

ACIP to CDSi to IIS

it's not just



Black & White

Written by

Amanda Timmons

Oregon Immunization Program

Presented by

Jenne McKibben

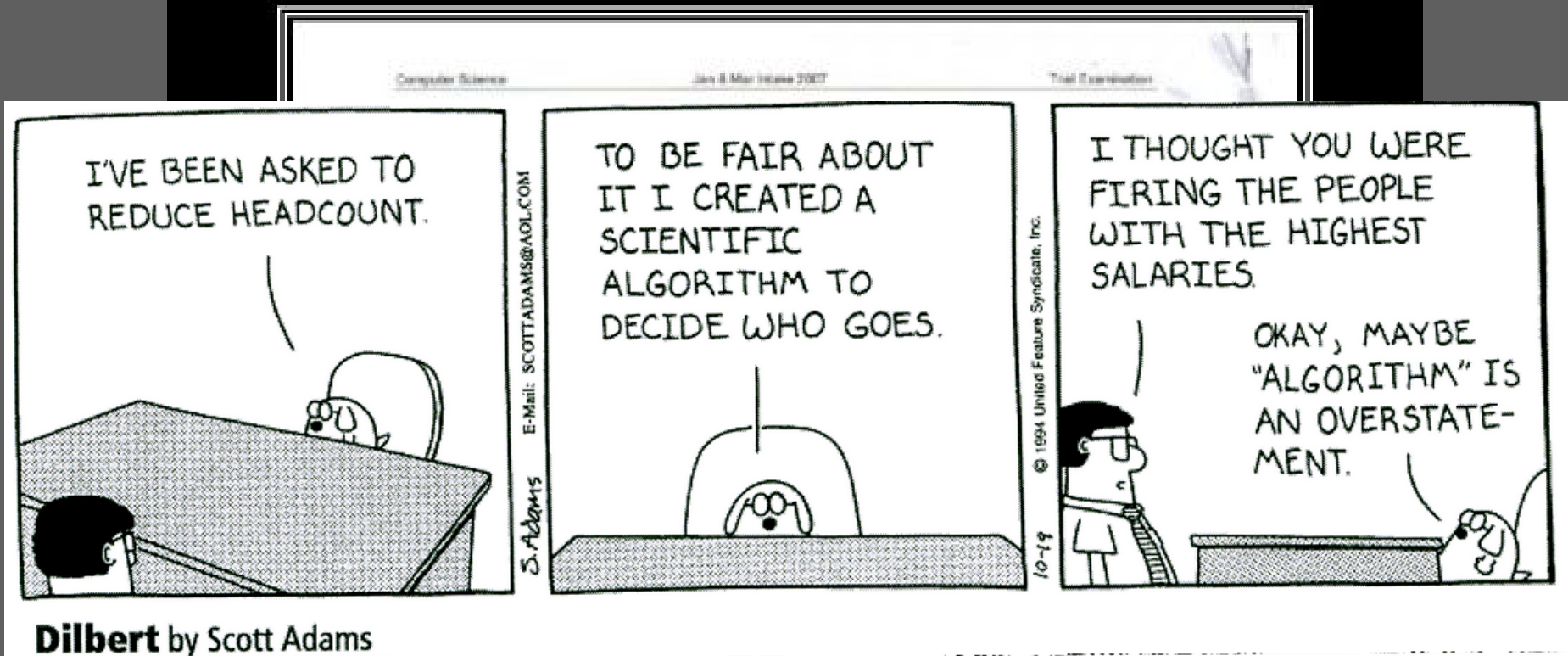
Oregon Immunization Program

Disclaimer

The opinions presented herein are solely those of the presentation author and should not in any way be attributed to the presenter or the Oregon Immunization Program.

Any similarities to actual persons, living or dead, or actual events are entirely coincidental.

Algorithms



ALGORITHM

A rythem named after Al Gore

CDSi Project

- Developed to provide a single, authoritative source of vaccine decision guidelines.
- Implementation-neutral – can be used by developers of any forecasting system.
- Updated consistently to reflect new recommendations.

Maintaining the algorithm

Before CDSi...

**FDA &
ACIP**

FDA Approval & ACIP Meeting

New vaccine approved in the US. ACIP meets and makes provisional immunization recommendations.

Oregon Workgroup

Oregon staffs meet to discuss provisional recommendations and licensure. Staffs formulate any questions to be answered before implementation.

**Forecasting
Workgroup**

**Oregon
Medical
Director**

Oregon Medical Director / CDC

Questions are forwarded to Oregon's Immunization Medical Director for clarification.

Initial Schedule Setup

Draft forecast criteria for new vaccines added to UAT platform for testing.

**Initial
IIS
Setup**

**IIS
Testing**

Testing & Refinement

Test cases are imported into UAT and reviewed by IIS staffs.

Implementation

Schedules are manually moved into Production.

Implementation

After CDSi. . .

**FDA &
ACIP**

FDA Approval & ACIP Meeting

New vaccine approved in the US. ACIP meets and makes provisional immunization recommendations.

Oregon Workgroup

Oregon staffs meet to discuss provisional recommendations and licensure. Staffs formulate any questions to be answered before implementation.

**Forecasting
Workgroup**

Oregon Medical Director / CDC

Questions are forwarded to Oregon's Immunization Medical Director for clarification.

**Oregon
Medical
Director**

Initial Schedule Setup

Draft forecast criteria for new vaccines added to UAT platform for testing.

**Initial
IIS
Setup**

**IIS
Testing**

Testing & Refinement

Test cases are imported into UAT and reviewed by IIS staffs.

Implementation

Schedules are manually moved into Production.

Implementation

IRL – A Case Study

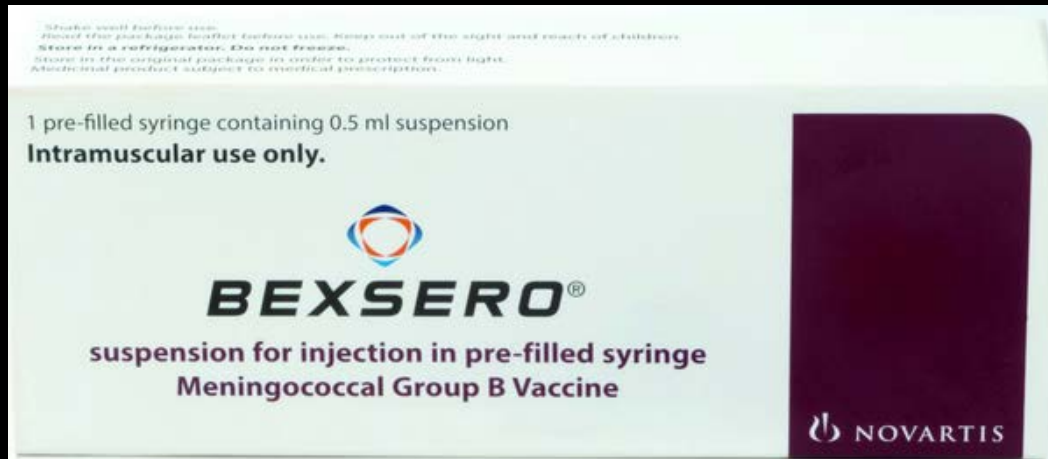
**GET
THE
VAX**

March 2 - 5
Matthew Knight Arena

Please bring your:
University ID Card, Insurance Card
and wear a short sleeve shirt.

meningitis.uoregon.edu

Trumenba – Pfizer
3 dose series
Given on a 0, 2, 6 month
schedule



Bexsero – Novartis
2 dose series
Given on a 0, 1 month
schedule

Outstanding Questions

- Are these vaccines interchangeable?
- What is the spacing between doses 2 and 3 of Trumenba when dose 2 is given late?
- If doses are given at less than the minimum interval, should they be repeated?

No published ACIP Recommendations

Per state-level experts. . .



Per CDSi guidance . . .



Meningococcal B, Bexsero

Min Grace Age	Max Grace Age	Min Grace Int	Invoke On Age	Invoke On Use	Invoke On High Risk	Max Dose	Override	Seasonal Adjustment
Yes		Yes		Yes				No

Acceptable Vaccines...

Vaccine	Rule	Trade Name	Size	Mult	Min Age	Max Age	Primary
Meningococcal B, OMV							Yes

Vaccine/Series Recommendations...

Condition	Compare	Count	Valid	Min Age	Max Age	Vaccine/Series Display
Meningococcal B, OMV	>	0		0D	0D	Meningococcal B, Bexsero

Doses...

Number										
1	Age Rule				Adjacent Interval			Jump Forward		
	Min	Rec	Ovr	Max	Min	Rec	Ovr	Doses	Min Age	
	10 Y	0 D	0 D	0 D	0 D	0 D	0 D			
	Unacceptable Vaccines				Non-Adj. Int.			Minimum Interval		
					Dose Num		Min Int		To Validate	
2	Minimum Age To Validate				Seasonal Adjustment					
					No					
	Age Rule				Adjacent Interval			Jump Forward		
	Min	Rec	Ovr	Max	Min	Rec	Ovr	Doses	Min Age	
					28 D	28 D	2 M			
	Unacceptable Vaccines				Non-Adj. Int.			Minimum Interval		
				Dose Num		Min Int		To Validate		
Minimum Age To Validate				Seasonal Adjustment						

No

Meningococcal B, Trumenba

Min Grace Age	Max Grace Age	Min Grace Int	Invoke On Age	Invoke On Use	Invoke On High Risk	Max Dose	Override	Seasonal Adjustment
Yes		Yes		Yes				No

Acceptable Vaccines...

Vaccine	Rule	Trade Name	Size	Mult	Min Age	Max Age	Primary
Meningococcal B, recombinant							Yes

Vaccine/Series Recommendations...

Condition	Compare	Count	Valid	Min Age	Max Age	Vaccine/Series Display
Meningococcal B, recombinant	>	0		0D	0D	Meningococcal B, Trumenba

Doses...

Number	Age Rule				Adjacent Interval			Jump Forward	
	Min	Rec	Ovr	Max	Min	Rec	Ovr	Doses	Min Age
1	10 Y	0 D	0 D	0 D	0 D	0 D	0 D		
	Unacceptable Vaccines				Non-Adj. Int. Dose Num Min Int			Minimum Interval To Validate	
	Minimum Age To Validate				Seasonal Adjustment				
					No				
2					2 M	2 M	3 M		
	Unacceptable Vaccines				Non-Adj. Int. Dose Num Min Int			Minimum Interval To Validate	
	Minimum Age To Validate				Seasonal Adjustment				
					No				
3					2 M	4 M	5 M		
	Unacceptable Vaccines				Non-Adj. Int. Dose Num Min Int			Minimum Interval To Validate	
	Minimum Age To Validate				Seasonal Adjustment				
					No				

What about published ACIP
recommendations?

Td/Tdap

Current Age: 11 years, 9 months, 29 days

Patient Notes (0) [view or update notes](#)

Add New Imms

Add Historical Imms

Edit Patient

Reports

Print Record

Print Confidential Record

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
Td/Tdap	07/05/2010	1 of 4	Td (adult), adsorbed [Td ®]				Yes	
	09/10/2010	2 of 4	Td (adult), adsorbed [Td ®]				Yes	
	12/22/2013	3 of 4	Td (adult), adsorbed [Td ®]				Yes	

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Past Due Date
	DTP/aP	DTaP, NOS	Maximum Age Exceeded		
<input type="checkbox"/>	HepA	HepA, NOS	06/01/2004	06/01/2004	01/01/2005
<input type="checkbox"/>	HepB	HepB, NOS	06/01/2003	06/01/2003	09/01/2003
<input type="checkbox"/>	HPV	HPV, NOS	06/01/2012	06/01/2012	06/01/2016
<input type="checkbox"/>	Influenza-seasn	Flu NOS	06/01/2012	09/01/2014	06/01/2012
<input type="checkbox"/>	Meningo	Meningococcal, NOS	06/01/2014	06/01/2014	06/01/2016
<input type="checkbox"/>	MMR	MMR	06/01/2004	06/01/2004	10/01/2004
<input type="checkbox"/>	Polio	Polio, NOS	07/13/2003	08/01/2003	09/01/2003
<input type="checkbox"/>	Td/Tdap	Tdap	12/22/2018	12/22/2018	12/22/2023
<input type="checkbox"/>	Varicella	Varicella	06/01/2004	06/01/2004	10/01/2004

Add Selected

Polio

Prospective forecast

Current Age: 2 years, 9 months, 29 days

Patient Notes (0) [view or update notes](#)

Add New Imms
Add Historical Imms
Edit Patient
Reports
Print Record
Print Confidential Record

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
DTP/aP	08/05/2012	1 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
	10/10/2012	2 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
	12/15/2012	3 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
HepB	08/05/2012	1 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
	10/10/2012	2 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
	12/15/2012	3 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
Polio	08/05/2012	1 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	
	10/10/2012	2 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	
	12/15/2012	3 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Past Due Date
<input type="checkbox"/>	DTP/aP	DTaP, NOS	06/10/2013	06/15/2013	01/01/2014
<input type="checkbox"/>	HepA	HepA, NOS	06/01/2013	06/01/2013	01/01/2014
<input type="checkbox"/>	HepB	HepB, NOS	Complete		
<input type="checkbox"/>	Hib	Hib, NOS	09/01/2013	09/01/2013	09/01/2013
<input type="checkbox"/>	Influenza-seasonl	Flu NOS	12/01/2012	09/01/2014	01/01/2013
<input type="checkbox"/>	MMR	MMR	06/01/2013	06/01/2013	10/01/2013
<input type="checkbox"/>	PneumoConjugate	PCV13	07/13/2012	08/01/2012	09/01/2012
<input type="checkbox"/>	Polio	Polio, NOS	06/01/2016	06/01/2016	06/01/2017
<input type="checkbox"/>	Varicella	Varicella	06/01/2013	06/01/2013	10/01/2013

Add Selected

Retrospective validation

Current Age: 2 years, 9 months, 29 days

Patient Notes (0) [view or update notes](#)

Add New Imms
Add Historical Imms
Edit Patient
Reports
Print Record
Print Confidential Record

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
DTP/aP	08/05/2012	1 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
	10/10/2012	2 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
	12/15/2012	3 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
HepB	09/16/2013	4 of 5	DTaP-HepB-IPV [Pediarix ®]				Yes	
	08/05/2012	1 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
	10/10/2012	2 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
HepB	12/15/2012	3 of 3	DTaP-HepB-IPV [Pediarix ®]				Yes	
	09/16/2013		DTaP-HepB-IPV [Pediarix ®]				Yes	
	08/05/2012	1 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	
Polio	10/10/2012	2 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	
	12/15/2012	3 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	
	09/16/2013	4 of 4	DTaP-HepB-IPV [Pediarix ®]				Yes	

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Past Due Date
<input type="checkbox"/>	DTP/aP	DTaP, NOS	06/01/2016	06/01/2016	06/01/2017
<input type="checkbox"/>	HepA	HepA, NOS	06/01/2013	06/01/2013	01/01/2014
<input type="checkbox"/>	HepB	HepB, NOS	Complete		
<input type="checkbox"/>	Hib	Hib, NOS	09/01/2013	09/01/2013	09/01/2013
<input type="checkbox"/>	Influenza-seasonl	Flu NOS	12/01/2012	09/01/2014	01/01/2013
<input type="checkbox"/>	MMR	MMR	06/01/2013	06/01/2013	10/01/2013
<input type="checkbox"/>	PneumoConjugate	PCV13	07/13/2012	08/01/2012	09/01/2012
<input type="checkbox"/>	Polio	Polio, NOS	Complete		
<input type="checkbox"/>	Varicella	Varicella	06/01/2013	06/01/2013	10/01/2013

Add Selected

Influenza

Current Age: 7 years, 3 months, 29 days

Patient Notes (0) [view or update notes](#)

Add New Imms

Add Historical Imms



Edit Patient

Reports

Print Record

Print Confidential Record

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
Influenza-seasn1	09/15/2008	1 of 2	Flu NOS				Yes	
	10/01/2014	2 of 2	Flu NOS				Yes	

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Past Due Date
<input type="checkbox"/>	HepA	HepA, NOS	12/01/2008	12/01/2008	07/01/2009
<input type="checkbox"/>	HepB	HepB, NOS	12/01/2007	12/01/2007	03/01/2008
<input type="checkbox"/>	Influenza-seasn1	Flu NOS	10/29/2014	09/01/2015	10/01/2015
<input type="checkbox"/>	MMR	MMR	12/01/2008	12/01/2008	04/01/2009
<input type="checkbox"/>	Polio	Polio, NOS	01/12/2008	02/01/2008	03/01/2008
<input type="checkbox"/>	Td/Tdap	Tdap	12/01/2014	12/01/2014	12/01/2014
<input type="checkbox"/>	Varicella	Varicella	12/01/2008	12/01/2008	04/01/2009

Add Selected

What does maintaining this cost?

Assumptions

All grantees either provide, or contract for, maintenance of a CDSi engine;

It takes at least the equivalent of a half time staff person to maintain it;

If that staff costs ~70K annually, approximately \$2 million is being spent annually;

These costs do not include maintenance of any EHR CDSi engine.

59 grantees

.5 FTE maintenance

Total

~ 2 million annually

Is this the best use of these funds?

A different path . . .

- One, federally-supported CDSi engine.
- A web-service that could be used by both IIS's and EHR's.
- Ambiguities could be more easily and quickly addressed.

Benefits

- Simpler maintenance of the CDSi engine – faster updates; less costly than separate forecasting systems.
- Standardization of recommendations across systems and across the country.
- Less hassle for systems connecting to the engine.

Potential Hurdles

- Differences between states in interpretation of forecasting recommendations.
- School / Child Care forecasting algorithms.
- Platform neutral technology.
- Service would have to be large enough to accommodate a large number of simultaneous transactions.

Questions?

amanda.j.timmons@state.or.us