



The Feasibility of Using Electronic Medical Records to Advance Evidence-based Prescribing

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COMPETE: The Study

- Computerization Of Medical Practices for the Enhancement of Therapeutic Effectiveness
 - A three year project to study appropriateness of prescribing in three areas: MSK/GI and Diabetes
 - To be conducted in a research network of community-based Family Practitioners who use an electronic medical record to capture all clinical, administrating and billing data
 - to conduct a controlled trial of computer-based patient-specific audit and feedback versus usual practice
 - Investigate impact on efficiency, satisfaction and quality of care, especially influence on prescribing



About the Team

- Centre for Evaluation of Medicines (CEM)
 - Independent Academic Research Institute
 - Areas of expertise include therapeutics, pharmaco-epidemiology, pharmacoeconomics, informatics and biostatistics
- COMPETE Project Team
 - Functional team crucial to success
 - Requires mix of clinical, hardware and software, database, business, case management, change management, practice management and research methodology expertise
 - Consistent technical and clinical expertise needed for long-term



Barriers

- Primary Care Physicians are reluctant to move into the Computer Age
 - Lack of sophisticated products
 - No time to investigate
 - Expense
 - Insufficient incentives to change
- Successful implementation of EMRs in Primary Care Practice is difficult
 - < 30% implemented physicians
 - unproven with “real world” products



EMR Software

- Rigorous 18 month process (presented at TEPR and CAPT1998):
 - EMR able to capture discrete data
 - coded, discrete fields throughout
 - Usable interface
 - point-and-click, structured templates
 - Billing, scheduling package for Ontario
 - Able to provide training and support
 - Prescription data depth
 - captures all details including reasons for stopping meds, allergy and drug interaction checks, drug info database



Current Status

- Experience to date:
Successful implementation of 32 physicians and >100 staff at 18 sites
- Mean age 42; 59% female physicians
- Mixture of HSO and Fee for Service
- 12 solos to 1 six-physician practice
- < 1 to 60 km from research centre



Data from COMPETE

- ~ 300,000 patient billings, 160,000 notes, 36,000 pts
- Best charting
 - 70-90% of patients seen charted in EMR
- Diagnoses (N > 156,874)
 - Mean 85% entered with ICD-9CM code
- Medications (N > 128,555)
 - 96% with GPI or DIN code
- Site satisfaction
 - COMPETE team highly regarded
- Research database humming
- Costs are high
 - ~\$50,000 per solo doc, \$35,000 per doc in group practice over 3 years



Top Ten Medications by Generic Drug Name

Top Ten Medications - Generic Name	Total
Acetaminophen-Caffeine w/ Codeine	2.9%
Amoxicillin	2.5%
ASA	1.9%
Salbutamol	1.9%
Estrogens, Conjugated	1.9%
Levothyroxine Sodium	1.8%
Lorazepam	1.6%
Sertraline HCl	1.4%
Rantidine HCL	1.3%
Atenolol	1.2%



Top Ten Diagnoses

Top Ten Diagnoses	Total
arterial hypertension (HTN)	8.40%
diabetes	2.90%
osteoarthritis	2.80%
acute bronchitis	2.20%
anxiety	2.10%
essential hypercholesterolemia	2.00%
normal condition	1.90%
Upper Respiratory Infection (URI)	1.80%
asthma	1.70%
arthritis	1.40%



Implementation Issues

- Initial Implementation of EMR:
 - Laborious but “automated”
 - Up to 10 docs per cycle, 5-week cycles from site assessment to “live”, 5 teams involved
- Support of EMR
 - Sites are very apprehensive; many need extensive ramp-up time and extra post-implementation support
 - Vendor management difficult, time-consuming
 - Vendor support is deficient in timelines and quality
- Solutions:
 - COMPETE team provides additional support, data quality management, vendor management



Conclusions

- COMPETE is a prototype:
 - Promise of major leap forward in health care delivery and evaluation
 - Unique source of detailed health information
 - Current technology and costs limits EMR use in primary care
 - Successful implementation and use is possible but requires:
 - Careful selection of motivated medical practices
 - Organized, tightly coordinated set-up with extensive training and re-training
 - Support beyond current business norm
 - Feedback to users re: data quality
 - Financial subsidy
 - Diffusion of EMRs fully into primary care will require additional technical and change management advances