Using an Immunization Information System for Assessment, Feedback, Information, Exchange (AFIX)

New York City
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American Immunization Registry Association National Meeting, October, 2013

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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 yrs
  - ~74% of 0-18 yr-olds eligible for publicly funded vaccines
    - ~66% VFC
    - ~1% 317 (underinsured, vaccinated at other than FQHCs)
    - ~7% SCHIP
- 88% (1,530) of all pediatric provider sites (1,737) enrolled in VFC
- ~3.3 million publicly funded vaccine doses costing ~$138 million distributed in NYC annually

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Citywide Immunization Registry (CIR)

- NYC's Immunization Information System (IIS)
  - State, City reporting mandate for immunizations administered to patients 0-18 years of age
  - ~ 4.9 million patient records
  - ~ 65 million immunizations
- 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
    - Coverage is within confidence intervals of Natl Imm Survey (NIS)
  - Transitioned to using CIR for 100% of AFIX from 2006-2010

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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 30% of enrolled 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
  - Conducts combined AFIX and VFC compliance site visits
  - ~ 2/3 of VFC site visits include AFIX

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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 expansion of age groups

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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 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

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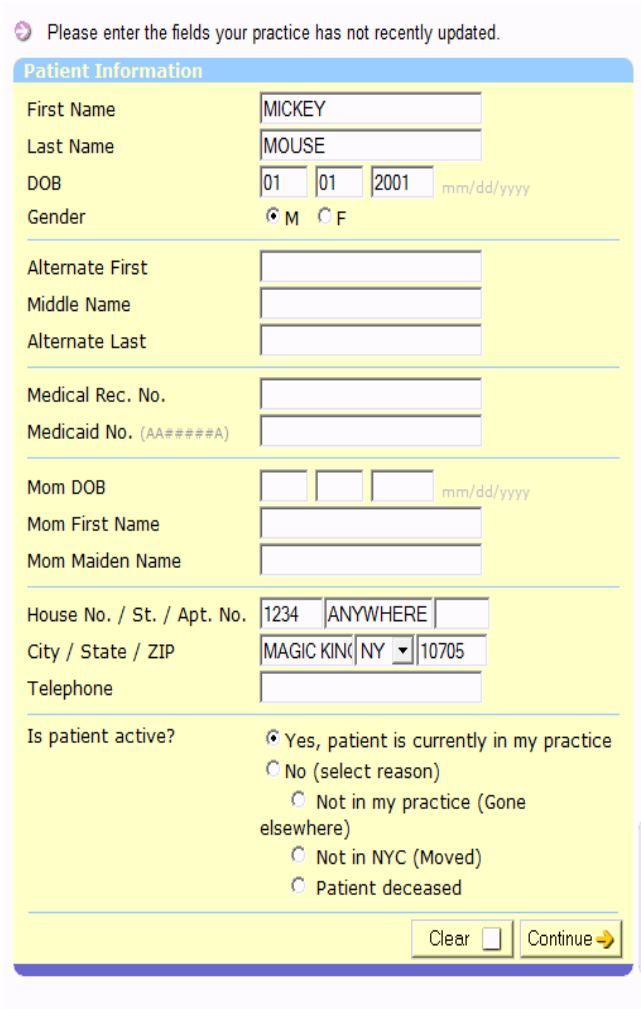
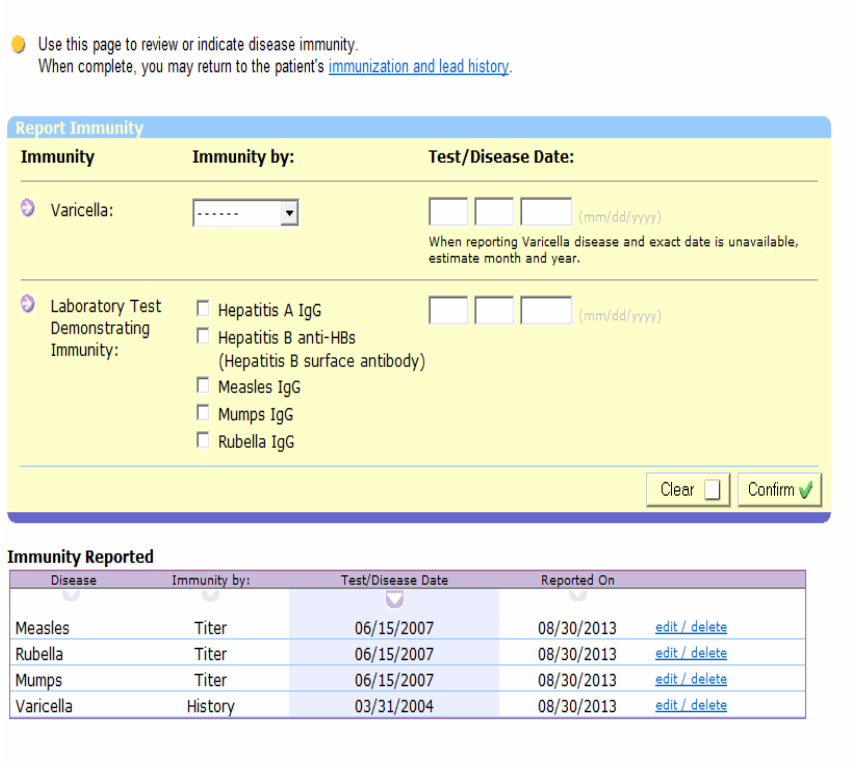
IIS Online Registry

MOGE Field



Disease History Field



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Steps for Implementing AFIX Using IIS

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AFIX - Assessment

- Field staff run immunization coverage through IIS Web UTD (instead of Co-Casa) before site visit
  - All patients in age range included
    - Age groups in 2012:
      - 19 to 35 months
      - 13 years
  - Identify and merge duplicate patient records
  - Re-run coverage after records are merged
  - Generate list of children not UTD for recall
  - Identify patterns of noncompliance with immunization schedule based on IIS clinical decision support

AFIX - Feedback

- Visit provider to conduct feedback sessions covering:
  - IIS-generated immunization coverage levels and areas of noncompliance with schedule
  - Recommendations for improving coverage, e.g.:
    - Evaluate patient immunization status at each visit based on age and interval not just vaccine dates
    - Use the IIS to obtain patient immunization history and recommendations of immunizations due now, in future
    - Recall and immunize children not UTD

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AFIX - Incentives

- Give providers recall lists at site visit
- Send follow-up report to show provider results of assessment 3 to 4 months later
  - Sites with < 90% coverage and ≥ 25 patients in either age group
- Honor providers for high coverage
  - In person, at Childhood Coalition Meeting
  - Post name on BOI Web site
    - 2012 Criteria:
      - ≥ 90% for 4 DTaP:3 polio:1 MMR:4* Hib:3 Hep B :1 varicella (4:3:1:4:3:1) among 19-35 mo-olds
      - ≥ 80% for 1 Td/Tdap:1 Mening among13 year-olds
      - ≥ 90% VFC Doses Administered Report (DAR)

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AFIX - eXchange

- At site visit, exchange information to facilitate improvement in coverage
  - Follow the ACIP Schedule
  - Use IIS reminder/recall system
  - Use Web sites: www.immunize.org and www.cdc.gov for current VISs, other information
- Refer providers to IIS outreach staff
  - Training on IIS Online Registry reminder/recall system
  - Troubleshooting to resolve IIS reporting problems

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Web UTD Application: Parameter-Driven Tool to Run Coverage by Facility

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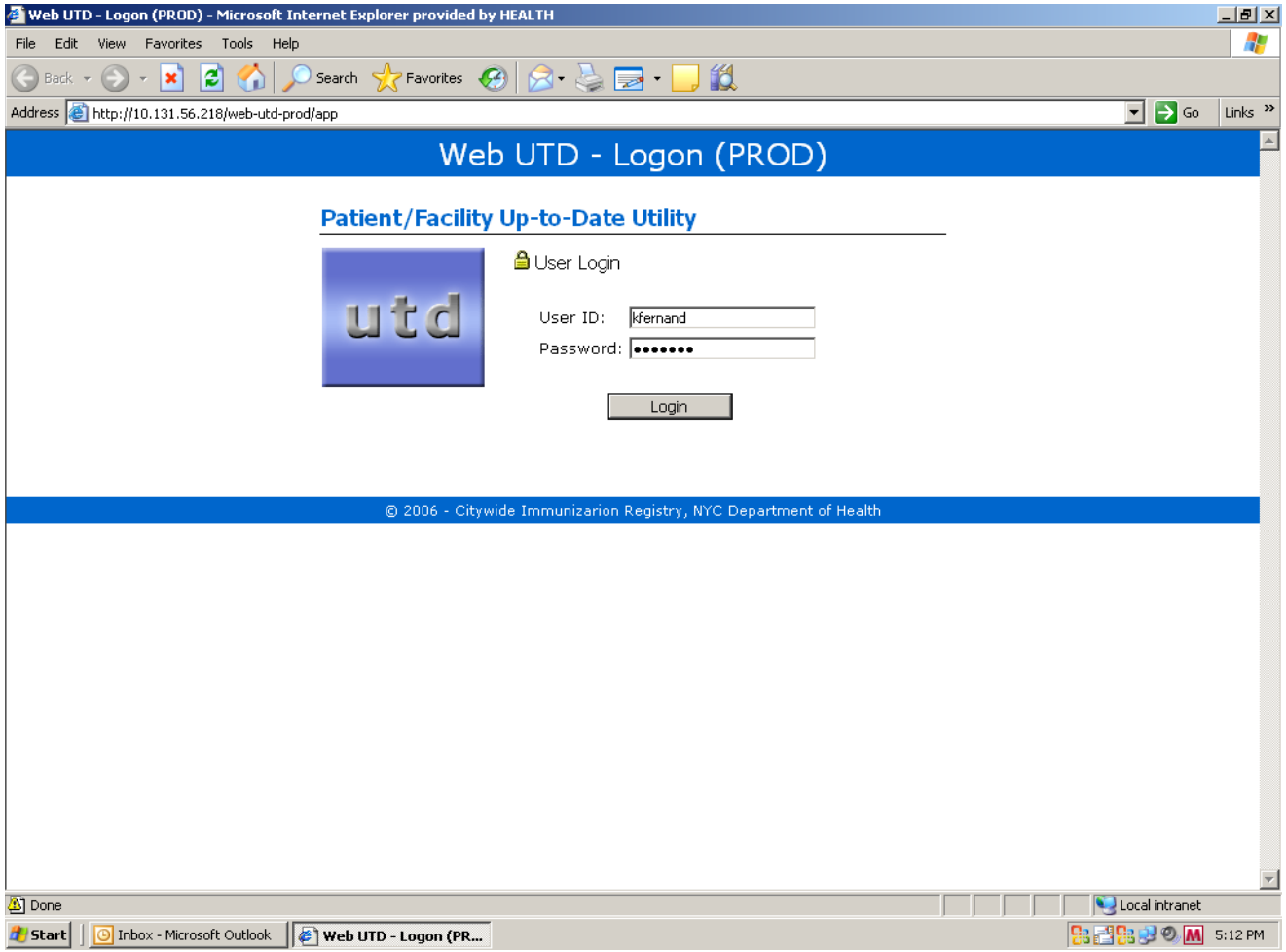
The Web Up-To-Date (UTD) application is an internal tool developed to run immunization coverage rates by site based on valid doses administered.



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Parameter-Driven

- Specify Facility
- Facility population inclusion criteria: based on child 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) 13 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

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Web UTD - New Job (Step 3) (PROD)

New Job Wizard

Step 1 | Step 2 | Step 3 | Step 4

Select all vaccine groups to include:

3	100 (HepB)
4	200 (DTP)
0	Tdap (115)
0	Td (09, 113)
0	Tdap (115) / Td (09, 113)
4	300 (Hib) ☑ ICE override
0	Merck Hib (49, 51)
0	non-Merck Hib
3	400 (Polio)
1	500 (MMR)
1	600 (Varicella)
4	700 (Pneumo. Conjugate) ☑ ICE override
0	720 (Pneumo. Polysaccharide)
0	800 (Influenza)
0	810 (HepA)
0	820 (Rotavirus)
0	830 (Meningococcal)
0	MCV4 (114)
0	MPSV4 (32)
0	MCV4 (114) / MPSV4 (32)
0	840 (Human Papillomavirus)
0	890 (H1N1 Influenza)

Review Date (Immunization): 06/25/2013

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Web UTD Output Files

- File with summary statistics
  - # of children assessed
  - # and % of children UTD for specified series and each antigen in the series
  - # of invalid shots
- File with list of children for recall
  - Names of children missing at least one shot from specified series
  - Type and dose number of shot missing

Immunization Coverage Feedback Report, 2012 19-35 Month-Olds

Series/Antigens	Assessment (N=47)
4:3:1:4:3:1	71%
4 DTaP	76%
3 Polio	95%
1 MMR	95%
Hib Full Series (Age/Interval-Adjusted)	95%
3 Hep B	90%
1 Varicella	95%
PCV Full Series (Age/Interval Adjusted)	90%
Hep A (2 doses)	29%

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Recall List, 2012

Facility: 7777X01
Minimum DOB: 08/01/2010
Maximum DOB: 12/31/2011
Review Date (Immunization): 08/15/2013
Date Produced: 08/15/2013 16:08:40

FACILITY CODE	SELECTION METHOD	VACCINE GROUP	TOTAL PATIENTS (EXCLUDING MOGEs)	TOTAL PATIENTS (INCLUDING MOGE)	TOTAL NUMBER OF MOGEs	COUNT OF PATIENTS WITH AT LEAST ONE INVALID	COUNT OF INVALID SHOTS-THIS FACILITY	COUNT OF INVALID SHOTS-ANY FACILITY	# OF PTs WITH MMR < 1 YEAR OF AGE	# OF PTs WITH VARICELLA < 1 YEAR OF AGE	# OF PTs WITH MMR AND VARICELLA < 28 DAYS APART	# OF PTs WITH 3rd HEPB < 6 MONTHS OF AGE	# OF PTs WITH 4th DTaP < 4 MONTHS AFTER 3rd DOSE
2015X01	LAST SERIES SHOT	ALL	225	229	4	2	4	4	0	0	0	0	0
2015X01	ANY SERIES SHOT	ALL	254	286	32								

Percent UTD (last series shot)

431431 Series Percent U	96.40%
4 DTaPs:	96.90%
3 Polios:	100.00%
1 MMR:	100.00%
4 Hibs (Full Hib Series):	97.80%
3 Hep Bs:	100.00%
1 Varicella:	100.00%
4 PCV (Full PCV Series)	97.80%
2 Hep A:	86.70%

Detailed List of Patients Not UTD (last series shot)

COUNT	CIR NUMBER	LAST NAME	FIRST NAME	DOB	GENDER	MEDREC	SERIES DUE	NOT UTD BUT NOT YET DUE SERIES	MMR < 1 YEAR OF AGE	VARICELLA < 1 YEAR OF AGE	MMR AND VARICELLA < 28 DAYS APART	3rd HEPB < 6 MONTHS OF AGE	4th DTaP < 4 MONTHS AFTER THE 3rd
***The following patients are not UTD on the series:													
1	1111	A	a	10/11/2011	F	11		HepA-2	N	N	N	N	N
2	1112	B	b	10/12/2011	M	12	HepA-2		N	N	N	N	N
3	1113	C	c	5/25/2011	M	13	HepA-2		N	N	N	N	N
4	1114	D	d	11/27/2011	M	14		HepA-2	N	N	N	N	N
5	1115	F	e	9/17/2011	F	15	HepA-2		N	N	N	N	N
6	1116	G	f	6/23/2011	M	16	HepA-2		N	N	N	N	N
7	1117	H	g	12/16/2011	F	17	DTP-2, HepA-2		N	N	N	N	N
8	1118	I	h	5/28/2011	M	18	HepA-2		N	N	N	N	N
9	1119	J	i	12/21/2011	F	19	DTP-4, Hib-4*, Pneumo Conj-4, HepA-2		N	N	N	N	N
10	1120	K	j	11/9/2010	M	20	Pneumo Conj-4		N	N	N	N	N
11	1121	L	k	11/5/2011	F	21	HepA-2		N	N	N	N	N
12	1122	M	l	11/7/2011	F	22		HepA-2	N	N	N	N	N
13	1123	N	m	10/8/2011	M	23	HepA-2		N	N	N	N	N
14	1124	O	n	10/30/2011	M	24	DTP-4	HepA-2	N	N	N	N	N

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Immunization Coverage Feedback Report, 2012
13 Year-Olds, Males and Females

Series/Antigens	Total Children Assessed	Percent UTD
1 Td/Tdap:1 Mening	267	91%
1 Td/Tdap	267	94%
1 Mening	267	93%

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Immunization Coverage Feedback Report, 2012
13 Year-Olds, Males and Females Separately

Series/Antigens	Total Children Assessed	Percent UTD
1 Td/Tdap:1 Mening:1 HPV, Males	120	36%
1 Td/Tdap:1 Mening:3 HPV, Males	120	21%
3 HPV, Males	120	28%
1 Td/Tdap:1 Mening:1 HPV, Females	147	56%
1 Td/Tdap:1 Mening:3 HPV, Females	147	43%
3 HPV, Females	147	45%

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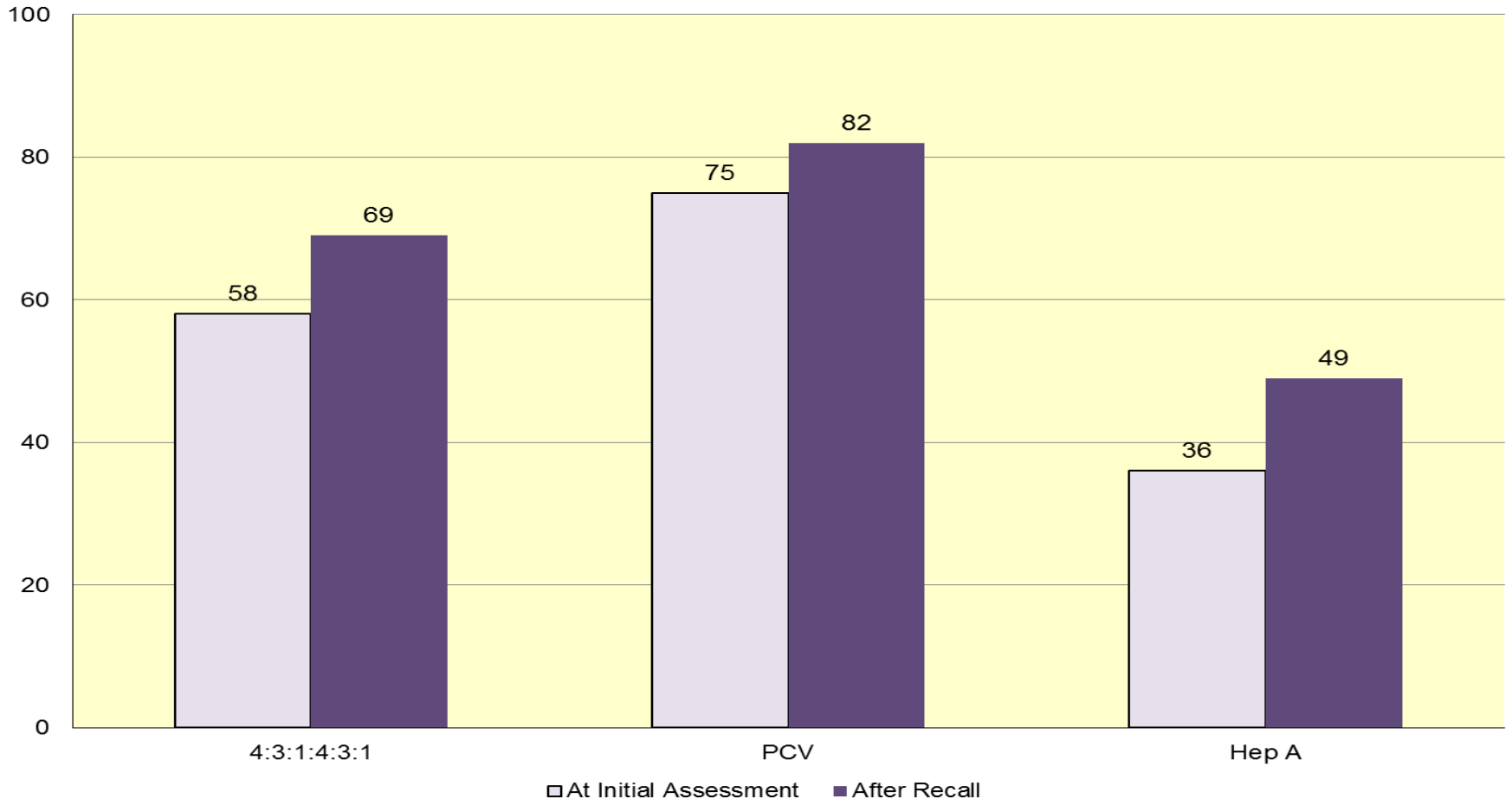
Coverage After Recall/ Follow-Up

Recall / Follow-Up, 2012

19-35 Month-Olds
Coverage Comparison: At Assessment (N=28,375) vs. Recall/Follow-up (N=28,614)
237 Provider Sites
Average of 5.7 Months Later



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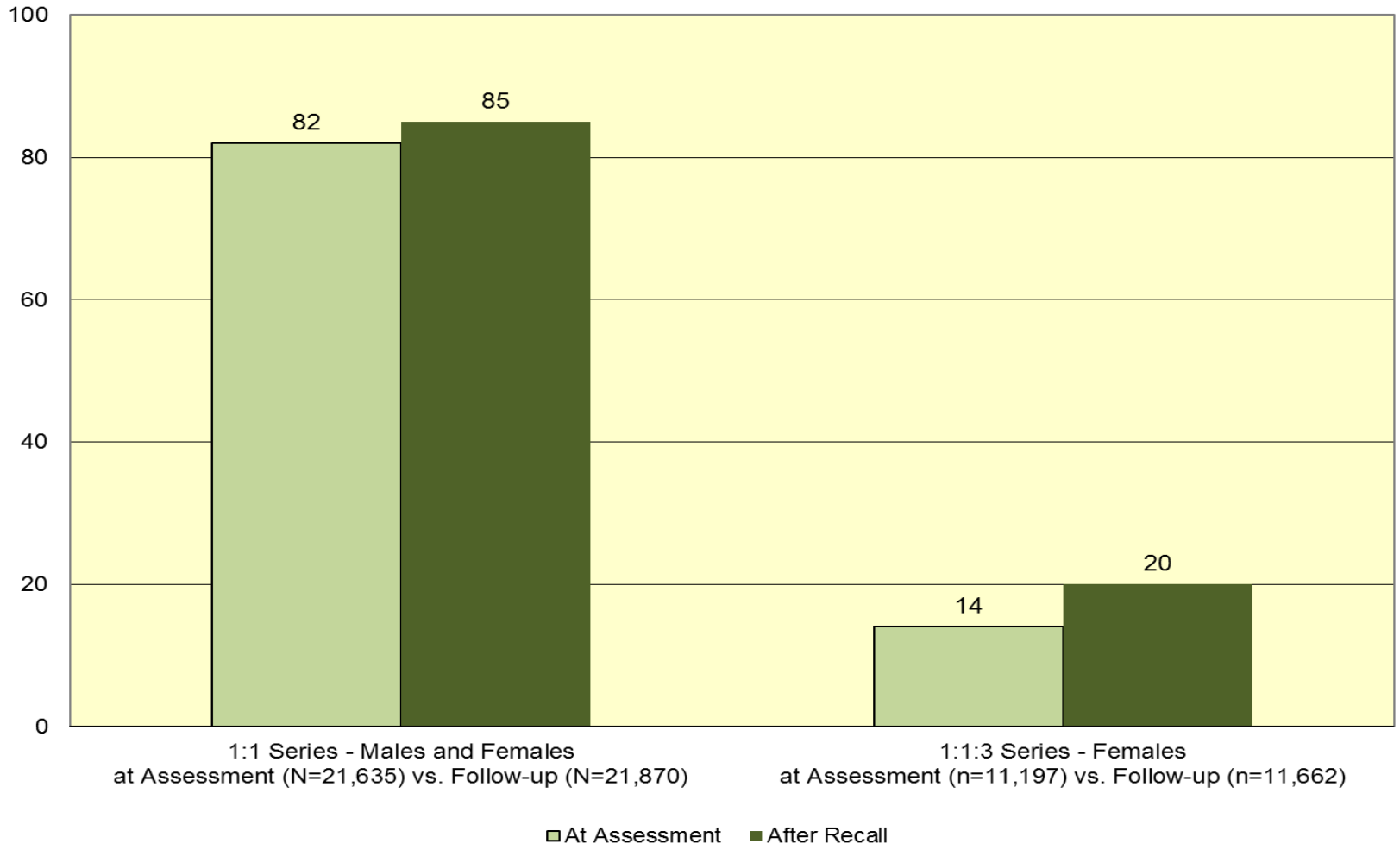
Recall / Follow-Up, 2012

13 Year-Olds
227 Provider Sites



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AFIX: 2012

- Total of 491 provider sites received AFIX
  - 34% of enrolled, active VFC provider sites (1,454)
- Most sites had AFIX for 2 age groups
- Total of 83,024 children assessed
  - 50,570 were 19-35 mo-olds; 32,454 were 13-yr-olds
    - Estimate these numbers are ~ 1/3 of total population in each of the 2 age groups

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2006 Versus 2012

	2006 (Chart Review)	2012 (IIS)
Number of sites assessed	**197** (15% of VFC sites)	**491** (34% of VFC sites)
Number of children assessed	**8,001***	**83,024****

* 24-35 month olds
**50,570 19-35 month-olds; 32,454 13 -year-olds

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Conclusions

- AFIX through IIS allowed us to improve our efficiency by:
  - Increasing # of provider sites assessed
  - Increasing # and age groups of children assessed
    - Age groups can be added quickly
    - Additional single antigens and series can be added quickly
  - Increasing coverage at follow-up in large populations

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Next Steps I

- Enhancements in 2013
  - Added 4 PCV to series for 19-35 mo-olds
  - Expanded adolescent group: 13-17 yr-olds
    - Assessing males, females separately for 1, 3 HPV
  - Follow-up with sites with <90% coverage and 10 patients in either age group (was 25 patients in 2012)

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Next Steps II

- Enhancements planned for 2014
  - Assess males, females combined for adolescent series and 1, 3 HPV
  - Add 1 HPV to adolescent series for Honor Roll: 80% for 1:1:1 in addition to other criteria

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Special Thanks

- Paul Schaeffer, Deputy Director, CIR
- Mikhail Golender, MPH, Data Coordinator, PQA

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