



Immunizations

Amy V. Groom, MPH
IHS Immunization Program Manager





Overview

- Program Updates
 - HPV, Men B, PCV13, Future
 - GPRA Immunization measures
 - How are we doing?
 - Call to arms
 - How can we do better?
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Immunization Clinical Decision Support

A.K.A. Forecasting



Human Papillomavirus (HPV) Vaccine

- ACIP HPV recommendation
 - Routine females - 2006
 - Routine males - 2011
 - 2 dose schedule- 2016
- HPV vaccines
 - Bivalent (2vHPV, Cervarix®)
 - Quadrivalent (4vHPV, Gardasil®)
 - 9-valent (9vHPV, Gardasil 9®)
- As of Dec. 2016 - Only 9vHPV available in the U.S.

HPV 2 dose Schedule in the U.S.

- Oct. 7, 2016
 - FDA licensure for a 2 dose schedule for adolescents 9-14 years
<http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM524629.pdf>
 - Post-marketing studies to evaluate the persistence of antibody titers 36 months after vaccination
- Oct. 18th, 2016 Advisory Committee on Immunization Practices (ACIP)
 - Voted to recommend 2 dose HPV schedule for adolescents 9-14 years
- Dec. 16th, 2016 – Official CDC Recommendation released
 - https://www.cdc.gov/mmwr/volumes/65/wr/mm6549a5.htm?s_cid=mm6549a5_e



HPV Vaccine Dosing Schedules

- 3 doses schedule (0,1-2, 6 months)
 - Prime, prime boost
- 2 dose schedule (0, 6 months)
 - Prime, boost
 - 4-6 months interval essential to ensure maturation and differentiation of memory B cells

Updated Recommendations for HPV vaccination

Dosing schedules

- **For persons initiating vaccination before the 15th birthday**
 - Recommended immunization schedule is 2 doses of HPV vaccine. The second dose should be administered 6–12 months after the first dose (0, 6–12 month schedule).
- **For persons initiating vaccination on or after the 15th birthday**
 - Recommended immunization schedule is 3 doses of HPV vaccine. The second dose should be administered 1–2 months after the first dose, and the third dose should be administered 6 months after the first dose (0, 1–2, 6 month schedule).

Summary of HPV Vaccine Recommendations

- Any HPV vaccine can be used to complete the series, regardless of which vaccine used for previous doses
- No recommendation for additional doses of 9vHPV for those who have completed the series with 2vHPV or 4vHPV vaccines
- Number of doses needed (2 vs. 3) is based on:
 - Age of FIRST dose AND
 - Interval between 1st and 2nd dose (must be at least 5 months)
- Questions:
 - Patient receives 1st dose at 14 years, 2nd dose 1 month later – do they need another dose?
 - YES. Minimum interval between dose 1 and 2 must be at least 5 months.
 - Patient receives 1st dose at 15 years, 2nd dose 6 months later – do they need another dose?
 - YES. 2 dose series is only for those who INITIATE the series BEFORE 15 years
 - Patient receives 1st dose at 11 years, 2nd dose 6 months later – do they need another dose?
 - NO. Patient started series before 15 years, and has at least a 5 month interval between dose 1 and 2.

Implementation of 2 Dose HPV Recommendation

- Official CDC recommendation December 16th, 2016
- IHS Immunization Forecasting (TCH forecaster) update released January 11th, 2017
 - For patients who initiate HPV vaccine before 15 years
 - 2nd dose will forecast 6 months later
 - If 2nd dose administered < 5 months after 1st, will forecast 3rd dose at appropriate interval
 - For patients who initiate HPV vaccine at 15 years or later
 - Will forecast 3 dose schedule
- Updates to immunization package Adolescent Report
 - Tentatively scheduled for Patch 14 (estimated release August 2017)



Meningococcal Vaccines

Quadrivalent Meningococcal Vaccines

- Protect against meningococcal strains A,C,W,Y
- Conjugated vaccines
 - Routinely recommended for adolescents at 11-12, booster at 16 years
 - Menactra® (Menactra), CVX code 114 – Sanofi, diphtheria toxoid protein carrier
 - Menveo® (Menveo), CVX Code 136– Novartis, conjugated to CRM
- Polysaccharide vaccine
 - Not recommended for routine use
 - Limited to patient older than 55 years indicated for meningococcal vaccine, or if conjugated vaccines not available
 - Menomune® (Menomune), CVX code 32- Sanofi

ACIP Quadrivalent Conjugate Meningococcal Vaccine Recommendations:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6003a3.htm>

Meningococcal B Vaccine

- Recommended in June 2015
 - ACIP Meningococcal B Vaccine recommendations: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6441a3.htm>
- NOT a routine recommendation
 - Category B – clinicians should CONSIDER (college-aged students living in dorms; outbreak)
 - Recommended age: 16-18 years
 - Minimum age: 10 years
 - Maximum age: 23 years
- Two vaccines – Not interchangeable
 - Trumenba - MenB-FHbp (Wyeth) – 3 doses
 - Bexsero - MenB-4C (Novartis) – 2 doses
- Forecasting in RPMS:
 - First dose is not forecast for any patient
 - If patient receives first dose, then subsequent doses will forecast based on ACIP recommendations
 - Forecast will specify brand when appropriate
 - If either brand can be given system will forecast Men-B, NOS

Other Meningococcal Vaccines

- MenHibrix (Hib-MenCY-TT) – GSK
 - Combination Hib (PRP-T) and meningococcal vaccine for C/Y ONLY
 - Can be used in high risk children for whom meningococcal and Hib vaccines are indicated
- Meningococcal C vaccine – NOT AVAILABLE IN THE US
 - Protects against C strains only

Pneumococcal Conjugate Vaccine, 13-valent (PCV13) for Adults

- Sept. 2014 ACIP recommendation
 - One dose of PCV13 for all adults 65 years and older
 - PPSV23 6-12 months later
 - TEMPORARY Recommendation – to be re-visited in 2018

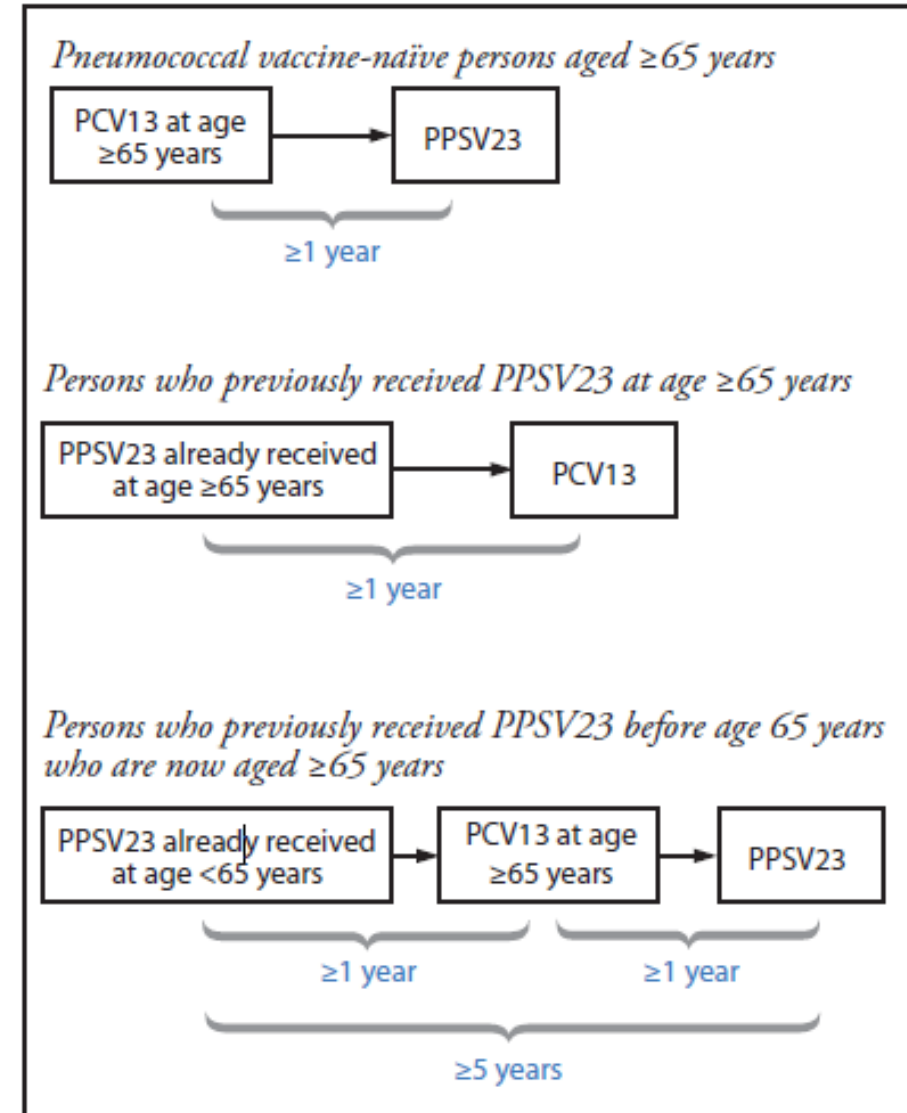
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm>
- IHS RPMS Forecasting update – May 2015
- September 2015 ACIP recommendation
 - Interval between PCV13 and PPSV23 changed to 1 year

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

PCV13 Recommendation

From: **Intervals Between PCV13 and PPSV23
Vaccines: Recommendations of the Advisory
Committee on Immunization Practices (ACIP)** .
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6434a4.htm>

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.

RPMS Pneumococcal vaccine Forecasting for 65 years and older

- If no previous pneumococcal vaccine:
 - PCV13 at 65 years and older
 - PPSV23 forecast 1 year later
 - Valid if given at least 8 weeks later
- If previous PPSV23 given:
 - PCV13 forecast 1 year after PPSV23
 - If additional PPSV23 needed, will forecast 1 year after PCV13 and 5 years after previous PPSV23
 - Patient receives PPSV23 at 64 years; PCV13 forecast at 65 years; additional PPSV23 at 69 yrs
- If previous PCV13 given:
 - PPSV23 forecast 1 year after PCV13
 - No additional PCV13 dose forecast



Future RPMS Immunization Forecasting

- Option to forecast Hepatitis A and B vaccines for adults with Chronic Liver Disease or Hepatitis C
 - RPMS BI Patch 14, tentative release August 2017
- In development
 - Maternal Tdap vaccination during every pregnancy
 - 27 weeks gestation

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How are we doing?


GPRA Immunization Measures

- Influenza
 - 6 months – 17 years (Children)
 - 18 years+ (Adults)
- Pneumococcal vaccine among adults 65 years and older
- Childhood Immunization – 4313314* among 2 year olds
- GPRA results for FY 2016
 - Not a great year
 - Only 1 of the 3 Immunization measures met

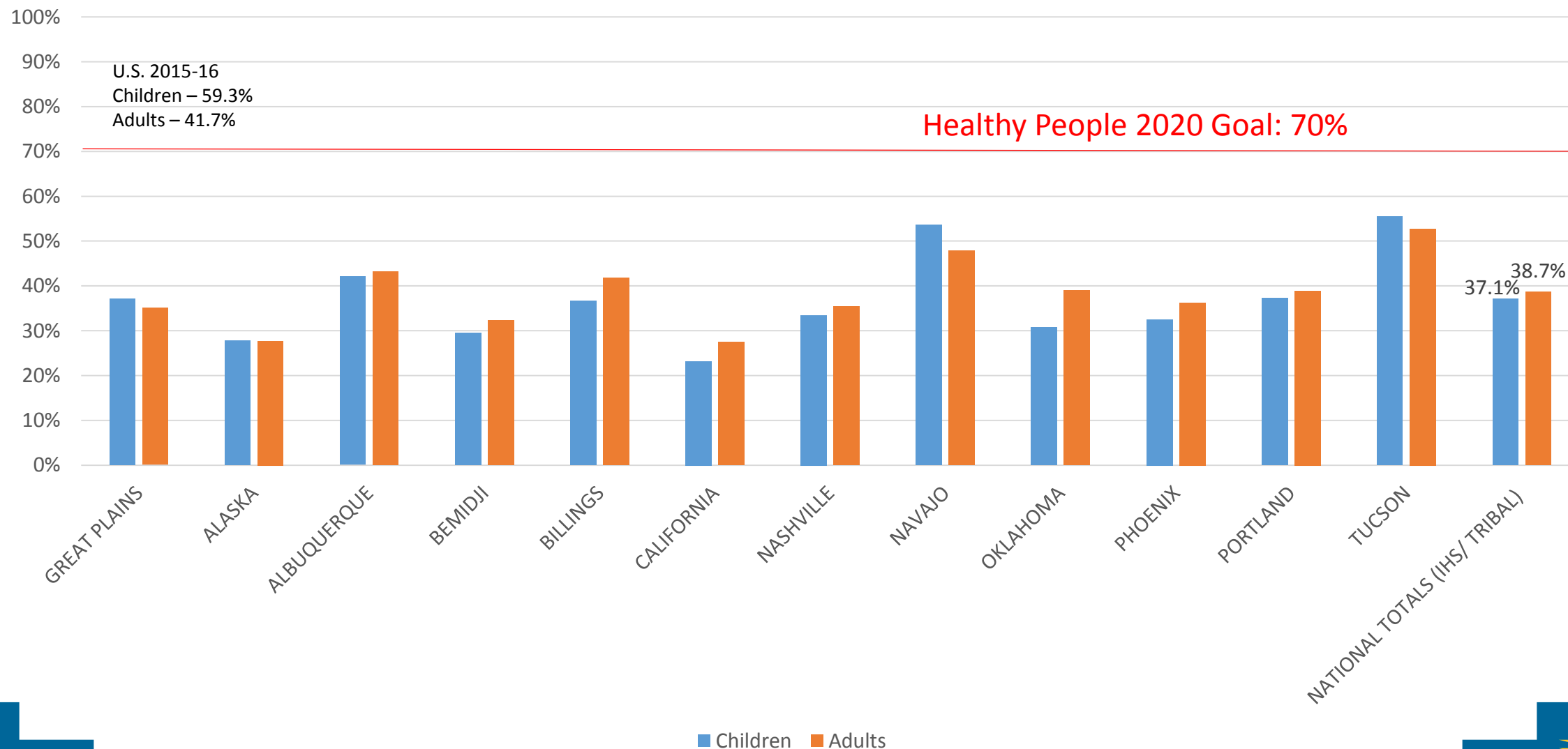
*4313314: 4 doses of DTAP, 3 doses Polio; 1 dose MMR; 3 doses Hep B, 3/4 doses Hib; 1 dose Varicella; 4 doses PCV



GPRA Influenza Vaccine Coverage Measure

- New Influenza Vaccine Measures for 2016 – Baseline
 - Children 6 months – 17 years: 37.1%
 - Adults 18 years and older: 38.7%
 - FY 2017 Targets – maintain baselines
 - Children 6 months – 17 years: 37.1%
 - Adults 18 years and older: 38.7%
- 

GPRA 2016 Influenza Vaccine Coverage by Area



Strategies to increase Influenza Vaccination

- Increase access to influenza vaccine
 - Walk in clinics, pharmacy –based clinics, community based clinics
 - Continue to offer flu vaccination THROUGHOUT the season
- Track down missing/incomplete data
 - Generate lists of unvaccinated patients
 - Use state immunization information systems (IIS)/registries
- Community Education
 - Radio PSAs, posters and educational materials
 - CHR influenza education

Flu Vaccination Materials

- Influenza Resources at www.ihs.gov/flu
- Influenza Materials from the Great Plains Tribal Epidemiology Center:
<http://nptec.gptchb.org/national-vaccination-project/>



(<https://www.youtube.com/watch?v=TN77u-KXZzY>)

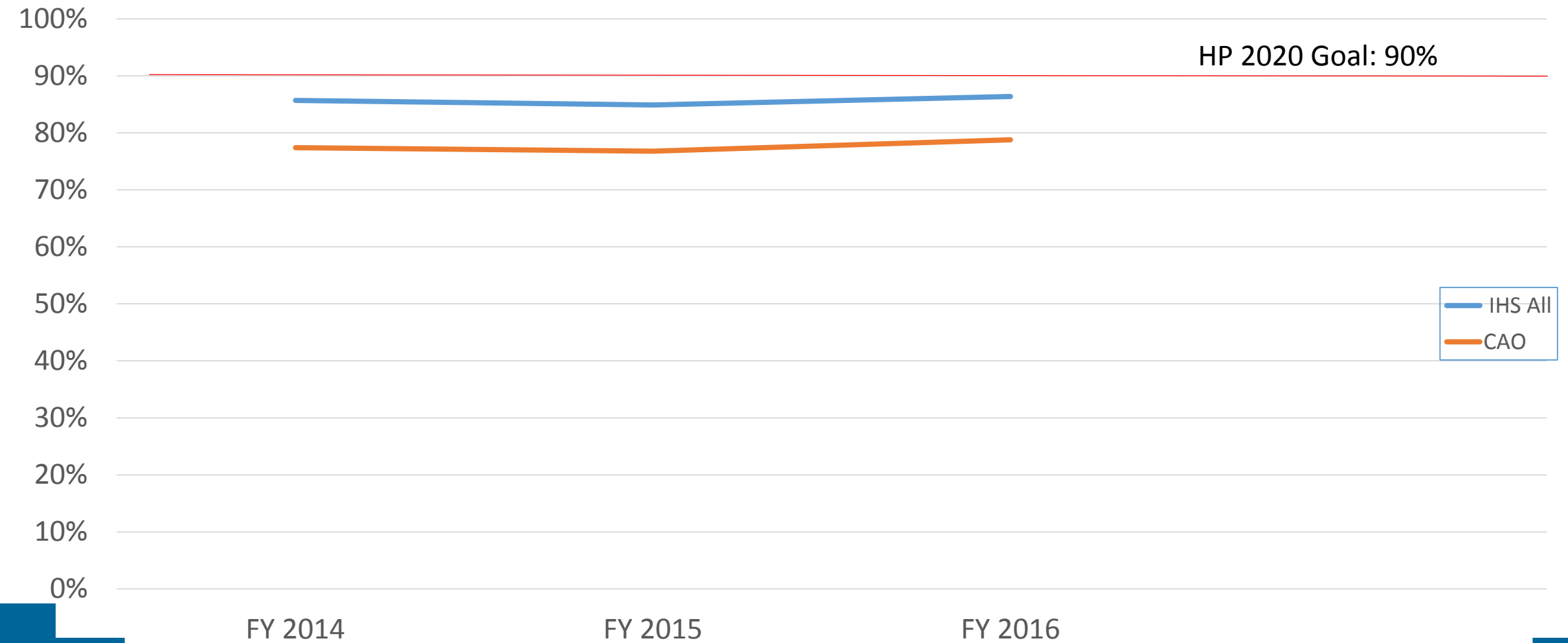


GPRA Pneumococcal Vaccine Measure

Among adults 65 years and older

- 1 dose of either PPSV23 OR PCV13 on or after age 65 years
- FY 2015 – NOT MET
 - Target: 85.7%
 - Result: 84.9%
- FY 2016 - NOT MET
 - Target: 87.3%
 - Result: 86.4%

Pneumococcal Vaccine for Adults 65 + years

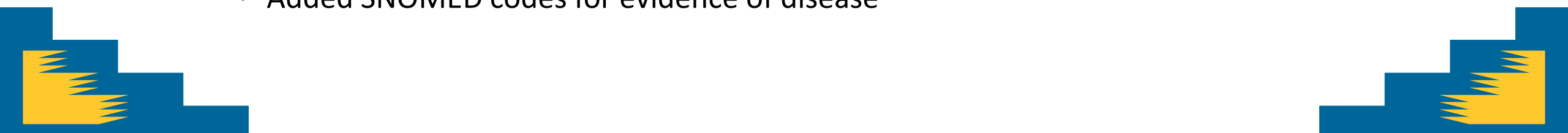


Challenges with the Pneumococcal Measure

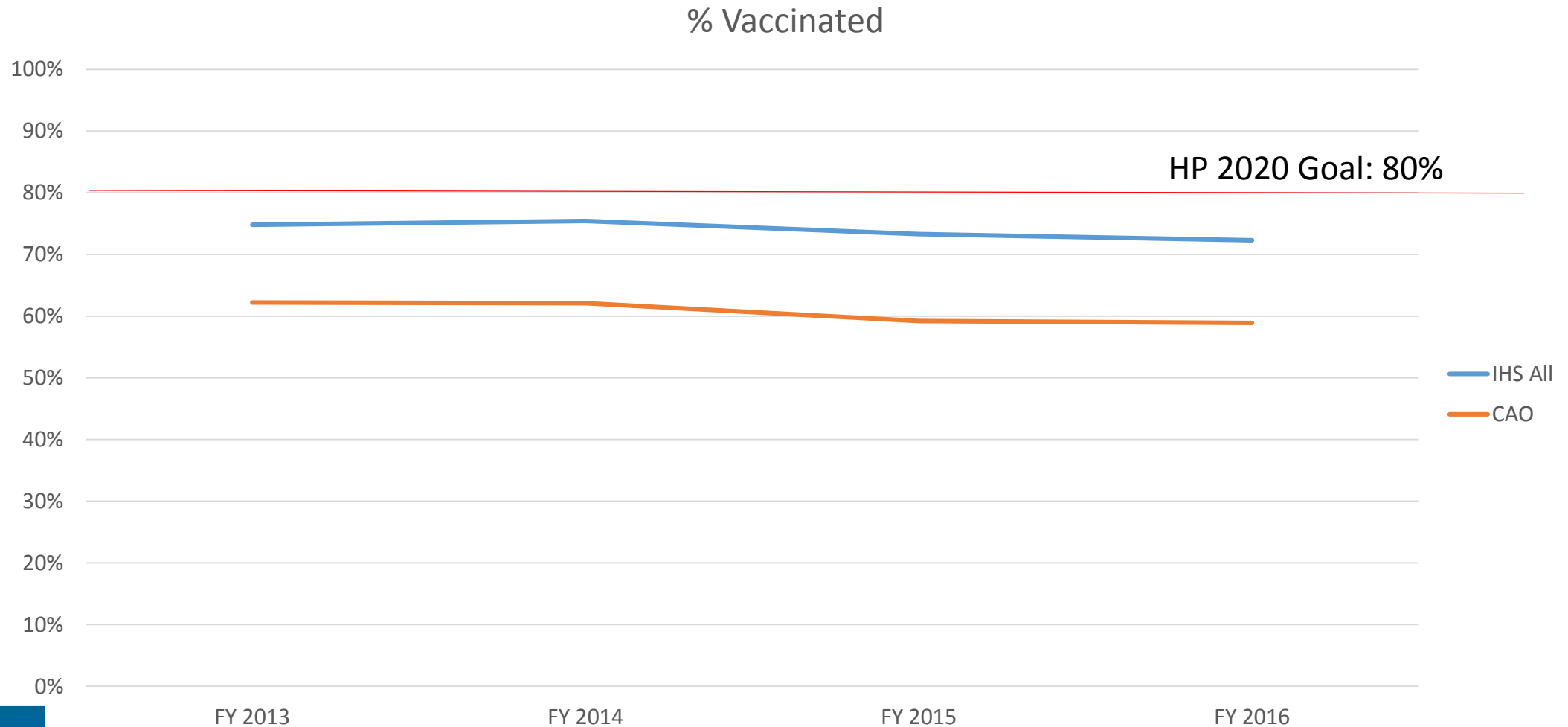
- Two different pneumococcal vaccines
 - Pneumococcal Polysaccharide vaccine, 23-valent (PPSV23)
 - Pneumococcal Conjugate vaccine, 13-valent (PCV13)
- Change to the recommendation in 2014
 - PCV13 recommended for adults 65 years and older, followed by PPSV23 one year later
- Already high coverage
 - Raising coverage is increasingly difficult
 - Juice worth the squeeze?



GPRAMA Childhood Immunization Measure

- 4313314 vaccine series among children 19-35 months
 - 2015 Target NOT MET
 - Target: 73.9%
 - Result: 73.3%
 - 2016 Target NOT MET
 - Target: 76.8%
 - Result: 72.3%
 - 2017 Target: 74.8%
 - Changes
 - Added SNOMED codes for evidence of disease
- 

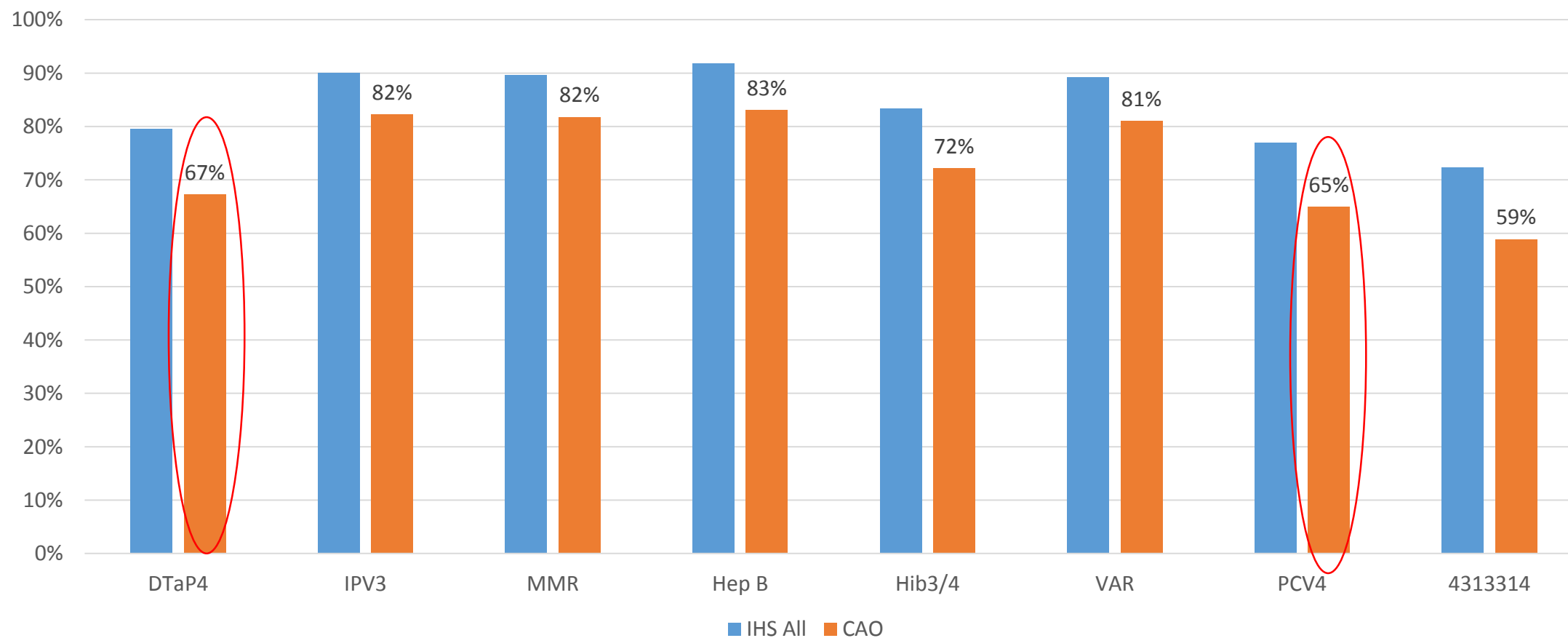
GPRAMA Childhood Immunization Completion of the 4313314* Vaccine Series FY 2013-2016



* 4313314: 4 doses of DTAP, 3 doses Polio; 1 dose MMR; 3 doses Hep B, 3/4 doses Hib; 1 dose Varicella; 4 doses PCV

GPRAMA Childhood Immunization Measure FY 2016

Coverage by Antigen



Challenges with the Childhood Measure

- Fourth doses of DTaP(DTAP4) and Pneumococcal Conjugate (PCV4) are the main challenges
- If children are delayed in getting their 3rd doses at 6 months of age:
 - May not get 4th DTaP on time because of required interval between 3rd and 4th dose (6 months)
 - May not NEED 4th dose of PCV any longer - # of doses of PCV changes depending on age of receipt
 - BUT THE STANDARD OF CARE IS 4 DOSES!

PCV-13 Deadlines


- To meet GPRA
 - All PCV-13 doses need to be administered 4 weeks apart if less than 12 months old
- Latest Possible Administration
 - 1st PCV-13
 - **Before** they turn 6 months old
 - 2nd PCV-13
 - **Before** they turn 7 months old
 - 3rd PCV-13
 - **Before** they turn 1 year old

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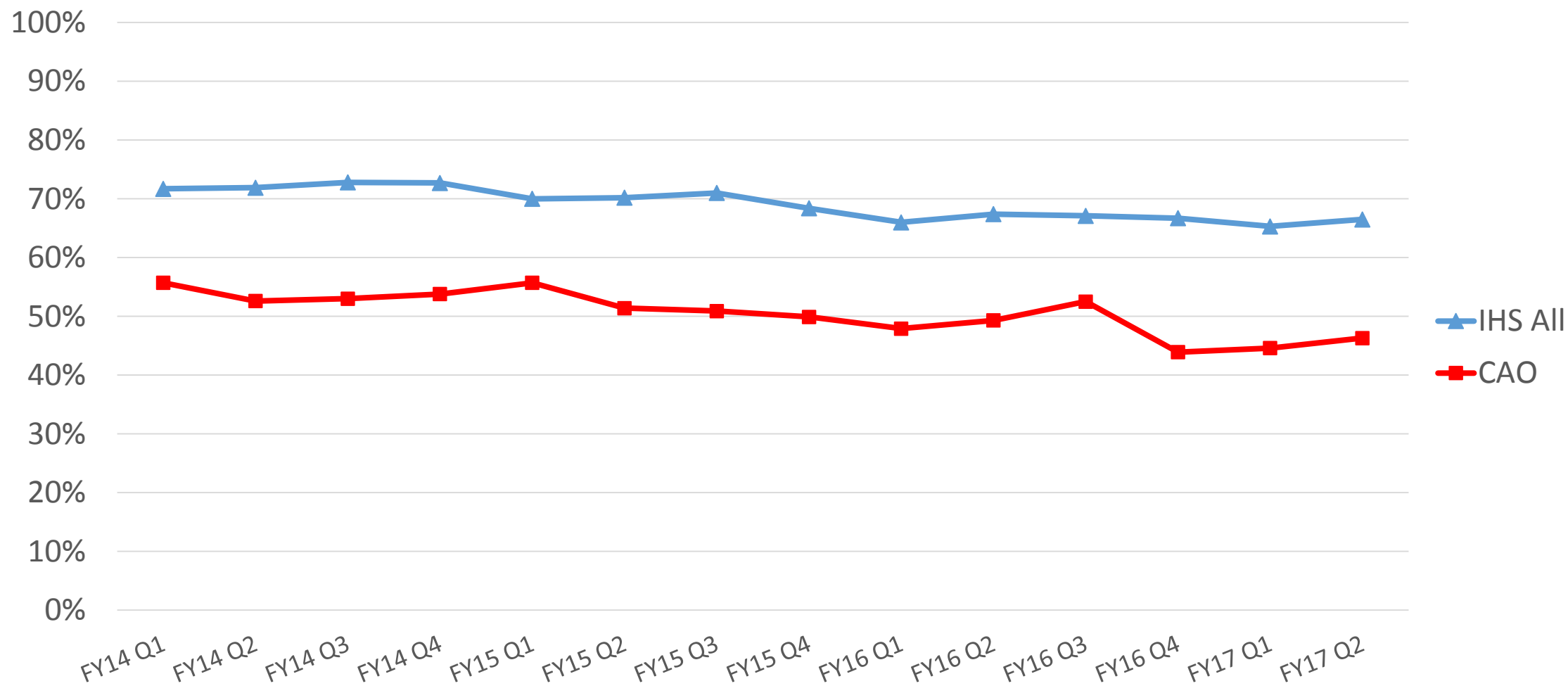
So what do we do?



RPMS 3-27 month old immunization report

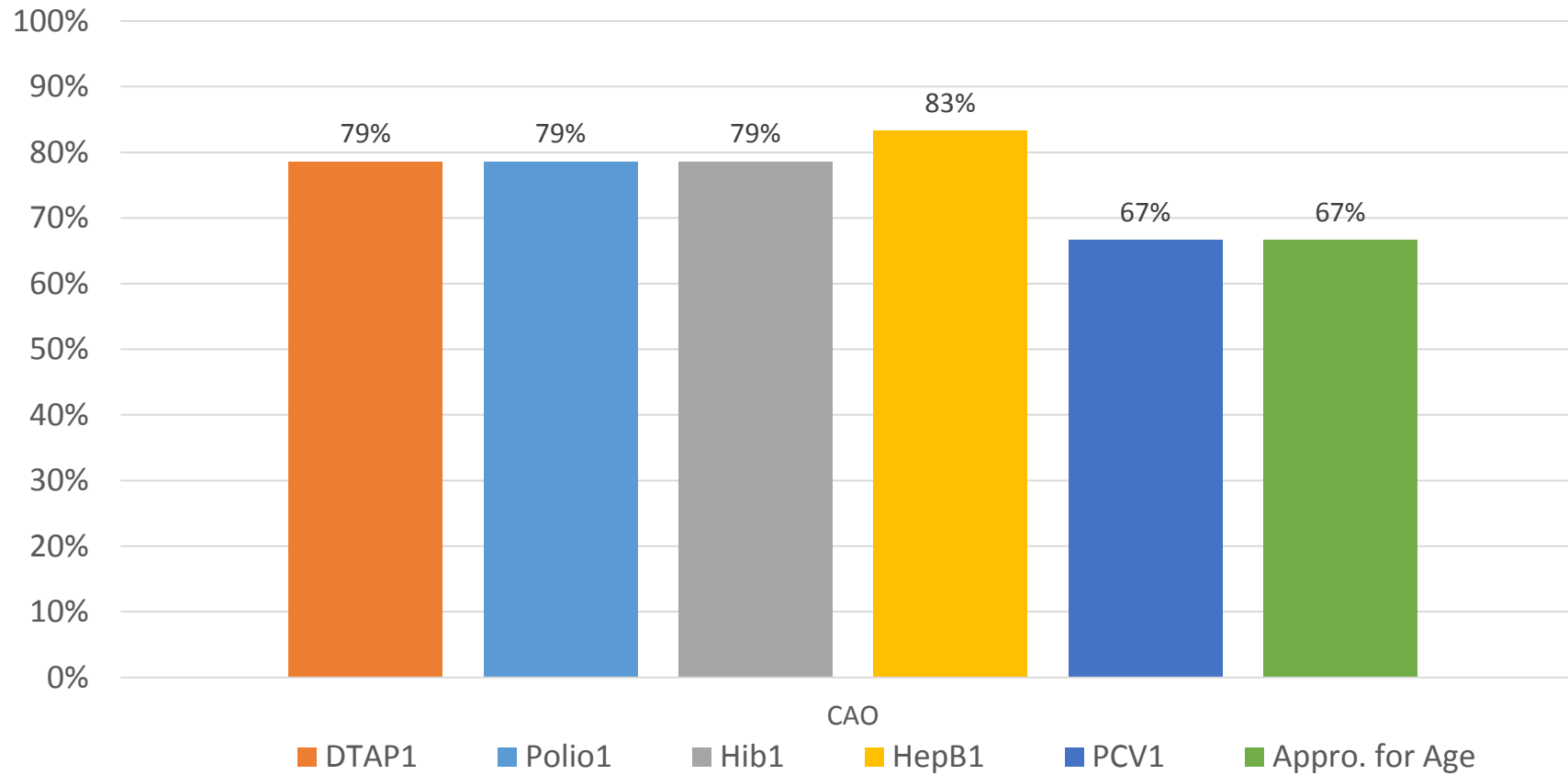
- Allows real-time monitoring of age-appropriate immunization coverage
 - Identifies children falling behind while there is still time to do something about it!
 - High coverage in 3-27 month old report = High 2 year old coverage = High GPRA measure coverage
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3-27 Month Old Coverage*



*Source: IHS Immunization Quarterly reports. www.ihs.gov/epi. Proportion of children vaccinated appropriately for their age with DTaP, Polio, Hep B, Hib, PCV, MMR and Varicella

CAO 3-27 month old report
3-4 month coverage
FY17 Q2



Strategies



- Monitor up to date coverage for children BEFORE they turn 2 years
 - Focus efforts on getting children who are falling behind back on track
- Use Reminder/Recall to follow up with children as soon as they start to fall behind
- Expand access to vaccines
 - Vaccinate at ALL visits
 - Simultaneous vaccination of ALL recommended vaccines
 - Implement standing orders
 - Pharmacy –based clinics

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What's Coming



GPRA Developmental Measures

- Already available in IHS Clinical Reporting System (CRS) software
 - Maternal Immunization Composite
 - Influenza + Tdap
 - CRS 17.1 - Revised measure to look for 3rd trimester pregnancy visit in report period for Tdap
 - Adult Immunization Composite Measure
 - To replace Pneumococcal Measure in GPRA FY 2018
 - FY 2018 – Baseline
- 
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Beyond Influenza and Pneumococcal vaccine

- The adult immunization schedule has grown more complex with the recent introduction of several new vaccines
- National interest in establishing additional adult immunization quality measures
 - National Adult Immunization and Influenza Summit
 - Quality Measures Working group 2012
 - 2014 National Quality Forum Report “*Priority Setting for Health Care Performance Measurement: Getting to Measures that Matter for Adult Immunizations*”*
 - 2012-2013 - IHS pilot to test feasibility and usefulness of a composite measure

*Available at: http://www.qualityforum.org/Projects/n-r/Prioritizing_Measures/Adult_Immunization/Draft_Report_for_Comment.aspx

National Quality Forum Report - Priorities

Age-specific Priorities

- HPV vaccination catch-up for females – ages 19-26 years and male – ages 19-21 years
- Tdap/pertussis-containing vaccine for ages 19-59 years
- Zoster vaccination for ages 60-64 years
- Zoster vaccination for ages 65+ years (with caveats)

Composite Measure Priorities

- Composite including immunization with other preventive care services
- Composite of Tdap and influenza vaccination for pregnant women
- Composite including influenza, pneumococcal and hepatitis B vaccination measures with diabetes care processes or outcomes for individuals with diabetes
- Composite including influenza, pneumococcal and hepatitis B vaccinations measures with renal care measures for individuals with kidney failure/end stage renal disease (ESRD)
- Composite including Hepatitis A and B vaccinations for individuals with chronic liver disease
- Composite of all ACIP/CDC recommended vaccinations for healthcare personnel

Why a Composite Measure?

- Provides a broad perspective on the system of vaccination at a facility
 - Rather than a campaign to increase coverage with one vaccine, encourages a systematic approach for all vaccines
- Multiple measures make it challenging to implement broad-based immunization quality improvement activities
- “Composite measures can enhance measurement to extend beyond tracking performance on separate measures and can provide a potentially deeper view of the reliability of the care system”

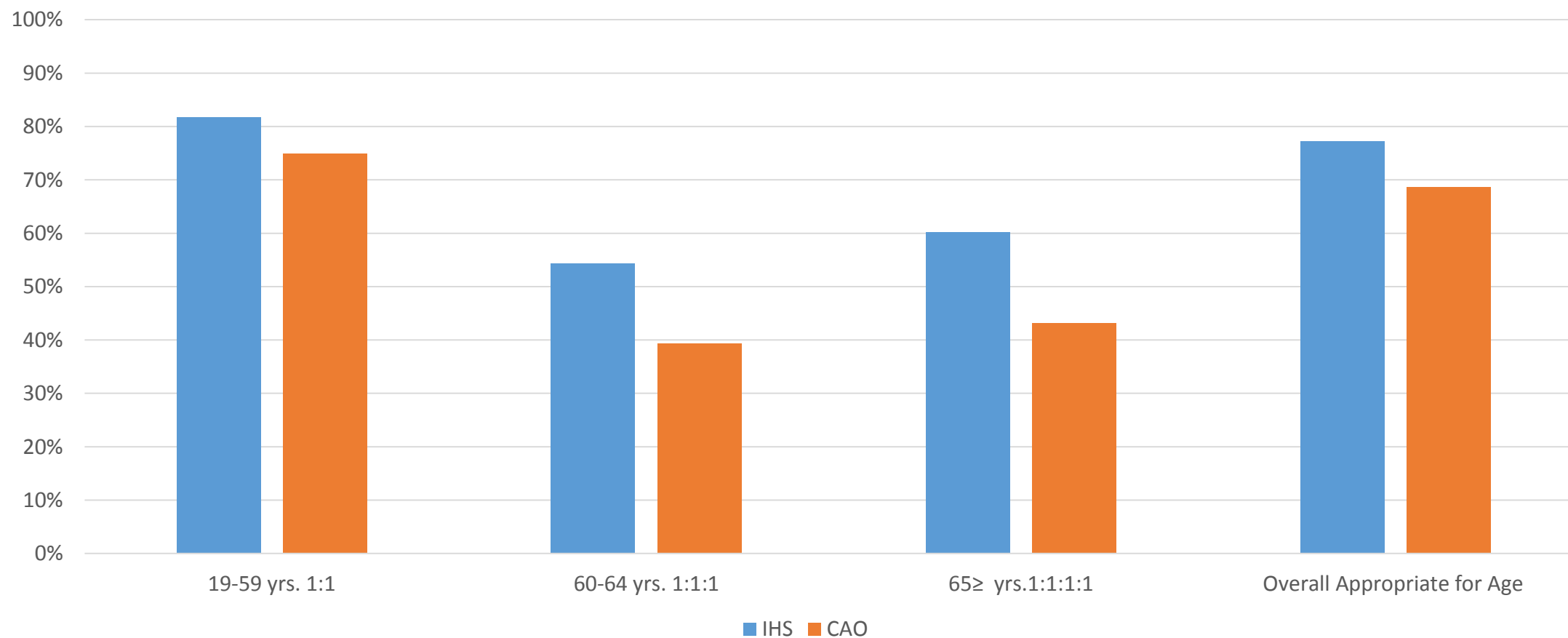
Institute of Medicine, Performance Measurement: Accelerating Improvement, Washington, DC: National Academies Press; 2006

IHS Adult Composite Measure

- Mirrors the current GPRA Adult Composite Developmental Measure

	Vaccines
19 – 59 years 1:1	<ul style="list-style-type: none">• Td-containing vaccine in the last 10 years AND• Tdap ever
60 – 64 years 1:1:1	<ul style="list-style-type: none">• Td-containing vaccine in the last 10 years AND• Tdap ever AND• Zoster
65 years + 1:1:1:1	<ul style="list-style-type: none">• Td-containing vaccine in the last 10 years AND• Tdap ever AND• Zoster AND• Pneumococcal vaccine (PPSV23 OR PCV13) on or after age 65 years or in last 5 years
Overall	Proportion of all adults 19 years and older who received the vaccines they SHOULD have received for their age (as outlined above)

FY 2016 Adult Composite (Developmental)



RPMS Adult Report – Composite Measure

Immunization v8.5*12		May 16, 2016 16:21:27		Page: 3 of 6	
DEMO HOSPITAL					
* Adult Immunization Report *					
Report Date: 05/16/2016					
Active Users (2+ visits, 3 yrs)					

Beneficiary Type: INDIAN/ALASKA NATIVE					

				Number	Percent
+					
* * * NEW GPRA COMPOSITE MEASURE SECTION * * *					
Total Number of Patients ages 19 through 59 years.....:				33	
Received 1 dose of Tdap ever.....:				14	42.4
Received 1 dose of Tdap or Td <10 years.....:				16	48.5
Received 1 dose Tdap ever AND Tdap or Td <10 years...:				13	39.4

Adult Composite Measure, cont.

Total Number of Patients ages 60 through 64 years.....:	4	
Received 1 dose of Tdap ever.....:	2	50.0
Received 1 dose of Tdap or Td <10 years.....:	2	50.0
Received 1 dose of Zoster ever.....:	1	25.0
Received Tdap ever AND Tdap/Td <10 yrs AND Zoster....:	1	25.0

Total Number of Patients 65 years and older.....:	7	
Received 1 dose of Tdap ever.....:	3	42.9
Received 1 dose of Tdap or Td <10 years.....:	4	57.1
Received 1 dose of Zoster ever.....:	5	71.4
Received 1 dose of Pneumo after 65 yrs OR last 5yrs.:	6	85.7
Received Tdap AND Tdap/Td <10y AND Zoster AND Pneumo:	3	42.9

Total Number of Patients 19 years and older.....:	44	
Total Patients 19 years and older appropriately vaccinated per age recommendations.....:	17	38.6



Summary

- Immunizations – always work to do
 - Increasingly complex schedule
 - Clinical decision support tools/forecasting are critical
 - Use the data
 - Coverage reports can help identify issues
 - For adults – time to move beyond just flu and pneumococcal
 - For children – time to take action
 - Ensure ALL recommended vaccines are being given at the recommended ages
 - Implement strategies to keep them on track
 - Reminder/recall, on-going monitoring
- 