



# Healthcare Privacy: View From the Bedside

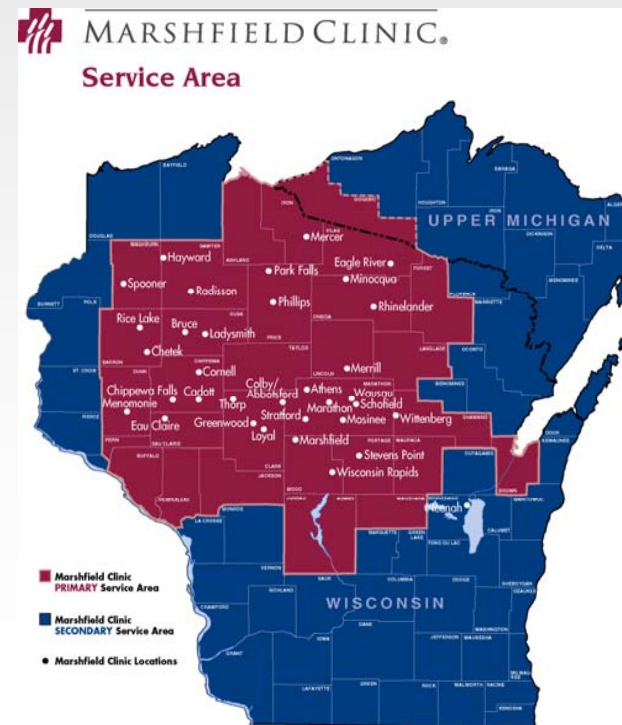
Justin Starren, MD, PhD, FACMI  
Director, Biomedical Informatics  
Research Center

MARSHFIELD CLINIC®

Research Foundation

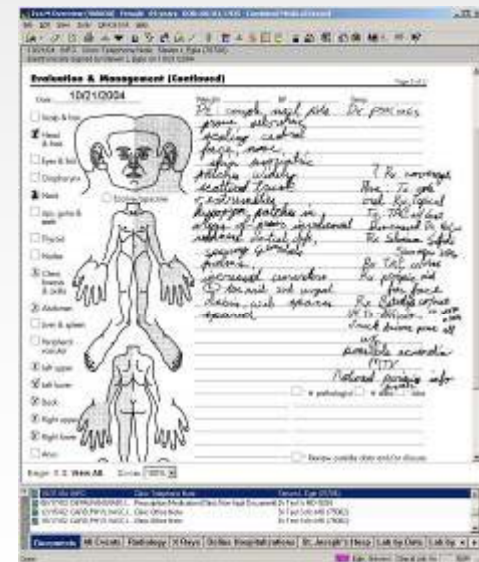
# Marshfield Clinic

- Formed 1916
- Multi-specialty group
- Physician led - 501C3
- ~760 physicians
- 43 sites
- ~400,000 unique pts/yr
- ~2M encounters/yr
- Over \$1 billion in Revenues



# CattailsMD

- Internally developed ambulatory EHR
- Wireless tablets
  - ◆ Over 2,600 deployed
  - ◆ All providers using tablets
- "Chartless"
  - ◆ Last paper chart room closed December 2007
- Improved Care
  - ◆ **Right Data** to the
  - ◆ **Right Person** at the
  - ◆ **Right Time**



# Hippocratic Oath

4<sup>th</sup> Century BC

I swear by Apollo Physician and Asclepius and Hygeia and Panacea and all the gods and goddesses, making them my witnesses, that I will fulfill according to my ability and judgment this oath and this covenant:

To hold him who has taught me this art as equal to my parents and to live my life in partnership with him, and if he is in need of money to give him a share of mine, and to regard his offspring as equal to my brothers in male lineage and to teach them this art - if they desire to learn it - without fee and covenant; to give a share of precepts and oral instruction and all the other learning to my sons and to the sons of him who has instructed me and to pupils who have signed the covenant and have taken an oath according to the medical law, but no one else.

I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice.

I will neither give a deadly drug to anybody who asked for it, nor will I make a suggestion to this effect. Similarly I will not give to a woman an abortive remedy. In purity and holiness I will guard my life and my art.

I will not use the knife, not even on sufferers from stone, but will withdraw in favor of such men as are engaged in this work.

Whatever houses I may visit, I will come for the benefit of the sick, remaining free of all intentional injustice, of all mischief and in particular of sexual relations with both female and male persons, be they free or slaves.

**What I may see or hear** in the course of the treatment or even outside of the treatment in regard to the life of men, which on no account one must spread abroad, **I will keep to myself**, holding such things shameful to be spoken about.

If I fulfill this oath and do not violate it, may it be granted to me to enjoy life and art, being honored with fame among all men for all time to come; if I transgress it and swear falsely, may the opposite of all this be my lot.

# Electronic Data Security at Marshfield Clinic

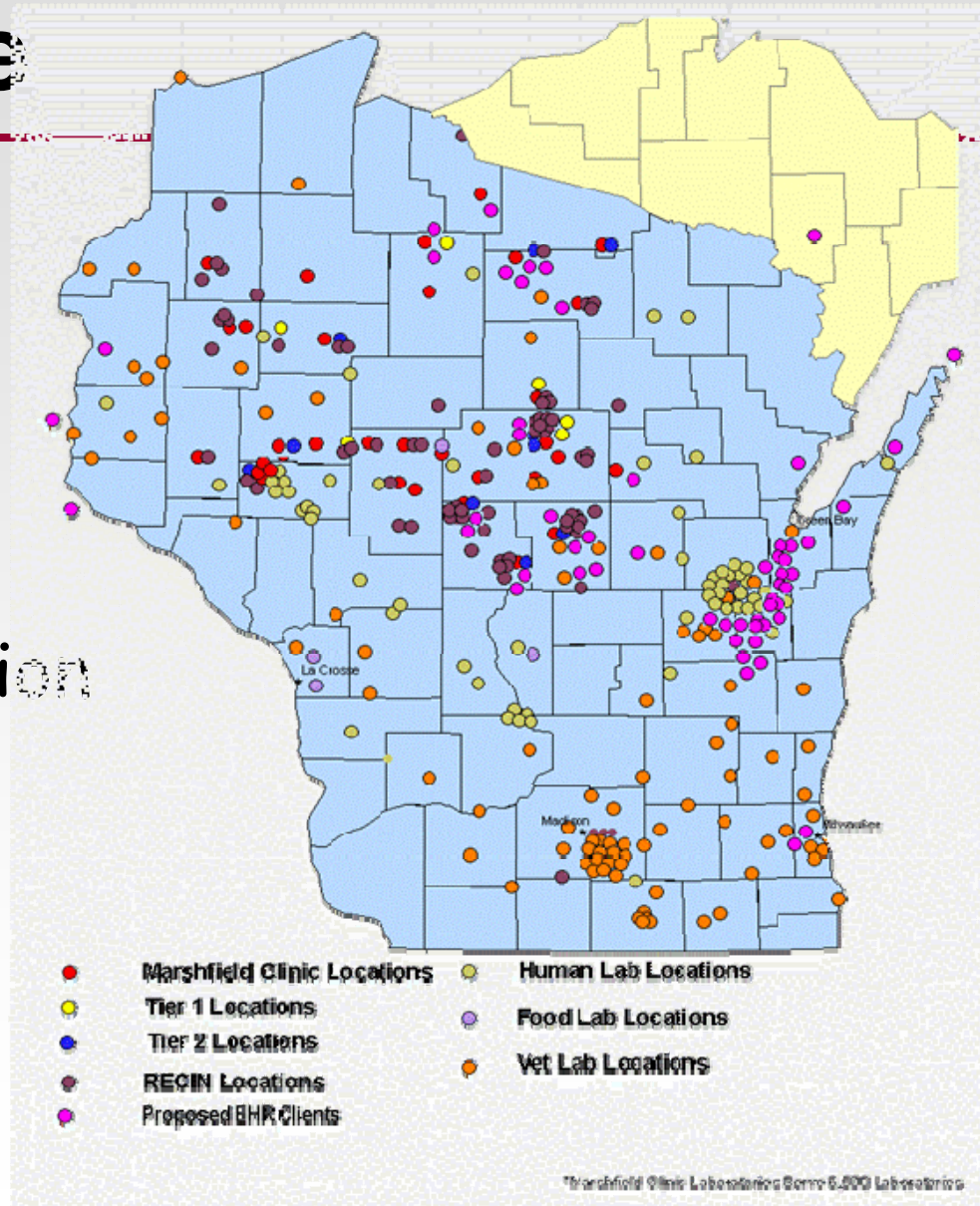
- Any provider, any patient
  - ◆ Justify unexpected access
- Every action by every person logged
  - ◆ Over 60 million transactions per day
  - ◆ One physician 13,962 items
- Smart Audits
  - ◆ Location
  - ◆ Position
  - ◆ Appointments
- More secure than paper



01:45.4 Change MECCA  
 01:45.6 Change MECCA  
 07:19.4 View CMR  
 07:19.5 View CMR  
 07:20.7 View PAT\_APPT  
 07:28.3 View PAT\_APPT  
 07:29.4 View NARRDOC\_MODIFY  
 07:29.4 View NARRDOC\_SIGN  
 07:30.3 View CMR  
 08:36.9 View PAT\_APPT  
 08:40.6 View DASHBOARD  
 13:32.0 View CMR  
 13:32.0 View CMR  
 18:08.0 View DASHBOARD  
 18:08.0 Change MECCA  
 01:46.8 View CMR  
 01:46.8 View CMR  
 07:19.3 View CMR  
 07:26.4 Change PAARAS  
 07:27.2 View MECCA\_SUMM  
 07:29.4 View CMR  
 08:30.2 View DASHBOARD  
 17:48.0 Change MECCA  
 07:19.3 View CMR  
 07:19.3 View DASHBOARD  
 07:25.3 View NARRDOC\_MODIFY  
 08:29.1 View DASHBOARD  
 08:29.1 View CMR  
 08:29.1 View CMR  
 08:30.4 View CMR  
 08:35.3 View CMR  
 08:40.2 View CMR  
 08:42.6 View CMR  
 08:42.6 View CMR  
 09:02.4 View CMR  
 09:25.3 View CMR  
 09:28.4 View NARRDOC\_MODIFY  
 09:28.4 View NARRDOC\_SIGN  
 09:29.1 Change MECCA  
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 09:32.3 View CMR  
 09:35.1 View PAT\_APPT  
 09:53.2 View DASHBOARD  
 08:42.9 View CMR  
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 09:01.8 View CMR  
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 07:29.5 View CMR  
 08:43.4 View DASHBOARD  
 08:45.2 View DASHBOARD  
 08:49.1 View DASHBOARD  
 09:00.6 View NARRDOC\_MODIFY  
 09:00.6 View NARRDOC\_SIGN  
 09:01.1 View CMR  
 09:10.3 Change MECCA  
 09:14.5 View DASHBOARD  
 09:14.5 View CMR  
 09:14.6 View CMR  
 09:18.5 View NARRDOC\_MODIFY  
 09:18.5 View NARRDOC\_SIGN  
 09:53.3 View CMR  
 09:53.3 View CMR  
 10:12.5 View NARRDOC\_MODIFY  
 10:12.5 View NARRDOC\_SIGN  
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 10:19.7 View CMR  
 10:21.2 View PAT\_APPT  
 10:21.4 View PAT\_APPT  
 10:44.2 View NARRDOC\_MODIFY  
 10:44.2 View NARRDOC\_SIGN  
 10:49.6 View DASHBOARD  
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 08:35.2 View CMR  
 08:46.3 View CMR  
 08:46.3 View CMR  
 09:01.5 View CMR  
 09:01.4 View CMR

# Health Care Data Exchange Improves Care

- Immunization
- Preventive Care
- Care Coordination
- Biosurveillance



# RECIN

Regional Early Childhood Immunization Network

Misc Patient (900003) - Standard Mode - RECIN

File Edit View Options Patient System Administration Help

Standard Immunization Schedule

**NEW VACCINE DETAIL**

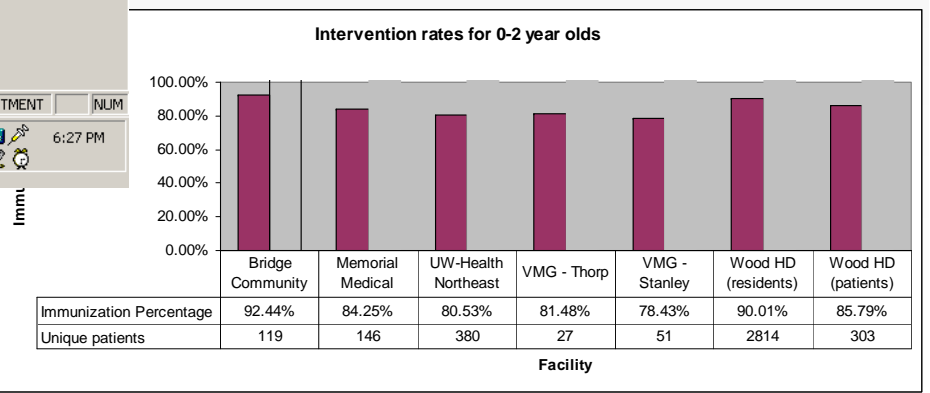
Family: DTP  
 Material: DTaP # 1  
 Source: RECIN  
 Date Given: 09/06/2006  
 Given By: Briggs, Margaret RN (4)  
 Physician: Cruz-Apolinario, Maria  
 Facility: WESTON CENTER  
 Body Site:  
 VFC Elig:  
 Dosage: 0.50cc  
 Lot Num:  
 Vendor:  
 Expr Date:  
 Inventory:  
 VJS Info: Current Forms...

OK Cancel Help

Family	#	Vaccine	Date Given
DTP	1		Overdue
	2		Due 10/04/2006
	3		Due 11/01/2006
	4		
HIB	1		
	2		Overdue
	3		Due 10/04/2006
	4		Due 11/01/2006
MMR	1		Overdue
	2		Due 10/04/2006
HepB	1		Overdue
	2		Due 10/04/2006
	3		Due 12/27/2006
Varicella	1		Overdue
Pneumococcal	1		Due 12/30/2014
Td-Adult/Tdap	1		Due 05/01/2007
	2		Due 05/01/2017
Flu	1		
Meningococcal	1		Due 12/30/2014

Siegler, Patricia A APPLETON HEALTH DEPARTMENT NUM

6:27 PM



# Sharing Data Improves Preventive Care

Theodore S Smith (2117085) Male 77 years 11/08/1929 - Dashboard

File View Options Clinical Link Help

### Problems [Expand]

Last Dx'd	Description
08/30/06	Arthritis [knee(s), lower leg(s) 716.96] - (CMR)
	Diabetes mellitus, type 2 [controlled 250.00] - (CMR)
06/01/06	BPH (Benign prostatic hypertrophy) [600.00] - (CMR)
	Hyperthyroidism [242.90] - (CMR)
	Chronic venous hypertension with inflammation [459.32] - (CMR)
03/03/06	Hypothyroidism [244.9] - (CMR)
	S/P appendectomy [past history V45.89] - (CMR)
	S/P cholecystectomy [past history V45.89] - (CMR)
	S/P TURP [past history V45.89] - (CMR)

### Prevention Reminders - Immunizations [Expand]

	DUE	Previous Service
Colonoscopy	OVERDUE	09/18/95
Fasting Lipid Profile	OVERDUE	04/14/03 - (CMR)
Hemoglobin A1c	OVERDUE	04/14/03 - (CMR)
Flu	DUE	-

Prevention		
Td(Adult)	03/11/11	03/11/01
Flu	DUE	-
Pneumococcal	-	05/30/96

### Vitals [View] [Expand]

08/30/06 Blood Pressure 130/64 mm Hg  
08/30/06 Pulse 68 bpm

### Allergies/Adverse Reactions - Clinical Alerts [Expand]

Drug (Verified 12/07/2006 By Shupe, Colleen M)

**Penicillin**

**Sulfa drugs**

**Non-Drug**

Needs Review

**Clinical Alerts**

None

### Active Medications [Expand]

(CAUTION: Includes Only Medications Inventoried or Prescribed in Medications Manager)

**Active:**

- Atorvastatin Calcium (Lipitor) 20mg Tablet  
Sig: 1 Tablet(s) (20 mg) by mouth once daily
- Glucosamine-Chondroitin
- Levothyroxine (Synthroid) 112mcg Tablet  
Sig: 1 Tablet(s) (112 mcg) by mouth once daily
- Lisinopril 10mg Tablet  
Sig: 1 Tablet(s) (10 mg) by mouth once daily
- Pioglitazone (Actos) 15mg Tablet  
Sig: 1 Tablet(s) (15 mg) by mouth once daily
- Ranitidine HCl (Zantac) 150mg Tablet  
Sig: 1 Tablet(s) (150 mg) by mouth once daily
- Saw Palmetto

### Appointments [Expand]

(Not seen in FAMILY PRACT for 3 years)

**Future**

12/11/06 @ 10:15 Is, Dr Test MD - OV NC-SL - (CMR)  
Marshfield Center - 15 First Floor Area A  
3 Mo Diabetic Check-up

**Past**

12/07/06 Cchit, Internist Test MD (113353) - NP to Dpt - (CMR)  
08/30/06 Cchit, Internist Test MD (113353) - MeccaNote - (CMR)  
06/01/06 Cchit, Internist Test MD (113353) - MeccaNote - (CMR)

No appointment selected.  
To view Provider Worksheet Notes, please select an appointment date in the Appointments pane

Ellis-Coyle, Tina L Clinical Link On NUM



# Multi-organization Chartless Campus – Weston Wisconsin



Saint Clare's

**Multiple Organizations**

**No paper charts**

**Single Electronic Record**

**Seamless Care**

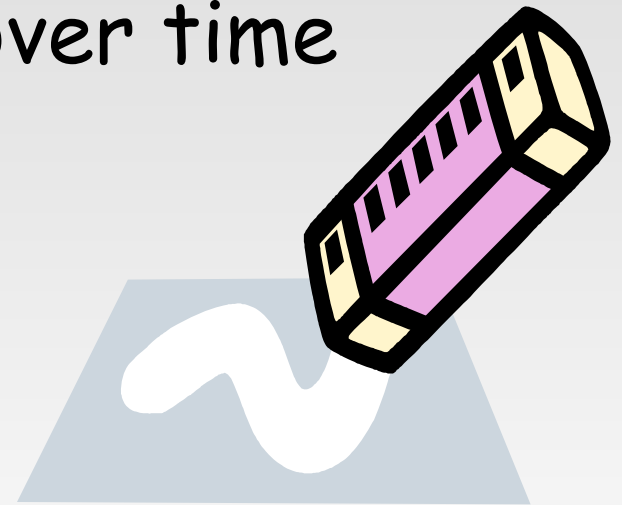
Group Practice

Ministry Health  
Group Practice

Diagnostic Center

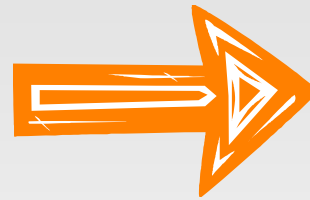
# Privacy is Good, Secrecy Kills

- Importance of patterns over time
  - ◆ Child Abuse
  - ◆ Drug seeking behavior
  - ◆ Munchausen's
- Environmental Hazards
- Biosurveillance
- Interactions with unknown medication
  - ◆ Who sees what?
  - ◆ What is a "mental health" medication?



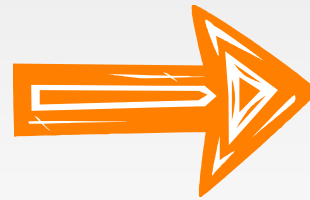
# Partial Medication Lists

**Disclose  
ALL  
Medications**



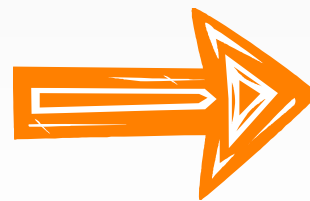
**Optimal Care**

**Disclose  
NO  
Medications**



**Unnecessary  
Duplication**

**Disclose  
SOME  
Medications**



**Misleading,  
Possible  
Harm**

# The Perfect Privacy Conundrum

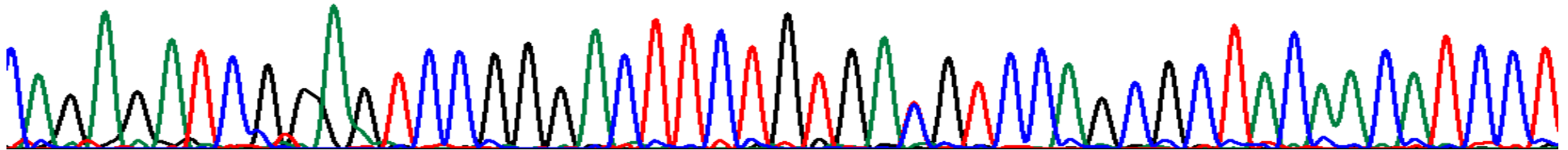
Ensuring that only the “right” people have access requires computing precisely who needs it.

Computing information needs, requires complete and total knowledge of every patient and every provider

Complete and total knowledge means the end of all privacy

A G A G A T C 140 G A G T C C G G G 150 C T T C T G T G A T G 160 G T C C A G C G C 170 T A C A A C A T C C 180 C A G A G A T C G G A C T T C T G T G A Y G T C C A G C G C T A C A A C A T C C T

# The Genomic Future



- DNA is everywhere
- Sequencing is cheaper everyday
- Genotype will be as widely known as race or gender

**Assume Knowledge. Regulate Behavior**

# Health Care Data Outside Health Care System

- Web activity
- E-mail
- Cable TV logs
- Utilities
  - ◆ Lifelines
- Purchase Records
  - ◆ Credit Cards, Shopping Clubs
- Location
  - ◆ Company Cell Phone, Rental Automobile



# Conclusion

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- Focus on the information, not the industry.
  - ◆ Increasing health care industry regulation may not increase health care data security.
- Focus on actions, not access
  - ◆ Insure the right data to the right people
  - ◆ Punish improper use by anyone