The Role of IIS in implementing HPV Vaccination Programs

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Agenda

- Background
- Introduction to the project
- Data collection
- Preliminary results
- Dissemination plans

Project Background

- 64 jurisdictions receive funds from CDC to manage immunization programs, and these funds can be applied to IIS
- IIS can support clinicians to recommend vaccines to their patients at CDC-recommended ages and intervals.
- Up-to-date HPV vaccination coverage by age 13 is approximately 50%, relative to the Healthy People 2030 goal of 80%.
  - *Pingali C, Yankey D, Elam-Evans LD, et al. Vaccination Coverage Among Adolescents Aged 13–17 Years — National Immunization Survey–Teen, United States, 2022. MMWR Morb Mortal Wkly Rep 2023;72:912–919. DOI: http://dx.doi.org/10.15585/mmwr.mm7234a3*
- New strategies are needed to boost rates of HPV vaccine uptake and completion by age 13 for optimal protection.

HPV Vaccination at Age 9 vs. Age 11

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- The CDC universally recommends HPV vaccination at ages 11-12, but it can be given as young as age 9 per FDA licensure.

- Provider recommendations for HPV vaccination at age 9 is associated with higher initiation and completion rates by age 13.
  - Saxena K, Kathe N, Sardana P, Yao L, Chen YT, Brewer NT. HPV vaccine initiation at 9 or 10 years of age and better series completion by age 13 among privately and publicly insured children in the US. HumVaccines Immunother. 2023;19(1).
  - Goodman E, Felsher M, Wang D, Yao L, Chen YT. Early Initiation of HPV Vaccination and Series Completion in Early and Mid-Adolescence. Pediatrics. 2023;151(3). doi:10.1542/peds.2022-058794

- *But what do the jurisdictional IIS say about the recommended age for HPV vaccination?*

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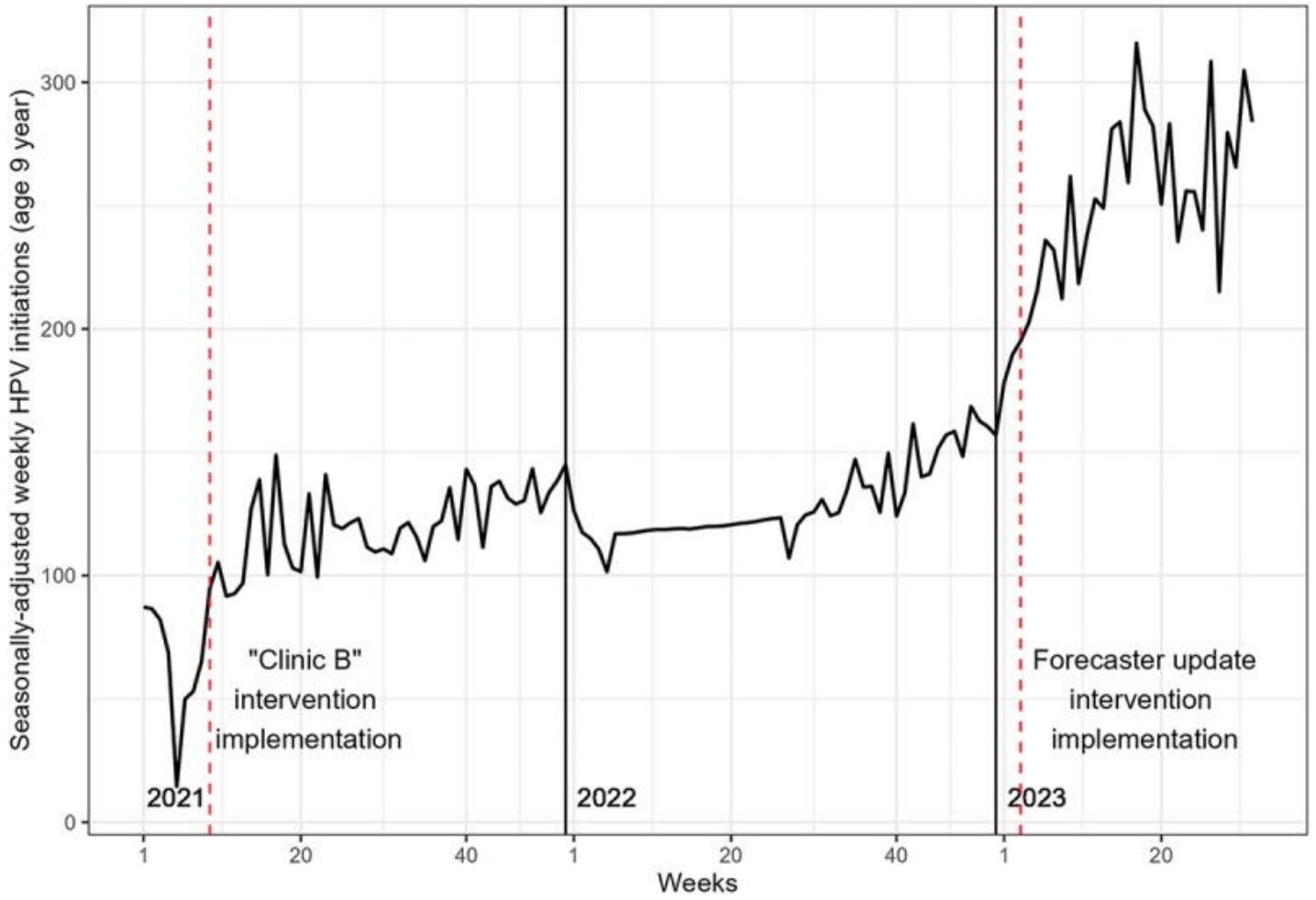
Research Questions

- Current study:
  - What are the characteristics of jurisdictional IIS with respect to state HPV vaccination recommendations?
  - How do jurisdictional health departments determine forecasts for HPV vaccination, and what characteristics of IIS platforms influence the forecast?

- Future studies:
  - How do jurisdictional IIS forecasts for HPV vaccination influence:
    - Provider recommendations for HPV vaccination?
    - Consistency in recommendations across jurisdictions?
    - HPV up-to-date vaccination rates?

The Experience in Washington State

Seasonally adjusted weekly counts of HPV initiation among 9-year-olds in Washington state, 2021 to mid-2023.



Christensen T, Zorn S, Bay K, Treend K, Averette C, Rhodes N. Effect of immunization registry-based provider reminder to initiate HPV vaccination at age 9, Washington state. *Hum Vaccin Immunother*. 2023;19(3):2274723.

Funding and Collaborators

- National Cancer Institute
  - Supplement to “Improving Provider Announcement Communication Training (IMPACT)” P01CA250989-03S1
  - 1 year, $125,000
- Noel Brewer (PI); Nadja Vielot (Supplement Lead)
- Deanna Kepka, PhD; Gregory Zimet, PhD; Sherrie Zorn, MD (Expert panel)
- Isabelle Keim (Research Assistant)
- Association of Immunization Managers (Katelyn Wells, Kristy Westfall)
- St. Jude HPV Cancer Prevention Program (Heather Brandt)

Study Activities

- Activity A. Gather data from the published literature, immunization program webpages, and immunization program personnel for the 64 US states and jurisdictions
- Activity B. Conduct in-depth stakeholder interviews on IIS implementation and decision-making in multiple jurisdictions
- Activity C. Disseminate case summaries to guide IIS priority-setting and implementation across jurisdictions.

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Activity A

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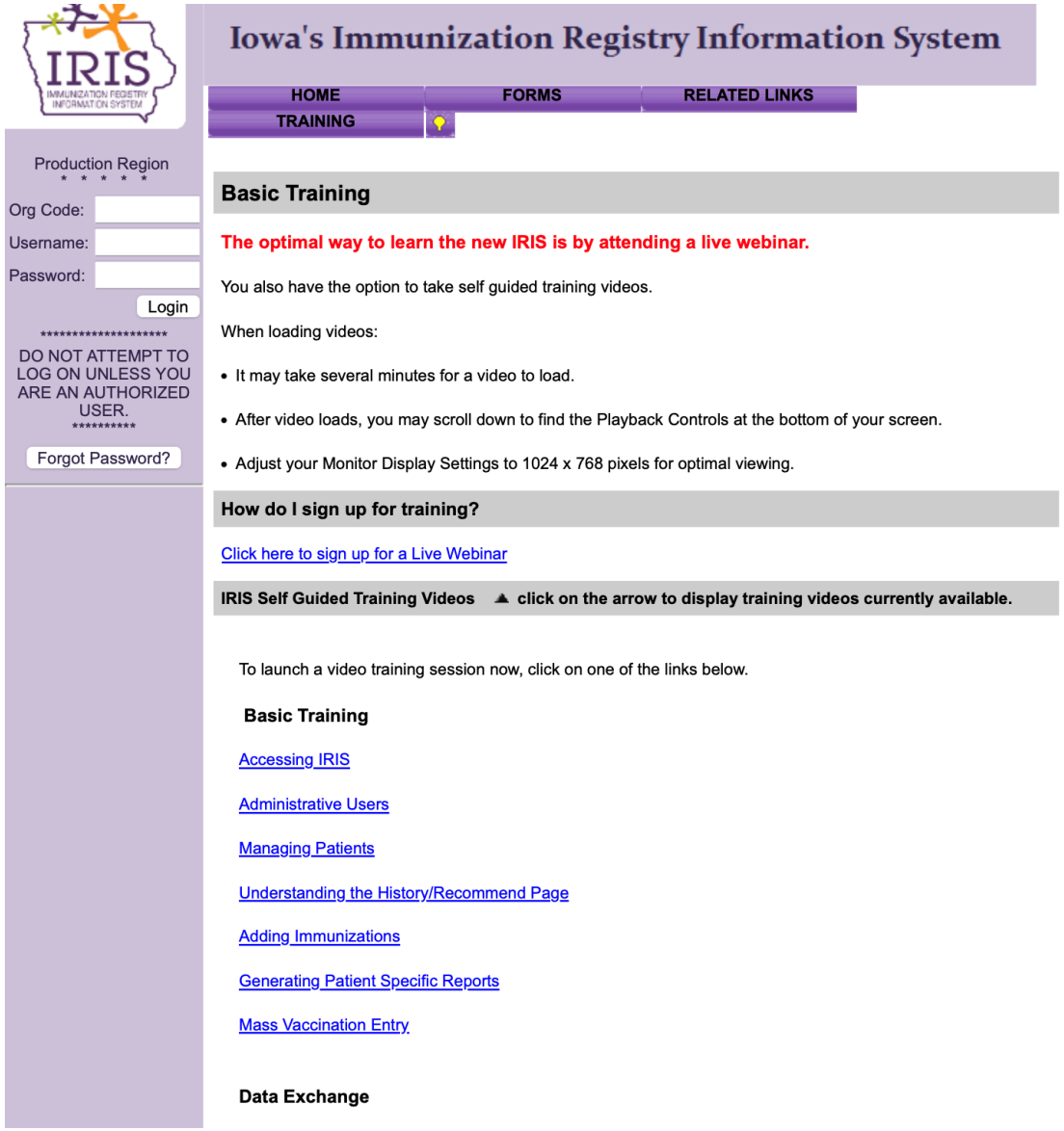
Review of Jurisdictional IIS Public Webpages



- Training videos
- Training manuals
- Information brochures
- State websites

North Carolina HPV Forecast Example

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Current Age: 9 years, 2 months, 5 days

Vaccines Recommended by Selected Tracking Schedule

Vaccine Group	Earliest Date	Recommended Date	Overdue Date	Latest Date
DTP/aP	Complete			
HepA	Complete			
HepB	Complete			
Hib	Maximum Age Exceeded			
HPV	07/09/2023	07/09/2023	07/09/2030	07/08/2061
Influenza	11/12/2021	10/15/2022	04/15/2023	

For a child with DOB: 07/09/2014:

- Earliest date: 9th birthday
- Recommended date: 9th birthday
- Overdue date: 16th birthday
- Latest date: 47th birthday -1 day

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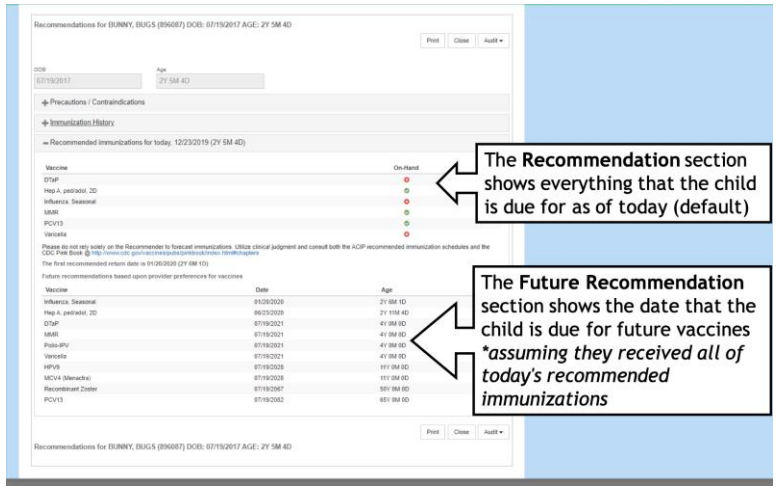
Forecasting Layout by Vendor



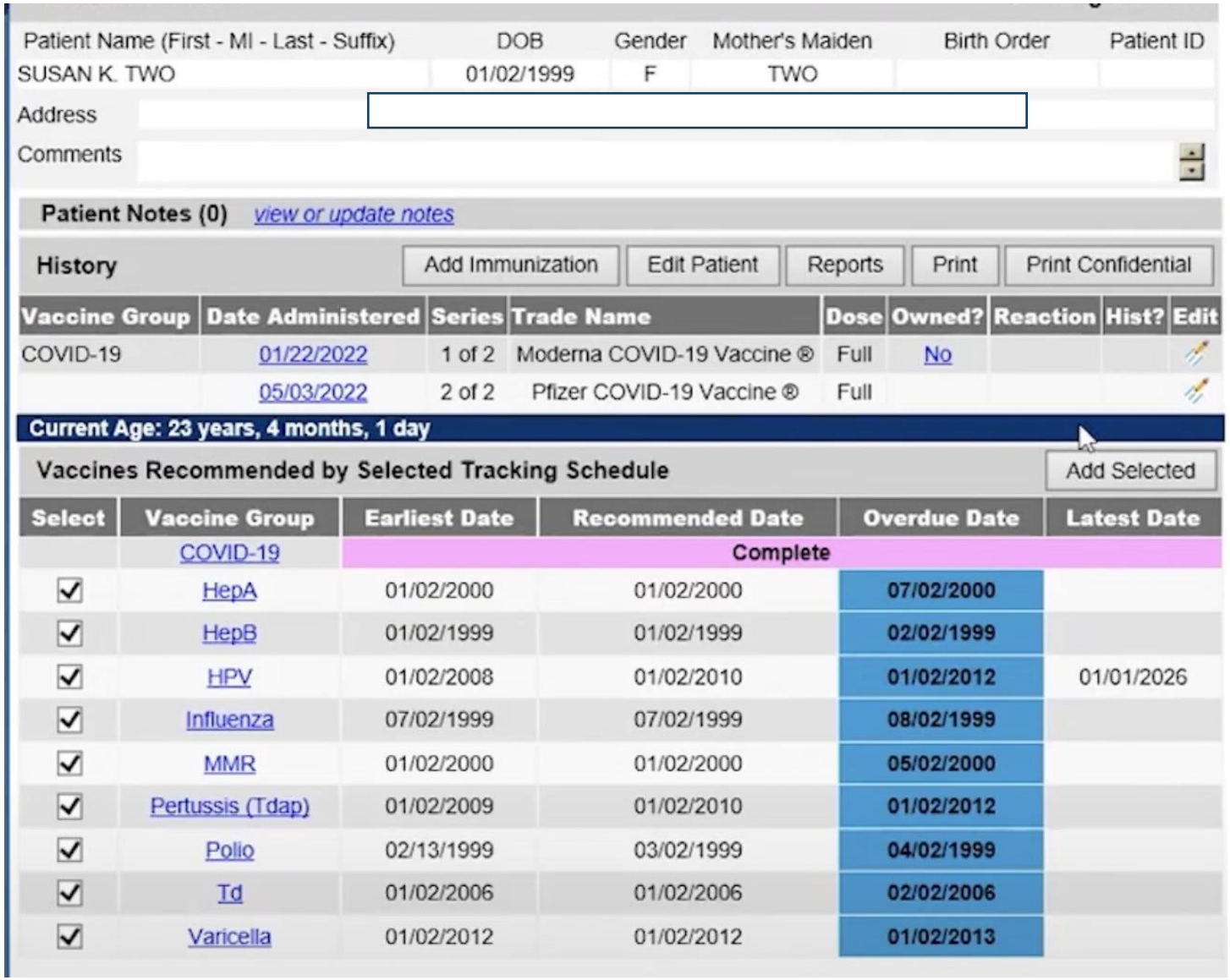
Envision: provides only one age option for each vaccine

- HPV: age 11

Future recommendations based upon provider preferences for vaccines

Vaccine	Date	Age
Influenza, Seasonal	01/20/2020	2Y 6M 1D
Hep A, ped/adol, 2D	06/23/2020	2Y 11M 4D
DTaP	07/19/2021	4Y 0M 0D
MMR	07/19/2021	4Y 0M 0D
Polio-IPV	07/19/2021	4Y 0M 0D
Varicella	07/19/2021	4Y 0M 0D
HPV9	07/19/2028	11Y 0M 0D

Forecasting Layout by Vendor



Patient Name (First - MI - Last - Suffix)	DOB	Gender	Mother's Maiden	Birth Order	Patient ID
SUSAN K. TWO	01/02/1999	F	TWO		

Address

Comments

Patient Notes (0) *view or update notes*

History | Add Immunization | Edit Patient | Reports | Print | Print Confidential

Vaccine Group	Date Administered	Series	Trade Name	Dose	Owned?	Reaction	Hist?	Edit
COVID-19	01/22/2022	1 of 2	Moderna COVID-19 Vaccine ®	Full	No			
	05/03/2022	2 of 2	Pfizer COVID-19 Vaccine ®	Full				

Current Age: 23 years, 4 months, 1 day

Vaccines Recommended by Selected Tracking Schedule | Add Selected

Select	Vaccine Group	Earliest Date	Recommended Date	Overdue Date	Latest Date
	COVID-19	Complete			
☑	HepA	01/02/2000	01/02/2000	07/02/2000	
☑	HepB	01/02/1999	01/02/1999	02/02/1999	
☑	HPV	01/02/2008	01/02/2010	01/02/2012	01/01/2026
☑	Influenza	07/02/1999	07/02/1999	08/02/1999	
☑	MMR	01/02/2000	01/02/2000	05/02/2000	
☑	Pertussis (Tdap)	01/02/2009	01/02/2010	01/02/2012	
☑	Polio	02/13/1999	03/02/1999	04/02/1999	
☑	Td	01/02/2006	01/02/2006	02/02/2006	
☑	Varicella	01/02/2012	01/02/2012	01/02/2013	

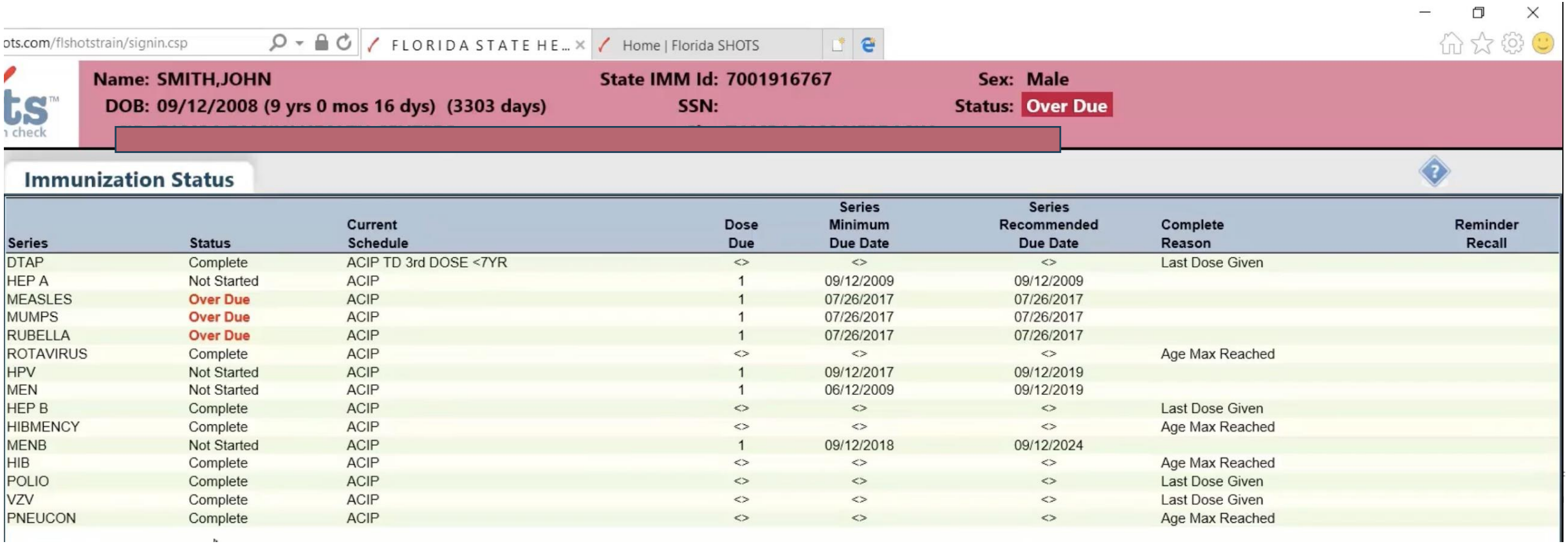
WIR: allows a variety of dates based on CDC-recommended ranges.

- HPV: earliest date is 9 years, recommended is 11 years, overdue is 13 years, latest is 27 years -1 day

Forecasting Layout by Vendor

Homegrown system: whatever the jurisdiction wants!

- HPV: earliest date is 9 years, recommended is 11 years
- Also includes completion indicators and indicators for reminder/recall



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Name: SMITH,JOHN **State IMM Id: 7001916767** **Sex: Male**

DOB: 09/12/2008 (9 yrs 0 mos 16 dys) (3303 days) **SSN:** **Status: Over Due**

[redacted]

Immunization Status

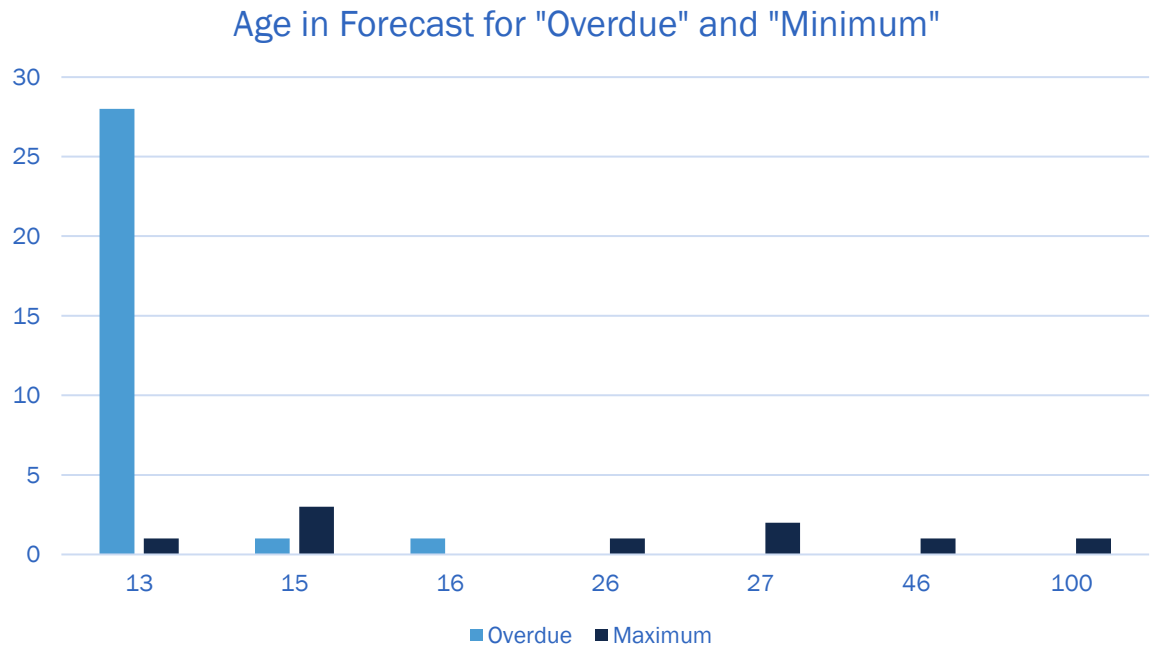
Series	Status	Current Schedule	Dose Due	Series Minimum Due Date	Series Recommended Due Date	Complete Reason	Reminder Recall
DTAP	Complete	ACIP TD 3rd DOSE <7YR	<>	<>	<>	Last Dose Given	
HEP A	Not Started	ACIP	1	09/12/2009	09/12/2009		
MEASLES	Over Due	ACIP	1	07/26/2017	07/26/2017		
MUMPS	Over Due	ACIP	1	07/26/2017	07/26/2017		
RUBELLA	Over Due	ACIP	1	07/26/2017	07/26/2017		
ROTAVIRUS	Complete	ACIP	<>	<>	<>	Age Max Reached	
HPV	Not Started	ACIP	1	09/12/2017	09/12/2019		
MEN	Not Started	ACIP	1	06/12/2009	09/12/2019		
HEP B	Complete	ACIP	<>	<>	<>	Last Dose Given	
HIBMENCY	Complete	ACIP	<>	<>	<>	Age Max Reached	
MENB	Not Started	ACIP	1	09/12/2018	09/12/2024		
HIB	Complete	ACIP	<>	<>	<>	Age Max Reached	
POLIO	Complete	ACIP	<>	<>	<>	Last Dose Given	
VZV	Complete	ACIP	<>	<>	<>	Last Dose Given	
PNEUCON	Complete	ACIP	<>	<>	<>	Age Max Reached	

Forecast Age Variations

HPV vaccine forecast characteristics (N=46)	
Characteristics	46 (100%)
Offers one age or date option for HPV vaccination	6 (13%)
Offers a range of age or date options for HPV vaccination	40 (87%)
Offers a minimum age or date	39 (84.8%)
Minimum age is 9 years	37 (80.4%)
Offers a recommended age or date	46 (100%)
Recommended age is 9 years	12 (26%)
Recommended age is 11 years	32 (69.6)
Recommended age is 12	1 (2.2%)
Recommended age is 15	1 (2.2%)
Offers an overdue age or date	30 (65.2%)
Overdue age is 13 years	28 (60.9%)
Overdue age is 15 years	1 (2.2%)
Overdue age is 16 years	1 (2.2%)

Forecasted Maximum vs. Overdue Age

HPV vaccine forecast characteristics (N=46)	
Characteristics	46 (100%)
Offers a ”Maximum Age”	9 (19.6%)
Maximum age is 13 years	1 (2.2%)
Maximum age is 15 years	3 (6.5%)
Maximum age is 26 years	1 (2.2%)
Maximum age is 27 years	2 (4.3%)
Maximum age is 46 years	1 (2.2%)
Maximum age is 100 years	1 (2.2%)



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Activity B

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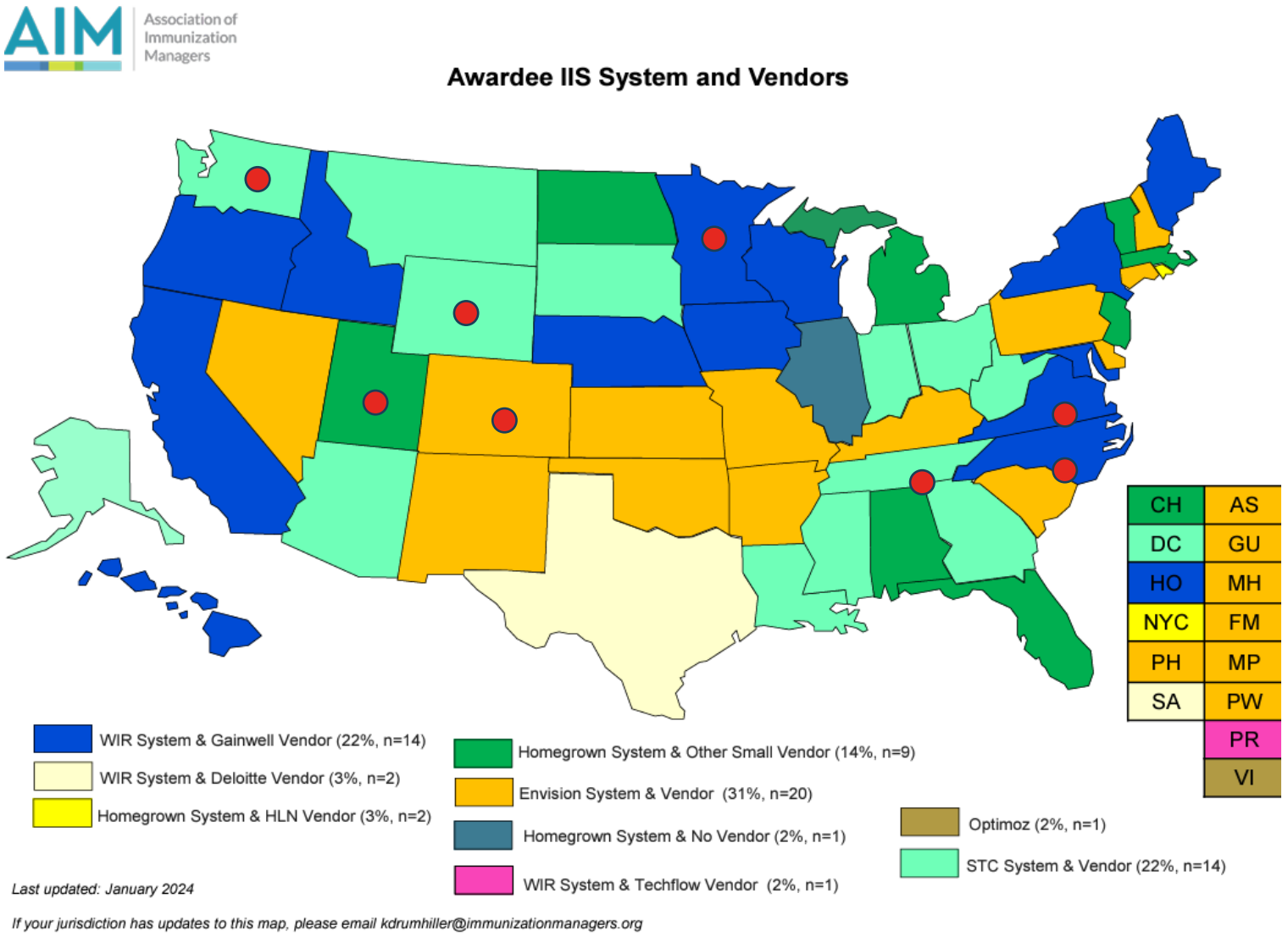
Interviews With IIS Stakeholders

- 8 jurisdictions
  - Colorado (n=3)
  - Minnesota (n=5)
  - North Carolina (n=3)
  - Tennessee (n=3)
  - Utah (n=7)
  - Virginia (n=5)
  - Washington (n=7)
  - Wyoming (n=3)
- 36 participants total

Systems and Vendors by Jurisdiction



https://www.immunizationmanagers.org/resources/aim-policy-maps/

Key Messages

- Benefits and limitations of IIS
- Customizability of IIS
- Decision-making around HPV forecast

Key Messages: Benefits of IIS platforms

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"We like [our vendor]. There is a lot of functionality available within the system. Anything from a plethora of reports in different forms that can be accessed. They keep up to date with all CDSI and recommendations and all of that is done and maintained by them."

"I personally think that being part of a consortium of states that are using the same product is a huge benefit, because we can support each other and advocate for each other, and pool resources as well for new advancements and upgrades and features, things like that."

"…[Our vendor] seems to have more innovation and try to be in the forefront, particularly a couple of years ago when a lot of states were onboarding to the IZ Gateway."

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Key Messages: Customizability

"So basically Wisconsin owns the base code and the license overall, but…we can make the changes that we need that make sense for our jurisdiction, but we need to be willing to share those with others."

"…One of the other issues with the current system is it's old technology, and it's not built on a modular base. It is lines and lines and lines of unique code because we've modified it basically for the last 20 years. And so updating it is very cumbersome, and you have to be particular, because it is lines of code, that you don't mess up something by making changes.

So we have really good coders, and they can basically take the [vendor's] code and make it whatever they want…. but if we do any customizations, [the vendor] updates something on their code, it may break our code. So we're hesitant to do a lot of customizations, but there is always the possibility to do things.

" The forecasting, on a whole, is really good. It's user-friendly, meaning I can get in and change settings, usually with ages, and stuff. I can play with ages a little bit. I can't necessarily go outside of the ACIP recommendations…."

Key Messages: HPV Forecast

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Determining the forecast age:

"So it follows ACIP recommendations. It's recommended as optional starting at age 9, and then the routine recommendation is starting at age 11. If they're younger than 15 when they get their first dose, it's two doses. If they're older, it's three doses. For adults, it's three doses. It just follows the standard recommendation."

"I mean, almost exclusively we follow ACIP recommendations, but I feel like we also use our clinical judgment."

"…American Cancer Society came out and was pushing 9. There was lots of different advocacy groups coming out pushing 9. …We think this is a good move, recognizing that ACIP has not changed their stance yet, but we feel like they will in the future, to more align with American Academy of Pediatrics (AAP), American Cancer Society (ACS), and the rest of the groups."

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Key Messages: HPV Forecast

Barriers to age-9 forecast

"So we know it can be given at age 9. I, personally, would love for all kids to get it at age 9, but the routine recommendation is age 11, so it's tricky. I personally wish the routine recommendation was at 9, that would kind of clear up a lot of confusion. So I tend to leave those types of decisions to like the medical director's discretion."

"We can request things, but if it doesn't follow the ACIP recommendations or CDSi test cases, then it's unlikely to be changed."

"There is a little bit of concern we have with the AAP's [preference] towards 9 rather than 11 that ACIP does. …it does put us in a position to have to choose between the two, and we don't really want to do that. And right now, we align with the ACIP."

"I think it's something we theoretically could do. It would take money to have that change, and I think in the grand like prioritization of what we need to spend money on with the WIR, it would be very low on the list, just because it's not like something that has to happen, because it does have that recommended [age 9]."

Key Messages: HPV Forecast

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Programming the age-9 forecast

"Every state has the option to override the CDC requirements or ACIP requirements, but when they choose to not, that's their choice."

"… since we do use a forecast vendor, if we want to make any changes to the actual forecasting itself, then we have to reach out to them, and that takes longer."

"It was an extremely easy change. So after all those conversations that I'm sure everyone else here can tell you about, or had, they said, F5, please do this. And changing the earliest recommendation age for a vaccine schedule like that is super simple. I went in and moved it from 11 down to 9."

"In this case, the vendor didn't have to do anything. We just changed the age from 11 to 9, so the prompt comes at age 9. And effectively we just go into the backend of the system and it changed the age for that particular vaccine."

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Key Messages: HPV Forecast

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Inputs to forecast changes

"Yeah, we really relied a lot on the advocacy organizations that we partner with, like HPV Roundtable, American Cancer Society and AAP, American Academy of Pediatrics, to really look at the data sources that they have been gathering through other research that has been going on, and also to help guide us for what the data shows us, how it can help boost initiation rates. And I think that strategically we were also seeing it as starting earlier at age 9 and also give providers more time to achieve completion by age 13."

Communicating forecast changes

"There can be some provider anxiety because it feels very different to them, but I think that our provider communication plan really acknowledges that difference in how to explain this to providers in a way that doesn't feel like this is a massive switch but an expansion upon the work that they are already implementing."

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Activity C

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Dissemination Plans

- Lessons learned and best practices published in a peer-reviewed journal
  - Includes vendor-specific guidance for setting HPV vaccination forecasts

- Webinars hosted by Association of Immunization Managers, St. Jude, other stakeholders

Dissemination Plans

- First annual National HPV Meeting
  - April 15-17, 2025, Indianapolis, IN
  - Workshop to disseminate these findings and advance future research projects
  - Develop novel collaborations

Thank You!

If you have further questions or information, please contact us:

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