

Using an Immunization Information System for Assessment, Feedback, Incentives, Exchange (AFIX) and Provider Feedback Reports

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Bureau of Immunization

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New York City (NYC) and the Vaccines for Children (VFC) Program

- 8.3 million people - 1.9 million are 0-18 years
 - ~74% of 0-18 year-olds eligible for publicly funded vaccines
 - ~66% VFC
 - ~1% 317 (underinsured, vaccinated at other than FQHCs)
 - ~7% SCHIP
- 85% (1,530) of all pediatric provider sites (~1,800) enrolled in VFC
- ~3.3 million publicly funded vaccine doses costing ~\$138 million distributed in NYC annually

Citywide Immunization Registry (CIR)

- NYC's Immunization Information System (IIS)
 - Reporting mandate for imms administered to patients 0-18 years
- In 2006, we linked CIR reporting to VFC distribution
 - Created CIR-generated VFC doses administered report (DAR):
doses reported to CIR in year / # doses received from VFC in year
 - Providers with DAR < 90% subject to a reduction of order
 - CIR reporting increased 70%, leading to more complete data
 - >90% of pediatric provider sites currently report regularly
 - Coverage is now within confidence intervals of Natl Imm Survey (NIS)
 - Transitioned to using CIR for 100% of AFIX from 2006-2010
 - Started sending Provider Feedback Reports quarterly

AFIX in NYC

- AFIX visits conducted among VFC sites to improve coverage
 - Prioritize sites with childhood series coverage < 90% and not visited in previous year
 - Conduct AFIX among $\geq 25\%$ of active VFC sites
- Before 2006, AFIX based on chart review
 - Piloted AFIX using IIS at end of 2006
 - Transitioned to 100% AFIX through IIS in July 2010
- In 2008, merged AFIX and VFC field ops teams
 - Conduct combined AFIX/VFC compliance site visits
 - ~ 2/3 of VFC site visits include AFIX
 - For both 19-35 month-olds and 13-17 year-olds

Why Transition to Using IIS for AFIX?

- Consumes less time and resources than chart review
 - Less disruptive to provider's practice
 - AFIX-IIS conducted in ½-1 day vs. 2-3 days
 - No data entry
 - Helps improve completeness of IIS data
 - Further incentive for providers to report to IIS
- Allows for assessment of all patients in age group (instead of sample)
- Facilitates adding, expanding age groups

Changes to Facilitate Use of IIS for AFIX

- Developed user friendly tool: Web Up-To-Date (UTD) Application
- Trained field staff to run Web UTD by site:
 - Summary report of coverage
 - Lists of children and adolescents not UTD
 - % of invalid doses (age, interval)
- Improved patient de-duplication in IIS
- Added fields to IIS Online Registry: Moved or Gone Elsewhere (MOGE) and Disease History

IIS Online Registry

MOGE Field

Please enter the fields your practice has not recently updated.

Patient Information

First Name: MICKEY
 Last Name: MOUSE
 DOB: 01 / 01 / 2001 (mm/dd/yyyy)
 Gender: M F

Alternate First:
 Middle Name:
 Alternate Last:

Medical Rec. No.:
 Medicaid No. (AA#####):

Mom DOB: / / (mm/dd/yyyy)
 Mom First Name:
 Mom Maiden Name:

House No. / St. / Apt. No.: 1234 ANYWHERE
 City / State / ZIP: MAGIC KIN(NY) 10705
 Telephone:

Is patient active?
 Yes, patient is currently in my practice
 No (select reason)
 Not in my practice (Gone elsewhere)
 Not in NYC (Moved)
 Patient deceased

Clear Continue

Disease History Field

Use this page to review or indicate disease immunity.
 When complete, you may return to the patient's [immunization and lead history](#).

Report Immunity

Immunity **Immunity by:** **Test/Disease Date:**

Varicella: (mm/dd/yyyy)
When reporting Varicella disease and exact date is unavailable, estimate month and year.

Laboratory Test Demonstrating Immunity:
 Hepatitis A IgG
 Hepatitis B anti-HBs (Hepatitis B surface antibody)
 Measles IgG
 Mumps IgG
 Rubella IgG

Test/Disease Date: / / (mm/dd/yyyy)

Clear Confirm

Immunity Reported

Disease	Immunity by:	Test/Disease Date	Reported On	
Measles	Titer	06/15/2007	08/30/2013	edit / delete
Rubella	Titer	06/15/2007	08/30/2013	edit / delete
Mumps	Titer	06/15/2007	08/30/2013	edit / delete
Varicella	History	03/31/2004	08/30/2013	edit / delete

Steps for Implementing AFIX Using IIS

AFIX - Assessment

Field staff run imm coverage through IIS Web UTD, including all pts in age range

- Age groups in 2014:
 - 19 - 35 months
 - 13 - 17 years
- Coverage based on pts who received last vaccination (except influenza) at site
- Identify and merge duplicate patient records
- Re-run coverage after records are merged
- Generate list of pts not UTD for recall
- Identify patterns of noncompliance with ACIP schedule based on IIS clinical decision support

AFIX - Feedback

- Visit provider for feedback session covering:
 - IIS-generated imm coverage, areas of noncompliance with ACIP schedule
 - Imm practices needing quality improvement (QI)
 - Recommendations for improving coverage, e.g.,
 - Follow ACIP schedule; evaluate pt imm status at each visit based on age and interval not just vaccine dates
 - Use IIS to obtain pt imm history, recs of imms due now, in future
 - Recall, immunize pts not UTD - Demo IIS r/r features
 - Use Web sites for VISs, other info
 - Refer to IIS, Imm Prog physician, VFC ordering staff, as needed

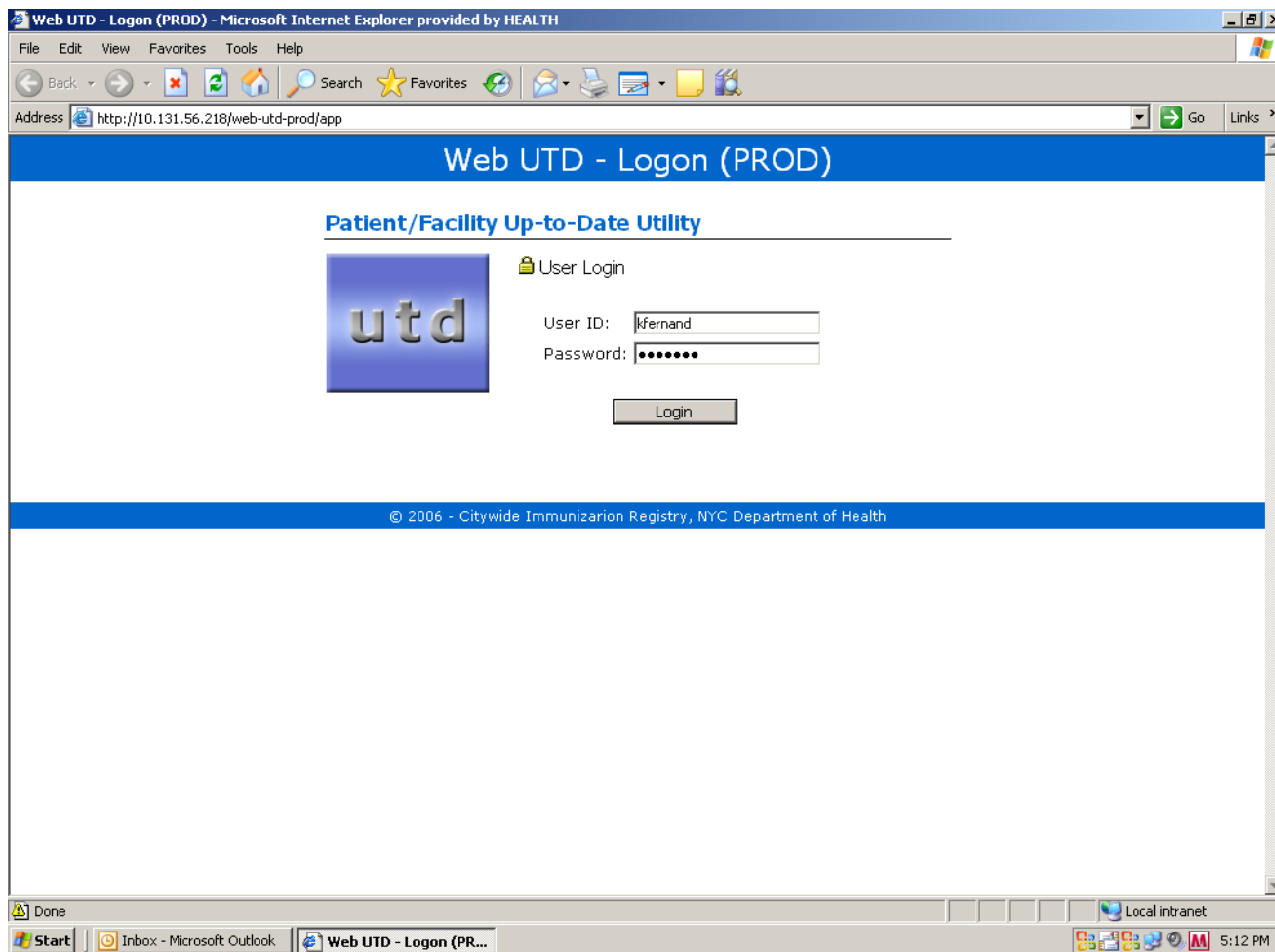
AFIX - Incentives

- Give providers recall lists at site visit
- Honor providers for high coverage
 - In person, at Childhood Coalition Meeting
 - Post name on our Web site
 - 2014 Criteria (must meet all):
 - $\geq 90\%$ for 4 DTaP:3 polio:1 MMR:4* Hib:3 Hep B :1 varicella:4 PCV (4:3:1:4:3:1:4) among 19-35 mo-olds
 - $\geq 80\%$ for 1 Td/Tdap:1 Mening among 13-17 yr-olds
 - $\geq 90\%$ VFC Doses Administered Report (DAR)
 - ≥ 10 patients in either age group

AFIX - eXchange

- Exchange info to follow-up on provider's progress to improve imm services, coverage
- Contact providers to discuss progress on QI activities
- Reassess coverage 3-4 mos after original assessment
 - Sites with $<90\%$ coverage and ≥ 10 pts in either age group
- Send follow-up report with reassessment results

The Web Up-To-Date (UTD) application is an internal tool developed to run immunization coverage rates by site based on valid doses administered.



Parameter-Driven

- Specify facility (site)
- Facility population inclusion criteria: based on patient receiving last series shot at that facility
 - After a certain age for each patient
 - 1 yr (361 days) for 19-35 mo-olds
 - 9 yrs for (3,287 days) for 13-17 yr-olds
- Specify age range of population assessed
- Review date: date coverage is run - it can be run as of a date in the past
- Specify number of antigens for UTD

New Job Wizard

Step 1 Step 2 Step 3 Step 4

Select all vaccine groups to include:

- 100 (HepB)
- 200 (DTP)
- Tdap (115) / DTP
- Td (09, 113)
- Tdap (115) / Td (09, 113) / DTP
- 300 (Hib) ICE override
- Merck Hib (49, 51)
- non-Merck Hib
- 400 (Polio)
- 500 (MMR)
- 600 (Varicella)
- 700 (Pneumo. Conjugate) ICE override
- 720 (Pneumo. Polysaccharide)
- 800 (Influenza)
- 810 (HepA)
- 820 (Rotavirus)
- 830 (Meningococcal)
 - MCV4 (114, 136)
 - MPSV4 (32)
 - MCV4 (114, 136) / MPSV4 (32)
- 840 (Human Papillomavirus)
- 890 (H1N1 Influenza)

Web UTD Output Files

- File with summary statistics
 - # of patients assessed
 - # and % of patients UTD for specified series and each antigen in the series
 - # of invalid shots
- File with list of patients for recall
 - Names of all patients missing at least one shot from specified series
 - Type and dose number of shot missing
- Use files to create report for provider of coverage and recall list (on paper, electronically)

Provider Coverage Report, 13 -17 yr-olds

Facility: 2222X02

Minimum DOB: 07/01/1996

Maximum DOB: 06/30/2001

Review Date (Immunization): 07/14/2014

Imm Age Days (Last): 3287 (Patient will be included if last shot was given in >= n days of age.)

Imm Age Days (Any): 0 (Patient will be included if any shot was given in >= n days of age.)

Last Shot Within Days: 10000 (Patient will be included if last shot was given within n days from Review Date.)

Patient Age Days: 10000 (UTD calculated as of the age specified. Shots given after that age, will be excluded.)

FACILITY CODE	SELECTION METHOD	VACCINE GROUP - ALL	TOTAL PATIENTS	TOTAL UTD	PERCENT UTD
2222X02	LAST SERIES SHOT	1:1 (1 Tdap, 1 Meningococcal)	391	350	89.50%
2222X02	LAST SERIES SHOT	1 Tdap	391	362	92.60%
2222X02	LAST SERIES SHOT	1 Meningococcal	391	355	90.80%

FACILITY CODE	SELECTION METHOD	VACCINE GROUP - ALL	TOTAL PATIENTS	TOTAL UTD	PERCENT UTD
2222X02	LAST SERIES SHOT	1:1:3 (1 Tdap, 1 Meningococcal, 3 HPV)	391	205	52.43%
2222X02	LAST SERIES SHOT	1:1:1 (1 Tdap, 1 Meningococcal, 1 HPV)	391	318	81.33%
2222X02	LAST SERIES SHOT	3 HPV	391	206	52.69%
2222X02	LAST SERIES SHOT	1 HPV	391	325	83.12%

FACILITY CODE	SELECTION METHOD	VACCINE GROUP - GIRLS	TOTAL PATIENTS	TOTAL UTD	PERCENT UTD
2222X02	LAST SERIES SHOT	1:1:3 (1 Tdap, 1 Meningococcal, 3 HPV)	183	123	67.20%
2222X02	LAST SERIES SHOT	1:1:1 (1 Tdap, 1 Meningococcal, 1 HPV)	183	161	88.00%
2222X02	LAST SERIES SHOT	3 HPV	183	123	67.20%
2222X02	LAST SERIES SHOT	1 HPV	183	165	90.20%

FACILITY CODE	SELECTION METHOD	VACCINE GROUP - BOYS	TOTAL PATIENTS	TOTAL UTD	PERCENT UTD
2222X02	LAST SERIES SHOT	1:1:3 (1 Tdap, 1 Meningococcal, 3 HPV)	208	82	39.40%
2222X02	LAST SERIES SHOT	1:1:1 (1 Tdap, 1 Meningococcal, 1 HPV)	208	157	75.50%
2222X02	LAST SERIES SHOT	3 HPV	208	83	39.90%
2222X02	LAST SERIES SHOT	1 HPV	208	160	76.90%

Provider Recall List, 13-17 yr-olds

COUNT	LAST NAME	FIRST NAME	DOB	GENDER	MEDREC	SERIES DUE	NOT UTD BUT NOT YET DUE SERIES
1	A	A	09/23/00	M	501	HPV-1	
2	B	B	08/11/97	M	502	HPV-1	
3	C	c	07/05/97	M	503	HPV-2	
4	D	d	07/05/97	M	504	HPV-2	
5	E	e	04/16/00	M	505		HPV-2
6	F	f	07/19/97	M	506	HPV-1	
7	G	g	12/25/98	M	507		HPV-3
8	H	h	08/25/97	M	508	Mening.-1, HPV-1	
9	I	i	03/21/01	F	509	HPV-3	
10	J	j	02/11/99	M	510		HPV-3
11	K	k	05/15/01	F	511		HPV-3
12	L	l	09/14/99	M	512	HPV-3	
13	M	m	06/17/00	M	513	Mening.-1, HPV-1	
14	N	n	02/09/99	M	514		HPV-3
15	O	o	03/24/00	M	515	HPV-2	
16	P	p	09/13/97	F	516	HPV-3	
17	Q	q	08/20/98	M	517	Mening.-1, HPV-1	
18	R	r	06/25/99	M	518	HPV-2	
19	S	s	09/29/99	M	519	Tdap, Mening.-1, HPV-1	
20	T	t	05/06/01	F	520	HPV-2	

AFIX Visits: 2006 versus 2013

	2006 (Chart Review)	2013 (IIS)
Number of sites assessed	197 (15% of VFC sites)	483 (34% of VFC sites)
Number of children assessed	8,001*	240,367**

* 24-35 month olds

** 63,060 19-35 month-olds; 177,307 13-17 year-olds

Quarterly Provider Feedback Reports

Report Frequency, Content

- Sent to all peds sites quarterly, includes:
 - Cover letter – timely messages – all quarters
 - VFC Doses Admin Rept (DAR) % – all quarters (VFC provs only)
 - % 19-35 mo-olds UTD for 4:3:1:3:3:1:4 – all quarters
 - % 13-17 yr-olds UTD for 1:1:3 – 2 quarters
 - % 6-59 mo-olds, 5-10 yr-olds, 11-18 yr-olds UTD for influenza – 2 quarters

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CIR Facility Code: XXXX - Provider Name
VFC PIN: XXXX

1. CIR-Generated UTD % for 19 - 35 month-olds

Review Date	# of 19-35 month-olds	UTD % ^a	Citywide Percentile Ranking ^b
07/31/14	75	80%	72
04/30/14	73	74%	
01/31/14	69	65%	
10/31/13	73	63%	

2. CIR-Generated UTD% for 13 - 17 year-olds

Review Date	# of Males	UTD % ^c	Citywide Percentile Ranking ^b	# of Females	UTD % ^d	Citywide Percentile Ranking ^b
07/31/14	60	10 %	40	44	11 %	17

3. Doses Administered Report (DAR)

Period	VFC Doses Distributed	VFC Elig	S-CHIP Elig	Underins (Non-FQHC)	VFC Not Elig	VFC Unknown	VFC,S-CHIP, Underins	DAR % ^e Target >90%
07/1/13 – 06/30/14	590	552	2	0	295	1	554	94%
04/1/13 – 03/31/14	690						612	89%
01/1/13 – 12/31/13	750						525	70%
10/1/12 – 09/30/13	780						507	65%

Provider Feedback Report

Footnotes

- ^a Percentage of 19-35 month-olds who received their last CIR-reported 4 DTaP: 3 polio: 1 MMR: 3 Hib: 3 Hep B: 1 varicella (4:3:1:3:3:1:4) series immunization at this facility, at 361 days of age or older, and who were up-to-date (UTD) on the series based on CIR data on the review date.
- ^b Percentile is a comparison to your peers for UTD coverage. For example, a percentile of 60 means that 60% of NYC pediatric practices have UTD coverage below your practice's coverage and 40% have coverage above your practice's coverage. Percentile is calculated for practices with at least 10 patients in the age range.
- ^c Percentage of 13-17 year-old males at your facility UTD for 1 Td or Tdap, 1 MCV4 or MPSV4, and 3 HPV based on immunizations reported to the CIR. A 13-17 year-old male patient is defined as belonging to your facility if you reported the last immunization administered to him at or after 9 years of age.

Provider Feedback Report

Footnotes, Cont.

^d Percentage of 13-17 year-old females at your facility UTD for 1 Td or Tdap, and 1 MCV4 or MPSV4, and 3 HPV based on immunizations reported to the CIR. A 13-17 year-old female patient is defined as belonging to your facility if you reported the last immunization administered to her at or after 9 years of age.

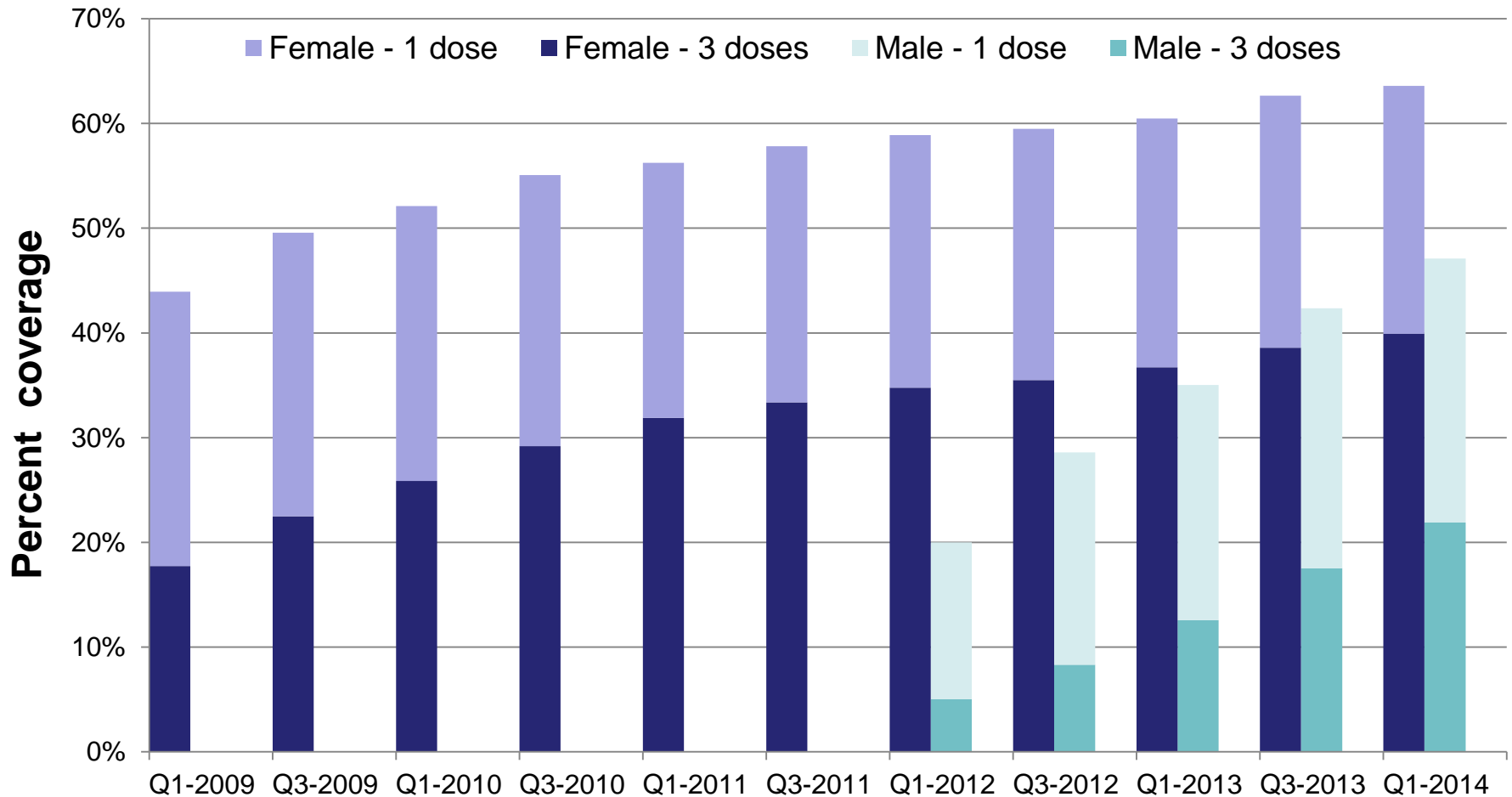
^e This percentage is calculated by dividing the total number of doses reported as administered to a child eligible for VFC or S-CHIP or who is underinsured (numerator) by the total number of VFC, S-CHIP, and underinsured doses received (denominator). Influenza doses are not included because the vaccine is seasonal. If the DAR is not at least 90%, the facility is subject to reduced VFC vaccine shipments.

Please review the match between the CIR facility code and the VFC PIN number and report any errors to the CIR at 347-396-2400.

Conclusions

- AFIX thru IIS and IIS-generated Provider Feedback Reports allowed us to:
 - Increase # of provider sites receiving AFIX
 - Give regular feedback to all sites
 - Increase # children and adolescents included in AFIX assessments and feedback reports
- Seeing increasing imm coverage among children and adolescents
 - Likely due to multiple factors – difficult to attribute to any 1 intervention

Percent Coverage for 1 and 3 Doses of HPV Vaccine among 13-17 year olds, by Gender



Data sources: NYC DOHMH CIR (numerators) and NYC DOHMH Epiquery and 2010 US Census (population estimates).

Note that ACIP recommended routine use of quadrivalent HPV vaccine in males on October 25, 2011.

2013 NIS-Teen: Female ≥ 1 HPV 64.2 \pm 9.0, ≥ 3 HPV 45.2 \pm 9.6; Male ≥ 1 HPV 46.2 \pm 9.6, ≥ 3 HPV 29.6 \pm 9.0.

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