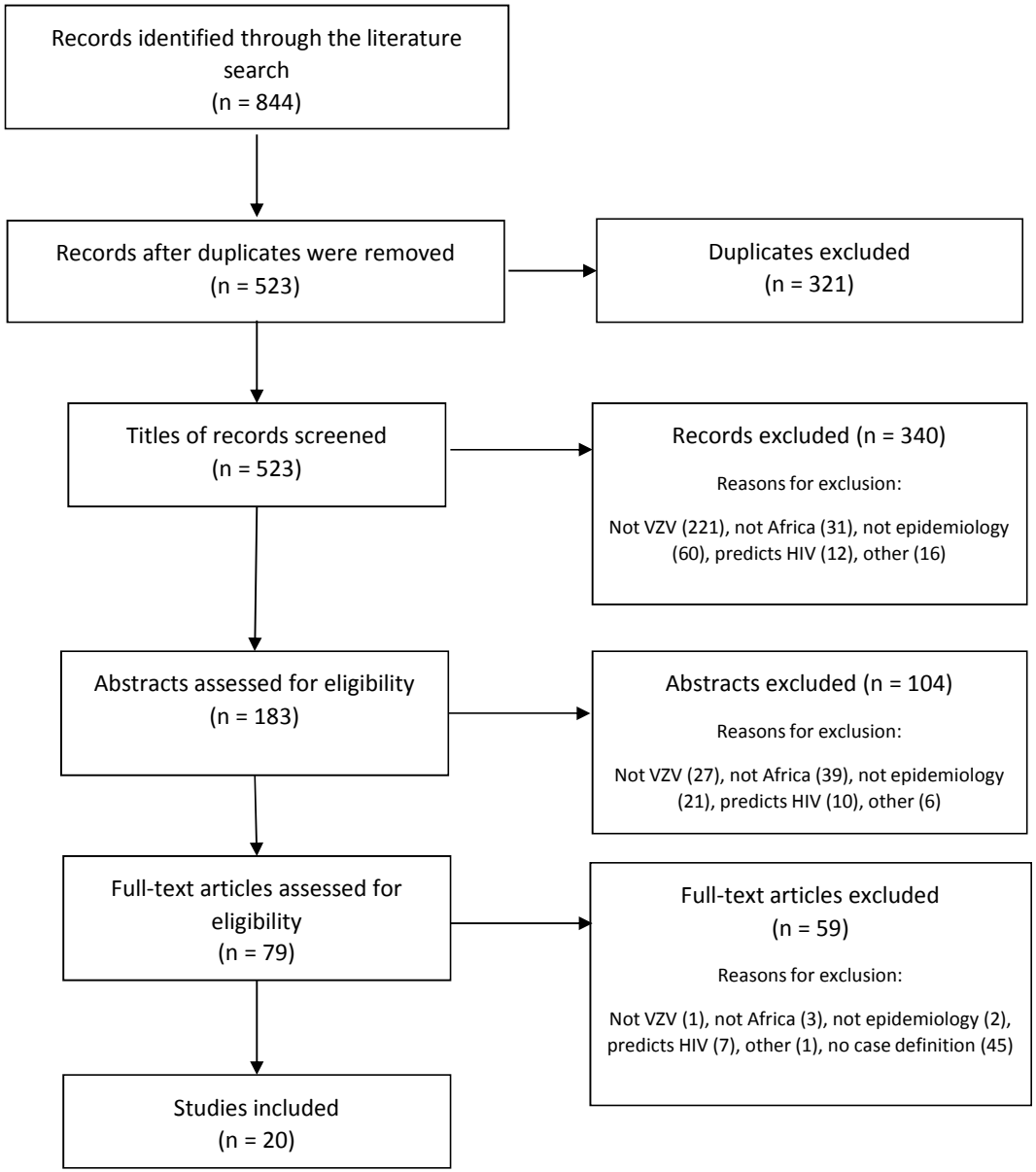
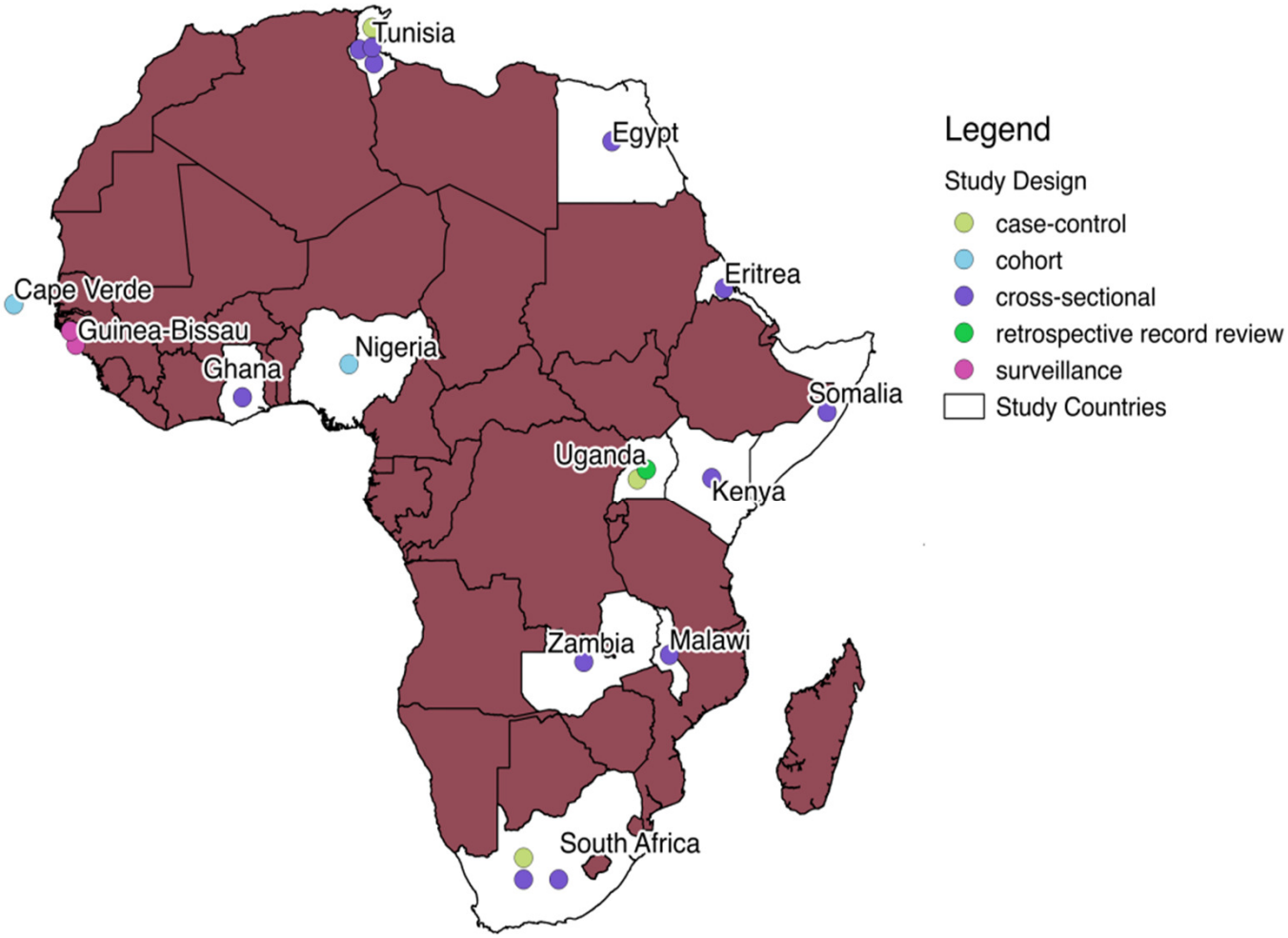

Records identified through the literature search
(n = 844)
Records after duplicates were removed
(n = 523)
Duplicates excluded
(n = 321)
Titles of records screened
(n = 523)
Records excluded (n = 340)
Reasons for exclusion:
Not VZV (221), not Africa (31), not epidemiology (60), predicts HIV (12), other (16)
Abstracts assessed for eligibility
(n = 183)
Abstracts excluded (n = 104)
Reasons for exclusion:
Not VZV (27), not Africa (39), not epidemiology (21), predicts HIV (10), other (6)
Full-text articles assessed for eligibility
(n = 79)
Full-text articles excluded
(n = 59)
Reasons for exclusion:
Not VZV (1), not Africa (3), not epidemiology (2), predicts HIV (7), other (1), no case definition (45)
Studies included
(n = 20)

Table: Characteristics of included studies

Author (year of publication)	Country	Setting	Study Design	Sample size
Admani, B., et al. (2008)	Kenya	Health facility	cross-sectional	182
Ajayi, G. O., et al. (2011)	Nigeria	Health facility	cohort	70
Asiki, G., et al. (2015)	Uganda	Community	case-control	166
Ben Fredj, N., et al. (2012)	Tunisia	Both	case-control	102
Benjamin, L. A., et al. (2013)	Malawi	Health facility	cross-sectional	183
Compston, L. I., et al. (2009)	Ghana	Both	cross-sectional	412
Ghebrekidan, H., et al. (1999)	Eritrea	Community	cross-sectional	450
Hannachi, N., et al. (2011)	Tunisia	Health facility	cross-sectional	404
Laaks, D., et al. (2015)	South Africa	Health facility	case-control	129
Leung, J., et al. (2015)	Somalis living in Kenya	Community	cross-sectional	288
Nahdi, I., et al. (2012)	Tunisia	Health facility	cross-sectional	126
Nahdi, I., et al. (2013)	Tunisia	Health facility	cross-sectional	47
Poulsen, A., et al. (2002)	Guinea-Bissau	Community	cohort	37400
Poulsen, A., et al. (2005)	Guinea-Bissau	Community	cohort	45000
Rubaihayo, J., et al. (2015)	Uganda	Health facility	cohort	5972
Schaftenaar, E., et al. (2014)	South Africa	Health facility	cross-sectional	405
Schoub, B. D., et al. (1985)	South Africa	Community	cross-sectional	244
Selim, H. S., et al. (2007)	Egypt	Health facility	cross-sectional	322
Siddiqi, O. K., et al. (2014)	Zambia	Health facility	cross-sectional	331
Sixl, W. and B. Sixl-Voigt (1987)	Cape Verde	Health facility	cohort	380

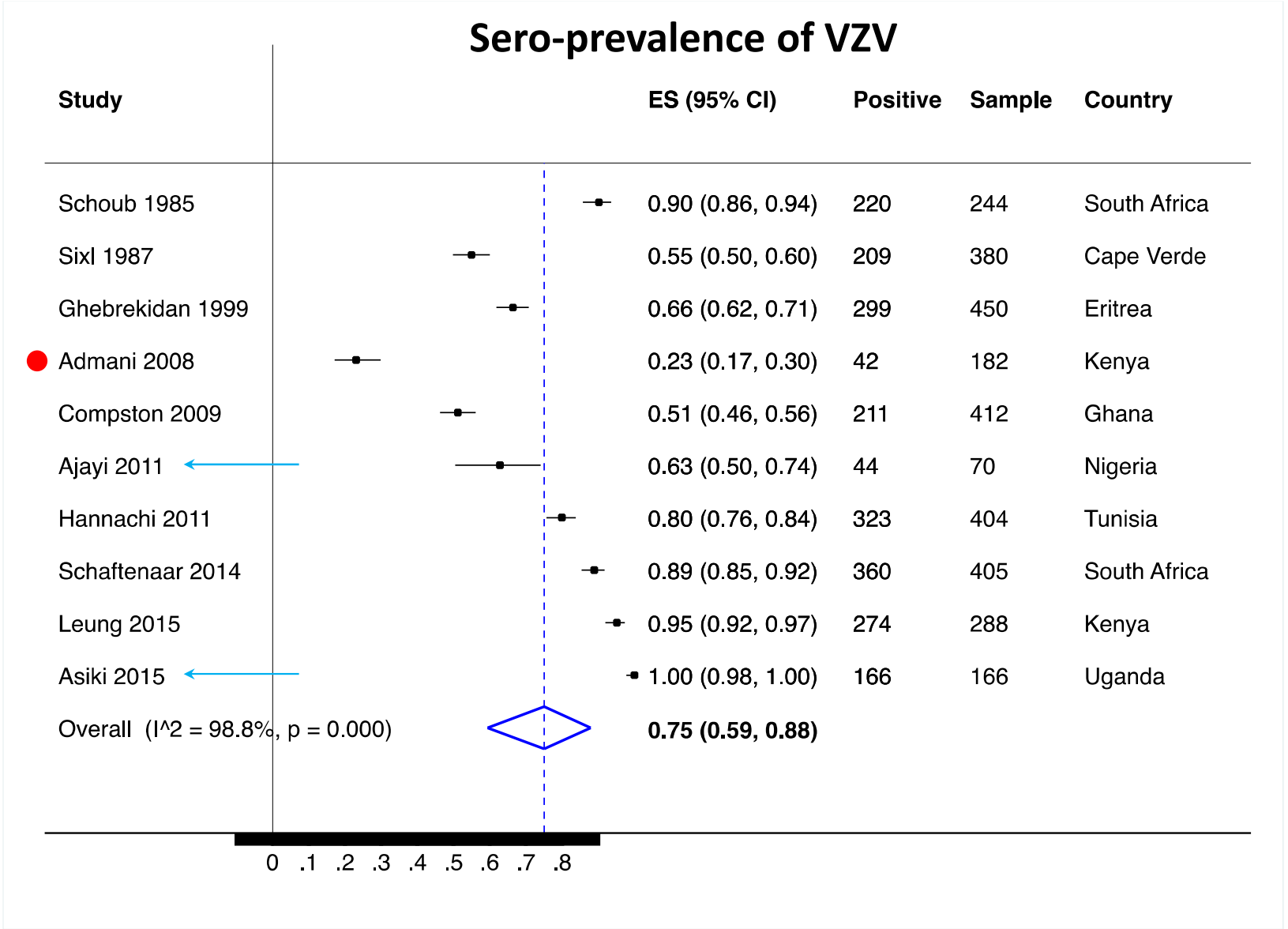
Geographical distribution and design included studies



Included studies come from 13 countries

Prevalence of VZV infection by serology

- 10 studies reported use of serology
- 7 of the ten studies measured IgG,
- 2 tested both IgG and IgM
- One study antibody not stated
- No standard definition of seropositivity
- Seroprevalence ranged from 21.9% in hospitalized Kenyan children to 100% in elderly patients in rural Uganda
- Children showed lower prevalence than adults


Sero-prevalence of VZV
Study
ES (95% CI)
Positive
Sample
Country
Schoub 1985
0.90 (0.86, 0.94)
220
244
South Africa
Sixl 1987
0.55 (0.50, 0.60)
209
380
Cape Verde
Ghebrekidan 1999
0.66 (0.62, 0.71)
299
450
Eritrea
Admani 2008
0.23 (0.17, 0.30)
42
182
Kenya
Compston 2009
0.51 (0.46, 0.56)
211
412
Ghana
Ajayi 2011
0.63 (0.50, 0.74)
44
70
Nigeria
Hannachi 2011
0.80 (0.76, 0.84)
323
404
Tunisia
Schaftenaar 2014
0.89 (0.85, 0.92)
360
405
South Africa
Leung 2015
0.95 (0.92, 0.97)
274
288
Kenya
Asiki 2015
1.00 (0.98, 1.00)
166
166
Uganda
Overall (I^2 = 98.8%, p = 0.000)
0.75 (0.59, 0.88)
0 .1 .2 .3 .4 .5 .6 .7 .8

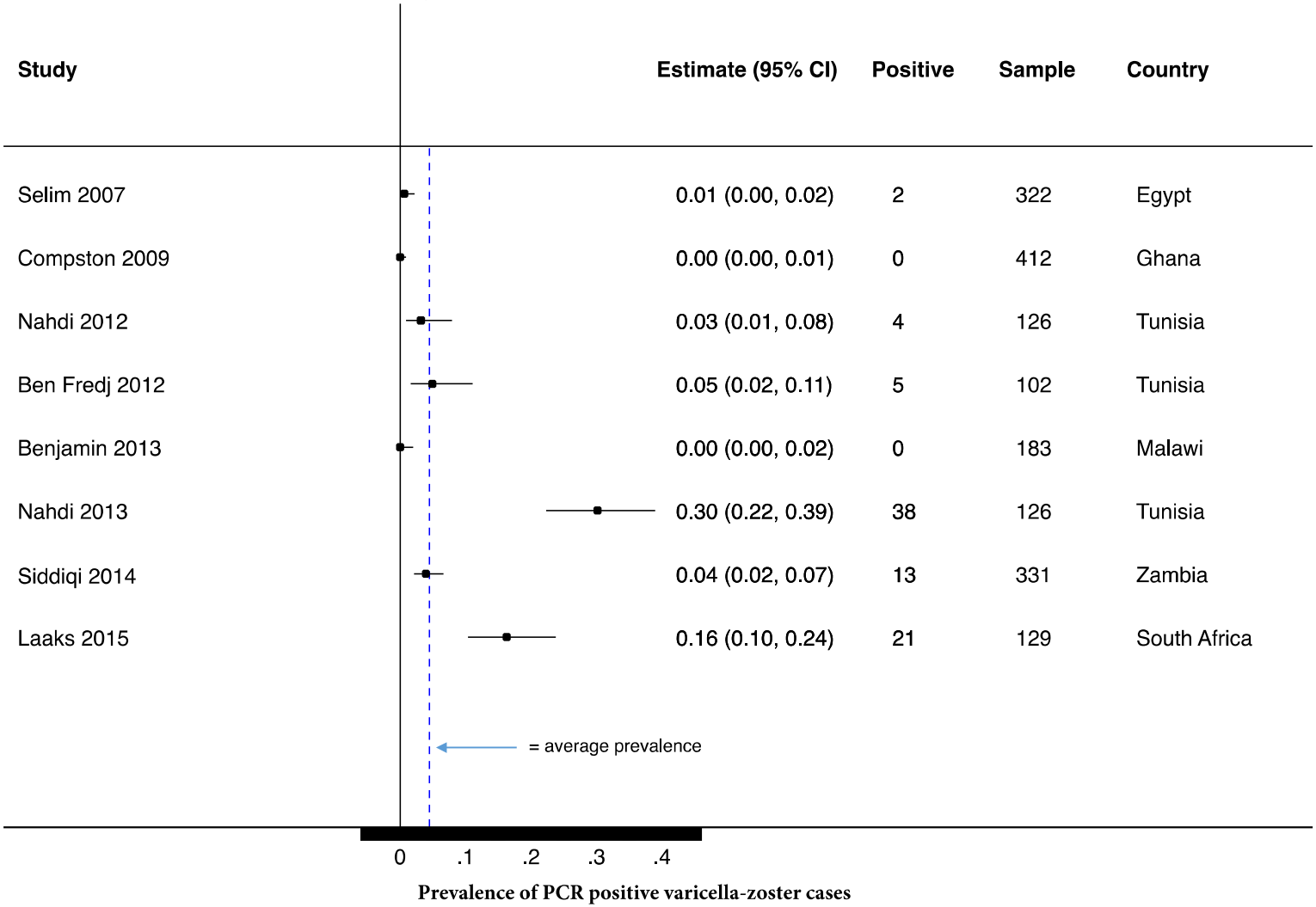
Prevalence of VZV infection by PCR

Most studies (8) looked at special cohorts of patients

- 5 studies - patients with neurological disease
- 2 studies - patients with ocular disease
- Only one study was in “regular” VZV disease

Difficult to extrapolate to general population

PCR prevalence of VZV



What about incidence?

Journal of Infection (2002) **45**: 237–242
doi:10.1053/jinf.2002.1049, available online at http://www.idealibrary.com on IDEAL®

A Household Study of Chickenpox in Guinea-Bissau: Intensity of Exposure is a Determinant of Severity

A. Poulsen[1,2,*,†], K. Qureshi[1,†], I. Lisse[1,2], P.-E. Kofoed[3], J. Nielsen[1,2], B. F. Vestergaard[4] and P. Aaby[1,2]

ORIGINAL STUDIES

Varicella Zoster in Guinea-Bissau

Intensity of Exposure and Severity of Infection

Anja Poulsen, MD,† Fernando Cabral, MD, Jens Nielsen,† Adam Roth, MD, PhD,† Ida Maria Lisse, MD,† Bent Faber Vestergaard, MD,‡ and Peter Aaby, MD†*

Incidence (cont….)

Poulsen et al: 2 community based studies in Guinea Bissau

Used both serology and clinical case definition

2002 – 441 cases per 100 000 population

- Median age of 3 years for the cases
- Pneumonia – 2%
- Bacterial skin infection – 44%
- Cough – 24%
- Conjunctivitis – 4%
- Diarrhoea – 2%

2005 – 3420 cases per 100 000 population

- Median age of 4.4 years for the cases
- Pneumonia 10%
- **Case-fatality rate – 0.13%**

Rubaihayo *et al. BMC Infectious Diseases* (2015) 15:187
DOI 10.1186/s12879-015-0927-7

Incidence cont…

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

Trends in prevalence of selected opportunistic infections associated with HIV/AIDS in Uganda

John Rubaihayo[1,2*], Nazarius M Tumwesigye[1] and Joseph Konde-Lule[1]

Clinical case definition for herpes zoster

4410 cases per 100 000 population overall

- Median age of cases 32 (range 26-39) years
- Median CD4 128 cells at ART initiation

Mortality and HIV infection

Mortality - Two studies reported mortality:

- Poulsen et al. 2005 reported a fatality rate of 0.13% - varicella
- Siddiq et al. 2014 had a 30.8% mortality - CNS infection

9 studies had data on HIV

Rubaihayo - Incidence was 1340 cases per 100 000 population pre-ART
- 330 cases per 100 000 population after ART became available

Compston – Healthy HIVneg seroprevalence 45%
- Symptomatic HIVpos seroprevalence 57%
OR=1.6 (95% CI, 1.1-2.6)

Evidence of HIV impact on both seroprevalence & incidence

Southern African Journal of HIV Medicine
ISSN: (Online) 2078-6751, (Print) 1608-9693

Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Varicella**
  - Limited data on vaccination in adolescents or adults
  - In Africa- lack of epidemiologic & socio-economic data

Herpes Zoster Vaccine

- HIV-infected persons at risk for VZV reactivation
  - Estimated incidence of 3.2 cases per 100 person-years
- Limited data on use of vaccine in HIV
- May be considered in HIV
  - History of varicella or zoster or
  - VZV positive without history of varicella vaccination
  - ≥60 years CD4 count ≥200 cells/mm^3

Safety and Immunogenicity of an Adjuvanted Herpes Zoster Subunit Candidate Vaccine in HIV-Infected Adults: A Phase 1/2a Randomized, Placebo-Controlled Study

The Journal of Infectious Diseases® 2015;211:1279–87

SHINGRIX
(ZOSTER VACCINE RECOMBINANT, ADJUVANTED)

ZOSTAVAX®
Zoster Vaccine Live

Zostavax® is Generally Safe and Immunogenic in HIV-Infected Adults with CD4 Counts ≥200 Cells/µL Virologically Suppressed on ART: Results of a Phase 2, Randomized, Placebo-Controlled Trial

CA Benson, L Hua, JW Anderson, JH Jiang, DR Bozzolo, K Bergstrom, PW Annunziato, SW Read, R Pollard, D Rusin, J Lennox

for the ACTG A5247 Team

Abstract #96

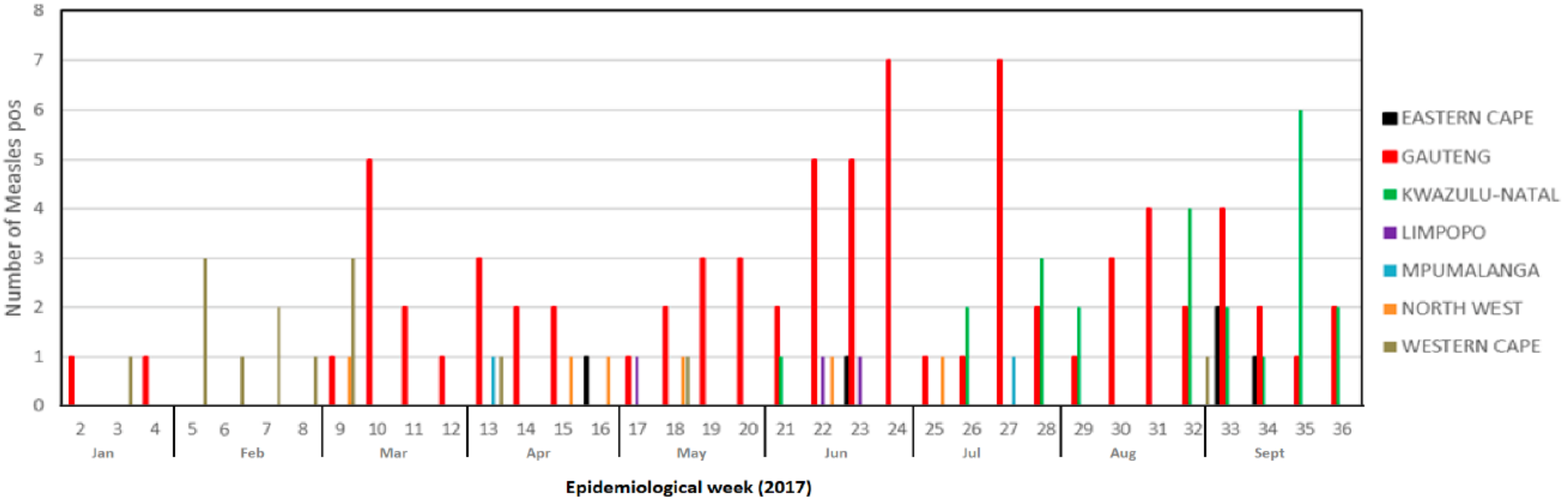
- Benefits of zoster vaccine
  - Reduce incidence of shingles
  - Reduce severity of disease
  - Reduce occurrence of post-herpetic neuralgia
- Concerns that remain
  - Lack of data on ideal dosing schedule
  - Safety & efficacy

Southern African Journal of HIV Medicine
ISSN: (Online) 2078-6751, (Print) 1608-9693

Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Zoster**
  - No data in Africa to support use of this vaccine

Measles outbreaks and surveillance update in South Africa, January-September 2017



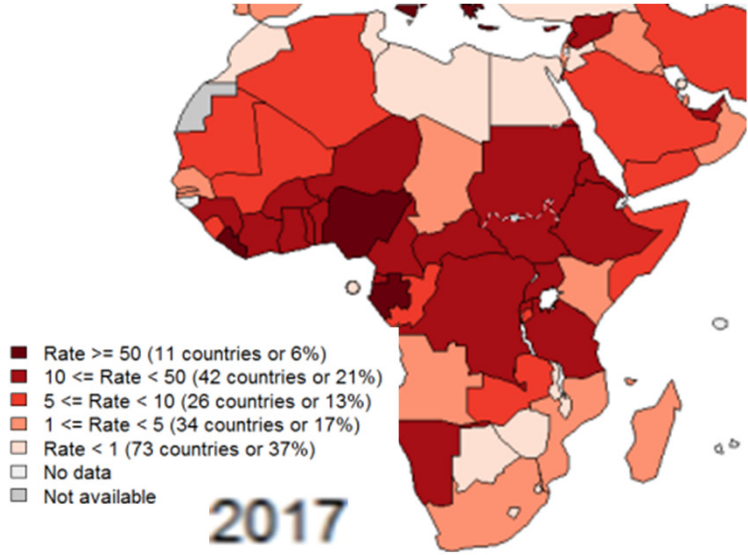
ProMED mail

Program for Monitoring Emerging Diseases

INTERNATIONAL SOCIETY FOR INFECTIOUS DISEASES

- Measles was confirmed in a 29-year-old Somali migrant worker in South Africa, who had spent the last 9 months visiting family in Djibouti city, Djibouti. He presented to hospital in Cape Town 12 days after returning by direct air travel with a 7 hour airport transfer in Nairobi, with a 6 day history of fever, conjunctivitis, dry cough, vomiting and diarrhoea, followed on day 7 by a red maculopapular facial rash with subsequent spread to his upper extremities and abdomen. There was no other travel history, nor contact with any persons with known measles or a febrile illness and rash. He received pre-travel health information through his travel company and was vaccinated against Yellow Fever. There is no formal documentation of his measles vaccination status, but his brother indicated that he underwent all routine childhood vaccinations in Somalia.

  Measles was confirmed on urine PCR on [Thu 18 Jan 2018] at the Groote Schuur Hospital Virology Laboratory, National Health Laboratory Service. The patient was discharged in a stable condition for isolation at home, to be followed up by the Groote Schuur Hospital Infectious Diseases Clinic, a member of the Geosentinel Travel Surveillance Network. A serum sample for measles IgM will be tested for surveillance purposes. The Groote Schuur Hospital Infection Prevention team is aiding the Western Cape Provincial Department of Health's Communicable Disease Control Unit to optimise infection control, and begin contact tracing.



World Health Organization

Published on ProMED 25th January 2018

Southern African Journal of HIV Medicine
ISSN: (Online) 2078-6751, (Print) 1608-9693

Guidelines for the vaccination of HIV-infected adolescents and adults in South Africa

- **Measles, mumps & rubella (MMR)**
  - Contra-indicated with CD4+ counts <200 cells.

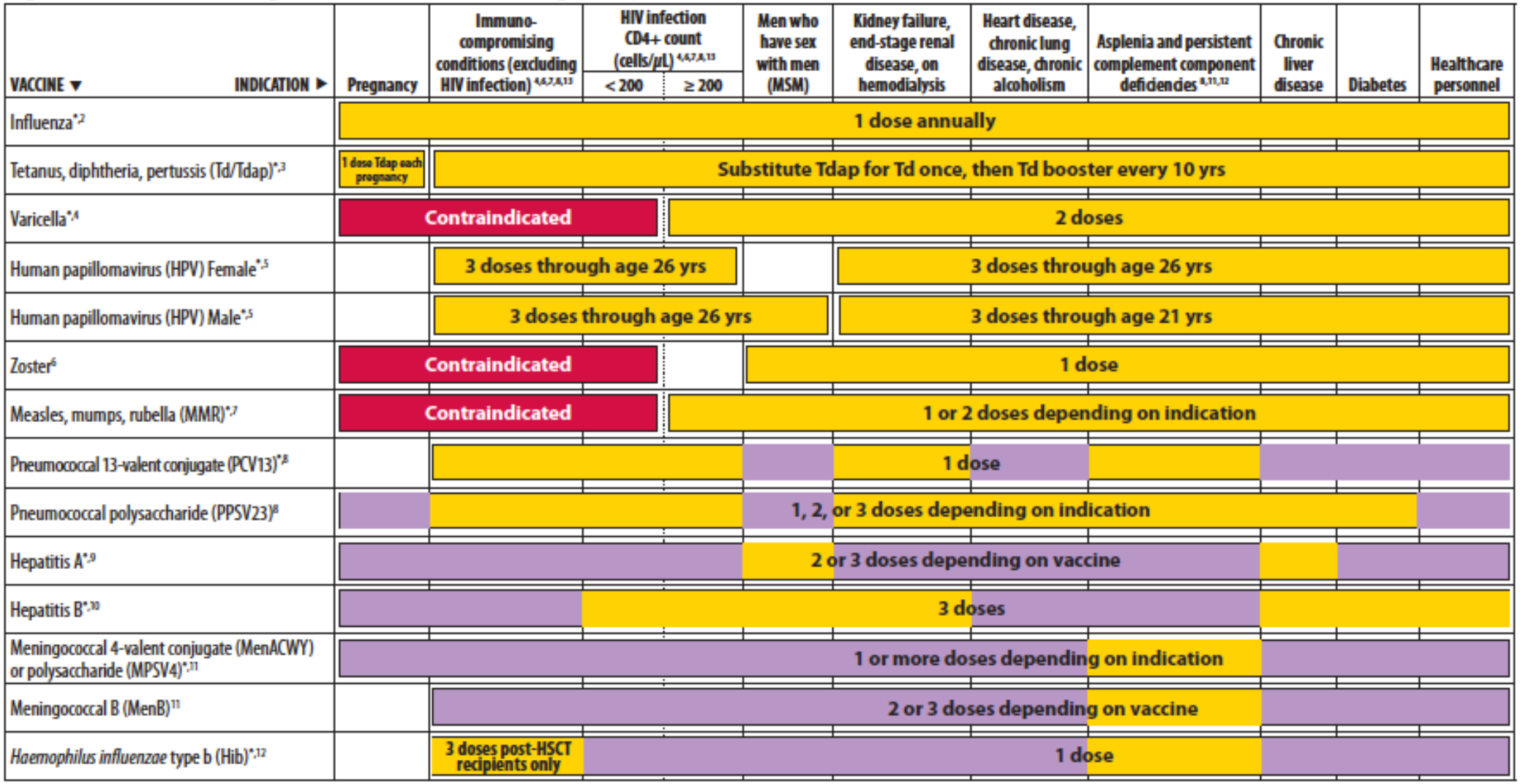
- **Polio**
  - Exceedingly rare in SA
  - Live vaccine contra-indicated in HIV
  - Inactivated recommended for those infected with HIV

TABLE 1: Vaccination guidelines for HIV-infected adolescents and adults.

Vaccine	Indication	Safety CD4+ count	Doses for unvaccinated adults	Booster	Comments
MMR vaccine	Measles, mumps or rubella seronegative	➢ 200 cells/mL	2 doses (28 days apart)	Protection likely lifelong	Mainly indicated in measles seronegative HIV-infected women of childbearing age Pregnancy should be avoided for 1 month after vaccination
Influenza	R	Any	1 dose	Yearly	-
Pneumococcal Conjugated (PCV13)	R	Any	1 dose	-	Given with PPV23 but must be given first
Pneumococcal Polysaccharide (PPV23)	RS	➢ 200 cells/mL	1 dose	5–10 years	Given with PCV13 but given 8 weeks after PCV13 Can be given to patients with CD4 count < 200 cells/mL if on ART and VL suppressed Maximum 2 booster doses, 1 booster dose in patients > 65 years. Poor response if CD4+ cell count < 200 cells/mL and VL not suppressed
Hepatitis B	R	Any	4 doses (40 µg) or 3 doses (20 µg)	Not clear awaiting evidence	-
Hepatitis A	RS – travel, MSM, liver disease	➢ 200 cells/mL	2 doses	10 years	-
Meningococcal	RS	Any	2 doses	5 years	-
Tetanus-diphtheria (Td)	R	Any	-	10 years	-
Pertussis-acellular	R	Any	1 dose	10 years	Given in pregnancy combined with tetanus-diphtheria (DTPa/dTpa)
Poliomyelitis-inactivated	RS	➢ 200 cells/mL	3 doses	none	-
Human papilloma virus (HPV)	RS – females, MSM	Any	2 doses	none	-
Varicella	NR	-	-	-	May be considered if CD4+ count > 400 cells/mL
Zoster	RS	≥ 200 cells/mL	1 dose	none	Only use if CD4+ count ≥ 200 cells/µL

MMR, measles, mumps, and rubella; R, recommended; RS, recommended in selected individuals; NR, not recommended; VL, viral load; HBsAb, hepatitis B surface antibody; MSM, men who have sex with men.

Figure 2. Vaccines that might be indicated for adults aged 19 years or older based on medical and other indications[1]



Recommended Adult Immunization Schedule United Sates - 2016

MMWR February 4 2016

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Conclusion

- Are opportunities to expand immunization for HIV-infected Adolescents & Adults
- Vaccinate during stable disease
- Communicate with patients about the importance of vaccination and the availability of vaccines
- Vaccination is the most cost effective intervention of 21st century

Saving Lives: Integrating Vaccines for Adults Into Routine Care

When **immunization rates are high,** the wider community is **protected** including:

Infants who are too young to receive their vaccines.

Older adults at risk of serious diseases.

People who take medication that lowers their immune systems.

World Health Organization

Protected **Together**

#VACCINESWORK