

EMR Implementation Readiness Assessment and Patient Satisfaction

Kasey Parker, Evaluation Lead and Report Writer

Catherine Campbell, Human Factors Lead

Anne-Marie Parent, Change Management Lead

Dr. Jim King, Physician and CMIO



Objectives

During EMR implementation we evaluated:

- ❖ Readiness and technical adoption
- ❖ Provider adoption, use and satisfaction
- ❖ Patient/family satisfaction



No Conflict of Interest to declare

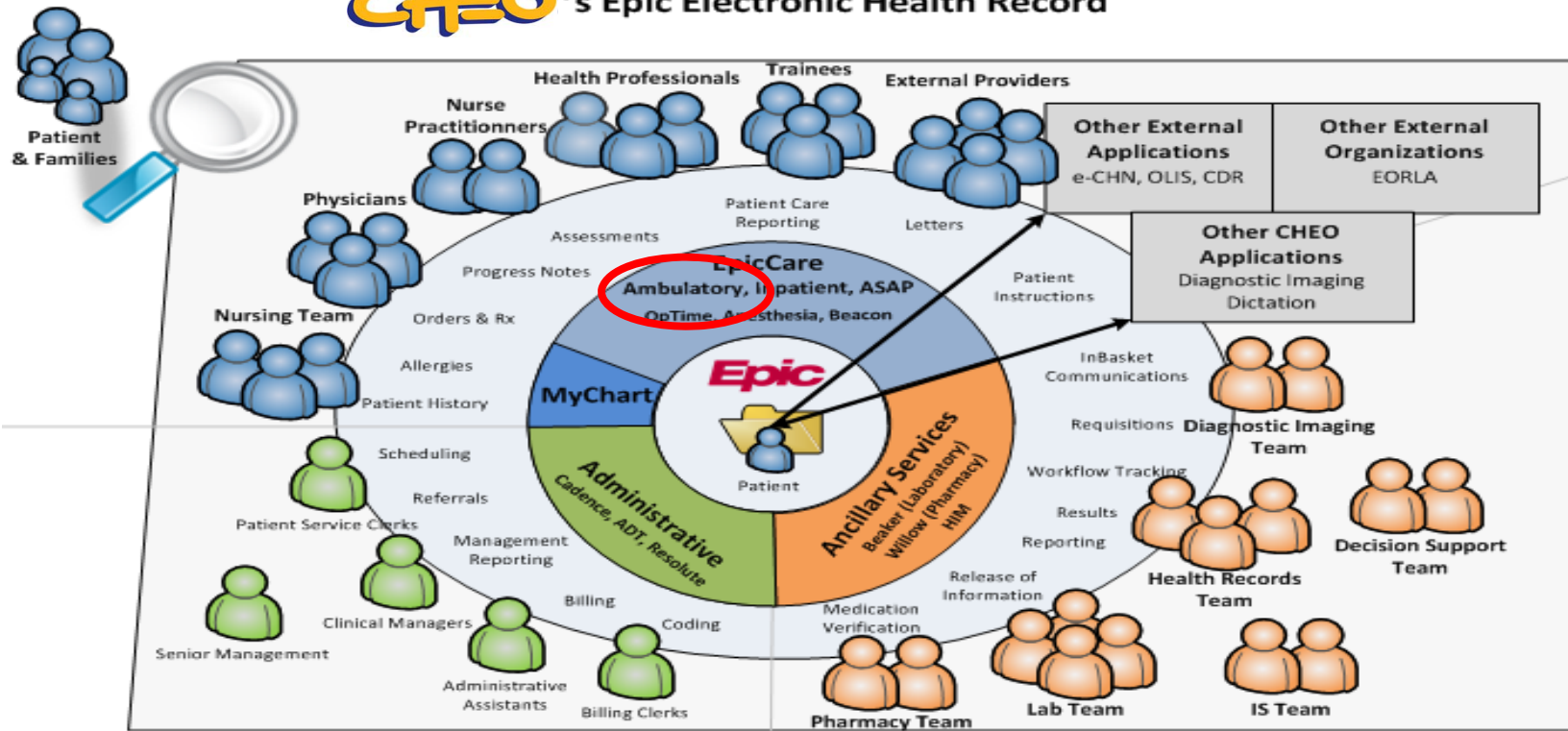


Children's Hospital of Eastern Ontario

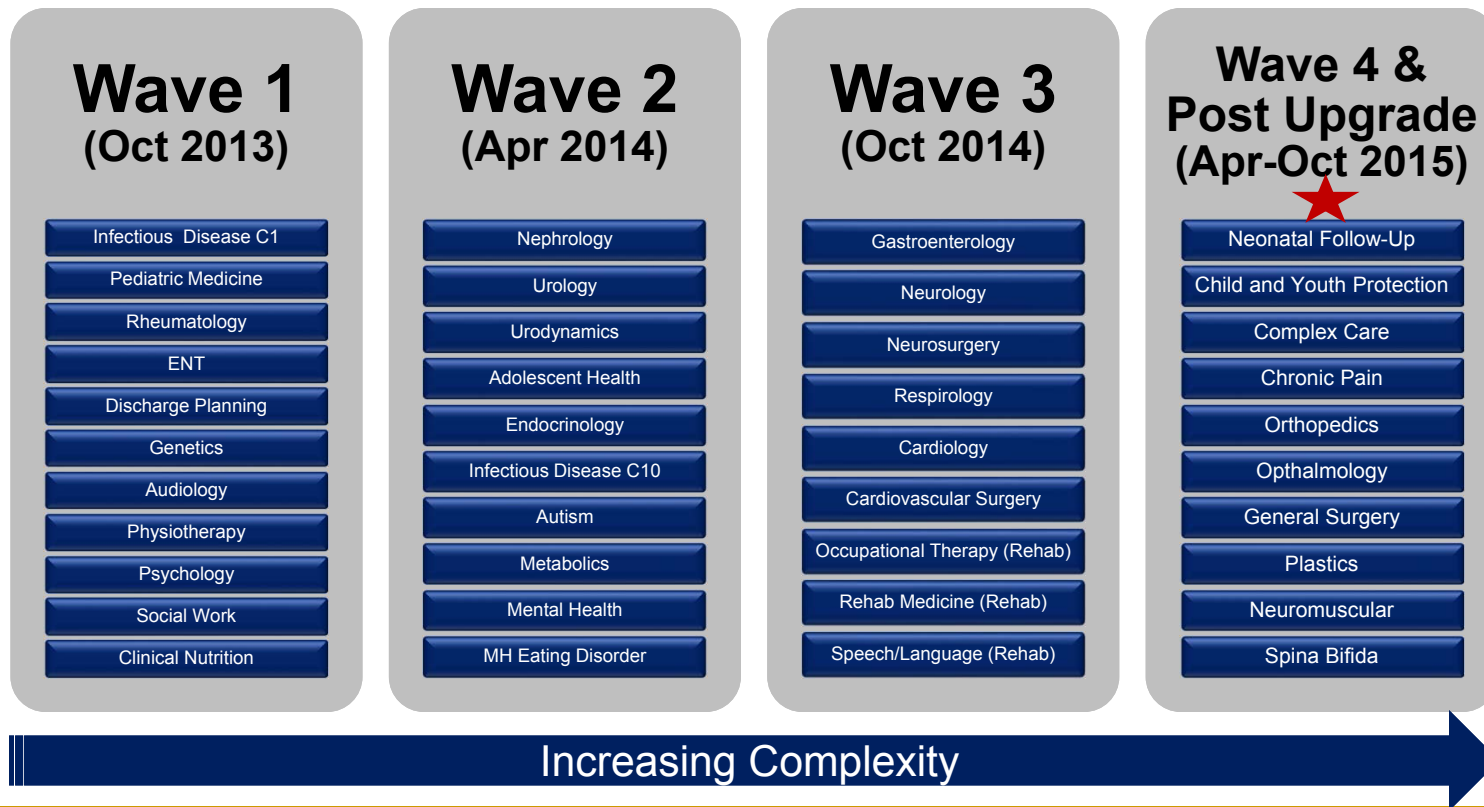
- ❖ 167 bed tertiary care pediatric hospital
- ❖ Referral Base: ~ 2 million
 - Pediatric Care to National Capital Region and Eastern Nunavut
 - Regional trauma center and Level III NICU
 - 194,000 outpatient visits to 63 specialty clinics
- ❖ Enterprise Epic implementation
 - EpicCare Ambulatory
 - Epic lab: Beaker
 - Patient Access and Revenue Cycle
 - Patient Health Portal



CHEO's Epic Electronic Health Record



Phase 1: Ambulatory



*100% patients are registered and scheduled

* 83% (33/40) clinics are 'Live' for order entry and clinical documentation

CHEO's Benefits are being Realized



134 pt/proxy accessed their record through MyChart

Patients

BedBoard supporting patient flow



65,559 medication orders
~ 1-2% rapid change/mo

Providers

1,059 unique users/mo
accessed 331,180 records



> 1 million procedure orders
(e.g. lab, DI)
~ 1-2% duplicates/mo

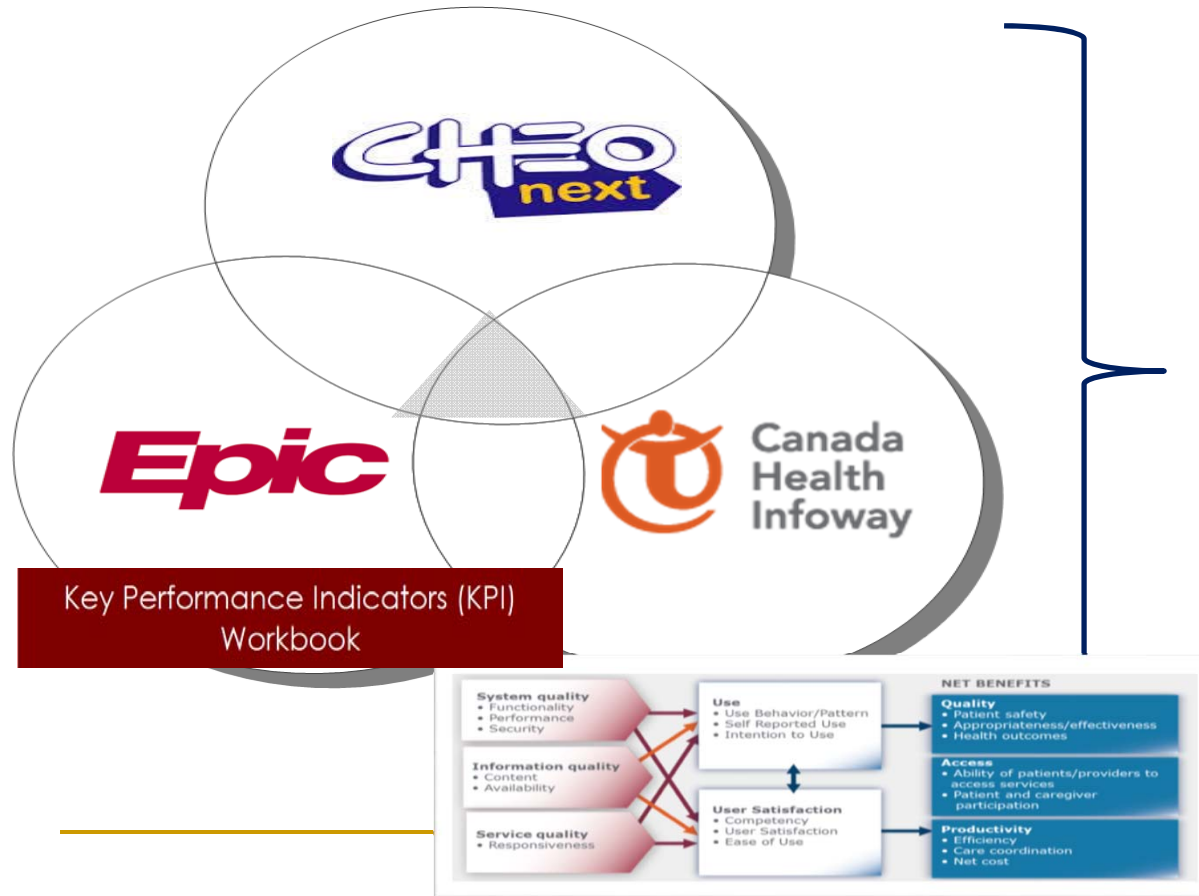
System

> 1 million less lines of transcription in 2014



Up to date as of Apr, 2015

Benefits Evaluation Framework



- ❖ Overarching question => *“What are the benefits (clinical and/or operational) of implementing an EMR system in a pediatric out-patient hospital based setting?”*
- ❖ Multiple evidenced based frameworks and EMR best practices
- ❖ Aligned Epic and CHI’s key performance indicators to CHEO’s strategic objectives

Epic and CHI Performance Indicators by Net Domain (N=12)

System, information, service quality and use/user satisfaction

Provider adoption, use and satisfaction~
(EHR Readiness Assessment)

Improved office/clinic efficiency

Percent result messages marked completed within 24 hours

Impact on transcription lines (n-lines)

Impact on transcription costs (CAD currency)

Impact on chart pulls (n-pulled)

Time to third available appointment (days)

Improved capacity to assess performance/ conduct quality improvement

Encounter cycle time: check-in/out (hh:mm)

Percent of charts returned the same day as the patient's appointment (WinRecs)*

Percent of encounters closed same day of patients appointment (Epic)^

Percent open closed encounters within 5 days

Improved patient access

Percent visits with a printed after visit summary (AVS)

Patient Satisfaction~

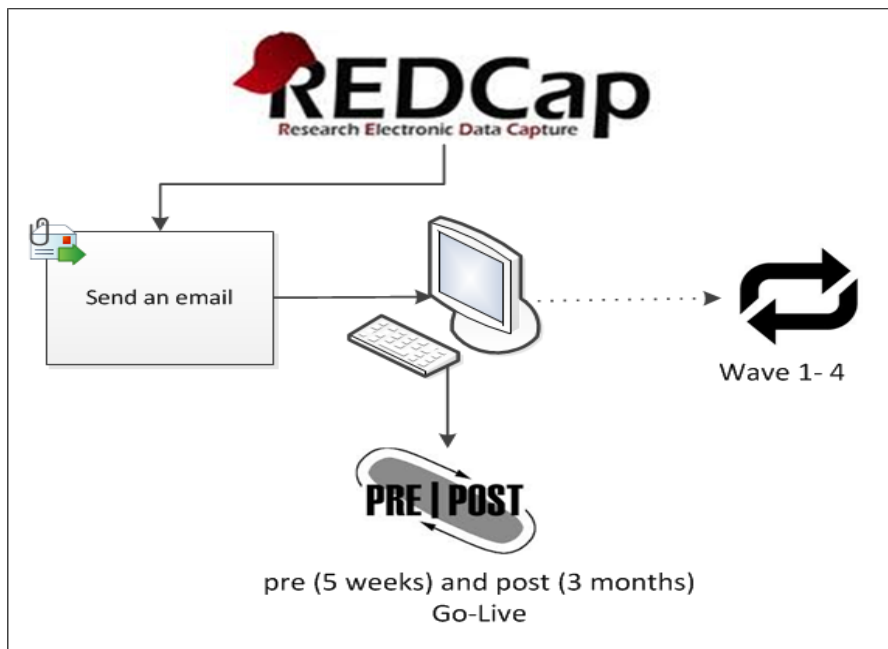
*Charts can be returned regardless if clinical documentation is complete

^Charts are returned/closed when: 1) diagnoses (or suspected) recorded; 2) charges dropped; and 3) progress note written (no restrictions)

~Qualitative metric collected via questionnaire

* Based on CHI BE Framework (Lau et al 2009 -- adapted from the DeLone and McLean information system success model)

Epic EHR Readiness Assessment: Overview of Methods and Questionnaire



Section 1: Background (11 questions)

- e.g. role, department, education activities, computer sophistication

Section 2: Likert Scale (57 questions)

- scale: strongly agree to strongly disagree (5-point scale +1 n/a option)
- 9 themes: e.g. leadership accountability, training, Epic EHR usefulness and friendliness

Section 3: Open Text (2 questions)

- opportunity to address concerns and benefits

**Run period: 3 weeks with up to 2 reminders*

Epic EHR Readiness Assessment: Design Components

- ❑ Derived from questionnaires previously validated and applied in a physician based healthcare setting

- ❑ Three (3) main sources were utilized to acquire:
 - ❖ Contextual/technical acceptance¹;
 - ❖ Readiness assessment²; and
 - ❖ Relational (technical/physician) factors³

- ❑ Pilot tested in a diverse group of project team members for face-validity:
 - ❖ Application Coordinators
 - ❖ Change Management Lead
 - ❖ EHR Research Team members
 - ❖ Human Factors BSA
 - ❖ Physician end user



¹Morton et al 2008, ²CHI Change Implementation Success Factors: Risk and Readiness Assessment, 2012 and ³Davis et al 1989 and Chutter et al 2009

Patient Satisfaction: Methods and Questionnaire

- Engaged and collaborated with Patient/Family Centred Care team
- Added 19-question insert into the existing CHEO “Bear” patient satisfaction questionnaire (REB 13/96x)
- Collected pre (6 weeks) and post (3 months) Go-Live for each Wave
- Run period = 5 weeks
- Sent questionnaire to ALL patients/families that completed an appointment

CHEO's OUTPATIENT/FAMILY QUESTIONNAIRE

Children's Hospital of Eastern Ontario
Centre hospitalier pour enfants de l'est de l'Ontario
401 Smyth Road, Ottawa
www.cheo.on.ca

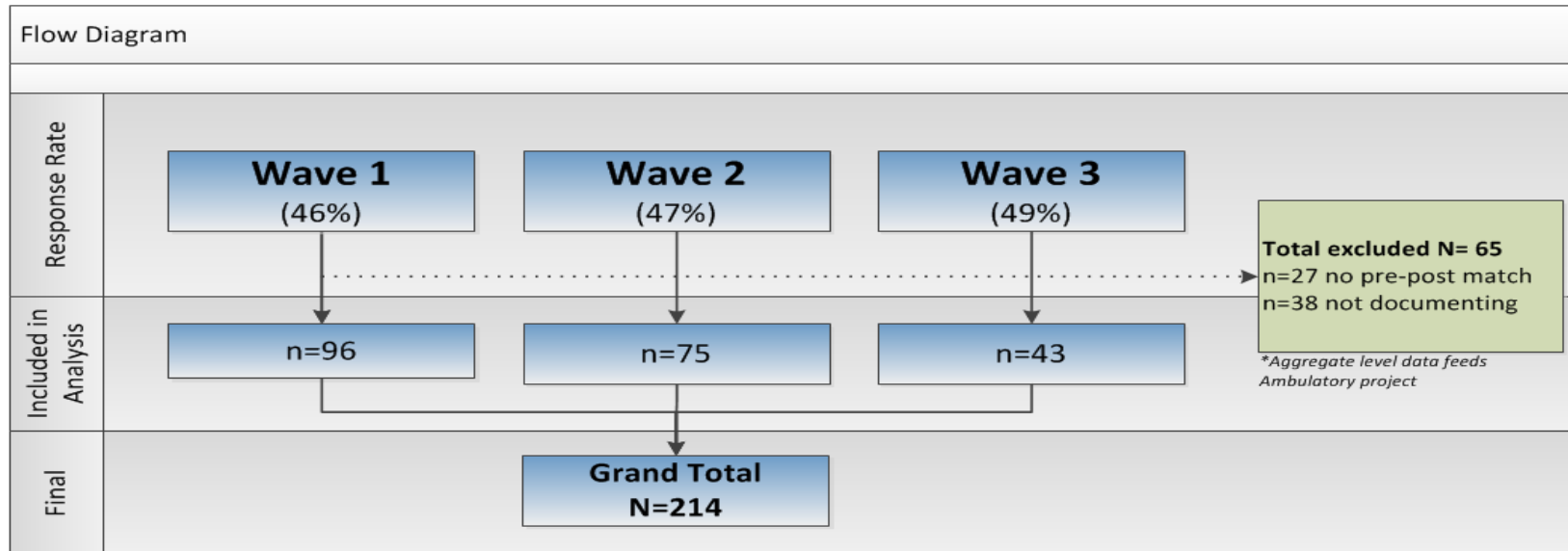
CHEO Epic

Please check off the response that best describes your most recent visit to an outpatient clinic at CHEO.

- 1. My care provider used the computer during my visit to enter notes.**
 Yes No
- 2. My care provider used the computer during my visit to share information with me.**
 Yes No
- 3. My care provider used the computer during my visit to look up test results.**
 Yes No
- 4. Did the computer work properly during the visit?**
 Yes No
- 5. My care provider gave me health information handouts.**
 Yes No
- 6. My care provider focused more on the computer screen than on me during the visit.**
 Agree Neither agree nor disagree
 Disagree NA
- 7. The use of a computer in the exam room improved the quality of care I received.**
 Agree Neither agree nor disagree
 Disagree NA
- 8. Having the computer in the exam room was helpful.**
 Agree Neither agree nor disagree
 Disagree NA
- 9. It was easy to talk to my care provider during the visit.**
 Agree Neither agree nor disagree
 Disagree NA

* Questions adopted from Zurovac et al 2012 and Lelievre et al 2010

Epic EHR Readiness Assessment: Flow Diagram



Epic EHR Readiness Assessment: Background Results

Gender	<ul style="list-style-type: none">• 85% female; 14% male; 1% missing value
Age	<ul style="list-style-type: none">• 26% 30 - 39 years; 28% 40 - 49 years; 27% 50 - 59 years
Healthcare Role	<ul style="list-style-type: none">• 32% Health Professional / Trainee; 22% Nurse / Nurse Practitioner; 12% Physician
Years of Service	<ul style="list-style-type: none">• 50% more than 15 years
Relationship to CHEO	<ul style="list-style-type: none">• 69% full time employee / full-time hours at CHEO
Computer Sophistication	<ul style="list-style-type: none">• 66% general skills

**Wave 1 (n=96) ; Wave 2 (n=75) and Wave 3 (n=43)*

Epic EHR Readiness Assessment: Key Findings

Case for Change

• **98%** of end users *agreed* that they understand the reasons for implementing the Epic EHR, including improving patient safety and quality of care (\wedge 2%)

Vision Clarity and Strength

• **71%** of end users *agreed* the vision for the Epic EHR creates understanding and excitement about the changes in workflow and practice that need to be made (∇ 5%)

User Engagement and Involvement

• **68%** of end users *agreed* the communication about the project is clear and consistent, regardless of who is delivering the message (∇ 3%)

Percent (%) Agreement (all Waves N=214) Question	Wave 1 (n=96)				Wave 2 (n=75)				Wave 3 (n=43)			
	Pre	Post	%Change	P-value [^]	Pre	Post	%Change	P-value [^]	Pre	Post	%Change	P-value [^]
1. I understand the reasons for implementing the Epic EHR, including improving patient safety and quality of care	96.9	98	1.1	0.22	98.6	97.3	-1.3	0.68	92.9	97.6	4.7	0.071
6. The vision for the Epic EHR creates understanding and excitement about the changes in workflow and practice that need to be made	72.3	64.9	-7.4	0.01*	75.3	68.5	-6.8	0.08	81	81	0	0.66
16. The communication about the project is clear and consistent, regardless of who is delivering the message	62.6	52.7	-9.9	0.01*	70.8	70.8	0	0.58	81.4	81.4	0	0.19

[^]Marginal Homogeneity test; * $p < 0.05$; ** $p < 0.001$

Epic EHR Readiness Assessment: Key Findings

Provider-Patient Relationship

•End users did not feel that using the Epic EHR increased patient satisfaction with the quality of health care he/she receives (▼29%)

EHR Usefulness

•End users did not feel that the Epic EHR: improved the quality of care they delivered to their patients (▼28%), increased productivity (▼16%) or improved performance (▼14%)

Percent (%) Agreement (all Waves N=214) Question	Wave 1 (n=96)				Wave 2 (n=75)				Wave 3 (n=43)			
	Pre	Post	%Change	P-value [^]	Pre	Post	%Change	P-value [^]	Pre	Post	%Change	P-value [^]
27. Using the Epic EHR has increased patient satisfaction with the quality of health care he/she receives	50	16.7	-33.3	<0.001**	40.6	15.6	-25	<0.001**	47.5	17.5	-30	0.001*
29. Using the Epic EHR for clinical documentation has improved the quality of care I deliver to my patients	66.7	31.8	-34.9	<0.001**	56.1	33.3	-22.8	<0.001**	46.3	19.5	-26.8	0.001*
35. Using the Epic EHR has increased my productivity	37.8	19.5	-18.3	<0.001**	44.6	27.7	-16.9	<0.001**	47.2	33.3	-13.9	0.002*
37. Using the Epic EHR has improved my performance	36.4	19.5	-16.9	<0.001**	36.9	30.8	-6.1	0.001*	31.6	13.2	-18.4	<0.001**

[^]Marginal Homogeneity test; * $p < 0.05$; ** $p < 0.001$

Epic EHR Readiness Assessment: Key Findings

Training

- **76%** of end users *agreed* they received the training they need to be able to understand and use the Epic EHR (▲5%)

EHR User Friendliness / Usability

- **53%** of end users *agreed* it is easy for them to remember how to perform tasks using the Epic EHR (▲15%)

Overall Attitude about the Epic EHR

- **74%** of end users *agreed* that overall, their attitude about Epic EHR use is positive (▼7%)

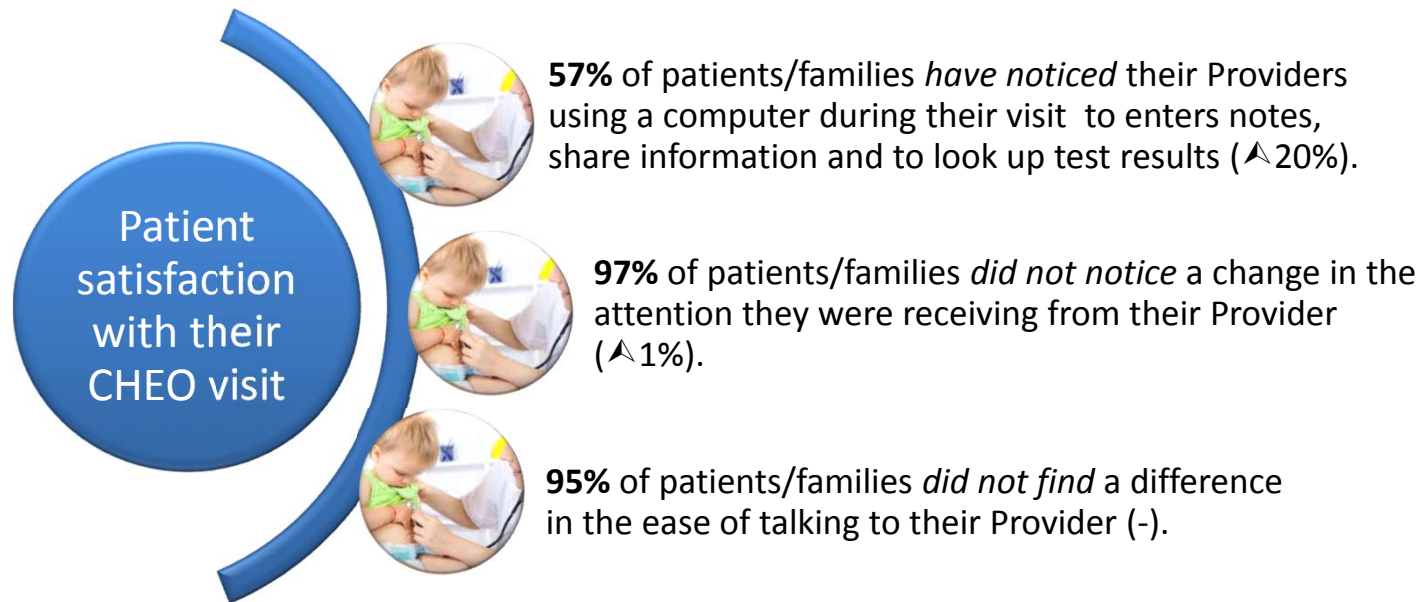
Percent (%) Agreement (all Waves N=214) Question	Wave 1 (n=96)				Wave 2 (n=75)				Wave 3 (n=43)			
	Pre	Post	%Change	P-value^	Pre	Post	%Change	P-value^	Pre	Post	%Change	P-value^
23. I have received the training that I need to be able to understand and use the Epic EHR	58.6	60.9	2.3	0.27	76.1	76.1	0	0.88	76.9	89.7	12.8	0.24
48. It is easy for me to remember how to perform tasks using the Epic EHR	36.4	50.6	14.2	0.04*	41	57.4	16.4	0.12	37.1	51.4	14.3	0.041*
57. Overall, my attitude about Epic EHR use is positive	79.8	65.2	-14.6	<0.001	81.7	77.5	-4.2	0.27	81	78.6	-2.4	0.19

^Marginal Homogeneity test; * $p < 0.05$; ** $p < 0.001$

Patient Satisfaction: Key Findings

Survey sent to 16,998 with 2,253 responses (13%)

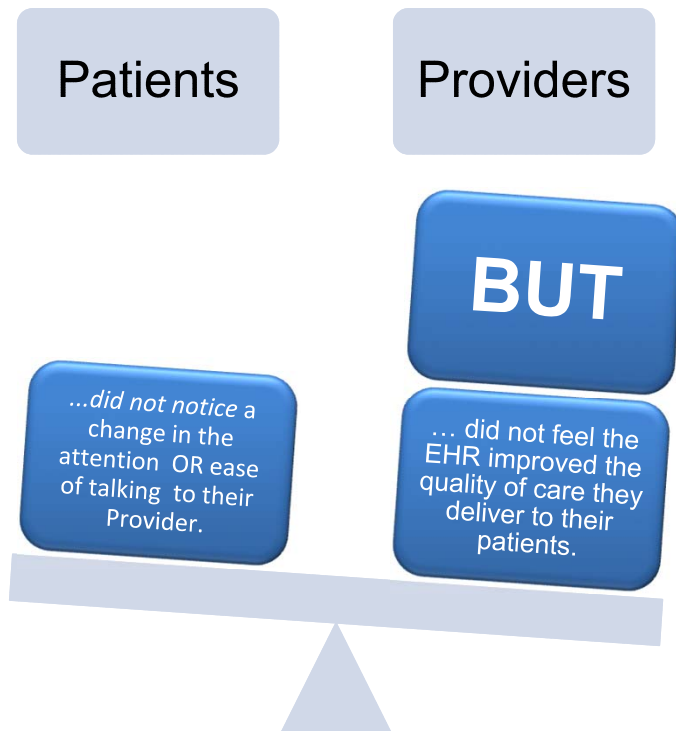
- ❖ 93% of patients/families are familiar with computers



Conclusion

- ❖ Benefits Evaluation (BE) ongoing
 - ❖ Readiness and technical adoption
 - Providers were ready and adapted well
 - strong Change Management and BE
 - trend improving over time with subsequent waves
 - ❖ Provider adoption, use and satisfaction
 - Providers felt EMR impacted quality of care , performance and productivity
 - trend not improving over time with subsequent waves
 - but still supported the implementation
 - ❖ Patient/family satisfaction
 - Did not notice a change in the attention or ease of talking to their Provider
-

Patient versus Provider Perspective



Results are expected at this early stage. We anticipate that it will take 6-12 months post Go-Live to see a true reflection of user experience.

**Anticipate that the 'balance board' will shift in a positive direction*

QUESTIONS



Any questions, please contact Kasey Parker kparker@cheo.on.ca
