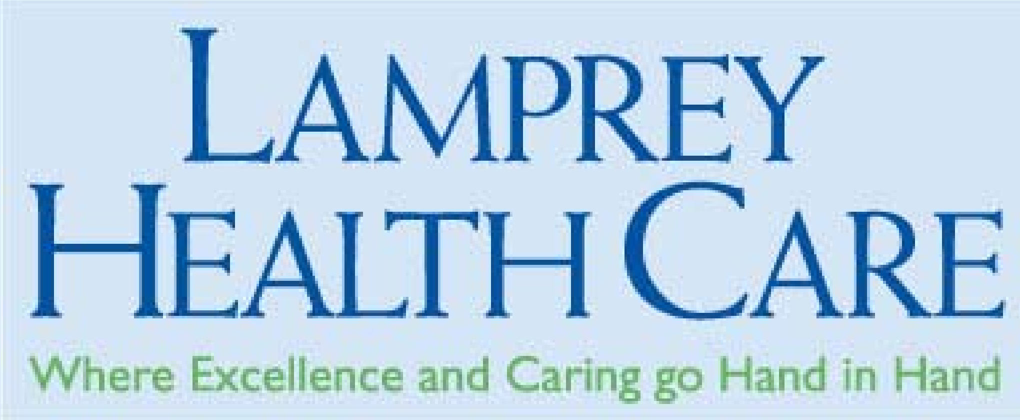
Utilizing the Electronic Health Record for Quality Improvement, Clinical Decision-Making and Enhanced Reimbursement



- Raymond
- Newmarket
- Nashua

www.lampreyhealth.org

Presentation Objectives

History of Electronic Health Record Progression at Lamprey Health Care 2000-2009

Clinical Reporting (2000-Present)

- Diabetes

Clinical Decision Making (2007-Present)

- Anticoagulation Therapy Management

Demonstrating Quality for Enhanced Reimbursement (2008-Present)

- Patient-Centered Medical Home

Electronic Health Record Database

Databases hold many types of information

(coded and not coded)

- The database is organized by a series of tables
- Patient information
- Information has a date and time
  - Test results
  - Medications
  - Allergies
  - Current list of diagnoses and problems
  - Appointment data
  - Clinical notes

Form Design/Revision

- Involves identifying reporting requirements
- Follows clinical guidelines
- Quality improvement opportunities
  - Strategic Plan
- Multi-disciplinary input/collaboration
  - Time to fill out the form
  - Who fills the form out
- PDCA cycling for improvement, efficiency and enhancement

- Coded information is essential for quality improvement, reporting and trending

- Useful and meaningful reporting starts with a well engineered form component

Keys to electronic form design

- Recognize form design as an ongoing, interactive process
- Collaborate both horizontally and vertically for key EHR enhancements
- Identify reporting requirements for targeted quality improvement

Electronic Health Record Reporting

Consistent Data Output = Performance Improvement

- Fast
- Automated
- Snap shots of data at the *Network, Health Center, Team or Provider* level
- Easily manipulated

- Identify patients or populations that need an intervention
- Highlight what is working
- Identify training needs for staff

Example 1

Utilizing the Electronic Health Record Disease Management

-Diabetes

Clinical Reporting

DM Visit Form: Shania Twain

Flowsheet-Testing | Educ-HM | Plan | Immunizations

Days	05/15/2008	04/28/2008	04/15/2008	03/25/2008	02.
WEIGHT			120		
BMI			31.31		
HGBA1C					
GLUCOSE SER					
BG FASTING					
BG RANDOM					
BG HOME FAST					
CHOLESTEROL					
TRIGLYCERIDE					

Lab Comments:

Home Testing Glucometer Type: One-Touch Ultrasm

Fasting BG Range:

BG Ranges:

Breakfast Before: After:

Lunch Before: After:

Dinner Before: After:

Bedtime: 3 A.M.:

HgbA1c: % **Office Blood Glucose:**

Update Orders Comment:

Foot Check

Visual/Sensory Normal Abnorma declined

Monofilament Test declined

Left Foot: Normal Abnormal

Right Foot: Normal Abnormal

Comments

HPI | Vital Signs | In-house Labs | DM Visit Form | Episodic Risk | Histories

ROS | Physical Exam | Impression & Plan | Prescriptions | E&M Advisor

Prev Form (Ctrl+PgUp) | Next Form (Ctrl+PgDn) | Close

Clinical Reporting

DM Visit Form: Shania Twain

Flowsheet-Testing | Educ-HM | **Plan** | Immunizations

HgbA1c - Done every 3-6 months.
5.9 (09/20/2005 3:24:00 PM)

Dilated Eye Exam - Done annually.
. (03/24/2003 1:01:58 PM)

Monofilament Exam - Done annually.
Left: Normal (07/26/2005 2:38:29 PM)
Right: Normal (07/26/2005 2:38:29 PM)

Flu Vaccine - Done annually.
declined (03/25/2008 4:27:31 PM)

Pneumovax - 1st dose by 65 - single revac at or >65, IF 5yrs since prev dose
07/31/2002 (07/31/2002 9:57:30 AM)

Microalbumin - Done annually.
microabl/cre:
microalb urn:
micralb ranu: < 5 ug/mL (09/20/2005 3:24:00 P
prot 24h urn:

LDL - Done annually.
170 (07/09/2004 12:24:50 PM)

Diabetes Education - Done annually.
Diabetic ed: Yes (12/27/2006 12:03:40 PM
DMeducPstYr: No (07/26/2005 2:38:29 PM)

Patient not on aspirin **LAST LDL 170 (07/09/2004 12:24:50 PM)**

Self Management Goals Handouts

Goal #1: Last updated: 05/15/2008
reviewed - no changes required
Walk 10 blocks a day, increase as tolerated.
NOw walking 15 blocks. Marie Hall RN December 27, 2006 12:19 PM

Goal #2: Last updated: 05/05/2005
reviewed - no changes required
Count carbs to keep < 60 grams/meal and 15 grams snack. Marie Hall RN May 5, 2005 1:11 PM

Goal #3: Last updated: 10/20/2003
reviewed - no changes required
Need to sleep more than 4 hours a night.

HPI | Vital Signs | In-house Labs | DM Visit Form | Episodic Risk | Histories
ROS | Physical Exam | Impression & Plan | Prescriptions | E&M Advisor

Logician - Marcy ...

Diabetes Report

Diabetes Compliance Report

Total # of Patients with Diagnosis of DIABETES 1758

	Number	Percent	Collaborative Goal
Patients with HgA1c tested twice within past 12 months:	1184	67%	**>90%**
Patients with BMI in the past 12 months:	1357	77%	
Patients with BMI <30 within past 12 months:	492	36%	
Patients with Foot Check within past 3 months:	705	40%	**>70%**
Patients with Monofilament within past 12 months:	1209	69%	**>90%**
Patients with Flu Vaccine within past 12 months:	841	48%	**>90%**
Patients with Pneumovax:	1003	57%	**>90%**
Patients with Microalbumin urine within past 12 months:	1018	58%	**>50%**
Patients with LDL within past 12 months:	1159	66%	**>90%**
Patients with LDL <100 within past 12 months:	698	60%	**>70%**
Patients with Aspirin Education:	1241	71%	**>90%**
Patients prescribed Aspirin	1119	64%	**>80%**
Patients over 55 prescribed ACE or ARB medications:	564	66%	**>75%**
Patients with self reported or documented DM Eye Exam in past 12 months:	473	27%	**>70%**

Example 2

Utilizing the Electronic Health Record for Quality Improvement

-Anticoagulation Management

Identify Clinical Need

- Duplication of data entry
- Multiple individual work-arounds
- Inefficient access to patient information
- Need for improved case management

Risk Management/Quality Improvement

- **Improve Patient Safety, Quality of Care and Provider Efficiency**
  - National Patient Safety Goal, TJC
    - » Information is coded for safety
    - » Clinical Guidelines/Triggers are embedded in the form
    - » Individualized patient care enhanced
    - » Patient leaves office with dosing instructions, time of next office visit and updated medication list

National Patient Safety Goals

- Goal 3 – Improve the Safety of Using Medications
  - Individualized care
  - Established protocols – AFP Guidelines
- Goal 8 – Accurately and completely reconcile medications across the continuum of care
- Goal 13 – Encourage the patients active involvement in their own care as a patient safety strategy

Anticoagulation Office Visit - Smart Form

Anticoagulation: Shania Twain

MGMT | ASSESSMENT | TREATMENT SCH | % DOSE CHANGES | DOSE SCHEDULE | REFERENCES

Anticoagulation Dx(s): Dx of ANTICOAGULATION THERAPY (ICD-V58.61)

Previous INR Target: 2-3 (01/10/2008 5:46:47 PM)

INR Target:

Add Anticoagulation Dx

Add/Change/Remove Problems

Current Coumadin Prescription(s): COUMADIN 5 MG TABS April 15, 2008 Total Weekly MG Dose: 49 Sunday: 7 mg, Mon: 7 mg, Tues: 7 mg, Wed: 7 mg, Thurs: 7 mg, Fri: 7 mg, Sat: 7 mg

Today's INR: 2.5

Last INR: 2.2 (04/15/2008 12:20:27 PM)

Today's PT:

Last PT: 5 (05/13/2003 12:12:35 PM)

USE TODAY'S LAB INTERFACE

Lab drawn by: Doyle

These two items may be completed to determine who is managing this patient.

Add "Anticoagulation Therapy V58.61" to Problem List

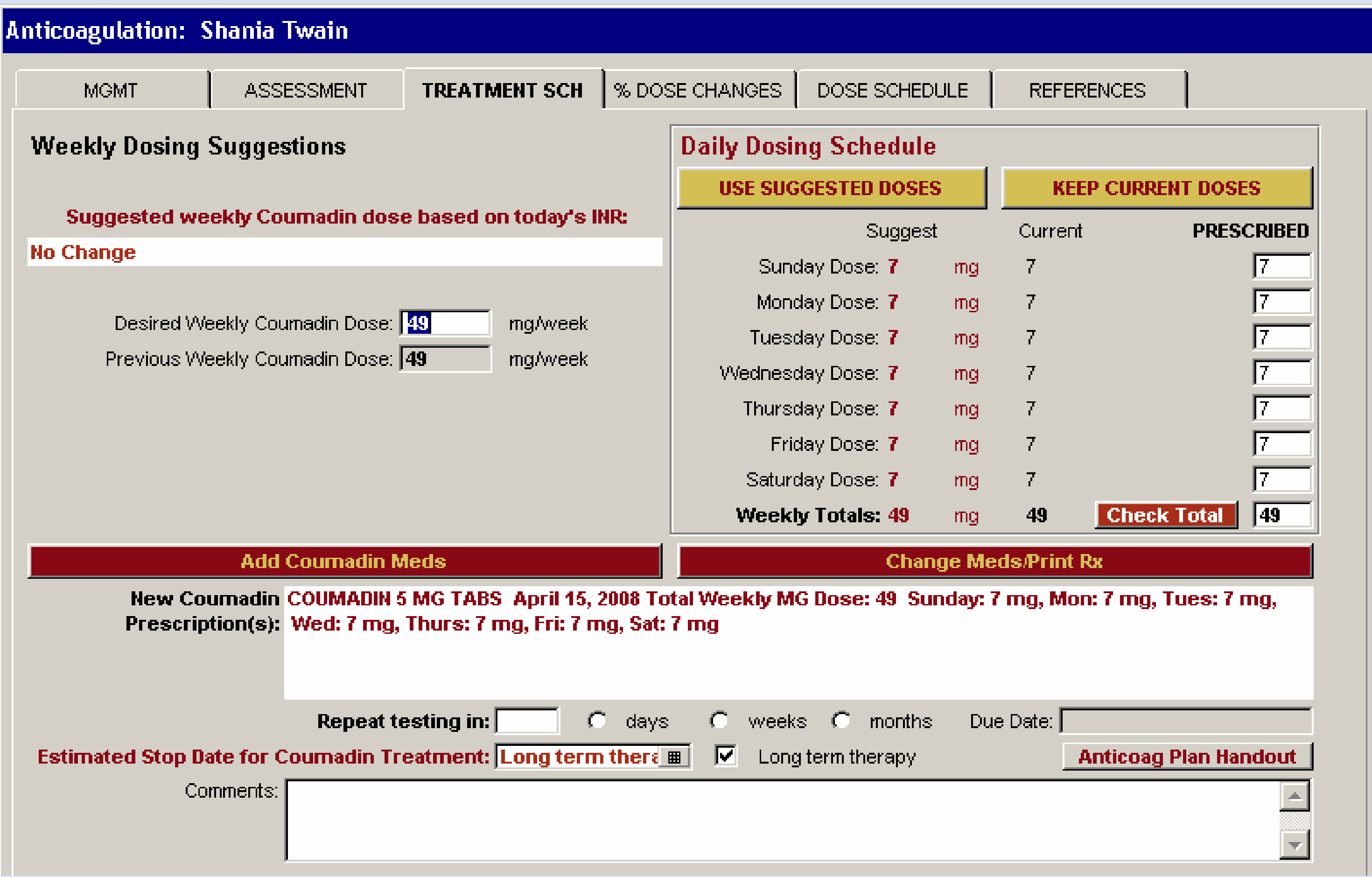
Other MD managing Coumadin therapy: Dr. CV

Anticoagulation Flowsheet

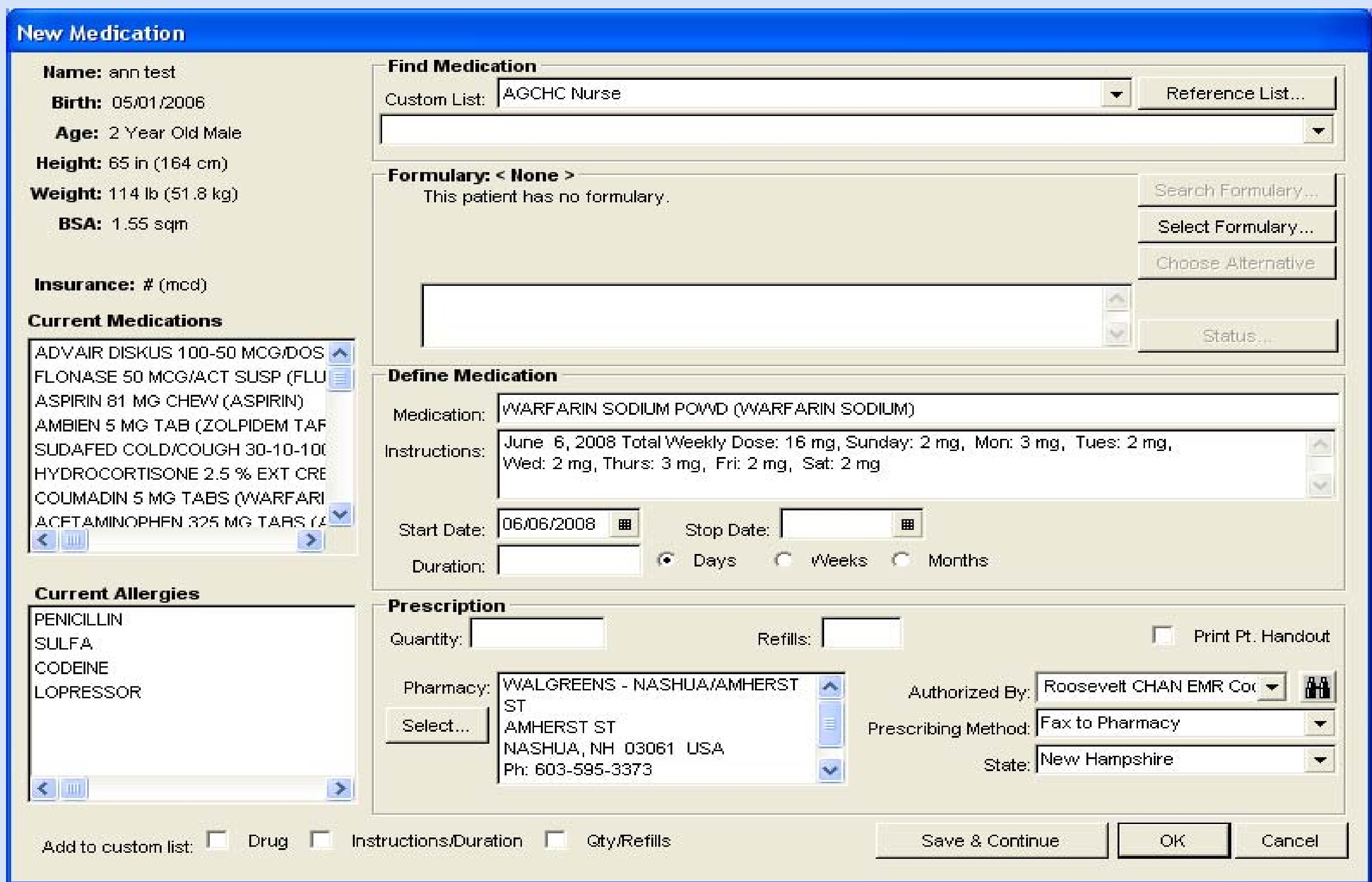
Days	05/27/2008	04/15/2008	02/22/2008	02/19/2008	02/12/2008	01/1
PT PATIENT						
PTT PATIENT						
INR		2.2				
TARGET INR						
COUM DOSE	COUMADIN...	COUMADIN...	COUMADIN...	COUMADIN...	COUMADIN...	COU
RECHECK LABS		4 weeks				

Prev Form (Ctrl+PgUp) | Next Form (Ctrl+PgDn) | Close

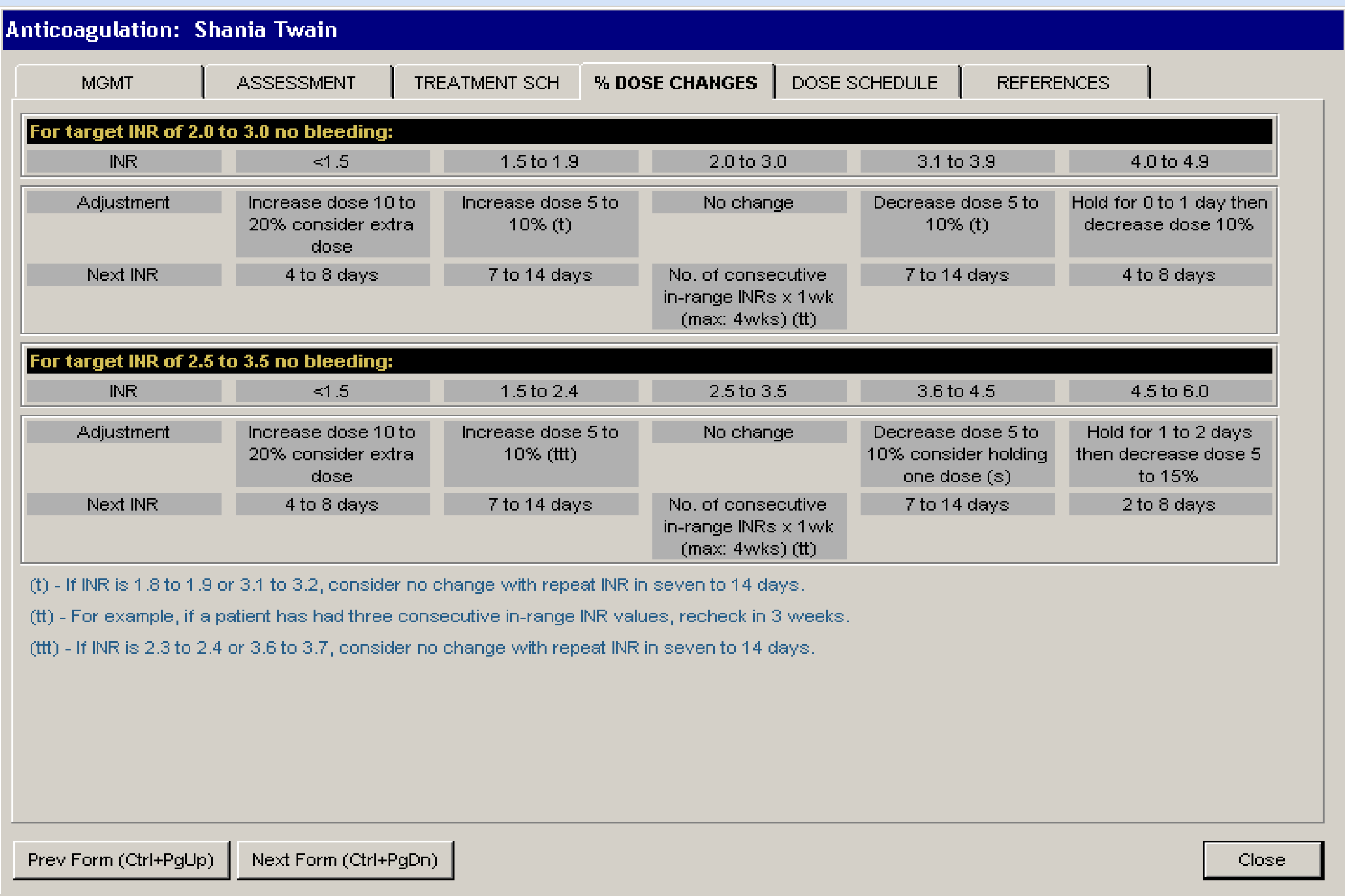
Anticoagulation Office Visit



Anticoagulation Office Visit



Anticoagulation Office Visit



Anticoagulation: Shania Twain

MGMT | ASSESSMENT | TREATMENT SCH | % DOSE CHANGES | DOSE SCHEDULE | REFERENCES

For target INR of 2.0 to 3.0 no bleeding:

INR	<1.5	1.5 to 1.9	2.0 to 3.0	3.1 to 3.9	4.0 to 4.9
Adjustment	Increase dose 10 to 20% consider extra dose	Increase dose 5 to 10% (t)	No change	Decrease dose 5 to 10% (t)	Hold for 0 to 1 day then decrease dose 10%
Next INR	4 to 8 days	7 to 14 days	No. of consecutive in-range INRs x 1wk (max: 4wks) (tt)	7 to 14 days	4 to 8 days

For target INR of 2.5 to 3.5 no bleeding:

INR	<1.5	1.5 to 2.4	2.5 to 3.5	3.6 to 4.5	4.5 to 6.0
Adjustment	Increase dose 10 to 20% consider extra dose	Increase dose 5 to 10% (ttt)	No change	Decrease dose 5 to 10% consider holding one dose (s)	Hold for 1 to 2 days then decrease dose 5 to 15%
Next INR	4 to 8 days	7 to 14 days	No. of consecutive in-range INRs x 1wk (max: 4wks) (tt)	7 to 14 days	2 to 8 days

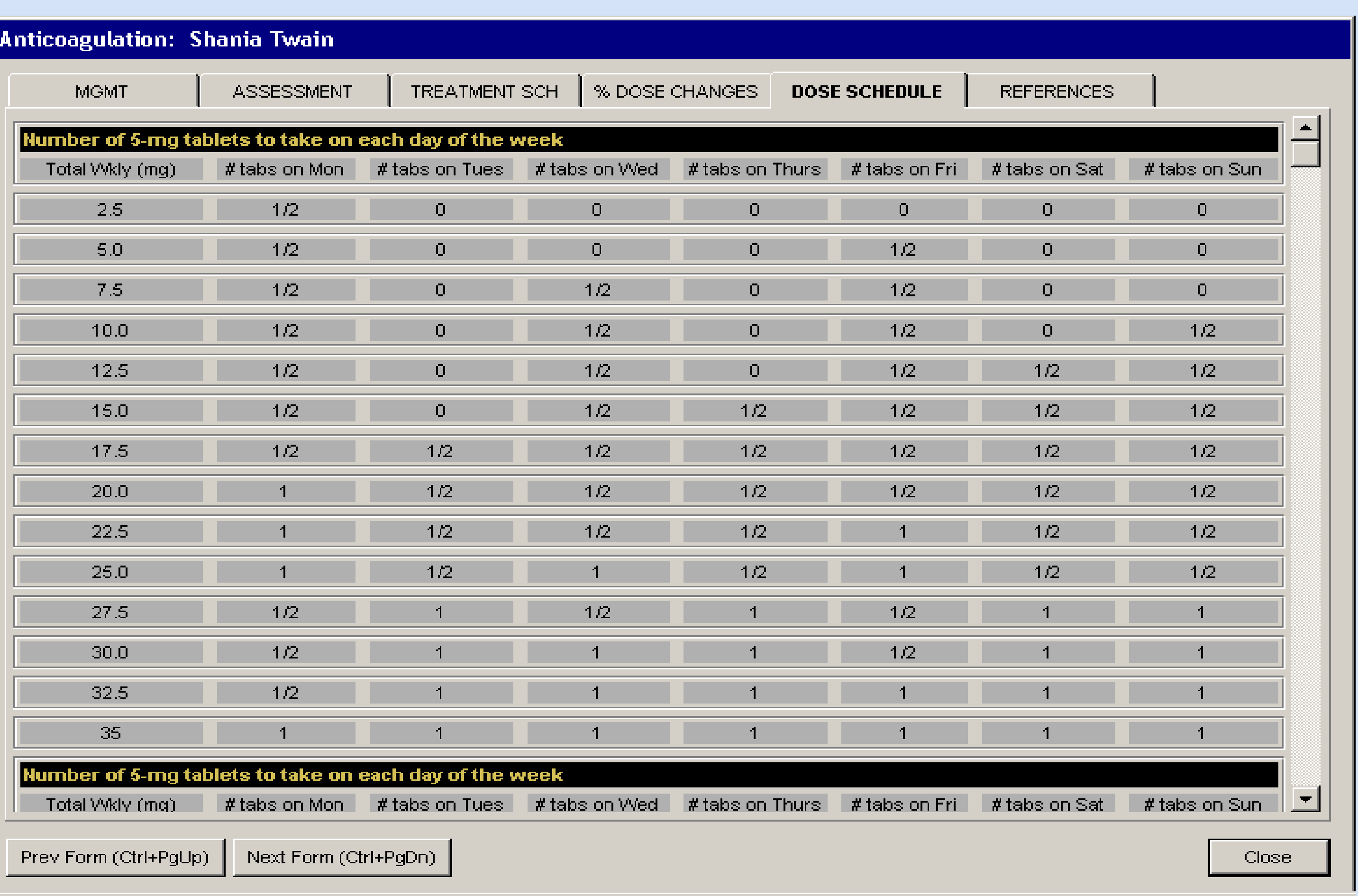
(t) - If INR is 1.8 to 1.9 or 3.1 to 3.2, consider no change with repeat INR in seven to 14 days.

(tt) - For example, if a patient has had three consecutive in-range INR values, recheck in 3 weeks.

(ttt) - If INR is 2.3 to 2.4 or 3.6 to 3.7, consider no change with repeat INR in seven to 14 days.

Prev Form (Ctrl+PgUp) | Next Form (Ctrl+PgDn) | Close

Anticoagulation Office Visit



Anticoagulation: Shania Twain

MGMT | ASSESSMENT | TREATMENT SCH | % DOSE CHANGES | **DOSE SCHEDULE** | REFERENCES

Number of 5-mg tablets to take on each day of the week

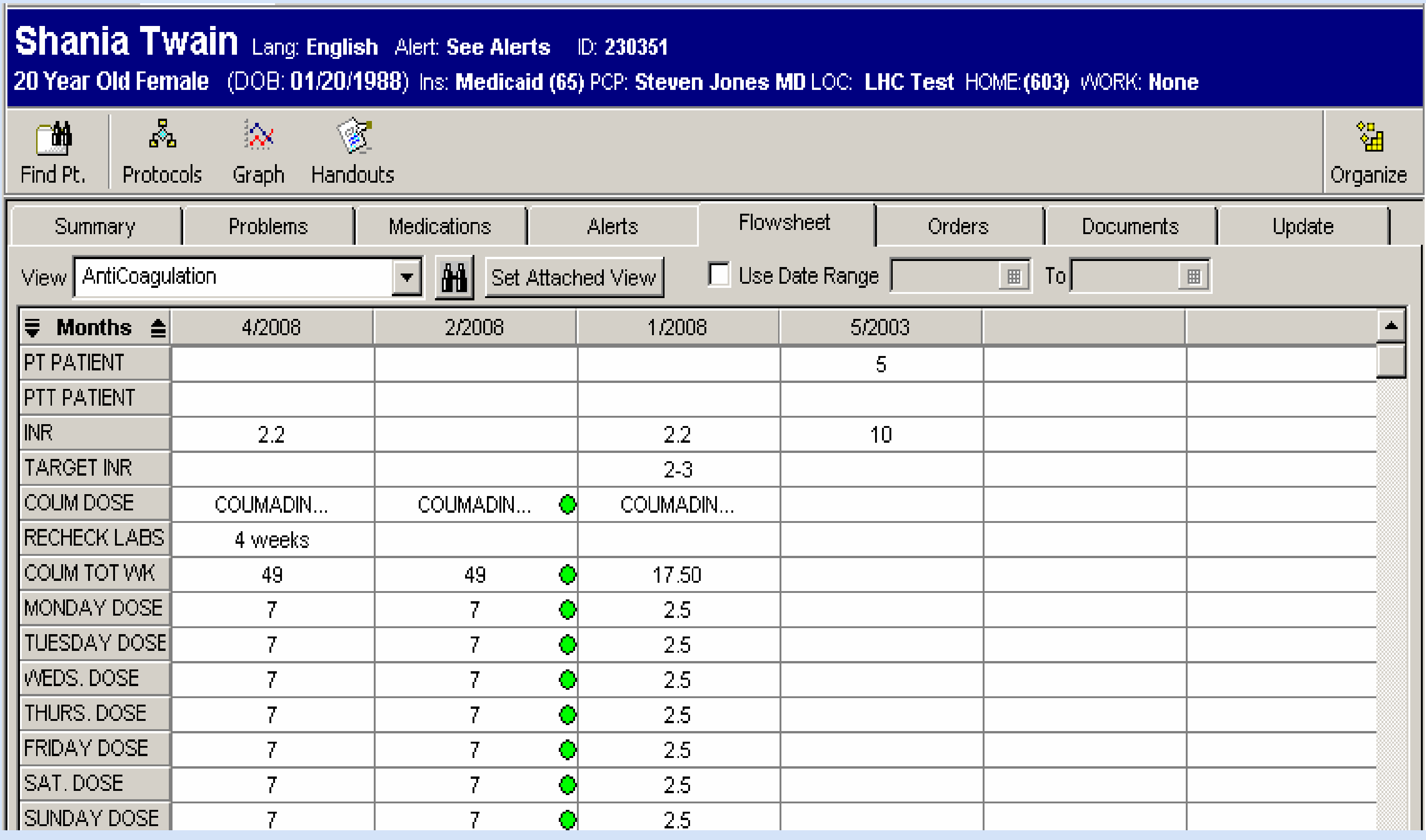
Total Wkly (mg)	# tabs on Mon	# tabs on Tues	# tabs on Wed	# tabs on Thurs	# tabs on Fri	# tabs on Sat	# tabs on Sun
2.5	1/2	0	0	0	0	0	0
5.0	1/2	0	0	0	1/2	0	0
7.5	1/2	0	1/2	0	1/2	0	0
10.0	1/2	0	1/2	0	1/2	0	1/2
12.5	1/2	0	1/2	0	1/2	1/2	1/2
15.0	1/2	0	1/2	1/2	1/2	1/2	1/2
17.5	1/2	1/2	1/2	1/2	1/2	1/2	1/2
20.0	1	1/2	1/2	1/2	1/2	1/2	1/2
22.5	1	1/2	1/2	1/2	1	1/2	1/2
25.0	1	1/2	1	1/2	1	1/2	1/2
27.5	1/2	1	1/2	1	1/2	1	1
30.0	1/2	1	1	1	1/2	1	1
32.5	1/2	1	1	1	1	1	1
35	1	1	1	1	1	1	1

Number of 5-mg tablets to take on each day of the week

Total Wkly (mg)	# tabs on Mon	# tabs on Tues	# tabs on Wed	# tabs on Thurs	# tabs on Fri	# tabs on Sat	# tabs on Sun

Prev Form (Ctrl+PgUp) | Next Form (Ctrl+PgDn) | Close

Anticoagulation Office Visit



Months	4/2008	2/2008	1/2008	5/2003		
PT PATIENT				5		
PTT PATIENT						
INR	2.2		2.2	10		
TARGET INR			2-3			
COUM DOSE	COUMADIN...	COUMADIN...	COUMADIN...			
RECHECK LABS	4 weeks					
COUM TOT WK	49	49	17.50			
MONDAY DOSE	7	7	2.5			
TUESDAY DOSE	7	7	2.5			
WEDS. DOSE	7	7	2.5			
THURS. DOSE	7	7	2.5			
FRIDAY DOSE	7	7	2.5			
SAT. DOSE	7	7	2.5			
SUNDAY DOSE	7	7	2.5			

Patient Handout

HCH Manchester at CMC
195 McGregor St., 3rd Floor Manchester, NH 03102
603-663-8718 Fax: 603-663-8766

June 6, 2008
Page 1

Patient Information - Anticoag Plan

For: ann test

June 6, 2008

Today's INR was:

Your anticoagulant dosage instructions:

Sunday:	2	mg
Monday:	3	mg
Tuesday:	2	mg
Wednesday:	2	mg
Thursday:	3	mg
Friday:	2	mg
Saturday:	2	mg
Total Weekly Dose:	16	mg

Repeat INR Testing in: 3 weeks

Current Medications:

ADVAIR DISKUS 100-50 MCG/DOSE MISC (FLUTICASONE-SALMETEROL) 1 puff daily
FLONASE 50 MCG/ACT SUSP (FLUTICASONE PROPIONATE (NASAL)) 2 sprays each day
ASPIRIN 81 MG CHEW (ASPIRIN) 1 by mouth daily
AMBIEN 5 MG TAB (ZOLPIDEM TARTRATE) 1 by mouth at bedtime as needed for sleep
SUDAFED COLD/COUGH 30-10-100-250 MG CAPS (PSEUDOEPHEDRINE-DM-GG-APAP)
HYDROCORTISONE 2.5 % EXT CREAM (HYDROCORTISONE (TOPICAL)) apply to rash 1-2x a day
COUMADIN 5 MG TABS (WARFARIN SODIUM) February 19, 2008 Total Weekly Dose: 35 Sunday: 5 Mon: 5 Tues: 5 Wed: 5 Thurs: 5 Fri: 5 Sat: 5
ACETAMINOPHEN 325 MG TABS (ACETAMINOPHEN) 2 every 4 hrs AS NEEDED for pain or fever
ROBITUSSIN DM 100-10 MG/5ML SYRUP (DEXTROMETHORPHAN-GG) 2 tsp by mouth every 4 hrs as needed for cough

Anticoagulation Report Sample

(utilizing Crystal Report Writer)

JONES, SUMMER 1/21/1910

Refill History (past year)

8/9/2008	COUMADIN 5 MG TABS daily DMH	Qty:	100	1 tab
9/11/2008	COUMADIN 5 MG TABS	Qty:	100	1 tab
11/12/2008	COUMADIN 2 MG TABS daily	Qty:	30	1 tab

PT/INR Results Past 35 Days

23.7 11/12/08

Example 3

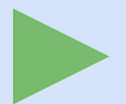
Patient Centered Medical Home

Patient-Centered Medical Home Model

- **Whole Person Orientation -**The personal physician is responsible for providing for all the patient's healthcare needs or taking responsibility for appropriately arranging care with other qualified professionals.
- **Personal Physician**
- **Coordinated and Integrated Care**
- **High-Quality Care** (Evidence-Based, Use of HIT, Continuous Quality Improvement)
- **Enhanced access**-24/7
- **Payment that recognizes the added value**

Patient-Centered Medical Home

- **NCQA Application –April 2009**
  - Access and Communication
  - Patient Tracking and Registry Functions
  - Care Management
  - Patient Self-Management Support
  - Test Tracking
  - Referral Tracking
  - Performance Reporting and Improvement
  - Advanced Electronic Communication
- **Level 3 Certification – July 2009**



Patient-Centered Medical Home

SCREEN SHOTS OF THE PROTOCOLS:

Age-Appropriate Screening Tests – Pediatric "All View" – All screening tests (by age) required for this pediatric patient.

Protocol "3 to 6 Years" :

Patients of either sex with an age of greater than 3 years, and less than 6 years.

Should have the following:

Test	Schedule	Last Done	Last Rslt	Status
HEIGHT	Every 12 months	04/13/2009	40.75	Due On: 04/13/2010
WEIGHT	Every 12 months	04/13/2009	38.38	Due On: 04/13/2010
BP SYSTOLIC	Every 12 months	04/13/2009	90	Due On: 04/13/2010
HGB SEMIQUAN	Every 3 years	03/26/2007	12.8	Due On: 03/26/2010
VIS ACU OD	Every 3 years	04/13/2009	20/40	Due On: 04/13/2012
or VIS ACU OS		04/13/2009	20/40	
or VISUAL ACUIT		04/13/2009	20/40	
HEARING AD	Every 3 years	Due Now		
or HEARING AS				
or HEARING TEST				
TB RISK	At Age 24 months	Due Now		
LEAD, BLOOD	At Age 24 months	03/26/2007	<5 ug/dL	Done

Patient-Centered Medical Home

Asthma-ActionPlan:

Assessment | Action Plan

Recommended Assessment - based on symptoms

Severe Persistent

Agree with recommendation

Alternate Impression

Impression: Severe Persistent

ASTHMA, MILD INTERMITTENT, UNSPECIFIED (ICD-493.90)

New Diagnosis

Update Diagnosis

Further Assessment Notes:

After the patient's symptoms history is collected, the form will recommend an asthma severity assessment and medications. The provider can agree or disagree. This forms the basis of the asthma action plan.

Medication (Recommendations based on documented impression)

Long-Term Control:

- [x] Anti-inflammatory agent (high dose inhaled glucocorticoid) AND
- [ ] Long-acting bronchodilator (inhaled or oral Beta2-agonist or theophyll AND
- [ ] Oral glucocorticoid (2 mg/kg/day, generally do not exceed 60 mg/day)
- [ ] ***Leukotriene modifiers may be considered for pts at least 6 yrs old

Quick Relief: Short-acting inhaled beta2-agonists

*** Daily use/increasing use indicates need for add'l long-term therapy.

Comments regarding medications:

Orders | Medications

Current Med List (including changes made)

GLUCOPHAGE 1000 MG TAB (METFORMIN HCL) 1 tab by mouth twice a day
ZYPREXA 15 MG TABS (OLANZAPINE) tab 1 by mouth twice a day
ACTOS 30 MG TAB (PIOGLITAZONE HCL) tab 1 by mouth daily for diabetes

Comments:

Assessment | Action Plan

Asthma Action Plan Medications

Summary

- Coded information is essential for quality improvement and reporting
- Well designed forms are critical for information capture
- Form design is often an ongoing interactive process
- Horizontal and vertical collaboration is key to successful EHR reporting