

Measuring the Success of Electronic Medical Record Implementation in Primary Care

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Hamilton, Ontario

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Background – Health Care

- Canada
 - Universal access
 - Hospitals, physicians publicly funded
 - Family physician primary gatekeeper
 - Drugs mix of public and private
 - Ontario
 - \$23 billion health care budget
 - \$2.6 billion for drugs – growing at 16%/year
 - Strong health economics base
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Background – COMPETE Project

- **Centre for Evaluation of Medicines (CEM)**
 - Independent Academic Research Institute
 - situated at St. Joseph's Hospital, Hamilton, Ontario
 - affiliated with McMaster University
 - **COMPETE (Computerization of Medical Practices for the Enhancement of Therapeutic Effectiveness)**
 - a three year project to evaluate the impact of EMR on primary care practice efficiency, quality of care, privacy concerns
 - Funded by CIHR, provincial MOH, industry
 - **EMR use is rare in mainstream family practice in Canada**
 - EHR strategy recent initiative of Health Canada
 - Primary care reform underway
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Literature on Implementation Best Practices*

Practice	Score*
Involve multiple stakeholders	27
Training	27
Stable, supportive governance	27
Sell benefits/Address obstacles	24
Develop early planning strategies	24
Problem solving	24
Project leadership	24
Vendor support	21
Workflow design	18
Process of choosing software	15
Provide implementation assistance	15
Customizability of software	6

* Systematic literature review; max score = 33

COMPETE Method of Implementation

- Evolved to a highly structured, hectic 5-week cycle with 5 main activities
 - Sales
 - In-depth site assessment
 - Hardware integration
 - Software applications training and support
 - “Go Live” day and ramp-up
- Post-implementation
 - Case Management
 - Measure data quantity and quality, re-training, hand-holding, practice management
 - Project Management
 - Managing vendors to ensure adequate support of sites

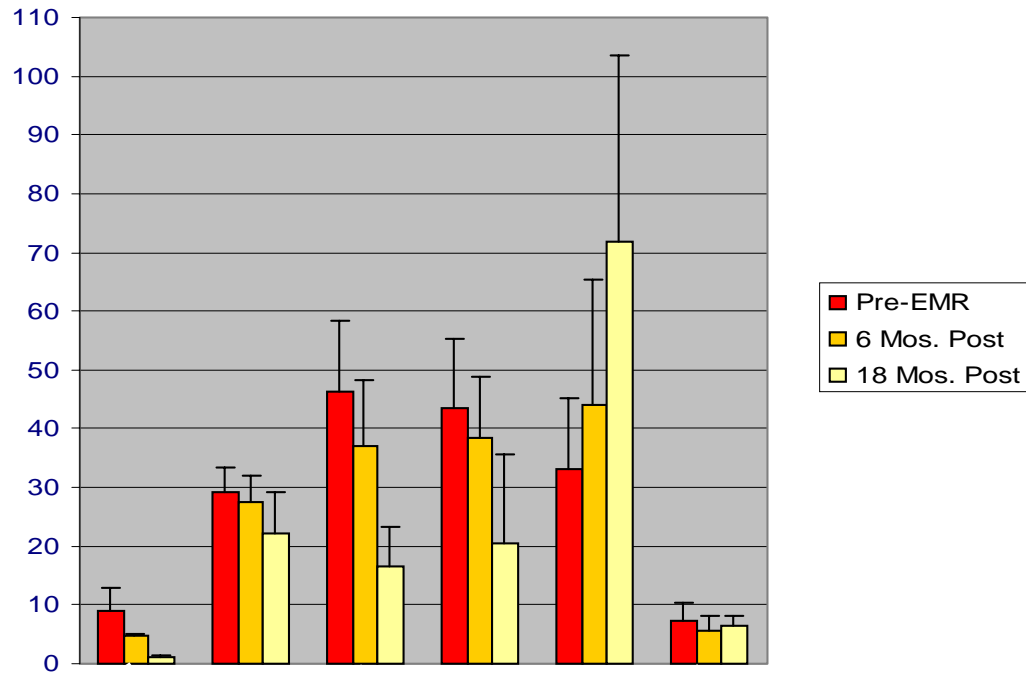
C.O.M.P.E.T.E. EMR Network

- Recruited 32 family physicians, > 100 staff in 18 practices in Hamilton-Niagara area
 - Primary care physicians - fee for service (80%) or HSO; 56% female; mean age = 42 yr
 - Physicians community-based; computer skills varied widely
 - Physician paid a nominal monthly fee
 - Hardware included server, workstations, printers, labelers
 - Software was YM/Purkinje's (DCI) version 1.4
 - Structured template-based EMR, Pen Windows
 - 60% sites had e-lab connections
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Implementation Assessment Tools

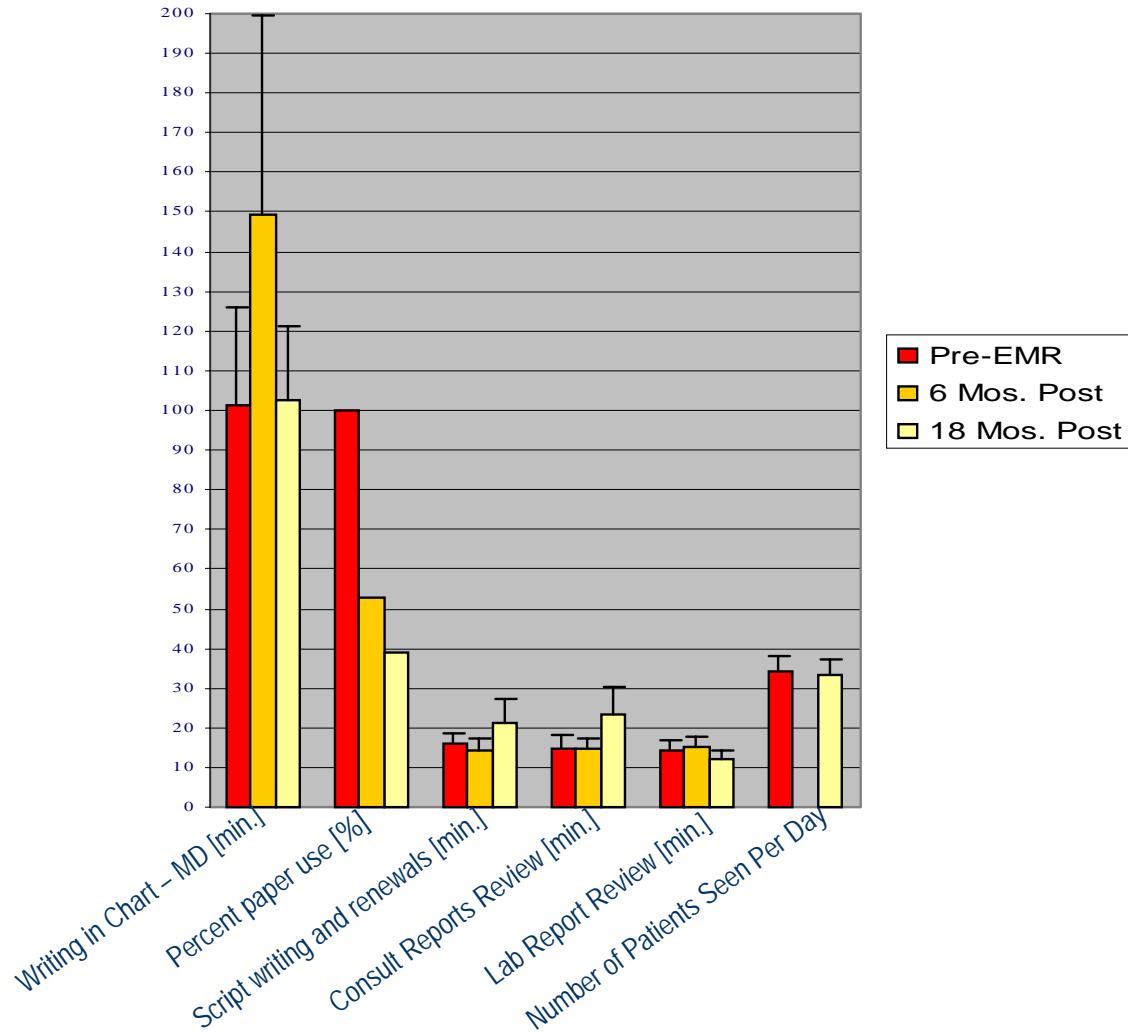
- Nothing suitable published
 - Therefore developed:
 - Self-reports on surveys
 - Direct observation
 - Focus groups
 - Extracted EMR data to corroborate
 - Assisted by professional practice management firm
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Pre/Post EMR Comparisons: Administrative Tasks



Prepare Day Sh
 Pull Charts for Day
 Pull Charts for Day Visi
 Pull Charts for Inquiries
 Writing in Chart -
 Billing Tasks [hours/

Pre/Post EMR Comparisons: Physician Processes



Physician Processes

- Where does the time go?

	Less	Same	More
Do you...			
Work a longer day?	0	12	6
Spend more time charting?	0	6	12
Have work left at day's end?	3	11	4

- Does the patient lose interaction time?
- Is the increased charting time really “cognitive dissonance”
 - With paper, script writing and lab review are not ‘charting’
 - With EMRs, also have decision support

Physician Processes₍₂₎

- Is the time worth it?

	NO	YES
Are you...		
Getting a better quality chart?	7	11
Saving time elsewhere during the day?	3	15

- Where are time savings to be found?

	Number of Replies
Where are you saving time?	
Reviewing E-Lab Results (N=11)	8
Referral Letters automatically done	4
Faster prescriptions/repeat scripts	3
Follow-up notes easier to do	1
Administrative tasks faster	2

Conclusions

- Computerization of small, independent practices is challenging and requires continual support
 - Post-implementation case management can have dramatic effect
 - Benefits of computerization require time to accrue
 - > 1 year for some to achieve the highest level of use
 - Not always time savings
 - Integration increases efficiency
 - Patients may pay a price for computerization initially
 - Few independent physicians currently will tolerate costs or changes that EMR brings
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Future Research Areas

- Focused use of:
 - voice recognition/hand writing recognition/touchscreen technology to aid speed
 - Use of Web conferencing to provide remote “super user” clinician support
 - Standard forms in EMR to aid in charting specific conditions; e.g. well baby visits, special prescriptions
 - Modeling effective communications with patients in EMR practices
 - Automated feedback/tips on computer use, data missing, etc.
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