EMR Cost-Benefit Analysis: Managing ROI into Reality

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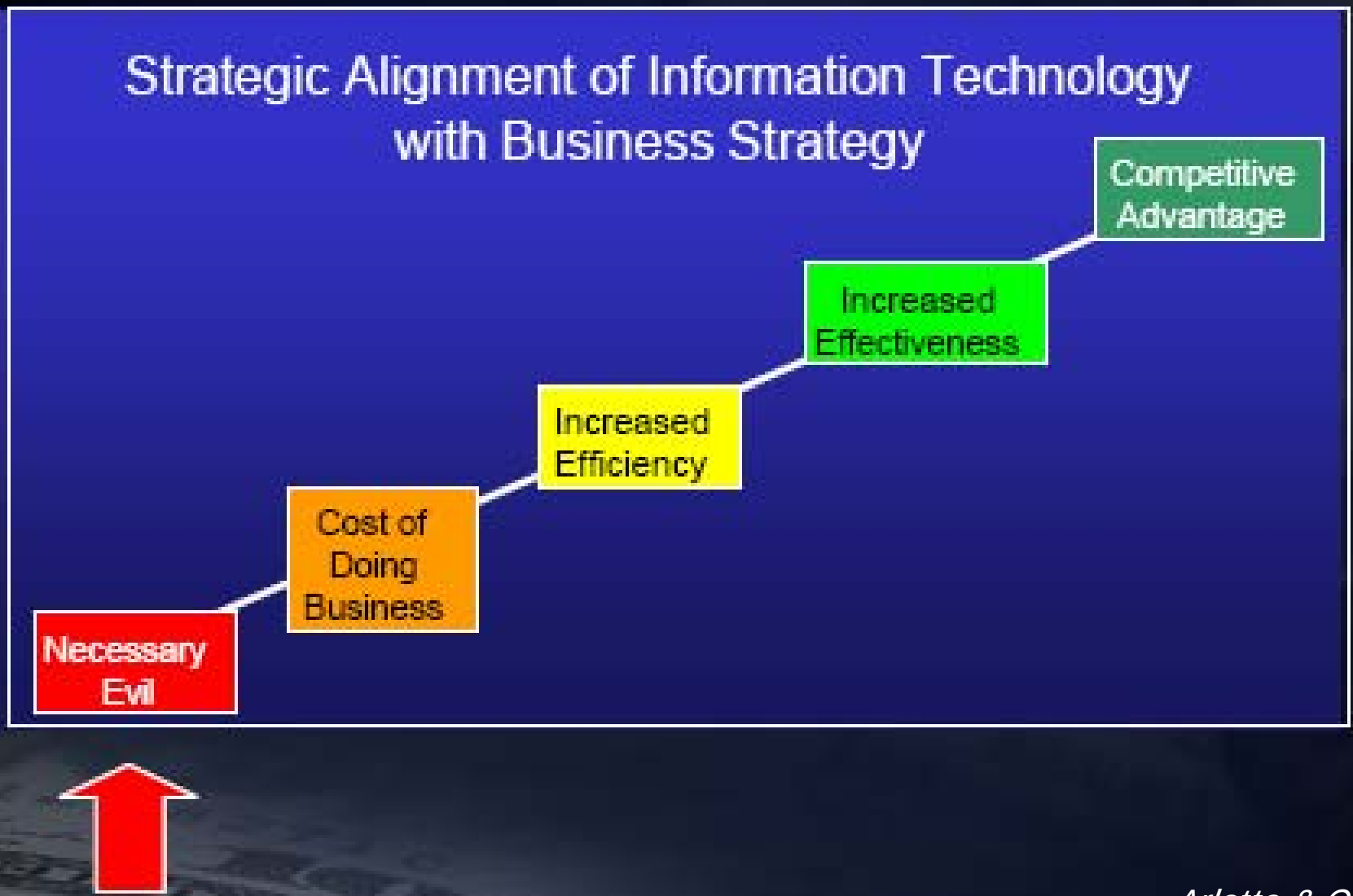
ROI – Is It Possible?



Arlotto & Oakes

“No Free Lunch” for ROI
You Must “Strive” to “Arrive”

- Innovators
- Early adopters
- Early majority
- Late majority
- Laggards

Viewers

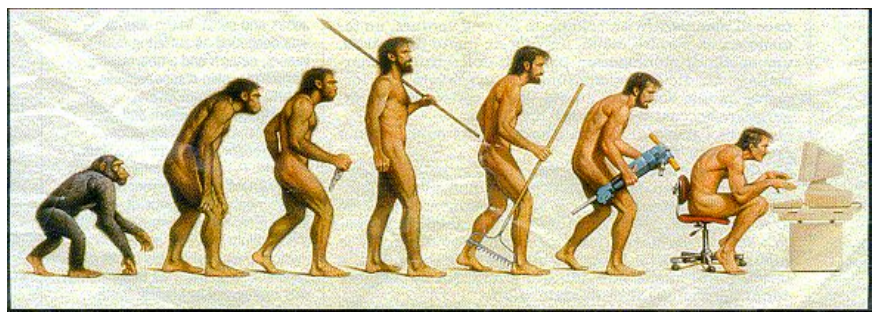
Basic users

Strivers

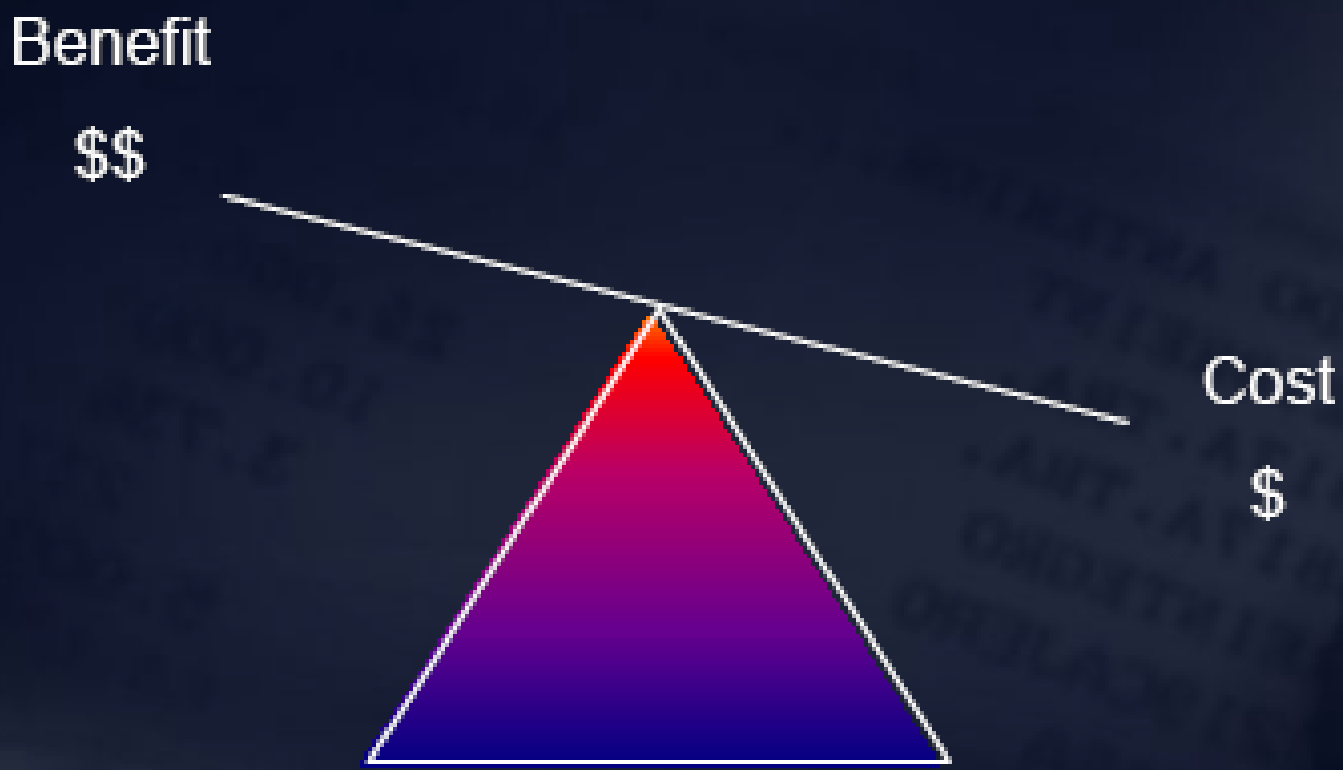
Arrivers

System changers

Miller RH, Sim I, Newman J: CHCF, 2003; www.chcf.org



Traditional ROI Analysis



Arlotto & Oakes

COST- BENEFIT ANALYSIS: Project Costs
Direct, one-time costs
Hardware & peripherals
Packaged and customized software
Network, peripherals, supplies, equipment
Initial data collection and conversion of archival data
Facilities upgrades, including site preparation and renovation
End-user project management
Project planning, contract negotiation, procurement
Application development and deployment
Configuration management
Office accommodations, furniture, related items
Initial user training
Workforce adjustment for affected employees
Transition costs (parallel systems, converting legacy systems)
Quality assurance and post implementation reviews

Direct, ongoing costs
Salaries for IT and assigned end user staff
Software maintenance, subscriptions, upgrades
Equipment leases
Facilities rental and utilities
Professional services
Ongoing training
Reviews and audits
Indirect, ongoing costs
Data integrity
Security
Privacy
IT policy management
Help Desk

Projected Benefits Level 1
Revenue Increases
Patient volume
Increased reimbursement
Reduced days in accounts receivable (AR)
Reduction of administrative denials
Labor Savings (FTE reductions, productivity improvements) **DANGER!**
Supply savings
Decreases in resource utilization
Reduced cost of ownership of existing technologies
Capital expense reduction (facilities, equipment, other technologies)

Arlotto & Oakes

Projected Benefits Level 2
Process redesign across departments and functions
Projected Benefits Level 3
Revenue cycle
Reduction in unbilled $ services
Reduction of days in AR
Reduction of denials
Customer satisfaction

3 Important Calculations

- Net Present Value (NPV)

$$NPV = \sum_{i=1}^{n} \frac{values_i}{(1+rate)^i}$$

  - (Expected future cash flow) – (Cost)
  - Ignores non-financial benefits
- Internal Rate of Return (IRR)
  - Interest rate resulting in expected benefits equaling expected costs over time period
- Payback Period
  - Time required to recover a project's initial cost
  - Less precise, early-return bias, conceptually easy

Intangible Factors

"Sometimes what counts can't be counted, and what can be counted doesn't count"

– Albert Einstein

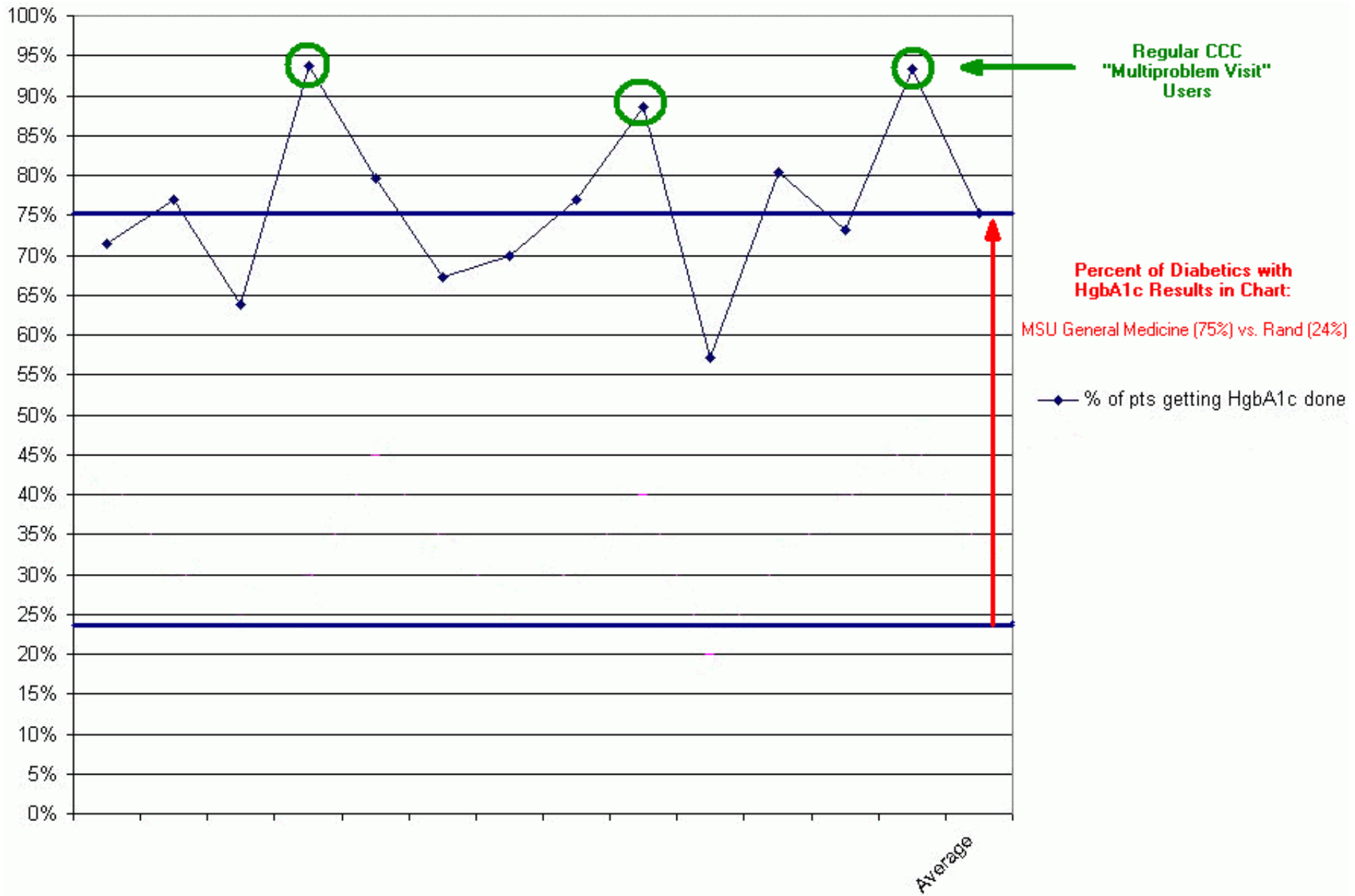
Intangible Benefits

- Brand Advantage
- Competitive Advantage
- Management Information
- "Catch-Up" To Standard Practice
- Stakeholder Satisfaction

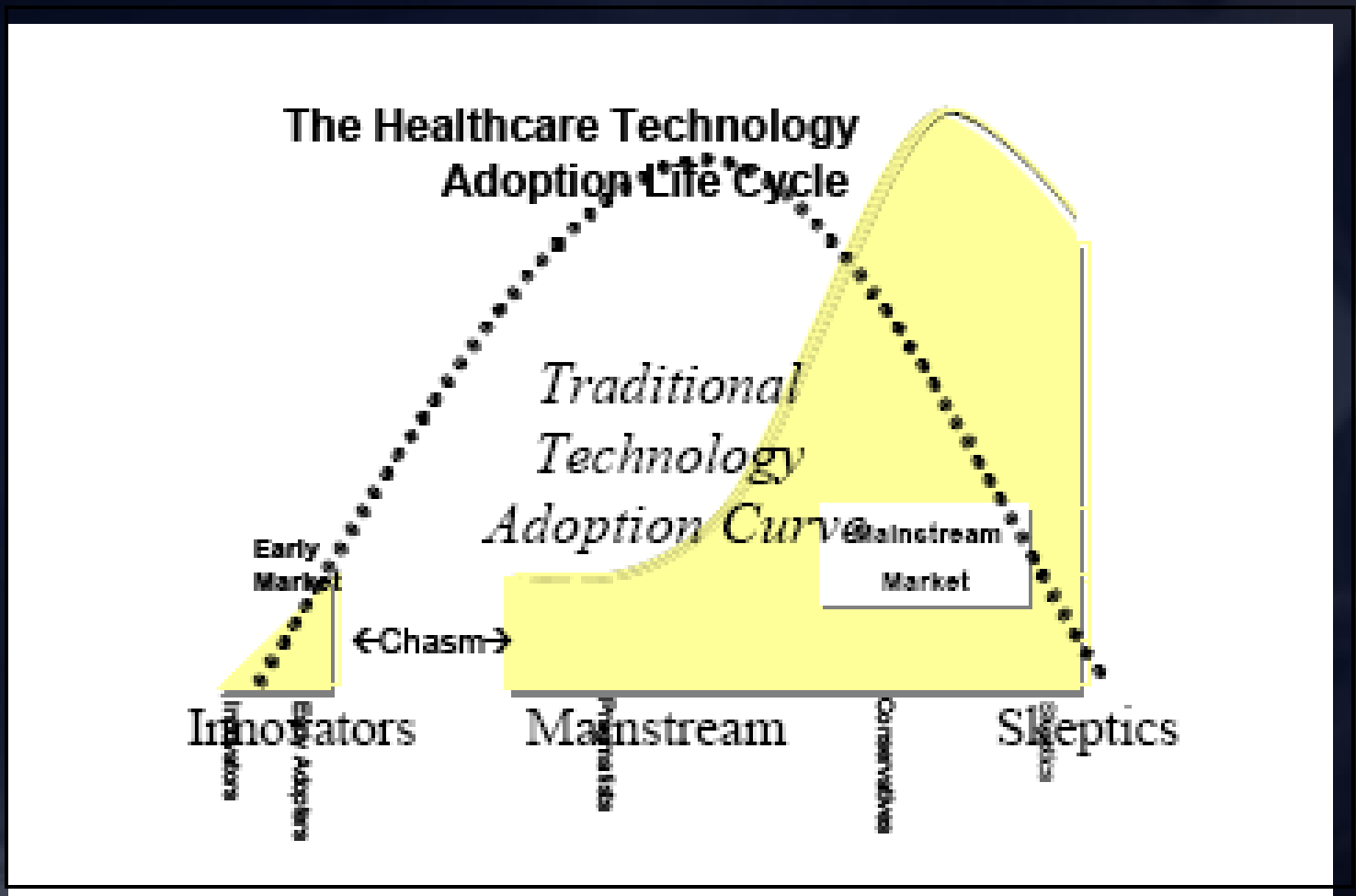
Some Additional Intangibles We've Seen

- Ability to offer open access appointments
- Decreased cost of compliance auditing
- Population management capabilities
- Virtual encounters possible, becoming reimbursable
- "Pay for performance" readiness
- Emerging national reputation

MSU IM vs. Rand Lansing Data: HbA1c in DM



Understand Your Institution's Risk Profile



Arlotto & Oakes

Risk Spectrum

Reduce Costs	Increase Value
Automate Transactions	Redesign Processes
Store Data	Manage Information
Support Operations	Transform Organization
Install Application	Customize Solution
React to Requests	Lead Proactively
Status Quo	Drive Change

Arlotto & Oakes

Cost-Benefit Analysis of Ambulatory EMR Use: Before-After Comparison of Costs, Savings and Cycle Times

Ref: Middleton B, Janas J. Identifying and Understanding Business Processes. In: Carter J: Electronic Medical Records, 2001 ACP-ASIM, pp. 152-7

AMIA 2004, by Michael Zaroukian, MD, PhD, Michigan State University

INTRO AND BACKGROUND	
1	This spreadsheet tool is intended to help physician offices **estimate annual savings** from full adoption of a full-featured contemporary EHR system
2	This spreadsheet **DOES NOT include the initial (Year 1) installation/implementation costs**, rather it focuses on the maintenance costs and savings *(The Year 1 costs for installation/implementation at FCC Year 1 were reported as $87,000)*
3	FCC data were extracted from results reported in the citation above by Blackford Middleton and John Janas at **Family Care of Concord (FCC)**
4	Except where indicated, the estimates assume a **standard implementation**, without add-on modules or enhancements
5	The higher MSU costs likely reflect the added costs of our **interfaces** (IDX PM, lab, radiology results/images), and wireless tablet PC environment
6	The FCC benefits assume **FULL CONVERSION** from paper-based charting to full EHR documentation
7	The MSU benefits calculation is based on the **actual decrease in paper chart pulls** achieved in 2003 (88%)

http://www.emr.msu.edu/Documents/Cost-benefit-estimate-EHR-AMIA-2004.xls

Counting Providers and Staff

STEP 1: ENTER YOUR CURRENT STAFF FTEs HERE		
Name	**Role**	**Clinical FTE (0.0-1.0)**
Clara Barton	RN	
Betsy Ross	LPN	
Donald Trump	Receptionist	
Don King	Referrals	
Etc…		
Total Staff FTE		**0.00**

STEP 2: ENTER YOUR CURRENT PROVIDER FTEs HERE				
Name	**Role**	**Specialty**	**# half-day clinics/week**	**Clinical FTE (0.0-1.0)**
				0
				0
				0
Total Provider FTE				**0.00**

EMR Costs: Initial and Annual

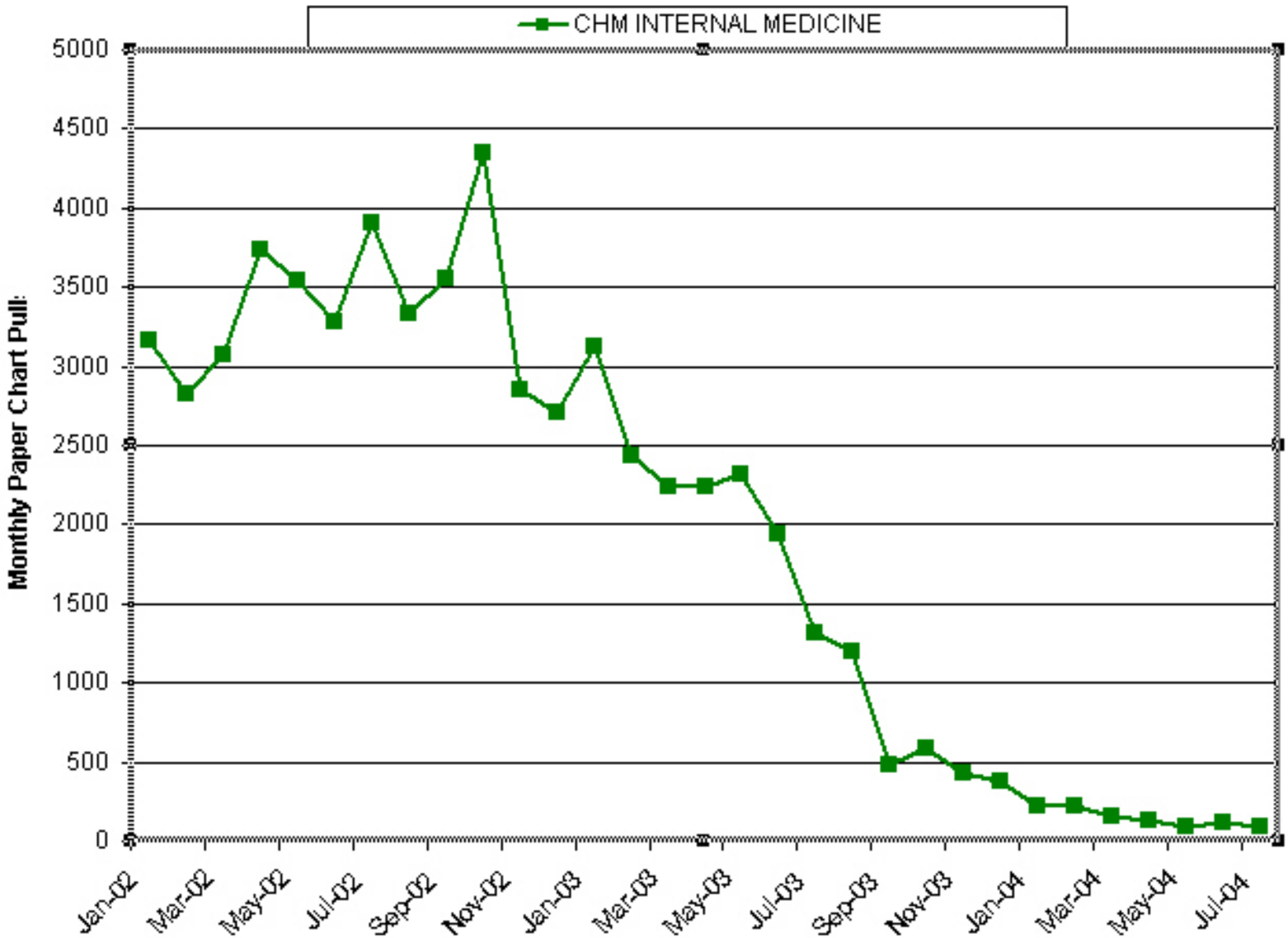
	Family Care of Concord	MSU IM Clinic
Providers	4	36
FTE Providers	4	4.3
Concurrent User Licenses	12	20
Initial EHR Costs		
Licenses (approx. 25% of total)	($21,750)	($38,000)
Everything else (approx. 75% of total)	($65,250)	($114,000)
Initial EMR costs per Physician FTE	**($21,750)**	**($152,000)**
Annual EHR Costs		
Annual support costs: software maint/upgrade, IT, depreciation	($37,000)	($ 55,000)
Annual EMR costs per Physician FTE	**($9,250)**	**($12,791)**

EMR "Hard Dollar" Savings:

Staff-to-Provider FTE Ratio; Chart Pulls; Transcription

	Family Care of Concord	MSU IM Clinic
Support staff per physician FTE (pre-EMR)	3.4	3.3
Support staff per physician FTE (with EMR)	2.0	2.3
Change in support staff per physician FTE	(1.40)	(0.93)
Total change in support staff	(5.60)	(4.00)
Average Salary + Fringe for clinic staff ($/hr)	$17.00	$23.26
Staff : Physician S+F savings ($)	**$198,000**	**$193,523**
Med records chart pull charges	*NA*	**$87,155**
Transcription savings	**$53,900**	**$ 75,717**
"Hard Dollar" Total	**$251,900**	**$ 356,395**
Savings per provider FTE ($)	***$62,975***	***$82,882***

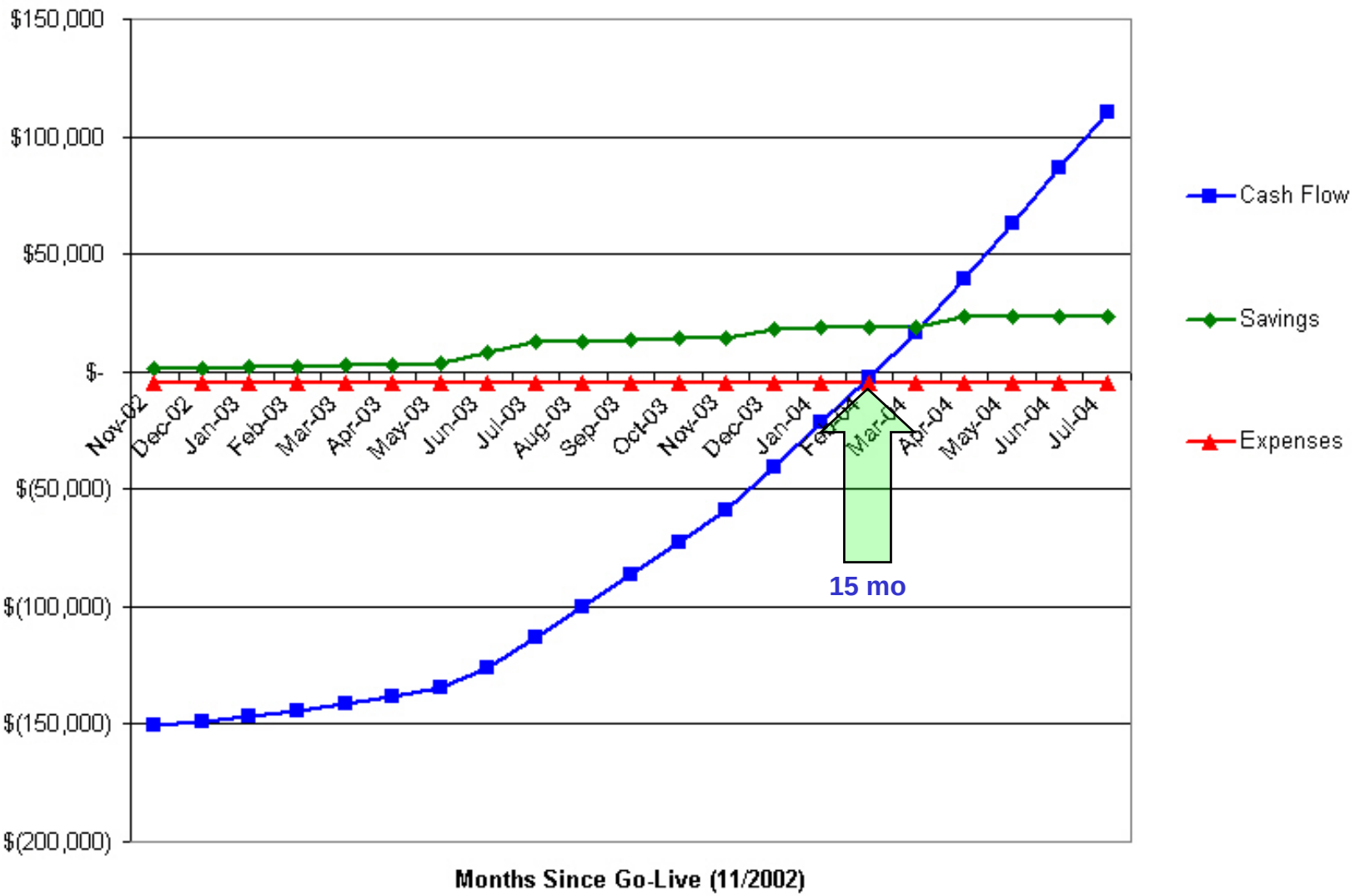
Change in Paper Chart Pulls After EMR Implementation
MSU HealthTeam



“Soft Dollar” Savings: Some Efficiency Gains

	Family Care of Concord	MSU IM Clinic
Net staff prescription refill savings	$70,720	$143,933
Annual savings from lab/radiology interface	$5,525	$92,265
Coding time reduction savings	$5,950	$14,560
Referrals processing savings	$ 7,140	$14,363
Total value of efficiency gains	**$89,335**	**$265,121**
Staff FTE equivalent gains	***2.5***	***5.5***

MSU IM Clinic EMR Implementation: Estimated Payback Period*



ROI: Basic vs. Advanced EMRs

Table 4. Effect of Electronic Medical Record Feature Set Variations on Net Benefits

Feature	Benefit	Light EMR	Medium EMR	Full EMR
Online patient charts	Chart pull savings	+	+	+
	Transcription savings	+	+	+
Electronic prescribing	Adverse drug event prevention		+	+
	Alternative drug suggestions		+	+
Laboratory order entry	Appropriate testing guidance			+
Radiology order entry	Appropriate testing guidance			+
Electronic charge capture	Increased billing capture			+
	Decreased billing errors			+
Net benefits (costs):		($18,200)	$44,600	$86,400

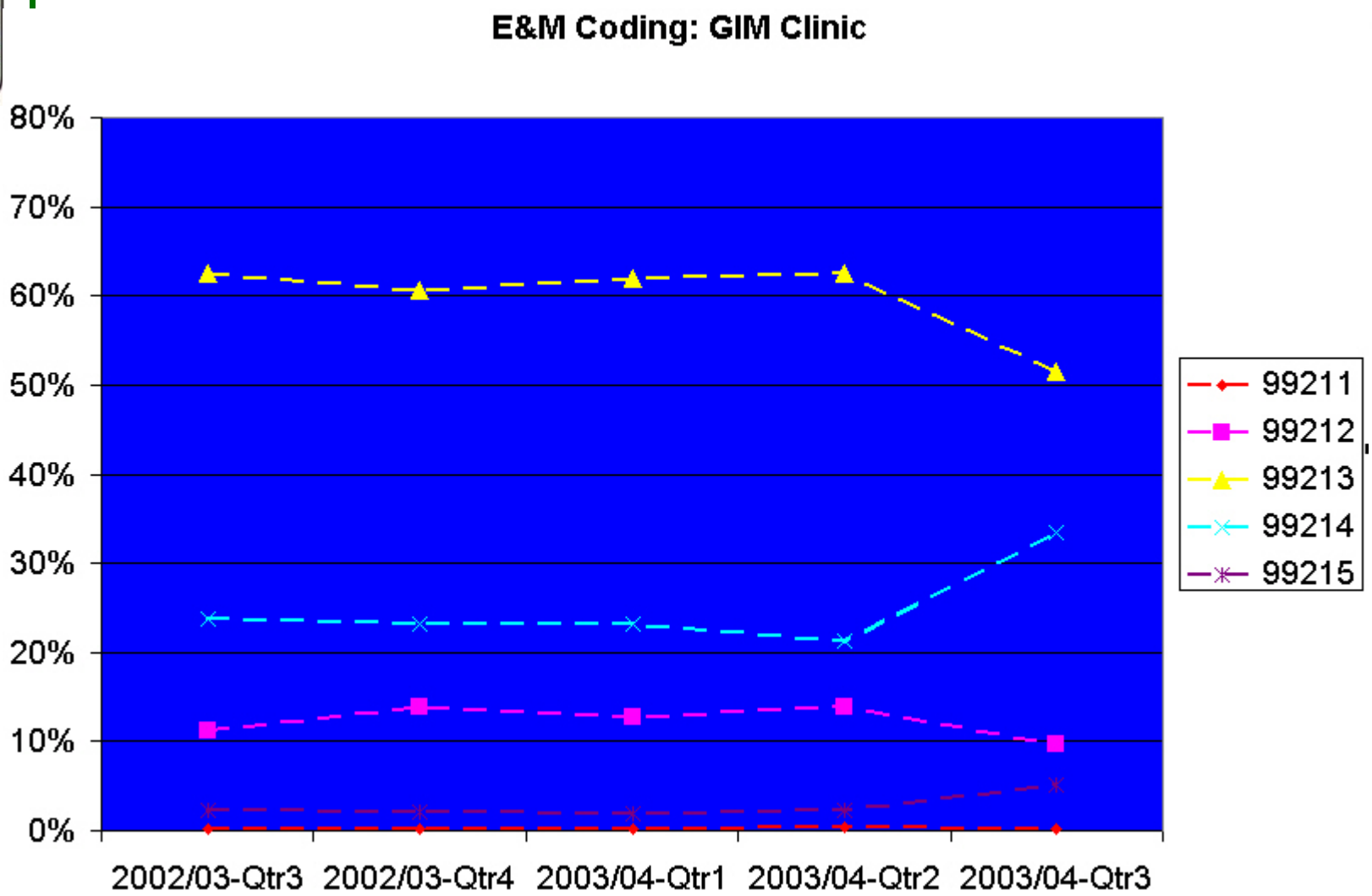
EMR = Electronic Medical Record.

Slow adopters increase net costs

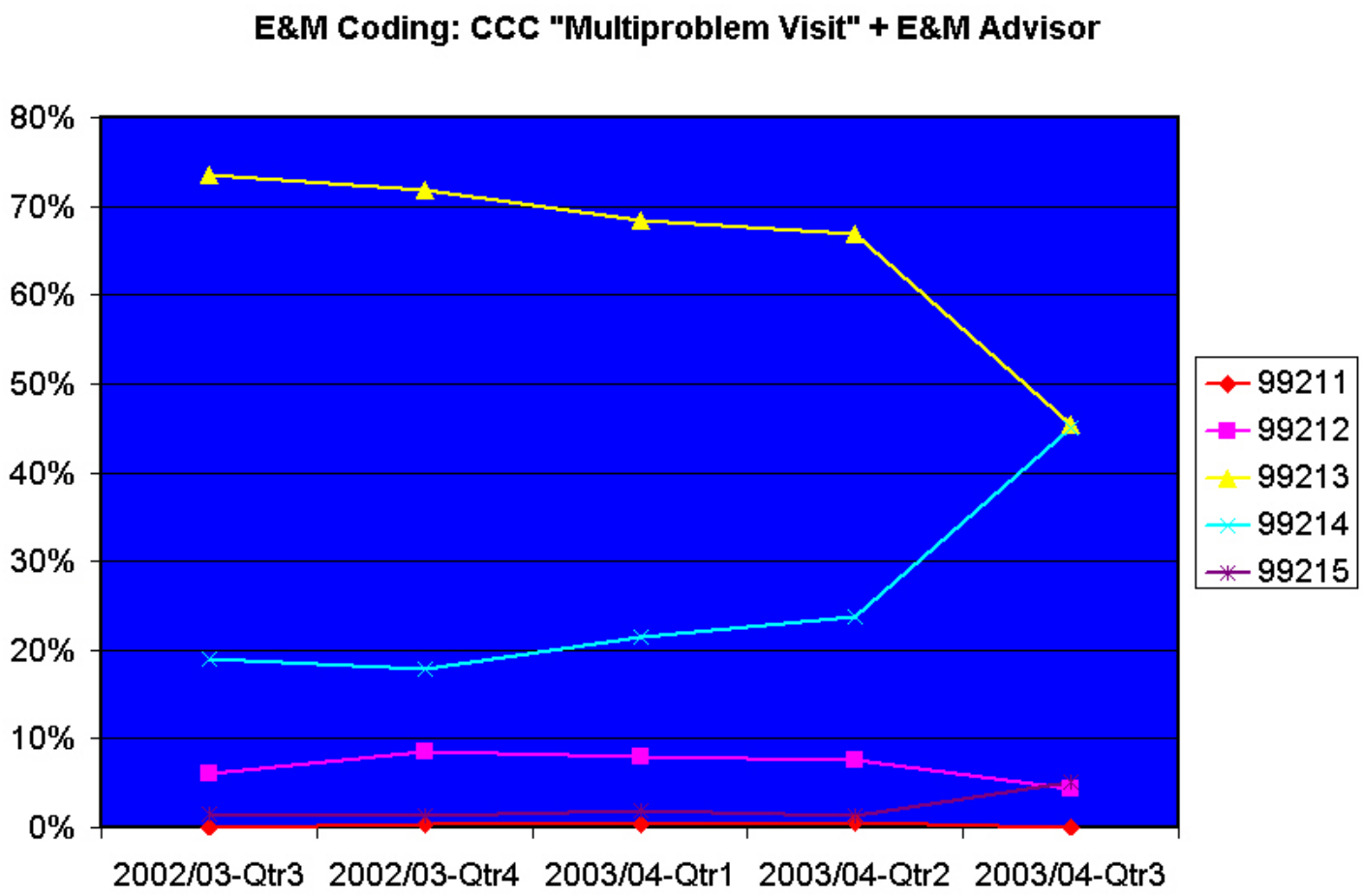
Rapid adopters create net benefits

Wang et al. AJM 2003;114:397-403

E&M Coding: MSU Internal Medicine Clinic



MSU Internal Medicine Clinic: Regular CCC Users



Remember Medical Necessity Issues!

Acknowledgement and Suggested Reading

- Pam W. Arlotto, MBA, FHIMSS; Jim Oakes, MSIM: *Return on Investment: Maximizing the Value of Healthcare Information Technology*, HIMSS Annual Conference & Exhibition 2004