



# Implementing a Medical - Dental Integrated Electronic Health Record (iEHR) System

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Informatics Short Talks

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MARSHFIELD CLINIC.

*Where the future of medicine lives*

# Marshfield Clinic

- ~ 780 physicians, 84 different specialties, ~7000 staff
- 49 regional clinics serving northern, central, and western Wisconsin, and the Upper Peninsula of Michigan
- 6 FQHC dental centers, 2 more by Aug 2010
- not-for-profit, regional system of care
- works closely with St. Joseph's Hospital a 524-bed acute facility
- maintains a joint EHR with St Joseph's Hospital





**Problems** [Expand]

Last Dx'd	Description
06/01/06	<b>BPH (Benign prostatic hypertrophy)</b> [600.00] - (CMR)
	<b>Chronic venous hypertension with inflammation</b> [459.32] - (CMR)
03/03/06	<b>Hypothyroidism</b> [244.9] - (CMR)
	<b>Arthritis</b> [knee(s), lower leg(s) 716.96] - (CMR)
	<b>Diabetes mellitus, type 2</b> [controlled 250.00] - (CMR)

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

**Drug (Verified Today By Moin, Amy M)**  
**Sulfa:** Hives

**Non-Drug (Verified Today By Moin, Amy M)**  
**Bee stings:** Blister(s); Hives; Throat swelling / acute onset  
**Eggs:** Anaphylaxis; Blister(s); Hives / generalized; acute onset; Extreme; positive test

**Clinical Alerts**  
 None

**Prevention Reminders - Immunizations** [Expand]

	DUE	Previous Service
<b>Colonoscopy</b>	OVERDUE	09/18/95
<b>Urine Microalbumin Test</b>	OVERDUE	06/01/06 - (CMR)
<b>Hemoglobin A1c</b>	OVERDUE	02/09/07
<b>Eye Exam</b>	OVERDUE	06/01/06
<b>Flu</b>	DUE	-

**Prevention**

Td(Adult)	10/04/17	10/04/07
Flu	DUE	-

**Active Medications** [Expand]

**Last Updated**

10/15/07	<b>Atorvastatin Calcium (Lipitor®)</b> 10mg Tablet 1 Tablet(s) (10 mg) by mouth o...
10/15/07	<b>Ginkgo Biloba (Ginkoba®)</b> 40mg Tablet 1 Tablet(s) (40 mg) by mouth once daily
10/15/07	<b>Multivitamin (Men's Multi-Vitamin®)</b> Tablet 1 Tablet(s) by mouth once daily

**Vitals [View]** [Expand]

09/06/07	Blood Pressure	120/80 mm Hg
09/06/07	Body Mass Index	22.4 kg/m <sup>2</sup>
09/06/07	Height	182.88 cm (72.00 in)
09/06/07	Oxygen Saturation	99.0 %
09/06/07	Pulse	72 bpm
09/06/07	Temperature	37.0 °C (98.6 °F)
09/06/07	Weight	74.9 kg (165.00 lb)

**Appointments** (Not seen in FAMILY PRACT for 3 years) [Expand]

**Future**

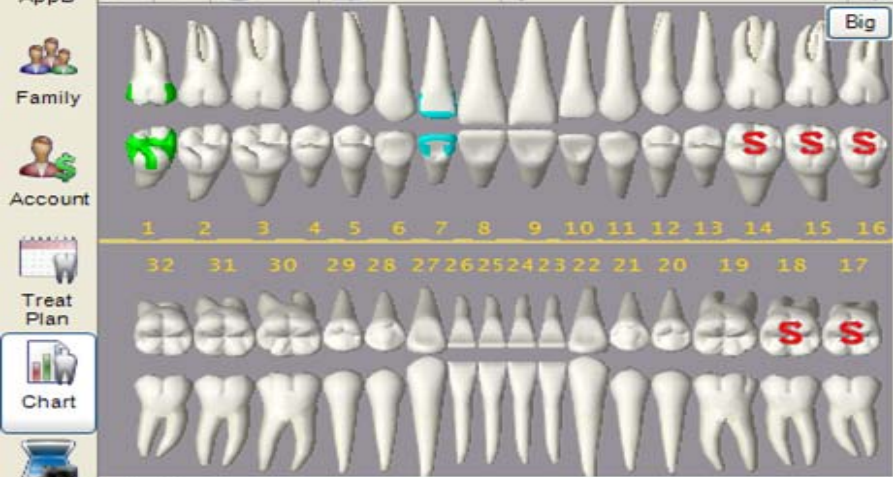
**Today**

**10/15/07** @ 14:45 Commercialization, Is MD - OV NC-SL - (CMR)  
 Marshfield Center - IS First Floor Area A  
 6 month diabetes check

**Past**

**Provider Worksheet** [Expand]

No Provider Worksheet for this appointment.  
[Create Provider Worksheet](#)



Enter Treatment Primary Planned Appointment Show Tooth Chart Legend

Add Procedure

Category: Dentist

Procedure: [Search...](#)

- Amalgam
- Composite
- Root Canal
- Complete Dent- Maxilla
- Complete Dent- Mandit
- Immediate Dent- Maxill
- Immediate Dent- Mand
- Part Resin Base- Maxill
- Part Resin Base- Manc
- Part Metal Base- Maxillar
- Part Metal Base- Mandic
- Part Flex Base- Maxillar
- Part Flex Base- Mandic
- Ext Cml Remnts-Decid
- Extract Erupted Th/Rt
- Extract- Surgical

Diagnosis

Caries,into pulp  
Attrition,pulp  
Abrasion,pulp  
Erosion,pulp  
Resorption,intem  
**Cracked tooth**  
Pulpitis  
Pulp,necrosis  
Pulp,degeneratio  
Pulp,calcification  
Acute apicl perio  
Peri absc,no sinu  
Peri absc,sinus

Secondary Provider

Surfaces

B/F V  
M O/I D  
L

Add  
Clear

Commit Treatment

TxPlan Comp  
Refer Existing

Attributes

Supernumerary  
 Attach to Referral

patient is a gagger

**Dental Alerts**

None

**Active Medications**

Last Updated

02/02/10 Acetaminophen  
02/02/10 Acetaminophen-Codeine 300-30mg Tablet 1 or 2 Tab...  
01/14/10 Amoxicillin 125mg/5 mL Suspension for Reconstitution ...  
01/14/10 Fluoride (Sodium Fluoride) 1 (2.2)mg Tablet, Chewa...

**Allergies/Adverse Reactions - Clinical Alerts**

**Drug (Verified 01/07/2010 By Gargulak, Michelle R)**

Amoxicillin: Diarrhea / as child  
Amoxicillin/Clavulanic Acid (Augmentin®)  
Benzocaine (local caines anesthetics): Reaction unknown by patient / as  
Penicillin

**Non-Drug (Verified 02/02/2010 By Gargulak, Michelle R)**

No Known Non-Drug Allergies/Adverse Reactions (NKND A)

**Clinical Alerts**

None

**Progress Notes**

Date	Th	Surf	Code	Description	Stat	Amount
02/02/2010	7	MID	D2160	•Amalgam - Three Surfaces, Primary or Permanent Referred To: Haack, James By: Provider: Dental Center, Park Falls (0200)	RC	\$0.00
awsdfasdf						
02/02/2010	1	MODL	D2161	Provider: Dental Center, Park Falls (0200) •Amalgam - Four Or More Surfaces, Primary or Permanent	EO	\$0.00
02/02/2010			Zreferral	Referred To: Miles, Michael By: Provider: Dental Center, Park Falls (0200)	R	\$0.00
zdsfsdfasdf						
02/01/2010	14		D1351	Provider: Dental Center, Park Falls (0200) •Sealant - Per Tooth	TP	\$42.00
testing						
02/01/2010	15		D1351	Provider: Dental Center, Park Falls (0200) •Sealant - Per Tooth	TP	\$42.00
testing						
02/01/2010	16		D1351	Provider: Dental Center, Park Falls (0200) •Sealant - Per Tooth	TP	\$42.00
testing						
02/01/2010	17		D1351	Provider: Kronberger, Tresa RDH (133437) •Sealant - Per Tooth	TP	\$42.00
02/01/2010	18		D1351	Provider: Kronberger, Tresa RDH (133437) •Sealant - Per Tooth	TP	\$42.00

# Current & Future Work

## Current Integration

- Medications information (bi-directional)
- Allergies (bi-directional)
- Special conditions (bi-directional)
- Demographics (driven by the medical system)
- HIPAA forms (driven by the medical system)
- Medical appointments in Dental

## Future Integration

- Dental Alerts
- Diagnosis
- History
- Problem lists

## Current Research & Development

- Dental data of interest to different physicians groups
- Clinical decision supports
- Linking dental procedure codes to diagnostics codes
- Dental workflow issues around the new system
- Usability issues and interface enhancement
- Design and development of dental data warehouse