Small Practice Integration of Immunizations

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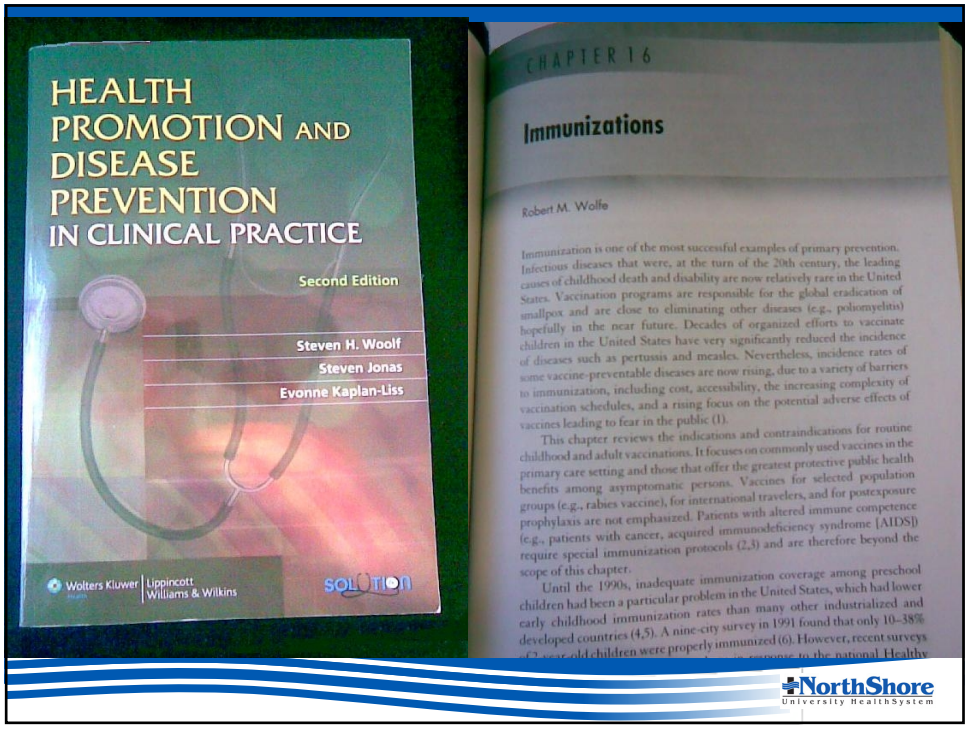

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SOCIETY OF TEACHERS OF FAMILY MEDICINE

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SHOTS Immunizations Mobile App

iPhone | Android | Shots Online

Shots Immunizations mobile app is a downloadable application for iPhones and Android devices that was developed to serve as a point of care tool. It is available for FREE on the iTunes App Store and the Google Play Store.

All medical students, residents, physicians, PAs, CRNPs, and healthcare personnel and anyone providing vaccines or vaccine information should have readily available, reliable information about all routine vaccines. Shots Immunizations mobile apps serve this purpose exceptionally well.

Shots Immunizations includes the unified CDC childhood and adolescent schedule, the catch-up schedule, the adult schedule, and the adult medical indications schedule. Each vaccine is covered in sections on the basics, special indications, catch-up, side effects, contraindications, precautions, and contents with additional sections on epidemiologic information about each disease. This app has a proven history as a reliable and useful source of information about all routine vaccines.

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Shots Immunization Schedules 2016
Immunization Schedules

Childhood and adolescent schedules updated February 2016
Adult schedule, and medical and other conditions schedule updated February 2016
Combination vaccine section updated February 2016

Available for iPhone/iPod on iTunes store.

Available for Android devices on Google Play.

Shots On-line version may be accessed with an internet connection on PCs and tablets at www.ImmunizationEd.org

Please report errors or send comments and suggestions via email to shotsbystfm@gmail.com

Clinical content developed by Richard K. Zimmerman, M.D., M.P.H., Sanford R. Kimmel, M.D., Donald Middleton, M.D., Pam Rockwell, M.D., and Robert M. Wolfe, M.D. from the Group on Immunization Education of the Society of Teachers of Family Medicine and Samuel Stebbins, M.D., M.P.H., public health physician, Arlington County Health Department.

Shots Immunizations 2016 schedules are derived from the Recommended Immunization Schedules for Persons Aged 0 through 18 Years and Adults Aged 19 Years and Older, United States, 2016, but are not an exact copy. http://www.cdc.gov/vaccines/schedules/index.html

The Shots Immunization app is developed by the Society of Teachers of Family Medicine.

The contents of this app do not necessarily reflect the official views of the Society of Teachers of Family Medicine.

This project is supported in part by an unrestricted educational grant to the Society of Teachers of Family Medicine Foundation, by Merck & Co., Inc.

Vaccine | 16-18 yrs
HepB > | Rota > | DTaP > | Hib > | PCV > | IPV > | Flu > | MMR > | Var > | HepA > | MCV4 > | Tdap > | HPV > | MCVB > | PPSV >

http://www.immunizationed.org/

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Adult Immunizations: the Problem

- Immunization rates among adults are considerably lower than those for children.
- Economic and racial disparities exist.
- Rates of influenza immunization are unacceptably low among some healthcare providers, an important target population.
- Improvements in adult immunization rates have tapered off.

Source: CDC; Reminder Systems and Strategies for Increasing Adult Vaccination Rates

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CDC Recommendations to Improve Rates

- based on Community Preventive Services Task Force
15 member independent panel appointed by Director of the CDC

The Task Force recommended a combination of interventions that include the following:

At least one intervention to increase client demand for vaccinations, such as:

- Client reminder and recall systems ✓
- Clinic-based client education ±
- ~~Manual outreach and tracking~~

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CDC Task Force Recommendations

Plus: one or more interventions that address either, or both, of the following strategies:

- Interventions to enhance access to vaccinations:
  - Expanded access in health care settings ±
  - Reduced client out-of-pocket costs X
  - Home visits X
- Interventions directed at vaccination providers or systems:
  - Provider reminders ✓
  - Standing orders ±
  - Provider assessment and feedback ✓

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Due Date	Topic	Date Completed
	MEDICARE ANNUAL WELLNESS VISIT	
xxxx	DIABETES ANNUAL EYE EXAM DOCUM...	6/11/20
xxxx	DIABETES LIPID PANEL ROUTINE (ANN...	8/21/20
xxxx	MI/CAD LIPID PANEL ROUTINE (ANNUAL)	8/21/20
xxxx	FLU VACCINE	10/23/2
xxxx	DIABETES HGB A1C ROUTINE	5/4/20
xxxx	DIABETES CMP ROUTINE(ANNUAL)	12/10/
xxxx	DIABETES URINE MICROALBUMIN/ CR...	5/4/201
xxxx	TETANUS BOOSTER	3/23/20
xxxx	COLORECTAL CA SCREENING	8/24/201
xxxx	PNEUMOCOCCAL VACCINE	10/23/2(

Ref: Yarnall, KSH et al Primary Care: Is There Enough Time for Prevention? Am J Public Health. 2003;93:635–641

Physician Burnout

"A significant proportion of doctors feel…frustrated by the fact that any gains in efficiency offered by electronic medical records are so soon offset by numerous, newly devised administrative tasks that must also be completed on the computer."

Pauline W. Chen, MD, "The Widespread Problem of Doctor Burnout." New York Times, August 23, 2012.

Adding technological devices to the home, like the vacuum cleaner and washing machine, rather than reducing the time needed for housework, caused a rise in standards of cleanliness and caused more work and stress for the average housewife.

Schor, Juliet. The Overworked American: The Unexpected Decline of Leisure. [New York, N.Y.]: Basic Books, 1991.

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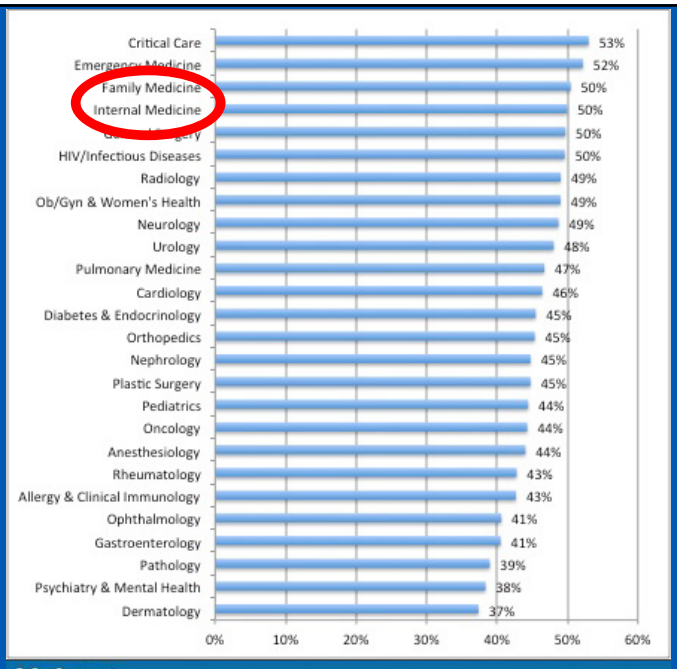

Medscape Percentage of burned-out physicians by specialty.

- Problem: how do we get physicians to pay special attention to “just one more thing to do: order vaccines!” ?
- Solution: don’t ask the physician to do it…ask someone else.

Tale of Two Models

- First model: Adult Immunization Toolkit Project 2010-2011 (funded by sanofi pasteur) using Medical Assistants to enter adult vaccine orders, guided by EMR
  - - designed by Ari Robicsek, MD (Infec. Dis., Clin. Informatics) and R.M. Wolfe, MD
- Second model: HPV call-back system combined with standing orders, Oct. 2015 to present
  - - based on modeal designed by Rajiv Naik, MD (Pediatrics, Gunderson Clinic)

Adult Immunization Toolkit

Idea of Build:

- Most of the work should be done by the computer
- Clerical work should be done by MA
  - Entire workflow in one place: office visit navigator
  - Computer "remembers" which vaccines are due
  - Simple documentation of prior vaccinations
  - Simple ordering of new vaccinations
- Final decision should rest with physician

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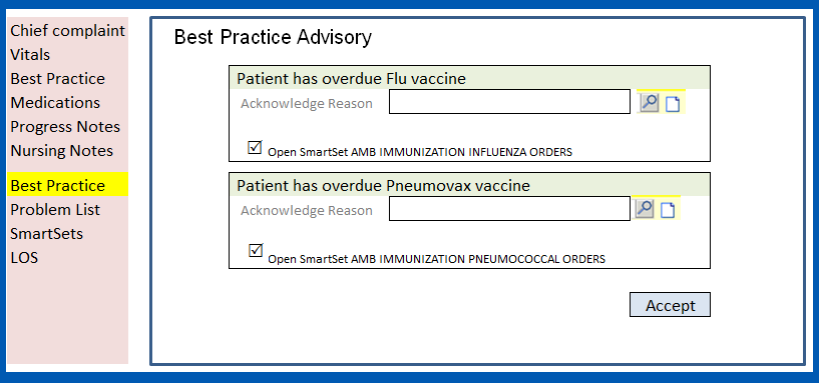
MA sees 'Best Practice Alert' highlighted during rooming



If nurse hits "Accept", a 'SmartSet' opens that shows contraindications, can click to enter vaccine order and administration charge, which is automatically associated with correct ICD code. Also link to print AVS on same page

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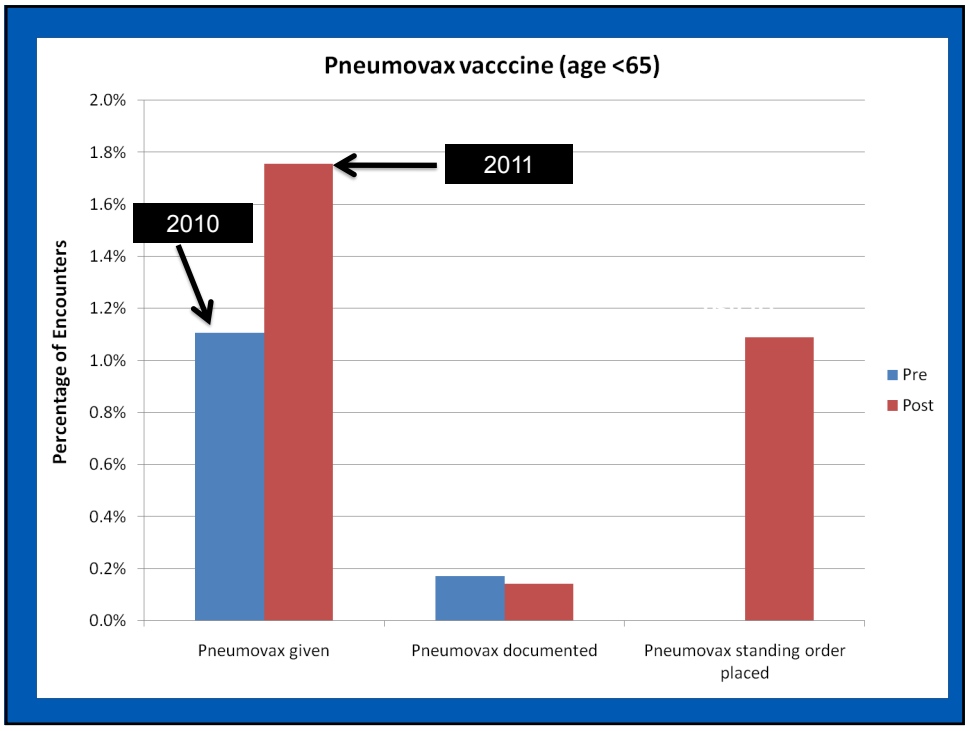
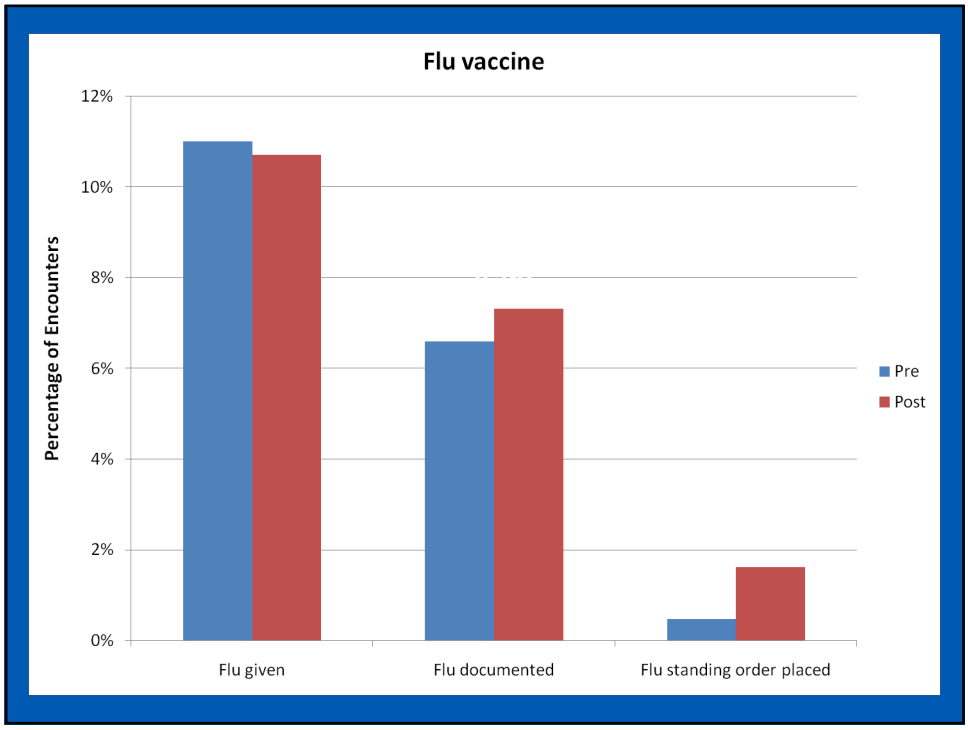
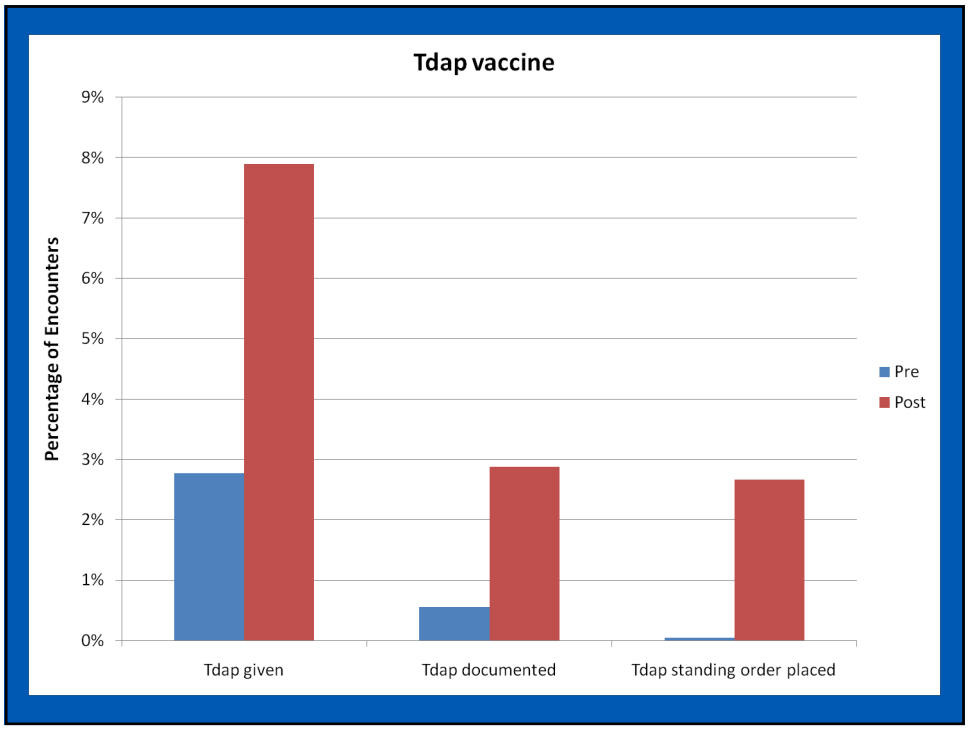
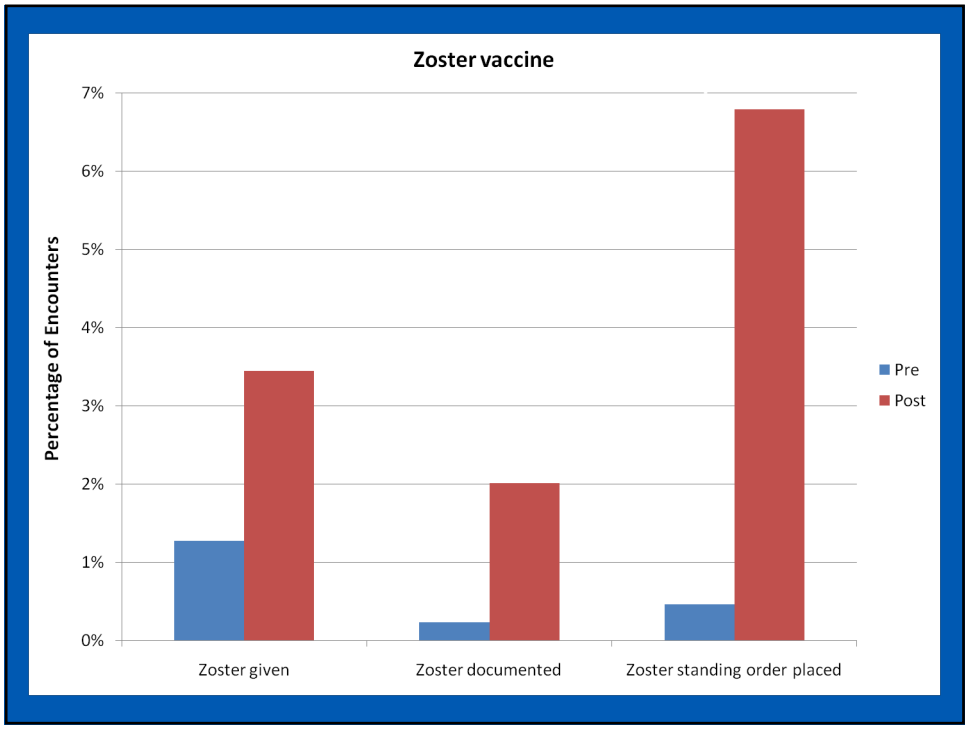
Performance comparison: Nov 23, 2010 to Feb 3 2011




Flu vaccine
12%
10%
8%
6%
4%
2%
0%
Percentage of Encounters
Flu given
Flu documented
Flu standing order placed
Pre
Post

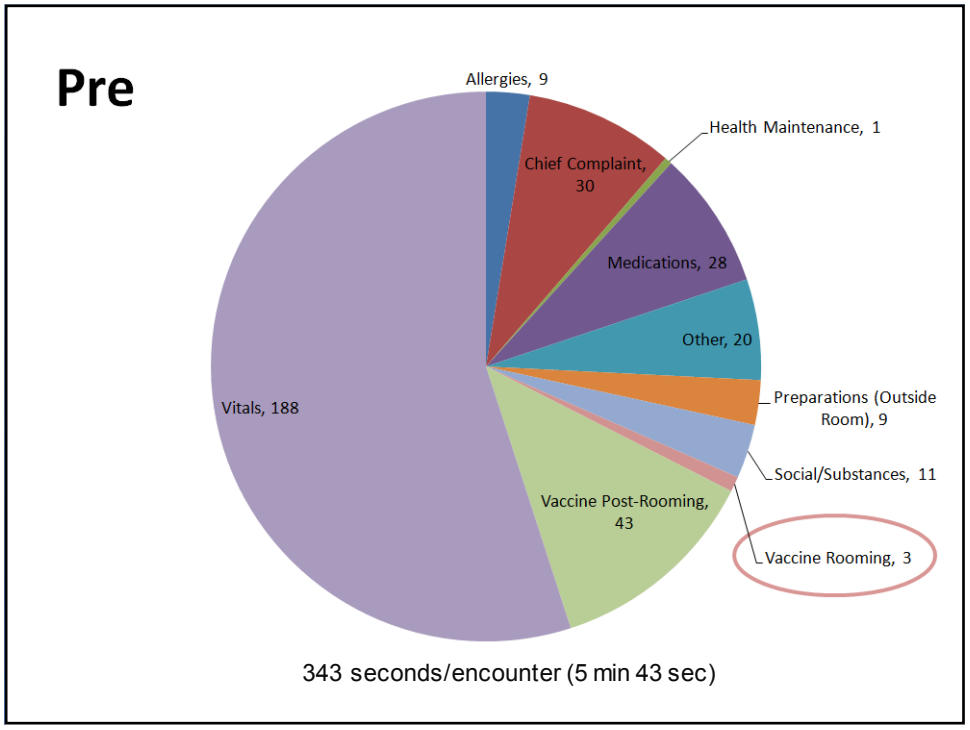

Tdap vaccine
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Percentage of Encounters
Tdap given
Tdap documented
Tdap standing order placed
Pre
Post

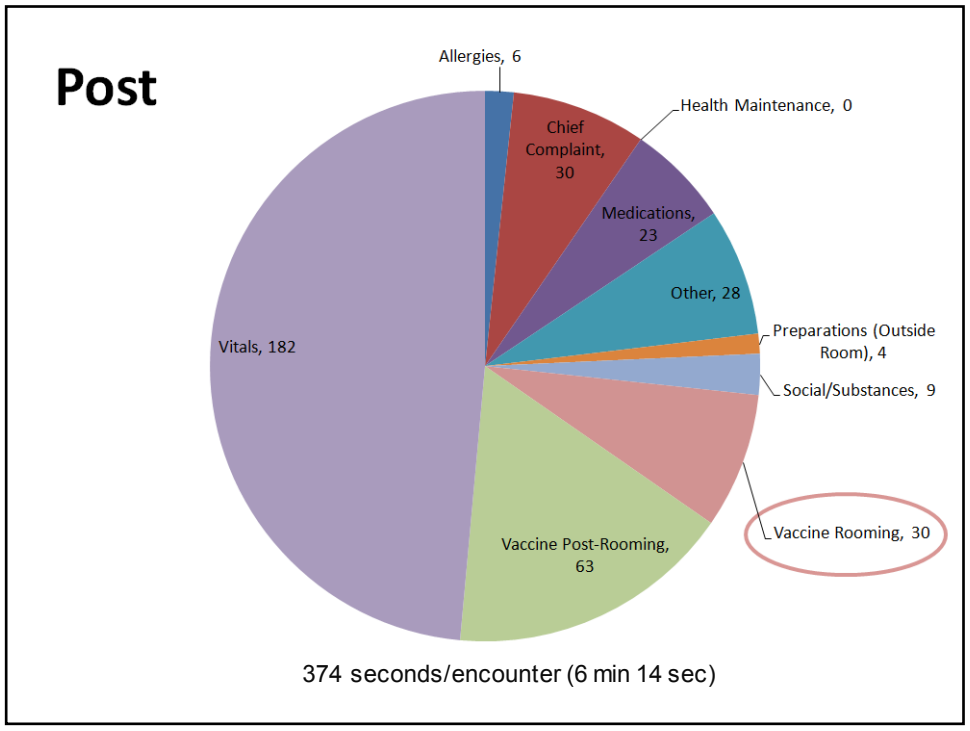


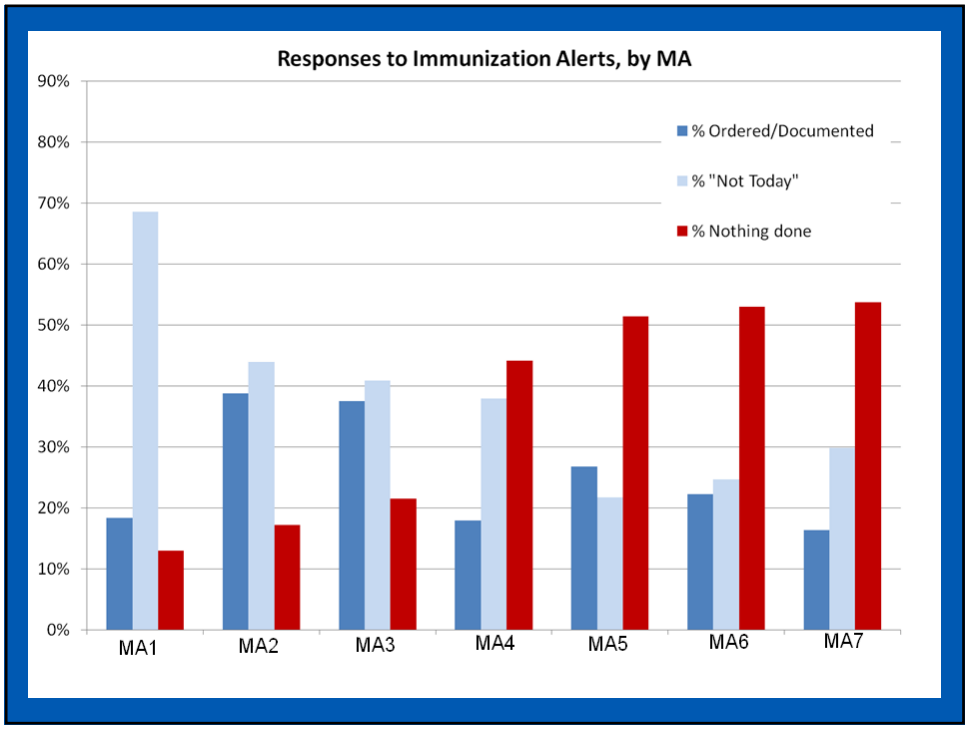
Time-and-Motion Study

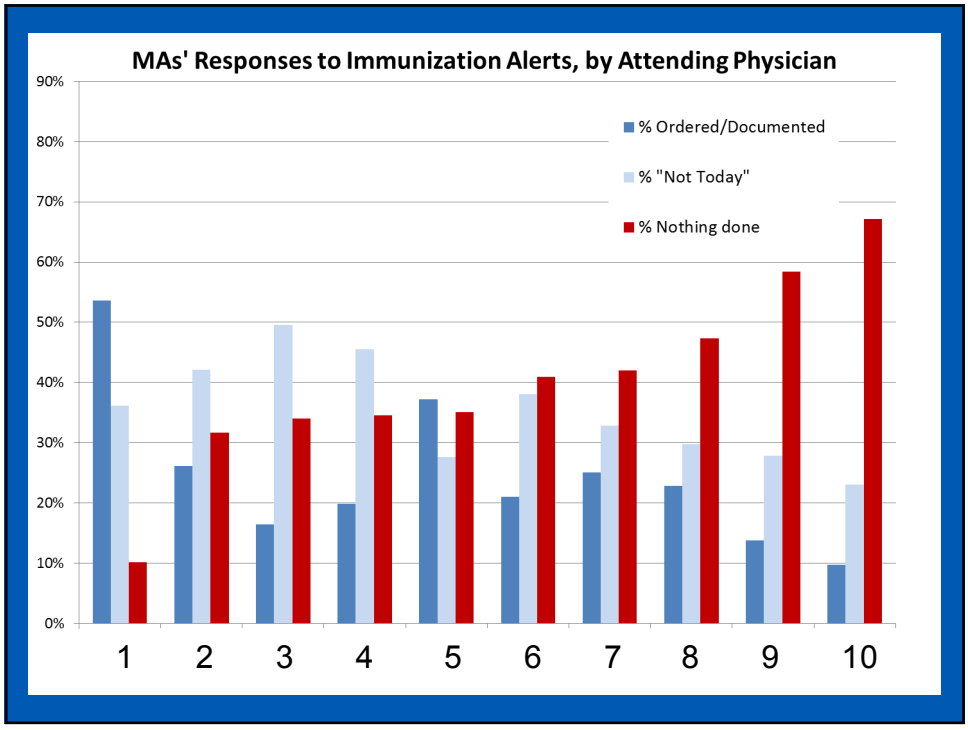
- Medical assistants observed during patient encounters
- Pre:
  - 201 encounters
  - 343 seconds/encounter (5 min 43 sec)
- Post:
  - 154 encounters
  - 374 seconds/encounter (6 min 14 sec)

→ Added 31 seconds to average time MA spent with each patient


Pre
Allergies, 9
Health Maintenance, 1
Chief Complaint, 30
Medications, 28
Other, 20
Preparations (Outside Room), 9
Social/Substances, 11
Vaccine Post-Rooming, 43
Vaccine Rooming, 3
Vitals, 188
343 seconds/encounter (5 min 43 sec)


Post
Allergies, 6
Health Maintenance, 0
Chief Complaint, 30
Medications, 23
Other, 28
Preparations (Outside Room), 4
Social/Substances, 9
Vaccine Rooming, 30
Vaccine Post-Rooming, 63
Vitals, 182
374 seconds/encounter (6 min 14 sec)


Responses to Immunization Alerts, by MA
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Ordered/Documented
% "Not Today"
% Nothing done
MA1
MA2
MA3
MA4
MA5
MA6
MA7


MAs' Responses to Immunization Alerts, by Attending Physician
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Ordered/Documented
% "Not Today"
% Nothing done
1
2
3
4
5
6
7
8
9
10

Success and Failure

- Success:
  - adult vaccination rates improved
- Failure:
  - Medical Assistants inconsistent in their willingness to take on responsibility of ordering multiple vaccines
  - Many physicians felt uncomfortable with MA's taking on this responsibility
- Final: medical group decided not to institute this system for enhancing adult vaccination rates

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HPV Callback System

- Based on model developed by Dr. Rajiv Naik, Section Head, Dept. of Pediatrics, Gunderson Clinic, Onalaska, WI
- When physician orders first HPV, also enters two more standing orders for next 2 shots.
- HIT sends monthly reports – nursing staff contacts patient/parent, arranges follow-up appointments.
- EMR configured to allow 'bulk messaging' to everyone needing follow-up

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NorthShore adaptation

- Dep't. of Pediatrics instituted similar system independently. Physicians get monthly reports, reminders if they fall behind.
- Similar system instituted at my office in Lincolnwood, IL → 3 family physicians.
- HIT sends monthly reports
- STAFF:
  - Front desk: admin staff contacts patients, makes appointment
  - Nursing: RN or LPN enters orders
- 'VACCINE CHAMPION' can be great help!

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Excel list is filtered to only include patients with at least 1 HPV vaccination.
Administrative person contacts patients via telephone, email, or letter.
When appointment is made, nurses are notified to enter standing orders.

Data ending March 31, 2016

PCP Physician Name	Patient Name	MRN Number	Birth Date	Current Age	Home Phone	HPV Dose 1	HPV Dose 2	HPV Dose 3	Comments
Wolfe,		12431755	3/17/94	22		Y	Y	N	1/26/2016 LVM to call back
Weiss,		200571024	6/21/89	26		Y	Y	N	12/01/2015 NS Connect msg, 02/04/2016 Pt will call back once insurance is taken care
Weiss,		200887222	12/29/89	26		Y	N		1/12/2016 NS connect message
Weiss,		201410941	4/29/98	18		Y	N		12/1/2015 LVM to call back
Weiss,		209870237	4/27/00	16		Y	N		12/01/2015 LWM to call back, 02/04/2016 Mom will call back
Ibawi,		209433994	9/13/00	15		Y	N		**Contact on 02/15/2016**
Ibawi,		208064139	9/20/93	22		Y	N		11/25/2015 LVM to call back, 02/04/2016 NS connect message sent
Weiss,		200520708	4/10/02	14		Y	N		01/26/2016 LVM to call back, #2 HPV shot scheduled 02/13/2016
Weiss,		200468619	1/24/00	16		Y	N		01/26/2016 LVM to call back, #2 HPV shot scheduled 02/13/2016
Ibawi,		208462077	1/22/92	24		Y	N		Pt stated has received her HPV shots at different location - will send records
Weiss,		209978055	6/16/98	17		Y	Y		**#2 HPV given 12/03/2015 ; #3 due 2/25/16, Contact in Feb**
Ibawi,		012415063	3/15/94	22		Y	Y	N	
Weiss,		209155886	11/16/98	17		Y	N		12/02/2015 LVM to call back, 02/04/2016 LVM to call back
Ibawi,		007897150	8/1/96	19		Y	Y	N	11/25/2015 PT will call back to schedule - mom will not call back
Ibawi,		006246300	7/21/92	23		Y	N		11/25/2015 PT will call back to schedule - mom will not call back
Wolfe,		200845352	5/3/95	21		Y	Y	N	12/01/2015 No cell phone- pt away at school
Wolfe,		005705496	4/24/91	25		Y	Y	N	1/12/2016 NS connect message
Wolfe		208233742	9/18/03	12		Y	N		**01/28/2016 PT's Mother does not want to continue**
Wolfe		204075105	3/26/92	24		Y	N		**12/03/2015 LVM to call back, No longer NS PT 12/03/2015**
Wolfe,		200422863	7/22/97	18		Y	N		12/03/2015 LVM to call back, HPV #2 shot scheduled 02/07/2016
Weiss,		203979273	5/30/97	18		Y	Y	N	#2 HPV done 12/03/2015, #3 scheduled 03/11/2016 (due 2/25/16)
Ibawi		200133627	11/18/91	24		Y	Y	N	**01/28/2016 PT is pregnant**
Wolfe,		201906625	11/8/97	18		Y	Y	Y	01/27/2016 PT completed series
Wolfe,		203070289	8/4/03	12		Y	Y	N	01/12/2016 NS connect message sent
Wolfe,		210010864	12/12/89	26		Y	N		12/07/2015 LVM to call back, PT will call back to schedule
Ibawi,		011787306	9/21/91	24		Y	Y	N	#2 done 12/1/15; #3 due 2/23/16 - last contacted 01/06/2016
Wolfe,		200439578	1/14/91	25		Y	Y	N	01/28/2016 NS connect message sent
Wolfe,		200507564	6/16/99	16		Y	N		12/07/2015 LVM to call back
Ibawi,		12209037	6/9/98	17		Y	N		01/28/2016 Pt schelued #2 02/04/2016

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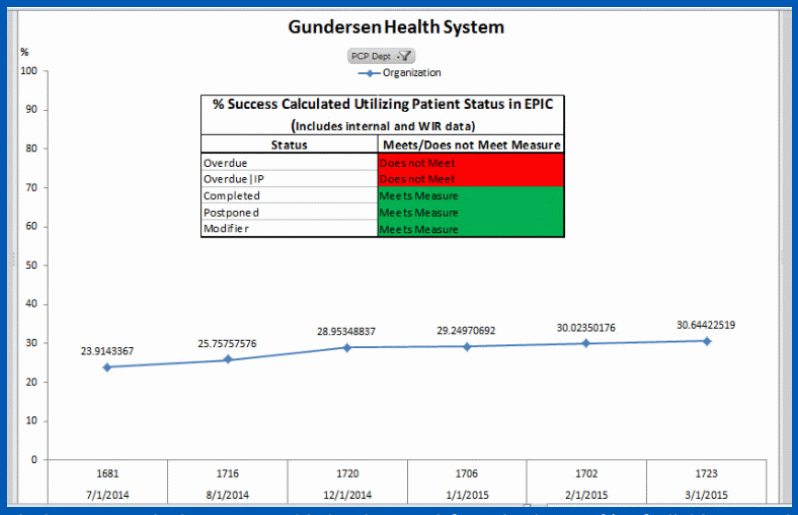
Dr. Naik's results



3 dose completion at age 13 (males and females) as a % of all 13 year olds

Results at Lincolnwood Family Medicine

ALL 3 PHYSICIANS

Percent eligible who completed:		HPV #1	HPV #2	HPV #3
PRE:	Apr '15 to Oct '15	14.3%	7.3%	2.1%
		(61/426)	(31/426)	(9/426)
POST:	Oct '15 to Apr '16	16.3%	10.4%	2.5%
		(66/405)	(42/405)	(10/405)
change from baseline:		+ 2.0%	+ 3.1%	+ 0.4%

Measure: patients 19-26 years of age who received 1, 2 or 3 HPV vaccinations; denominator is all HPV- eligible patients age 19-26 years.

Comment: metric for HPV changed as this system was instituted. Initially metric was completion rate for series within 1 yr of receiving 1st HPV dose. Now it is completion of 3 shots by age 13.

PHYSICIAN #1

Percent eligible who completed:		HPV #1	HPV #2	HPV #3
PRE:	Apr '15 to Oct '15	11.4%	4.8%	1.0%
		(24/210)	(10/210)	(2/210)
POST:	Oct '15 to Apr '16	13.4%	9.1%	1.9%
		(28/209)	(19/209)	(4/209)
change from baseline:		2.0%	4.3%	1.0%

PHYSICIAN #2

Percent eligible who completed:		HPV #1	HPV #2	HPV #3
PRE:	Apr '15 to Oct '15	11.4%	7.3%	1.6%
		(14/123)	(9/123)	(2/123)
POST:	Oct '15 to Apr '16	13.6%	7.6%	0.8%
		(16/118)	(9/118)	(1/118)
change from baseline:		2.2%	0.3%	-0.8%

PHYSICIAN #3

Percent eligible who completed:		HPV #1	HPV #2	HPV #3
PRE:	Apr '15 to Oct '15	24.7%	12.9%	2.2%
		(23/93)	(12/93)	(2/93)
POST:	Oct '15 to Apr '16	28.2%	17.9%	6.4%
		(22/78)	(14/78)	(5/78)
change from baseline:		3.5%	5.0%	4.3%

Relative completion rates for target population

Only Patients In Call-back System (19-26 yrs and at least HPV#1)					
HPV #2 completion		ALL	MD1	MD2	MD3
Pre-study	# got HPV-2	31	10	9	12
	# got HPV-2 ÷ all	50.8%	41.7%	64.3%	52.2%
		(31/61)	(10/24)	(9/14)	(12/23)
Post-study	# got HPV-2	42	19	9	14
	# got HPV-2 ÷ all	63.6%	67.9%	56.3%	63.6%
		(42/66)	(19/28)	(9/16)	(14/22)
change from baseline		12.8%	26.2%	-8.0%	11.5%
HPV #3 completion		ALL	MD1	MD2	MD3
Pre-study	# got HPV-3	9	2	3	4
	# got HPV-3 ÷ all	14.8%	8.3%	21.4%	17.4%
		(9/61)	(2/24)	(3/14)	(4/23)
Post-study	# got HPV-3	10	4	1	5
	# got HPV-3 ÷ all	15.2%	14.3%	6.3%	22.7%
		(10/66)	(4/28)	(1/16)	(5/22)
change from baseline		0.4%	6.0%	-15.2%	5.3%

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Challenges – Learning Points

- Immunizations are too important to leave to the physician! Doctors have too many other tasks to do.
- Health System needs to make vaccines a priority and dedicate the resources needed: staff, HIT, etc…
- Standing orders and call-back system can improve rates.
- Try to tailor EMR to be user-friendly. Ambulatory care is usually the "ugly sister" in terms of health system priorities; loses out to hospital interests.
- Know the limitations of the office personnel. Don't give them more than they can handle.

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