



Immunizations for Patients with Diabetes

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Overview

- Immunization recommendations
 - Routine for all adults
 - For all adults with diabetes
 - Updates
- Coverage
 - US Adults
 - IHS (based on Diabetes audit data)
- Tools and Strategies to increase vaccine coverage

Routine Adult Immunization Recommendations

- Human Papillomavirus Vaccine (HPV)
 - Females 19 – 26 years
 - Males 19-21 years
- Td-contain vaccines
 - Booster every 10 years
 - 1 dose of Tdap
- Influenza
 - Annually
- Pneumococcal polysaccharide, 23-valent (PPSV23, Pneumo-PS, or Pneumovax®)
 - 65 years
 - May start earlier for certain high risk populations – e.g. AI/AN in certain geographic regions
- Pneumococcal conjugate vaccine, 13-valent (PCV13 or Prevnar13®)
 - 65 years
- Shingles Vaccine - updated
 - 50 years or 60 years, depends on brand

Adult Vaccine Schedule: <http://www.cdc.gov/vaccines/schedules/easy-to-read/adult.html>

If you are this age,

talk to your healthcare professional about these vaccines

| If you are this age, | Flu <i>Influenza</i> | Td/Tdap Tetanus, diphtheria, pertussis | Shingles <i>Zoster</i> | Pneumococcal | | Meningococcal | | MMR Measles, mumps, rubella | Human papillomavirus | | Chickenpox <i>Varicella</i> | Hepatitis A | Hepatitis B | Hib <i>Haemophilus influenzae type b</i> |
|----------------------|-------------------------|---|---------------------------|--------------|--------|------------------|-------|--------------------------------------|----------------------|---------|--------------------------------|-------------|-------------|---|
| | | | | PCV13 | PPSV23 | MenACWY or MPSV4 | MenB | | for women | for men | | | | |
| 19 - 21 years | Green | Green | White | Green | Green | Green | Green | Green | White | White | Green | Green | Green | Green |
| 22 - 26 years | Green | Green | White | Green | Green | Green | Green | Green | White | Blue | Green | Green | Green | Green |
| 27 - 59 years | Green | Green | White | Green | Green | Green | Green | Green | White | White | Green | Green | Green | Green |
| 60 - 64 years | Green | Green | Green | Green | Green | Green | Green | Green | White | White | Green | Green | Green | Green |
| 65+ years | Green | Green | White | Green | Green | Green | Green | Green | White | White | Green | Green | Green | Green |

More Information:

You should get flu vaccine every year.

You should get a Td booster every 10 years. You also need 1 dose of Tdap. Women should get a Tdap vaccine during every pregnancy to help protect the baby.

You should get shingles vaccine even if you have had shingles before.

You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition.

You should get this vaccine if you did not get it when you were a child.

You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.



Recommended For You: This vaccine is recommended for you *unless* your healthcare professional tells you that you do not need it or should not get it.



May Be Recommended For You: This vaccine is recommended for you if you have certain risk factors due to your health condition or other. Talk to your healthcare professional to see if you need this vaccine.

If you are traveling outside the United States, you may need additional vaccines.

Ask your healthcare professional about which vaccines you may need at least 6 weeks before you travel.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines



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

Immunizations for those with Diabetes

- Universally recommended, but particularly important:
 - Influenza
- Recommended specifically because of diabetes:
 - Pneumococcal Polysaccharide, 23-valent (PPSV23)
 - Hepatitis B

If you have a health condition, talk to your healthcare provider about the vaccines you need.

| | Flu Influenza | Td/Tdap Tetanus, diphtheria, pertussis | Shingles Zoster | Pneumococcal | | Meningococcal | | MMR Measles, mumps, rubella | HPV Human papillomavirus | | Chickenpox Varicella | Hepatitis A | Hepatitis B | Hib Haemophilus influenzae type b |
|--|------------------|---|--------------------|--------------|--------|------------------------|------|--------------------------------------|-----------------------------|---------|-------------------------|-------------|-------------|--|
| | | | | PCV13 | PPSV23 | MenACWY or MPSV4 | MenB | | for women | for men | | | | |
| Pregnancy | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Weakened Immune System | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| HIV: CD4 count less than 200 | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| HIV: CD4 count 200 or greater | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Kidney disease or poor kidney function | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Asplenia (if you do not have a spleen or if it does not work well) | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Heart disease Chronic lung disease Chronic alcoholism | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Diabetes (Type 1 or Type 2) | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |
| Chronic Liver Disease | Green | Green | Light Purple | Green | Green | Blue | Blue | Light Purple | Green | Green | Light Purple | Blue | Blue | Blue |

More Information:

You should get flu vaccine every year.

You should get a Td booster every 10 years. You also need 1 dose of Tdap vaccine. Women should get Tdap vaccine during every pregnancy.

You should get shingles vaccine if you are age 60 years or older, even if you have had shingles before.

You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition.

You should get this vaccine if you did not get it when you were a child.

You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.

You should get Hib vaccine if you do not have a spleen, have sickle cell disease, or received a bone marrow transplant.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines

Recommended For You: This vaccine is recommended for you *unless* your healthcare professional tells you that you do not need it or should not get it.

May Be Recommended For You: This vaccine is recommended for you if you have certain other risk factors due to your age, health condition or other. Talk to your healthcare professional to see if you need this vaccine.

YOU SHOULD NOT GET THIS VACCINE



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

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Pneumonia and Influenza

- American Indian and Alaska Native people are almost 2 times more likely to die from pneumonia and influenza than non-Hispanic whites. ¹
 - Significant variation by region and age group
- During the 2009 H1N1 influenza pandemic, AI/AN people were 4 times more likely to die from influenza-related complications than other race groups. ²
- Reasons for this disparity include a higher rate of chronic medical conditions, including DIABETES.

1. Pneumonia and Influenza Mortality Among American Indian and Alaska Native People, 1990–2009.

<http://ajph.aphapublications.org/toc/ajph/0/0>

2. Deaths Related to 2009 Pandemic Influenza A (H1N1) Among American Indian/Alaska Natives --- 12 States, 2009

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5848a1.htm>

Influenza Vaccine Recommendations

- Influenza – annual influenza vaccine for everyone 6 months and older
- IHS Policy – Mandatory for all health care personnel



Influenza Vaccine Recommendations: <http://www.cdc.gov/mmwr/volumes/65/rr/rr6505a1.htm>

Image: IHS Chief Medical Officer, Dr. Toedt, receiving his annual influenza vaccine

Pneumococcal Vaccines

- Pneumococcal Polysaccharide, 23-valent
 - PPSV23, Pneumo-PS, or Pneumovax[®]

- Pneumococcal Conjugate, 13-valent
 - PCV13 or Prevnar13[®]

Pneumococcal Vaccine Recommendations: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5934a3.htm>

PCV13 for Adults

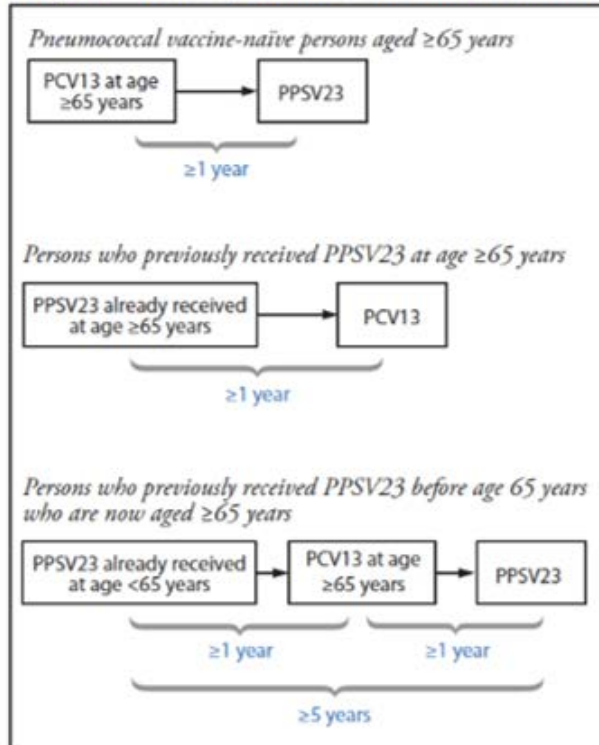
- PCV13 is recommended for all adults 65 years and older (***New in 2014***)
- The interval between PCV13 and PPSV23 is 1 year

PCV13 recommendations for adults:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6434a4.htm>

Recommendations for PCV13 and PPSV23

BOX. Recommended intervals for sequential use of PCV13 and PPSV23 for immunocompetent adults aged ≥ 65 years — Advisory Committee on Immunization Practices, United States



Abbreviations: PCV13 = 13-valent pneumococcal conjugate vaccine; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

Notes: For adults aged ≥ 65 years with immunocompromising conditions, functional or anatomic asplenia, cerebrospinal fluid leaks, or cochlear implants, the recommended interval between PCV13 followed by PPSV23 is ≥ 8 weeks. For those for whom previously received PPSV23 when aged < 65 years and for whom an additional dose of PPSV23 is indicated when aged ≥ 65 years, this subsequent PPSV23 dose should be given ≥ 1 year after PCV13 and ≥ 5 years after the most recent dose of PPSV23.

Alternate Text: The above box outlines the Advisory Committee on Immunization Practices recommended intervals for sequential use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine for immunocompetent adults aged ≥ 65 years in the United States.

PCV13 for Adults < 65 years

- PCV13 is recommended for adults < 65 years with immune-compromising conditions.
- These include:
 - Cerebrospinal fluid leak
 - Cochlear implant
 - Sickle cell disease/other hemaglobinopathy
 - Congenital or acquired asplenia
 - Congenital or acquired immunodeficiency
 - HIV
 - Chronic renal failure
 - Nephrotic Syndrome
 - Leukemia
 - Lymphoma
 - Hodgkins Disease
 - Generalized malignancy
 - Iatrogenic immunosuppression
 - Solid organ transplant
 - Multiple myeloma
- Diabetes is NOT considered an immune-compromising condition for this vaccine.

PCV13 recommendations for adults: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6434a4.htm>

PPSV23 for Adults

- Routine: One dose at 65 years and older
 - PCV13 should be received first
- High Risk: < 65 years with high risk conditions
 - Includes diabetes
 - PPSV23 should be administered at time of diagnosis
- Patients who receive PPSV23 before 65 years of age should receive one booster dose at 65 years of age, at least 5 years after last dose

Pneumococcal Vaccine Recommendations:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5934a3.htm>

PCV13 for Children

- Routine: All children < 5 years of age
 - 4 doses: 2,4,6, 12-15 months
 - Number of doses depends on age of receipt
 - Healthy children 2-5 years months with no PCV13 receive 1 dose
 - High risk* children 2-5 years who receive incomplete PCV13 series need 1 or 2 doses depending on prior doses
 - * chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy); **diabetes mellitus**; cerebrospinal fluid leak; cochlear implant; sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; solid organ transplantation; or congenital immunodeficiency:
- PCV13 for children 6-18 years for highest risk only
 - Anatomic asplenia
 - Immuno-compromising conditions (e.g. HIV)
 - Cochlear implant
 - CSF Leak

PPSV23 for Children

- No routine use of PPSV23 in children.
- High risk* children 2 years and older should receive a dose of PPSV23.
 - *Sickle cell, asplenia, chronic cardiac, pulmonary or renal disease, **diabetes**, CSF leaks, HIV, immunosuppression, transplant, cochlear implant
- PPSV23 should be given after all recommended pneumococcal conjugate 13-valent (PCV13) recommended doses.
- Give PPSV23 at least 8 weeks after last dose of PCV13
- No re-vaccination for children with diabetes.
 - Receive additional dose at 65 years of age

Childhood Schedule:

<http://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-combined-schedule-bw.pdf>

Hepatitis B in Patients with Diabetes

- Hepatitis B virus (HBV) causes acute and chronic infection of the liver.
- Outbreaks in long term care facilities related to adults with diabetes receiving assistance with glucose monitoring.
- Risk of acute hepatitis B infection is 2.1 times higher among adults with diabetes vs. those without.
- Higher seroprevalence of antibody to hepatitis B core antigen (indicative of past or present HBV infection) among adults with diabetes compared with those without diabetes.

Hepatitis B recommendations for people with diabetes:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a4.htm>

Hepatitis B Vaccine Recommendation (2011)

- Hepatitis B vaccination should be administered to unvaccinated adults with diabetes mellitus aged 19 through 59 years.
- Hepatitis B vaccination may be administered at the discretion of the treating clinician to unvaccinated adults with diabetes mellitus who are aged ≥ 60 years.

Hepatitis B recommendations for people with diabetes:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a4.htm>



IMMUNIZATION COVERAGE

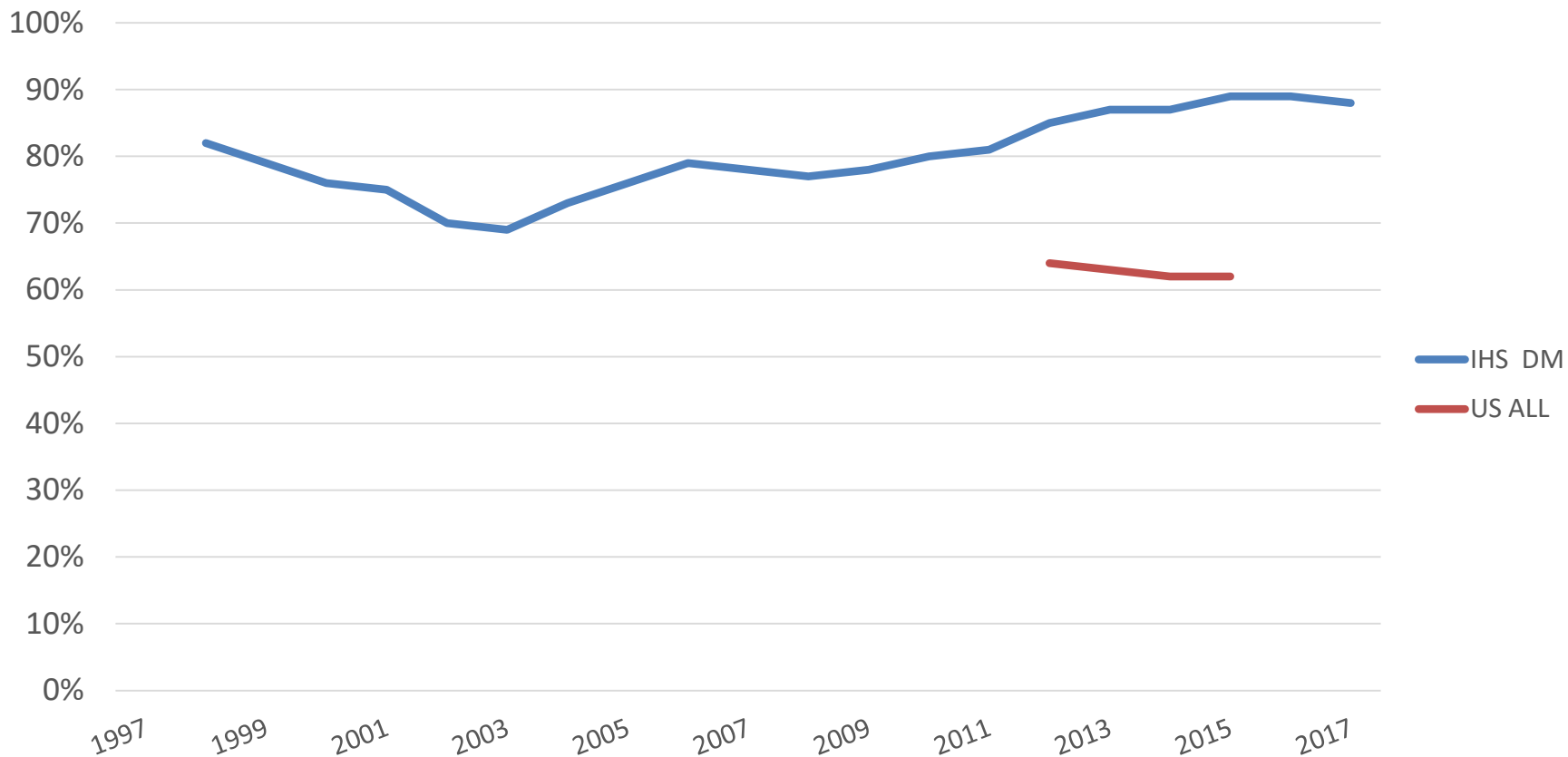


Immunization Coverage Data

- IHS Data Source –IHS Diabetes Care and Outcomes Audit, results for selected outcomes through audit 2017.
- US Data – CDC sources
 - AdultVaxView
 - FluVaxView

Td/Tdap Vaccines last 10 years

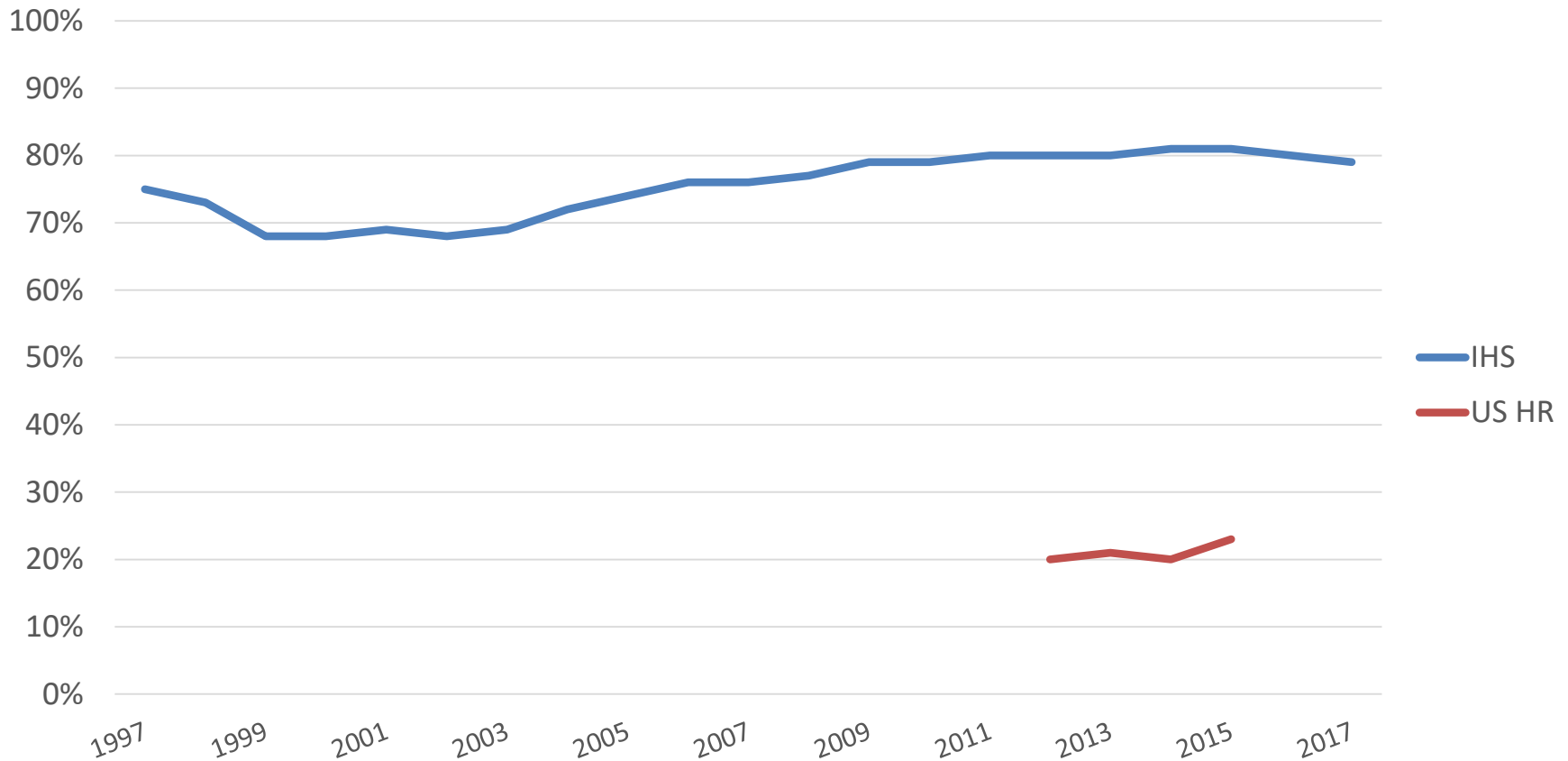
IHS (DM) vs. US (All)*



Data Sources: IHS – Diabetes Audit; US – CDC AdultVaxView: <https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/data-reports/index.html>

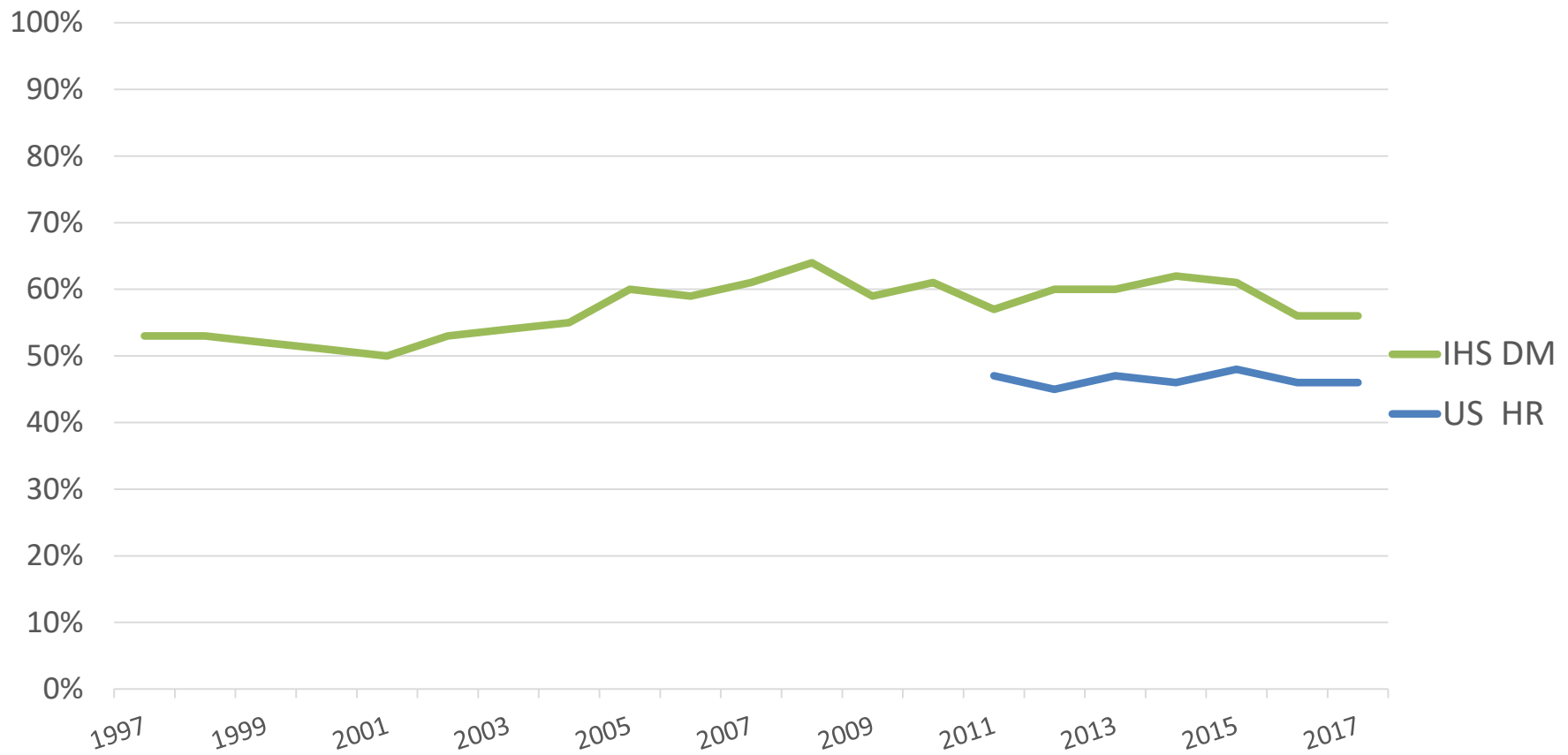
Pneumococcal Vaccines

IHS (DM) vs. US (High Risk 18-64 yrs)



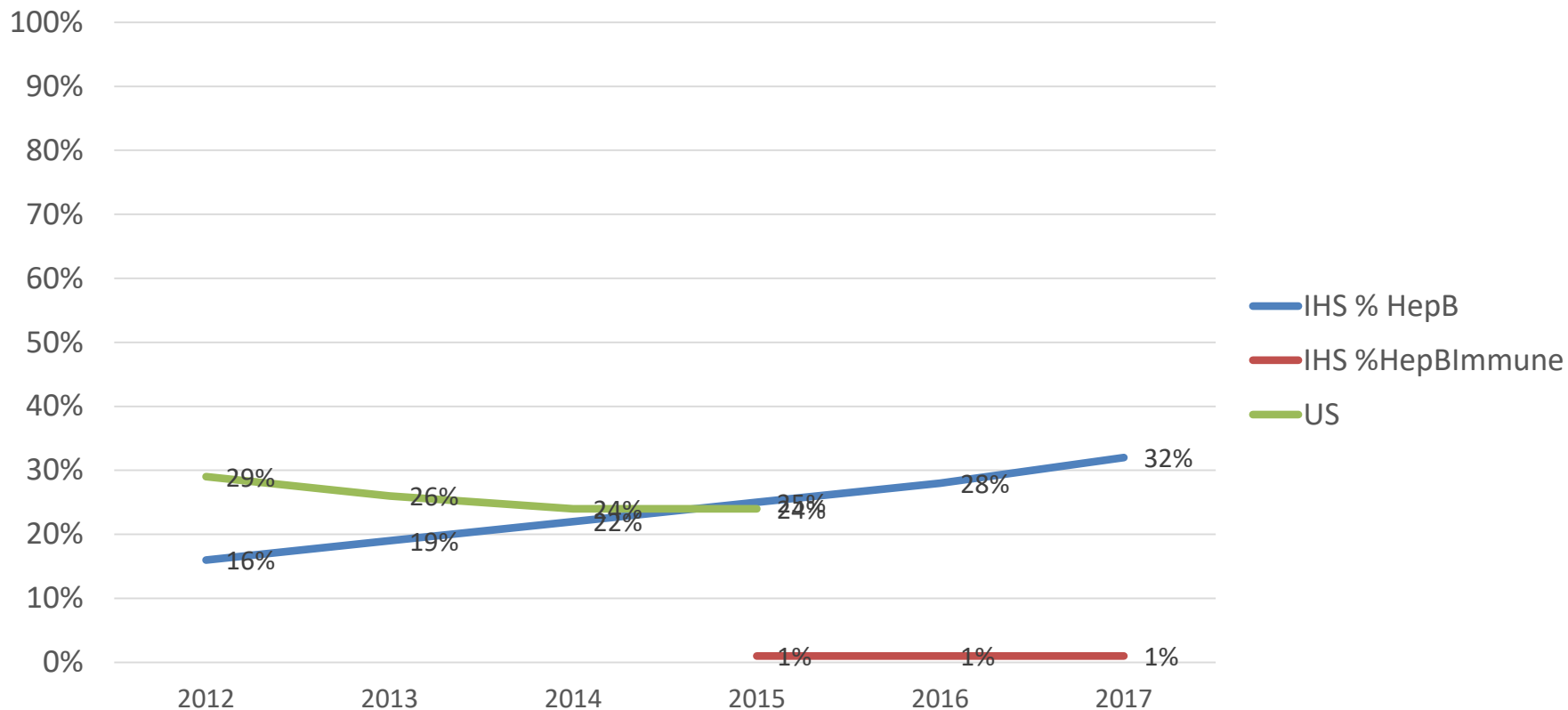
Data Sources: IHS – Diabetes Audit; US – CDC AdultVaxView:
<https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/data-reports/index.html>

Influenza Vaccine Coverage IHS (DM) vs. US (High Risk 18-64 yrs)



Data Sources: IHS – Diabetes Audit; US – CDC FluVaxView,
<https://www.cdc.gov/flu/fluview/interactive.htm>

Hepatitis B Vaccine Coverage Patients with DM - IHS and US



Data Sources: IHS – Diabetes Audit; US – CDC AdultVaxView: <https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/data-reports/index.html>

Vaccine Updates - Oct. 2017

- Shingles Vaccine
- New Hepatitis B vaccine – pending licensure

Previous Shingles Vaccine recommendation

- Zoster Vaccine Live (Zostavax[®]) by Merck.
- Recommended for all immune-competent adults 60 years and older.
- 1 dose.

New Shingles Vaccine

- Shingrix, licensed by FDA on October 20th, 2017
- Recombinant herpes zoster sub-unit vaccine (HZ/su)
- Contains AS01B adjuvant
- Manufacturer: GlaxoSmithKline (GSK)
- Age indication: Adults 50 years and older
- Administration: Intramuscular (IM)
- Dosage: Two 0.5 ml doses, two to six months apart.
- Anticipated availability : Feb-March 2018
- Price TBD (~\$140/dose)
- For product information: <https://www.shingrix.com/>

ACIP Recommendation

ACIP voted that herpes zoster subunit (HZ/su) vaccine is:

- Recommended for the prevention of herpes zoster and related complications for immunocompetent adults **aged 50 years** and older.
- Recommended for the prevention of herpes zoster and related complications for immunocompetent adults **who previously received Zoster Vaccine Live (ZVL.)**
- **Preferred** over Zoster Vaccine Live (ZVL) for the prevention of herpes zoster and related complications.

Shingrix Safety

- The most common side effect was mild to moderate pain at injection site.
- No serious adverse events were observed.
- About 17% of people who received the vaccine did have a reaction that interfered with their activities.

Shingrix Efficacy

- High levels of protection in all age groups against shingles and postherpetic neuralgia (PHN.)
- In clinical trials the vaccine showed:
 - 97% protection against shingles in adults 50-69 years old
 - 91% protection against shingles in adults 70 years and older
 - 91% protection against PHN in adults 50 years and older
 - Protection of 85% or above was maintained for 4 years after vaccination

New Hepatitis B vaccine

- NOT YET LICENSED
 - Decision anticipated Nov. 9, 2017
- HEPLISAV-B
- Manufacturer: Dynavax Technologies Corporation
- Contains 1018 ISS Adjuvant
- Administration:
 - Adults 18 years and older
 - Two 0.5 ml doses, 1 month apart



**SO WHAT CAN WE DO TO MAKE SURE
OUR PATIENTS ARE VACCINATED?**

EHR/RPMS Tools

- Clinical Decision Support for Immunizations:
 - Shows which vaccines are due for patients
 - Takes into account minimum intervals and ages
 - All routine, AGE-BASED recommendations
- Optional Reminders – Must be turned on
 - PPSV23 for high risk
 - **Hepatitis B for adults 19-59 years with Diabetes**
 - **New in August: Hepatitis A and B in adults with Chronic Liver Disease or Hepatitis C virus infection**

RPMS Immunization Package

- Lists and Letters in the RPMS Immunization package:
 - Only available in the roll and scroll environment (NOT EHR)
 - Can be used to generate lists of patients who received or are due for specific vaccines for reminder/recall efforts
 - Can be used in conjunction with QMAN

Summary of Tools and Resources

- Clinical Decision Support/Reminders in EHR
 - PPSV23 and Hep B for patients with diabetes – must be turned on in the Immunization Package
- RPMS Immunization package
 - List and Letters to identify patients due for vaccines
 - Send reminder letters
- QMAN
 - Develop a template to identify patients with diabetes
 - Can use in the Immunization Package to identify vaccine needs for patients with diabetes

Resources

- CDC vaccine recommendations
 - <http://www.cdc.gov/vaccines/hcp/acip-recs/index.html>
- IHS RPMS Immunization Package Resources
 - http://www.ihs.gov/epi/index.cfm?module=epi_vaccine_resources
- IHS Immunization Program
 - Cheyenne Jim - Cheyenne.Jim@ihs.gov
 - Jillian Doss-Walker - gvc4@cdc.gov