

Joint Implementation of Epic Ambulatory in Two Academic Centers

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Hamilton Health Sciences

- 7 hospital sites, including a Cancer Center and Children's Hospital (second largest in Ontario)
- serves population of 2.3 million (Hamilton and south central Ontario)
- regional referral centre for Cardiac, Stroke, Burns, Trauma, Pediatrics, High-risk obstetrics, Cancer, Rehabilitation services.
- 1,100 beds
- staff of 11,000
- 500,000 clinic visits
- Affiliated with McMaster University and Mohawk College, one of the world's leading health science research organizations.

St Joseph's Healthcare Hamilton

- A premier academic and research healthcare organization
- Affiliated with McMaster University, Mohawk College and the St. Joseph's Health System (SJHS) and home to the prestigious Firestone Institute for Respiratory Health and the high-tech Brain-Body Institute
- With a staff of more than 4,000 and over 650 beds and 355,000 outpatient visits per year, the organization's four locations - including the Charlton, West 5th, King and Brantford campuses - provide tertiary, secondary and ambulatory health care services for the Hamilton-Niagara-Haldimand-Brant Local Health Integration Network, and the neighbouring regions of Halton, Kitchener-Waterloo, and Norfolk.

The Need

Ambulatory care is ~ 50% of our hospital activity

- over 200 different clinics
- 830,000 visits per year (combined HHS and SJHH)
- 800 Physicians/Surgeons + 700 Residents
- 1500 staff

Variety of paper and electronic systems

- impossible to integrate
- Data silos → patient safety issues
- All ordering is paper-based
- Results followup mostly paper-based

Inability to analyze at clinic/population level

Inefficiencies

- eg. 15% no show rate

The Plan

Create a complete single, city-wide Clinical Information System for all Ambulatory patients at HHS and SJHH, which is:

- optimized for the care of patients in the ambulatory setting
- integrated with our hospital information systems

Background

- Clinical need for outpatient CIS recognized in 2011
- RFI 2011, RFP 2012
- Lead vendor **Epic** chosen May 2013
- Contract signed July 2013
- Set up, adopt, customize 2013-2014
- Began implementation Oct 2014

Bringing
clinics and
community
together

What is PatientLink?

PatientLink is a digital outpatient system that improves health outcomes and patient experiences, reduces clinical error, and provides system-wide access to patient information from both Hamilton Health Sciences and St. Joseph's Healthcare Hamilton.

Accessible

Trustworthy

Intuitive

Leading Edge

Two Separate Academic Centres



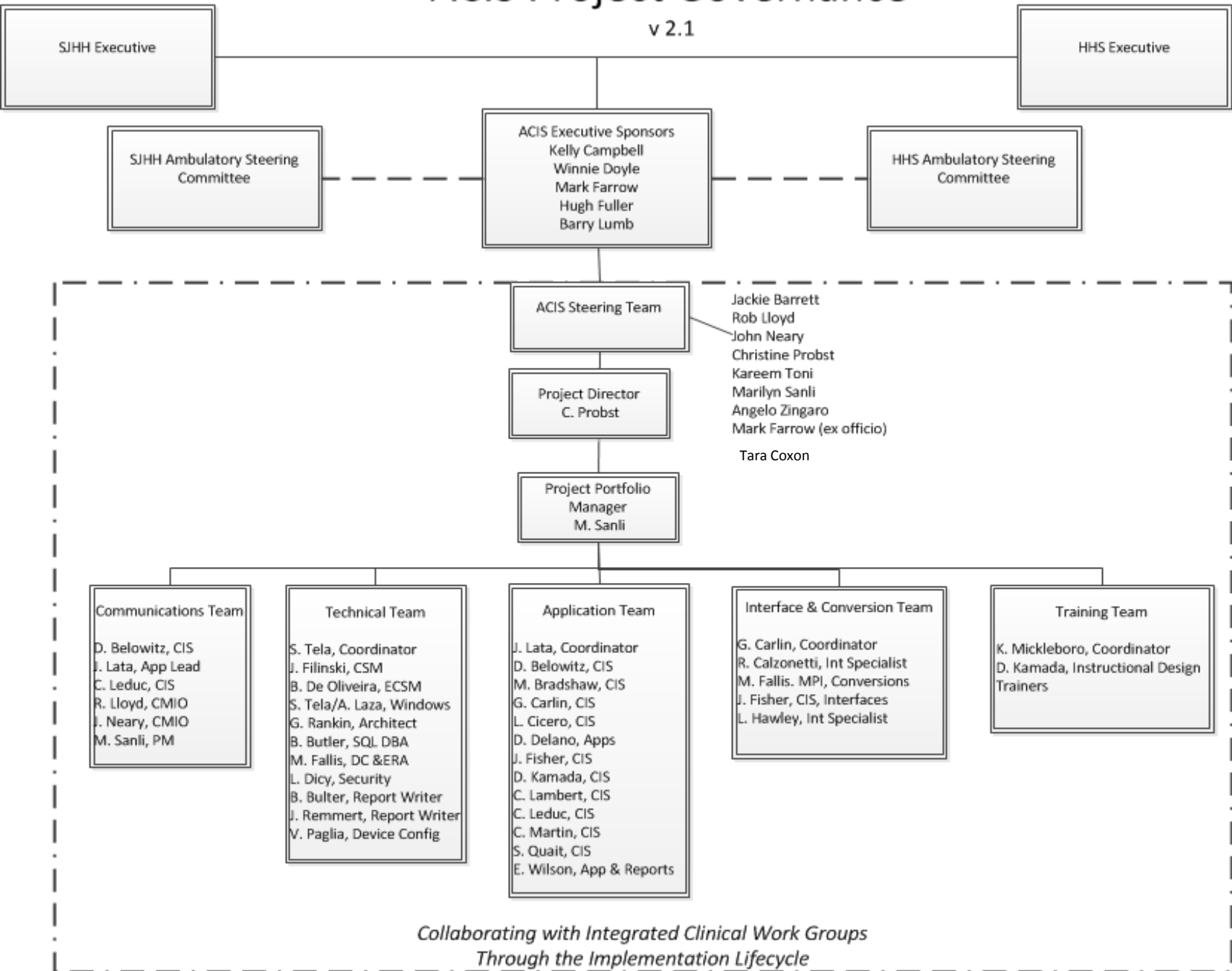
Single

Ambulatory Clinical Information System Platform

One year to build and implement...What could possibly happen?

ACIS Project Governance

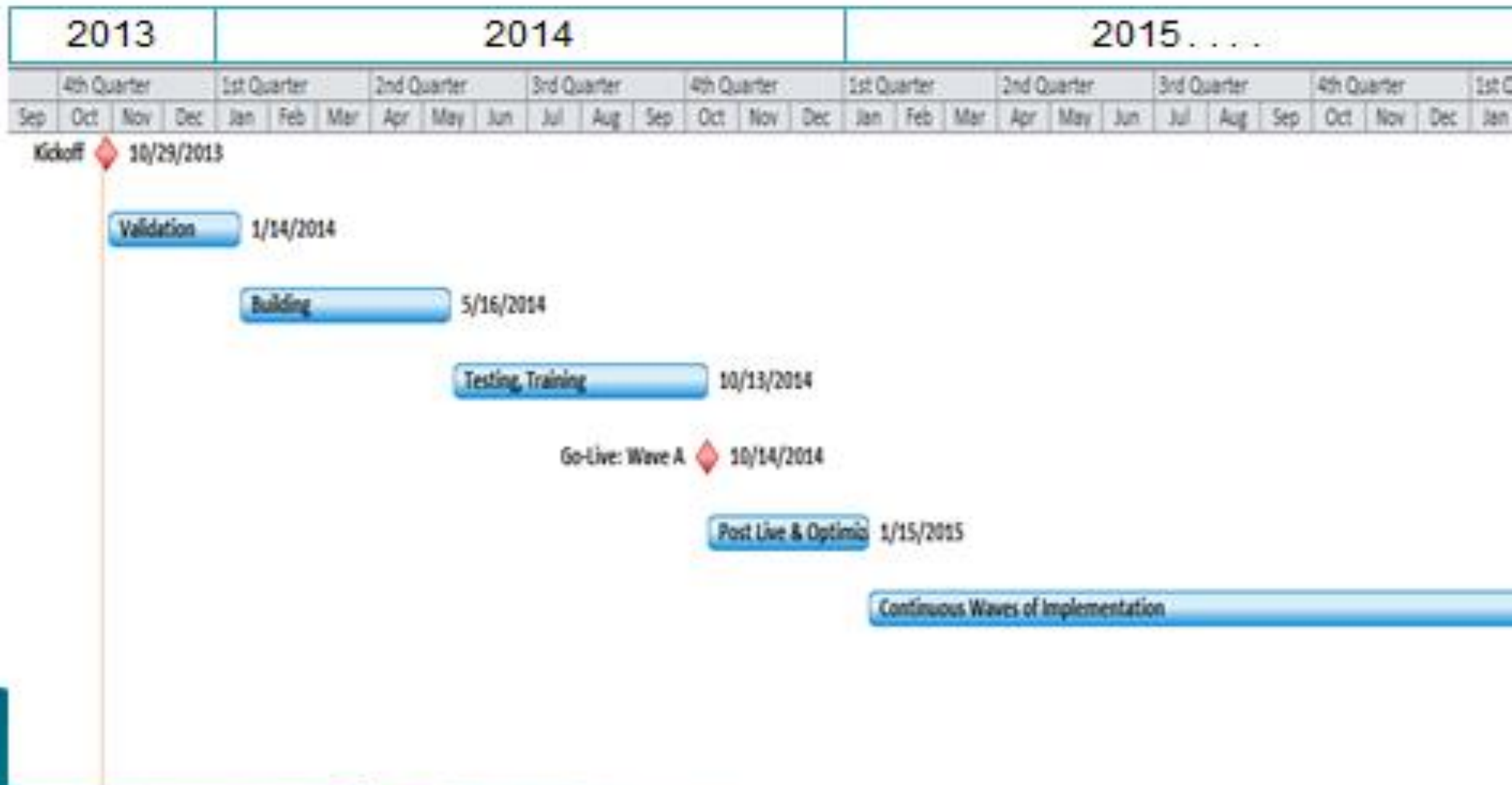
v 2.1



PatientLink Guiding Principles

- Aligned with the Mission, Vision and Values of both SJHH and HHS
- utilize principles of process redesign to optimize workflow, communication, efficiency and safety, while reducing duplication
- guided by best practice and are evidence based
- maximize standardization of processes and procedures while valuing the unique requirements of specialty areas
- adhere to rigorous Project Management methodologies
- inclusive, involving communication, education and opportunities for involvement of all stakeholders, including those from SJHH, HHS and McMaster FHS
- opportunities for collaboration of SJHH and HHS staff
- EPIC products provide the default software platform

Project Timelines



Wave A – Go Live October 21, 2014

SJHH	HHS
Mood Disorders	GIMRAC (Boris Clinic)
Diabetes (W5th & King)	Diabetes & Research (Boris Clinic)
Bariatrics (Surgery & Medicine)	

- >200 clinicians and support staff
- 50 Physicians, Nurse Practitioners and PA
- Project Team > 100 SJHH & HHS Staff & Physicians and Epic
- Support Service Experts including HIM, Privacy, Diagnostic

Technical Integration

- **Challenges**
 - Different Citrix environments
 - Separate active directory structures
 - Different access management and support processes
 - Rotating residents

Interface /System Integration

- **Challenges**
 - Different source systems including ADT, Scheduling, DI, PACs, Transcription
 - Common Laboratory System (HRLMP)
 - Separate Interface Engines

Clinical Practice Integration

- **Challenge**
 - negotiating documentation standards, approaches and roles
- **Achieved**
 - Joint documentation standards, approaches and role alignment

- **Challenge**
 - 3 Diabetes sites with different documentation standards, processes and workflows
- **Achieved**
 - Single documentation templates/standards, processes and workflows
 - Learners and Staff Physicians who work at more than 1 site, have same templates/standards, processes and workflows


















Vendor vs Site Approach

EPIC	PatientLink
<ul style="list-style-type: none"> Start with Family Practice 	<ul style="list-style-type: none"> X Academic Specialty Clinics only
<ul style="list-style-type: none"> Use Foundation – minimal customization prior to go live Formal Optimization period for specialty customization 	<ul style="list-style-type: none"> X Foundation plus: <ul style="list-style-type: none"> Standardized Discipline Specific Templates (joint standards) Added Specialty Content prior to go live ✓ Formal Optimization period for further specialty customization
<ul style="list-style-type: none"> All resources must be Epic Certified 	<ul style="list-style-type: none"> ✓ Majority of resources were Epic certified
<ul style="list-style-type: none"> Mandatory end-user training with certification 	<ul style="list-style-type: none"> ✓ Mandatory end-user training – complete practice exercises prior to access to PRD
<ul style="list-style-type: none"> Use Cadence Scheduling 	<ul style="list-style-type: none"> X Used each organization’s legacy Scheduling system
<ul style="list-style-type: none"> Build Freeze – 6 weeks prior 	<ul style="list-style-type: none"> X Build Freeze – 2 weeks prior
<ul style="list-style-type: none"> Foundation Validation Sessions 	<ul style="list-style-type: none"> ✓ Clinic specific workflow and validation needed
<ul style="list-style-type: none"> Foundation Pharmacy Build 	<ul style="list-style-type: none"> X Needed Canadian-ization (e.g. Units, Spelling) <ul style="list-style-type: none"> Pharmacy customization

Project Tools

- **Joint Steering Committee**
- **Joint Executive Sponsors**
- **Build Tracker**
- **Go Live Readiness Assessment**
- **Workgroups – added internal working groups (e.g. Privacy, Health Information Management, MyChart, EpicCareEverywhere etc...)**

Weekly Build Status Reports

<p>Total Workflow and Core Build Complete for Testing</p>	<p>96%</p>		<p>Expected Build Complete</p> <p>100%</p>		<p>Break Down of High Priority Items</p>															
<p>Overall Workflow and Core Build Complete</p>	<p>72%</p>		<p>Expected Build Complete</p> <p>Go-Live</p>		<table border="0"> <tr> <td>Build Standards</td> <td>  </td> <td>60%</td> </tr> <tr> <td>GIMRAC</td> <td>  </td> <td>92%</td> </tr> <tr> <td>Bariatric</td> <td>  </td> <td>64%</td> </tr> <tr> <td>Diabetes</td> <td>  </td> <td>65%</td> </tr> <tr> <td>Moods Disorder</td> <td>  </td> <td>91%</td> </tr> </table>	Build Standards		60%	GIMRAC		92%	Bariatric		64%	Diabetes		65%	Moods Disorder		91%
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System Screenshots

Custom History Sections

The screenshot displays the Epic EMR interface for a patient named Amb Validate, Roi. The patient's information includes MRN: -E1991-, HI: 1.727 m, WT: 82 kg, BMI: 27.49 kg/m², and allergies to Penicillins. The visit is dated 22/04/2015 with Nurse Psychiatry, RN for Documentation.

The history section is titled "22/04/2015 visit with Nurse Psychiatry, RN for Documentation" and contains several custom fields:

- Sexually Active:** YES (selected), No, Not Currently. Comment field.
- Partners:** Female (selected), Male.
- Birth Control / Protection:** Abstinence, Coitus interruptus, Condom, Diaphragm, Implant, Injection, Inserts, IUD, OCP, Patch, Post-menopausal, Rhythm, Spermicide, Sponge, Surgical (selected), Other, None.
- Gender Identification:** Gender identity: Male, Female (selected), Intersex, Transgendered. Sexual Orientation: Asexual, Heterosexual (selected), Homosexual, Bisexual.
- Patient and Family Data:**
 - Recent discharge from inpatient visit: YES (selected), No.
 - SDM Name(s):
 - POA personal care: Amb Validate, REG.
 - POA finance: Amb Validate, BTG.
 - Advanced directives: Yes, No, Not assessed (selected).
 - Highest Level of Education Achieved: No schooling / 8th grade or less, Some high school, Technical or trade school, Some college/ university, Diploma/ Bachelor's degree (selected), Graduate degree, Unknown.
 - Employment: Employed, Unemployed, Unemployed, not seeking employment, Unemployed, seeking employment, Retired, Unknown (selected).
 - Income source: Employment, Employment insurance, Pension (DOSP, CPP, OAS) (selected), Social assistance (Welfare), Disability insurance (Private), No income.
 - Occupation:
 - Benefit Coverage: Ontario Drug Benefits, Ontario Works, Trillium, ADP, Private, Other, None (selected).
 - Home environment: Private home/ apartment/ rented room (selected), Board and care, Assisted/ semi independent living, Mental health residence, Group home/ intellectual disability, Psychiatric hospital/ unit, Homeless- with/ without shelter, Longterm care facility, Rehabilitation hospital/ unit, Hospice/ palliative care unit, Acute care hospital, Correctional facility, Other.
 - Person in the home environment: Lives alone, Lives with spouse only (selected), Lives with spouse and others, Lives with child(ren)(not spouse), Lives with others.
 - Support person(s):
 - Patient feels safe at home: YES (selected), No, Not assessed.
 - Community agencies:

At the bottom, there is a "Mark as Reviewed" section with the text "Last Reviewed by Nurse Emergency, RN on 5/8/2008" and navigation buttons for "Restore", "Close", "Previous F7", and "Next F8".

Custom Best Possible Medication History (Adherence)

The screenshot displays the Epic EMR interface for a patient named Testepic, Ralph. The main window shows the 'Best Possible Medication History - Best Possible Medication History' section, which is a custom configuration. This section includes a 'Values By' dropdown set to 'Best Possible Medication History (BPMH)' and a grid of checkboxes for various medication sources and adherence criteria. The grid is as follows:

Category	Options
BPMH collected	<input type="checkbox"/> Yes, <input type="checkbox"/> No, <input type="checkbox"/> Attempted but unable to complete record
Information sources	<input type="checkbox"/> Patient, <input type="checkbox"/> Family, <input type="checkbox"/> Caregiver, <input type="checkbox"/> Ontario Drug Benefit (ODB) Drug Profile Viewer, <input type="checkbox"/> Medication vials, <input type="checkbox"/> Adherence aids, <input type="checkbox"/> Pharmacy medication list, <input type="checkbox"/> Community pharmacy
Denies use of	<input type="checkbox"/> Herbal and natural health products (NHP), <input type="checkbox"/> Over the counter (OTC) products, <input type="checkbox"/> Vitamins, <input type="checkbox"/> Inhalers, <input type="checkbox"/> Nasal sprays, <input type="checkbox"/> Eye drops, <input type="checkbox"/> Ear drops, <input type="checkbox"/> Transdermal patches, <input type="checkbox"/> Topical creams or ointments, <input type="checkbox"/> Injectable drugs, <input type="checkbox"/> Study medications, <input type="checkbox"/> Nutritional supplements, <input type="checkbox"/> Sample medications
Adherence as per patient report	<input type="checkbox"/> Always takes as prescribed, <input type="checkbox"/> Occasional non adherence, <input type="checkbox"/> Frequent non adherence, <input type="checkbox"/> Non compliant, <input type="checkbox"/> Unsure
Adherence as per prescription refills	<input type="checkbox"/> Refills on time, <input type="checkbox"/> Questionable, <input type="checkbox"/> Unable to determine
Adherence aids	<input type="checkbox"/> None-takes from vials, <input type="checkbox"/> Blister package, <input type="checkbox"/> Dosette, <input type="checkbox"/> Alarm, <input type="checkbox"/> Reminders from others
Blister pack or dosette filled by	<input type="checkbox"/> Self, <input type="checkbox"/> Family/caregiver, <input type="checkbox"/> Pharmacy, <input type="checkbox"/> Not applicable
Medications administered by	<input type="checkbox"/> Patient, <input type="checkbox"/> Family, <input type="checkbox"/> Caregiver

Below the grid, there are buttons for 'Restore', 'Close', 'Cancel', 'Previous', and 'Next'. The 'History' section at the bottom shows 'Medical History' and 'Surgical History' both as 'None'. The right sidebar contains various clinical sections like 'Specialty Comments', 'Vitals', 'Allergies', 'Medical History', 'Surgical History', 'Family History', 'Problem List', 'Medications', 'Immunizations/Injections', 'Reminders and Results', 'Health Maintenance', and 'Care Team and Communications'. The status bar at the bottom shows 'PHYSICIAN P.' and the time '12:57 PM'.

Custom Mental Health Assessment Scales (e.g. HAM-D)

Hyperspace - POC - STJW5 MOOD DISORDERS - PHYSICIAN P. - PSYCHMD

Epic Patient Station Telephone Call Refill Enc My Reports Remind Me Personalize

Testepic, Ralph MRN: 0001473017 BMI: None Allergies: Not on File Care Team: Primary Ins.: None FYI: (None)
 Male, 22 y.o., 24/08/1992 CSN: 33361 Patient FYIs: None Outside Info: None
 PCP: Minuzzi, Luciano MyChart: Inactive Pharmacy: None

Flowsheets

Vital signs HAM-D YMRS HAM-A BDI Total Score Montreal Cognitive As... Edinburgh Postnatal D... SMMSE MADRS Depression Scale TMS Treatment Sheet Occupational/Performa... HAM-D

Mode: Accordion Expanded View All

Item	Score	Office Vi...
Total Score		22/04/15 1200
Hamilton Rating Scale for Depression		
Depressed Mood	3	
Work and Activities	3	
Genital Symptoms	1	
Somatic Symptoms (Gastrointestinal)	2	
Loss of Weight	1	
Insomnia Early	2	
Insomnia Middle	2	
Insomnia Late	1	
Somatic Symptoms (General)	1	
Feelings of Guilt	0	
Suicide	1	
Anxiety (Psychological)	3	
Anxiety (Somatic)	2	
Hypochondriasis	2	
Insight	2	
Retardation:Psychomotor	1	
Agitation	2	
Total Score		
HAM-D Total Score	29	

Value Information
 29
 Taken by:
 Physician Psychiatry, MD at 22/04/15 1200 (today)

AMB Sidebar Report
 Current as of: Wed 22/4 12:53 PM. Click to refresh.

Specialty Comments Edit Show All Report
 No comments regarding your specialty

Vitals No data recorded

Allergies Not on File
[Open Allergies Activity](#)

Medical History None

Surgical History None

Family History None

Problem List None
 Mark as Reviewed Never Reviewed

Medications None
 Mark as Reviewed Never Reviewed

Immunizations/Injections None

Reminders and Results None

Health Maintenance Postponed
 Soon Due Late
 None

Care Team and Communications
 Referring Provider
 No referring provider set
 PCPs Type
 Luciano Minuzzi, MD

PHYSICIAN P. My Open Charts My Open Encounters My Incomplete Notes Canceled Ord Cosign - Clinic Orders Letter Queue My Unsigned Orders Patient Reports

1:00 PM

Custom Physical Exam

Hyperspace - POC - SJH DIABETES - PHYSICIAN E. - ENDOMD

Results My Open Charts My Open Encounters Overdue Results

Epic Patient Station Chart Telephone Call Refill Enc My Reports Remind Me Personalize

Test, Amb PCP: None MRN: 0001350191 BMI: None Allergies: Not on File Primary Ins.: None Pharmacy: None
Female, 50 y.o., 02/02/1965 CSN: 35815 Patient FYIs: None Outside Info: None

NoteWriter

Copy Note Copy Physical Exam Clear All

HPI ROS Physical Exam Edit Note

Basic Const HENT Eye Lymph Neck Cardio Vasc Chest Abd GU Musc Neuro Skin Foot Psych

vital signs reviewed nursing note reviewed

Constitutional <input type="checkbox"/> well-developed <input type="checkbox"/> well-nourished <input type="checkbox"/> diaphoretic <input type="checkbox"/> distressed HENT <input type="checkbox"/> normocephalic <input type="checkbox"/> no external signs of trauma <input type="checkbox"/> right external ear normal <input type="checkbox"/> right TM nl <input type="checkbox"/> left external ear normal <input type="checkbox"/> left TM nl <input type="checkbox"/> oropharynx clear and moist <input type="checkbox"/> nose normal <input type="checkbox"/> oropharyngeal exudate Eyes <input type="checkbox"/> PERL <input type="checkbox"/> EOM normal <input type="checkbox"/> conjunctivae normal Right Left <input type="checkbox"/> discharge <input type="checkbox"/> discharge <input type="checkbox"/> scleral icterus Neck <input type="checkbox"/> ROM normal <input type="checkbox"/> supple <input type="checkbox"/> thyromegaly	Cardiovascular <input type="checkbox"/> normal rate <input type="checkbox"/> regular rhythm <input type="checkbox"/> heart sounds normal <input type="checkbox"/> intact distal pulses <input type="checkbox"/> murmur <input type="checkbox"/> rub <input type="checkbox"/> added sound <input type="checkbox"/> peripheral edema Pulmonary <input type="checkbox"/> effort normal <input type="checkbox"/> breath sounds normal <input type="checkbox"/> respiratory distress <input type="checkbox"/> wheezes <input type="checkbox"/> crackles <input type="checkbox"/> chest tenderness Abdominal <input type="checkbox"/> soft <input type="checkbox"/> bowel sounds normal <input type="checkbox"/> distension <input type="checkbox"/> tenderness	Genitourinary/Anorectal <input type="checkbox"/> vagina normal <input type="checkbox"/> uterus normal <input type="checkbox"/> guaiac result <input type="checkbox"/> vaginal discharge Musculoskeletal <input type="checkbox"/> ROM normal <input type="checkbox"/> tenderness <input type="checkbox"/> edema Neurological <input type="checkbox"/> alert <input type="checkbox"/> oriented x 3 <input type="checkbox"/> DTRs normal <input type="checkbox"/> cranial nerve deficit <input type="checkbox"/> abnormal coordination <input type="checkbox"/> abnormal DTRs <input type="checkbox"/> abnormal tone Skin <input type="checkbox"/> warm <input type="checkbox"/> dry <input type="checkbox"/> erythema <input type="checkbox"/> pale <input type="checkbox"/> rash Psychiatric/Behavioral <input type="checkbox"/> mood/affect normal
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Chart Review
Synopsis
Rooming
Flowsheets
Notes (2)
NoteWriter
Plan
Wrap-Up
More Activities

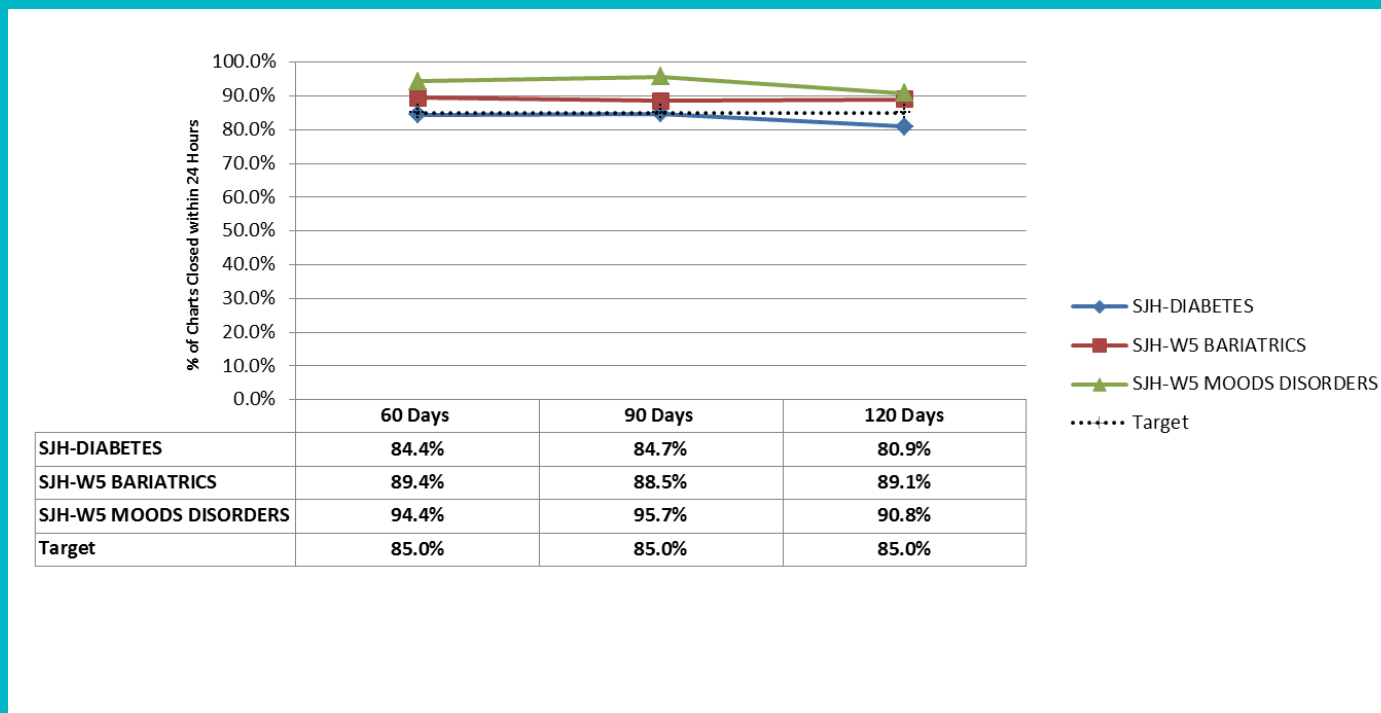
Benefits Evaluation

Benefit A: Percentage of Unique Patient Visits Completed within 24 hours (SJH)

Description: This metric calculates the percentage of a clinician's visits that were closed on the day of the visit (Target: 85%).

Purpose: The purpose of this metric is to evaluate the percentage of clinician visits that were completed within the same day as the patient's appointments. Patient charts that are unnecessarily opened beyond 24 hours of the patient visit can negatively impact reimbursement time and continuum of care.

Summary of Time Series for St. Joseph Healthcare



- Closing of the encounter signals that all clinical documentation, orders and outgoing communications are complete
- This indicator is on target

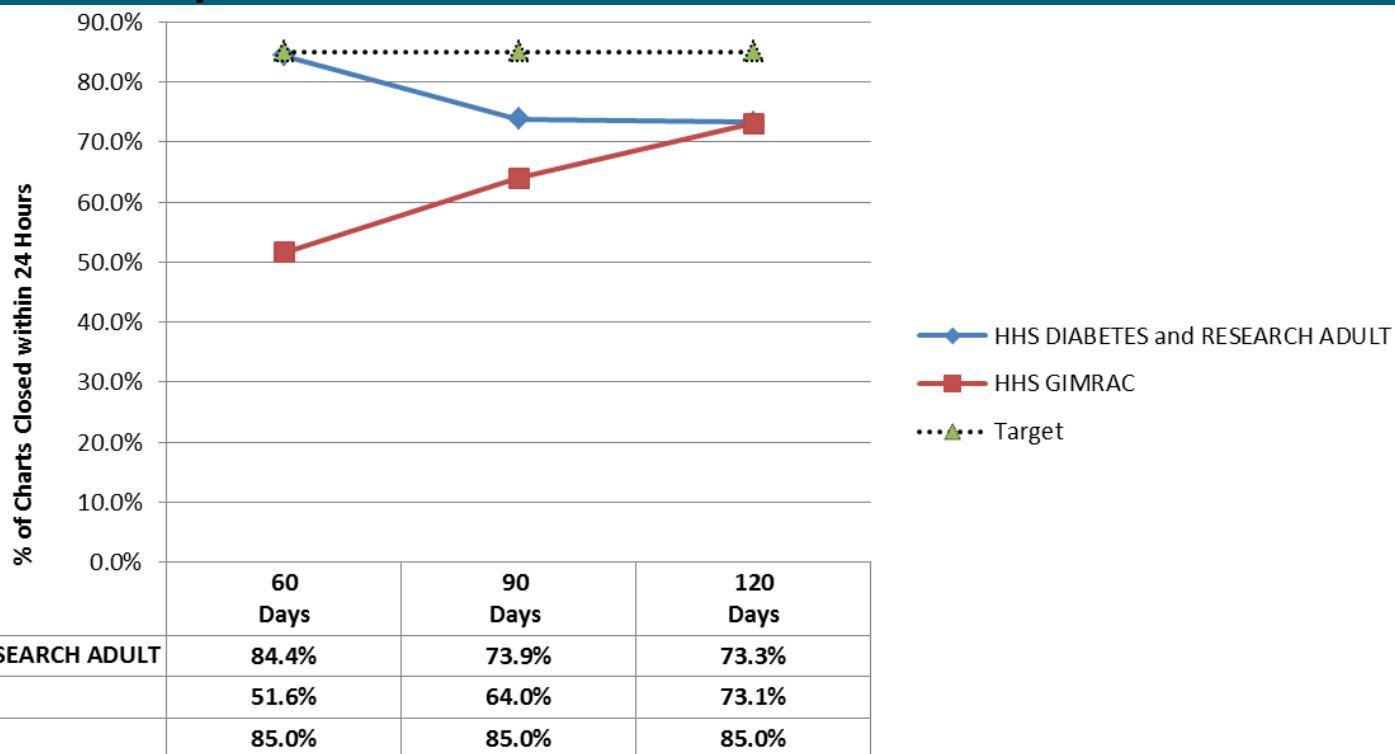


Benefit A: *Percentage of Unique Patient Visits Completed within 24 hours (HHS)*

Description: This metric calculates the percentage of a clinician's visits that were closed on the day of the visit (Target 85%).

Purpose: The purpose of this metric is to evaluate the percentage of clinician visits that were completed within the same day as the patient's appointments. Patient charts that are unnecessarily opened beyond 24 hours of the patient visit can negatively impact reimbursement time and continuum of care.

Summary of Time Series for Hamilton Health Sciences



- Initial interface issues caused additional encounters to be opened which increased the number of open encounters for the HHS clinics
- It has since be resolved
- Some progress towards the target has been made

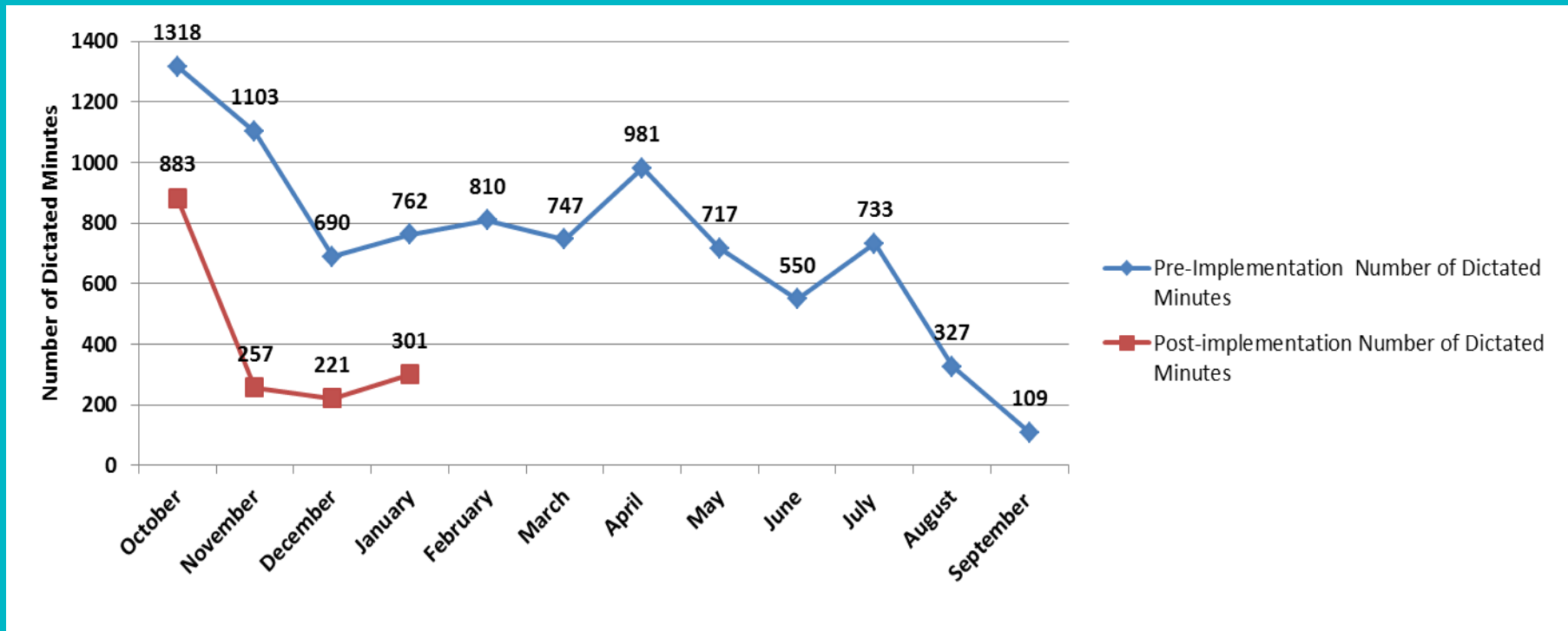


Benefit D: Average Number of Transcribed Minutes Per Dictated Report (SJH)

Description: This metric calculates the average number of transcribed minutes per dictated report

Purpose: The purpose of this metric is to examine the change in average number of transcribed minutes per dictated report. It is expected that the average number of transcribed minutes per dictated report will decrease as providers use Patient Link's documentation tools

Summary of Time Series for St. Joseph Healthcare



- Total # of Dictated Minutes Volume is for all Ambulatory – not just Wave A clinics

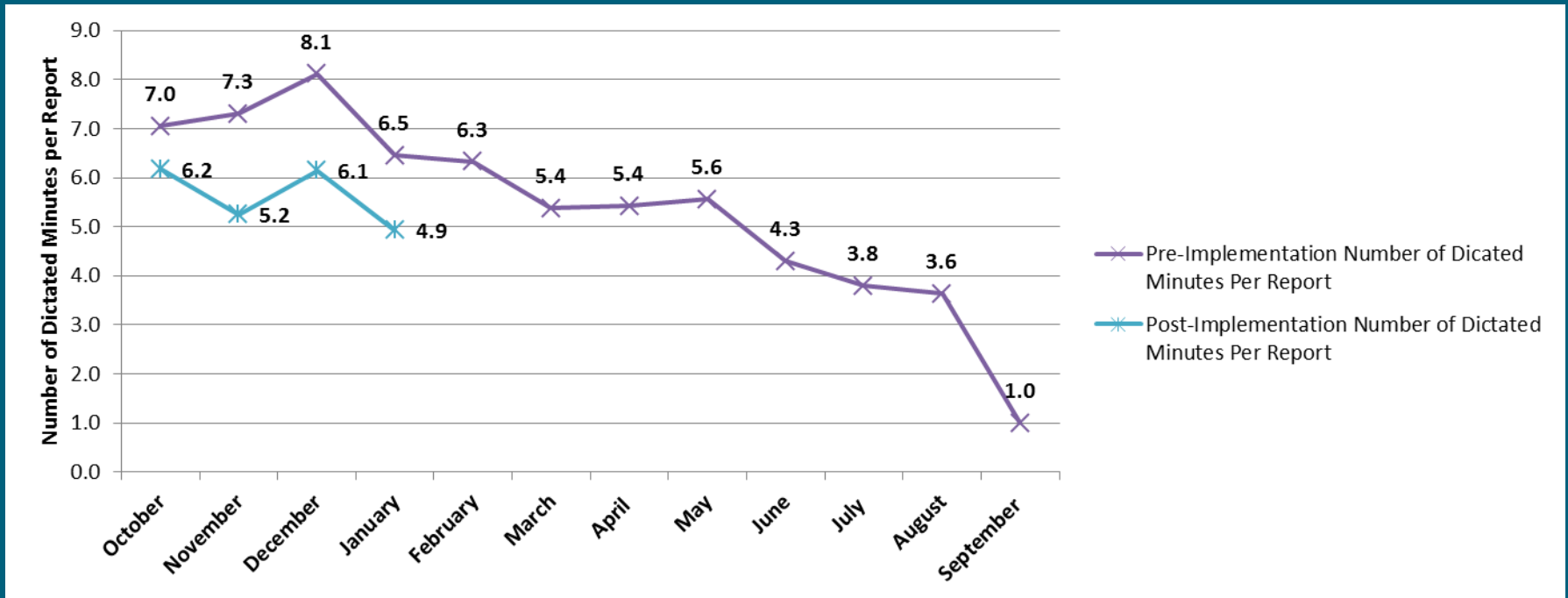


Benefit D: Average Number of Transcribed Minutes Per Dictated Report (SJH)

Description: This metric calculates the average number of transcribed minutes per dictated report

Purpose: The purpose of this metric is to examine the change in average number of transcribed minutes per dictated report. It is expected that the average number of transcribed minutes per dictated report will decrease as providers use Patient Link's documentation tools

Summary of Time Series for St. Joseph Healthcare



- Total # of Dictated Minutes Volume per Dictated Report are for all Ambulatory clinics – not just Wave A clinics



Lessons Learned

Things we did well...

- Bringing together two separate organizations and creating one set of standards. Included:
 - 2 Health Records committees
 - 2 Privacy committees
 - 2 ADT departments
 - 2 Lab processes
 - 2 DI processes
 - 2 Executive
 - 2 Interface teams
 - 2 Device Deployment Teams
- Standardization of clinical build between the 2 organizations
 - 3 diabetes clinics → 1 standard
- Committed and dedicated team – project, clinics and vendor
- CRL relationships with clinics
- Detailed Process Mapping
- Adjust approach for specialties

Things we did well...

- Steering Committee – cross site and cross disciplinary, very responsive and engaged
- Overall Physician Adoption
 - Engagement and leadership of the CMIOs
- Technical Dress Rehearsal and Clinical Dress Rehearsal
- Overall Go Live Support structure
 - Command Center – responsiveness to calls/issues; single point of contact ; triage
 - Daily Debriefing – opportunity for clinic voice/engagement
 - Go Live Issue Log – to track status of issues
 - Executive Support visible at “troubled” areas
 - Rapid Resolution to Go Live Issues – quick, visible and noticed
- Defined Optimization Plan with the agile rollout of quick wins

Things we need to improve

- Interfacing
 - challenges with scheduling and allergies
 - awaiting Meditech → Epic contextual launch
- Consolidate and shorten End-User Training
 - better focus on clinic specific workflows
 - respect the “build freeze” dates
- Allow more time for Integrated Testing
- Improve clinic specific current workflow analysis

Things we need to improve

- Improve post-live communication with users
 - Getting feedback
 - Updates re improvements
- Enterprise Voice Recognition (\$)
- Partial dictation uptake has been smaller than expected –investigate.
- Alerts management process
- Use of Messaging
- Problem List management

QUESTIONS?