

Improving data quality & clinical records: Challenges of structure, process + utility

Presented to ITI conference - Dubrovnik

Presented by Simon de Lusignan



22nd June 2009

What this talk is about....





>>

World's biggest Computer programme Complexity of clinical practice

Abstract:



Background:

- Sharing of "coded" health data should improve patient safety + efficiency
- These data can also be used for research
- Existing models to improve records + data quality (DQ) are descriptive
- Objective:
 - A model to appraise if lessons from the computerisation of UK to improve medical records + DQ can be applied in another
- Method:
 - Combines Donnabedian & Realistic Review evaluation methods
 - Identify causal links between inputs + clinical process that change DQ
- Results:
 - Structural change capable of integration into the clinical process improves DQ.
 Others are not adopted unless large financial incentives.
 Niche improvement of DQ is possible + pertinent
- Conclusion:
 - This approach may help other health systems appraise which of the UK initiatives they should adopt



OVERVIEW

Overview:

About me!

- My practice + My research interests
- Introduction / what is data quality + why does it matter?
 - The big picture, why computerise + code data to improve records
- Background
 - 2 previous models to improve computerised clinical records...
- Method / Framework
- Donnabedian's classic approach to evaluation: structure process + outcome
- + Pawson's "Realistic Review" CMO = Context + Mechanism = Outcome

Results / Analysis

– Analysis of causative links between structural initiatives + process >> DQ in UK

Discussion

- Framework for developing a computerised research network
- Accurate denominator Focussed clinically relevant DQ improvement Linkage

Conclusion

- Align DQ initiatives with the strategic direction / role of the network..





About me



- 11,800 patient practice
- 6.5 Whole time equivalent GPs / 8 partners
- Computerised since 1988 EMIS brand since 1994
- Involved in "Practice Based Commissioning" and UK's
 First ICO (integrating Care Organisation)





Head of Primary Care, St. Georges, London

- Primary Care Informatics (PCI) research group 2 interests:
- (1) Impact of IT in the consultation



de Lusignan S, Kumarpeli P et al., ALFA open source toolkit. JMIR 2008 http://www.jmir.org/2008/4/e27/ (2) Using routinely collected data for QI



Lusignan S, Sismanidis C, Carey IM, et al.,. Trends in type 2 diabetes BMC Fam Pract. 2005 Mar 22;6(1):13.

Increasing secondary use of clinical data

Historic card system -Research was carried out -manually – e.g.MSGP4

- Data provided to research data bases
- 1. RCGP Spotter practice www.rcgp.org.uk/bru
- 2. Q-Research www.research.org



Communicable and

Ad hoc research projects

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The Birmingham Research Unit of the Royal College of General Practitioners was established in 1957 as
the Records and Statistical Unit and since then has been particularly concerned with the surveillance of
What's New?
Weekly Data on

reporting of respiratory tract infections on a twice-weekly basis and for its involvement in national morbidity surveys which it has conducted in cooperation with the Office of National Statistics.



QOF – Quality based payments

QUALITY AND OUTCOMES FRAMEWORK 2007/08 - Online GP practice results database 0845 300 6015 - emanwalturmath

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Public Health Notification of disease & death

Prescribing + referral data



Inspection, appraisal & Re-validation





INTRODUCTION

Introduction (1):

Computerised records should reduce medical errors

- Two key publications highlighted problems with patients safety
 - 44 98,000 preventable medical deaths (USA)
 - To Err is Human (IOM 1999)
- The potential role of informatics To provide a shared EPR...
 - Need a National Health Information infrastructure
 - Crossing the quality chasm (IOM 2001)

Following these reports many countries have invested in health IT infrastructure hoping to improve patient safety + improve the efficiency of their healthcare systems







Introduction (2) Components of the computerised record (EPR)



- Administrative data
 - Practice ID + Users + rights etc.
 - Patient details
 - Unique patient ID
 - Demographic details Age, Gender, Ethnicity, Address, etc.

Structure

- Coded data and free text may belong to different tables in the record
 - E.g. The journal (current consultations) / medication data / etc.
- "Coded data"
- (1) Recorded using a coding interface usually a "picking list"
- (2) Happens automatically when data are entered into a data entry form
- Free-text
 - Narrative entered into set fields with the EPR

In most systems only coded data can be processed + analysed for patient care

Context + multiple synonyms make free-text hard to analyse safely



Introduction (3) Recording structured data and free text...



Clinical records made in real time – in a 10 minute consultation – *Exemplar at: www.biomedicalinformaitcs .info/alfa/*

Sheeler I, Koczan P, Wallage W, de Lusignan S. Low-cost three-channel video for assessment of the clinical consultation. Inform Prim Care. 2007;15(1):25-31.





Coding is part of a complex social interaction & many factors distort coding

de Lusignan S, Wells SE, Hague NJ, Thiru K. Managers see the problems associated with coding clinical data as a technical issue whilst clinicians also see cultural barriers. Methods Inf Med. 2003;42(4):416-22.

	Recorded diagnosis	True diagnosis	Comments
Perceived patients view	Headache	Depression	Patient does not want "stigma"

Introduction (5) So what is data quality?



Data quality = data "Fit for purpose"

- Historic definitions focussed on mathematical concepts:
 - Pringle et al., Completeness + accuracy of the data.
 - Williams, Currency
 - Thiru et al: **Positive predictive value + sensitivity**
 - Data quality probes provide a Boolean method for looking at data quality (e.g. Salbutamol + asthma; Asthma Not B-blocker etc.)

I It is not feasible to apply mathematical definitions to all data

^{1.} Pringle M, Ward P and Chilvers C. Assessment of the completeness and accuracy of computer medical records in four practices committed to recording data on computer.British Journal of General Practice 1995;45:537–41.

² Williams JG. Measuring the completeness and currency of codified clinical information. Methods of Information in Medicine 2003;42:482–8.
3 Thiru K, Hassey A and Sullivan F. Systematic review of scope and quality of electronic patient record data in primary care. BMJ 2003;326(7398):1070.
4 Brown P and Warmington V. Info-tsunami: surviving the storm with DQprobes. Informatics in Primary Care 2003;11:229–33; commentary 234–7.
5. de Lusignan S. The optimum granularity for coding diagnostic data in primary care: report of a workshop of the EFMI Primary Care Informatics

Working Group at MIE 2005. Inform Prim Care. 2006;14(2):133-7.

Introduction (6) Summary



UK general practice has been computerised since the 1990s (though hospital practice lags behind

- + now it is given further impetus by:
 - 1. National priorities for care & statutory duty of "Clinical Governance"
 - Hard to measure except by computer
 - 2. Linkage of GP computer systems to other parts of the NHS
 - 3. Financial subsidies for initial purchase now computers are NHS funded
 - 4. Financially incentivised quality targets based only on computer records
- This presentation describes why + how clinical records have changed in response to these initiatives
 - Which should you adopt & which should you ignore?

de Lusignan S, Teasdale S, Little D, Zapp J, Zuckerman A, Bates DW, Steele A. Comprehensive computerised primary care records are an essential component of any national health information strategy: report from an international consensus conference. Inform Prim Care. 2004;12(4):255-64.



BACKGROUND

Background (1) *Previous models provide insight... ...but limitations*



■ Model 1: Four factors should be tilted in favour of clinical coding...



de Lusignan S. The barriers to clinical coding in general practice: a literature review. Med Inform Internet Med. 2005;30(2):89-97.

Improved records Data quality



Individual

Knowledge how to code

Skills to code data + manage time

Attitude: Negative towards clinical coding Clinician's health beliefs / disease labels Variation in what is important to code Educational interventions can change practice

Clinical Task

Biomedical

consultations are easier to code, especially where there are numerical variables + EBM guidelines + financial incentives

Skills

To avoid the computer dominating the consultation

Context Usually defined in the narrative Interface / Brand / Coding systems Effects what is coded Scientific comparisons needed

Technical

Migration loses data

Integration Between systems remains problematic Standardisation facilitates coding

Confidentiality *Privacy, information security* + *legislation*

Organisational

Change agents Education + financial incentives are effective

Practice /office Commitment to paperless practice

Locality Shared approach Local ownership

National / Health service Alignment of IT and service objectives Support academic informatics Background (1) Previous models provide insight... ...but limitations



■ Model 1: Four factors should be tilted in favour of clinical coding...



■ However this model may not be valid – as €trump all barriers

de Lusignan S. The barriers to clinical coding in general practice: a literature review. Med Inform Internet Med. 2005;30(2):89-97.

Background (2) Listed strengths + weaknesses – but not predictive..



Opportunities:

- (1) Growing volumes of routinely recorded data.
- (2) Improving data quality.
- (3) Technological progress enabling large datasets to be processed.
- (4) The potential to link clinical data in family practice with other data including genetic databases.
- 5) An established body of know-how within the international health informatics community.

Challenges:

- 1) Research methods for working with large primary care datasets are limited.
- (2) How to infer meaning from data.
- (3) Pace of change in medicine and technology.
- (4) Integrating systems where there is often no reliable unique identifier and between health (person-based records) and social care (care-based records-e.g. child protection).
- (5) Achieving appropriate levels of information security, confidentiality, and privacy.

de Lusignan S, van Weel C. The use of routinely collected computer data for research in primary care: opportunities and challenges. Fam Pract. 2006 Apr;23(2):253-63.



METHOD

Method (1) Combined Donabedian & Realistic review:



- Donnabedian proposed three elements to evaluation:
 - Structure
 - Process
 - Outcome
- Holzemer et al., created an outcomes model for healthcare research (OMHS) based on the Donnabedian model; but adding 3 rows

	Inputs /Structure	Process	Outcome
Provider			
Setting			
Client / Patient			

Holzemer WL, Reilly CA. Variables, variability, and variations research: implications for medical informatics. *J Am Med Inform Assoc.* 1995;2(3):183-190.



Pawson & Tilley's realistic review approach has been extended into the healthcare setting

- Realistic review is based on a CMO model where:
- Mechanism (M) "+" Context (C) = Outcome (O).

■ O = M + C

- The "+" is not simple addition but more implies interacts in a causal way
- In this case study:
 - M = structure or inputs;
 - C = clinical context it needs to be incorporated into (Process)
 - O = The outcome on data quality
- "The three Ws" or "the realist mantra";
- "What works for whom in what circumstances?"
- The advantage of this approach is that it recognises that inputs may interact differently in other clinical contexts...

Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist review--a new method of systematic review designed for complex policy interventions. J Health Serv Res Policy. 2005 Jul;10 Suppl 1:21-34.







The final approach is to review impact of any change on the UK clinical context (process) + report the outcome in improving records
 The approach is represented in the following grid:

		Donabedian >>>>				
		Structure Input Mechanism	Process Context	Outcome: Improved data quality = Utility of data		
Но	Health service					
Holzemer	System vendor					
	Regional / locality					
¥	Practice					



RESULTS

de Lusignan S, Stephens PN, Adal N, Majeed A. Does feedback improve the quality of computerized medical records in primary care? J Am Med Inform Assoc. 2002 Jul-Aug;9(4):395-401.

Results

Funding trumps all other data quality initiatives!!!

- Screening targets
- Cervical cytology
- Data quality payments
- Token incentives to link-data
- Incentives to complete audits (e.g. Equity audits)
- Chronic disease management

E



Results - Inputs at health service level (1)....



Structure Input	Process Context	Utility	Implications
Authenticate users	Much longer to log on	Clumsy system mean smart cards left in one machine	 Use system where staff can be mobile
National demographic service	Any mismatches added to workflow	Much more accurate denominator	+++++ Provides a denominator
On-line clinic booking	Impossible to include in workflow	Does not use national codes	 Redesign
Lab-tests results on-line	Less social process Rapid access to rest of record	Vastly increased capacity for QI, Audit + Research	+++++

Examples of national programmes linking to desktop EPR systems

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On-line lab results posted into system

Patients on national demographic service

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Results - Inputs at health service level (2)....



Structure Input	Process Context	Utility	Implications
Choice of coding system	Larger > any concept but harder to find	Limited list imposed for quality payments	+ ICPC + ICD + procedures
Same data used for billing + care	Distorts coding	Boosts some recording	+ / - Appraise effect
Summary care record + online "My health space"	Poor organisational fit	No positive influence	 On-line records less researched niche?
Electronic record transfer "GP2GP"	Shock! Who wrote that narrative!	Will greatly improve data quality	+++
On-line performance data	No effect apparent Distorts record	Unsure	+/-

On-line GP quality scores

http://www.qof.ic.nhs.uk/



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contacts

😜 Internet

🕄 100% 🛛 👻

8

Results - Inputs at health service level (3)....



Structure Input	Process Context	Utility	Implications
DMD Dictionary	Standard dictionary of drugs + devices	Logical hierarchy of drugs	+++
RCP records initiative	Structure + content standards	Admission, handover, discharge	+++
OpenEHR	Standard models of clinical archetypes	More clinically useful records	+
NHS national guidance	Selectively adopted	Audit-based education useful	+ + ? Evidence-base

Dictionary of Medicines + Devices

www.dmd.nsh.uk

dictionary of medicines + devices						HS
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The NHS preferred terminology for referencing medicines and devices is delivered by the NHS Business Services Authority and NHS Connecting for Health.

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NHS Connecting for Health

St George's

University of London

Addresses the problem of non-standard drug dictionaries

OpenEHR



http://www.openehr.org

Conceptual approach to the medical record

Separates

- Coding system / Terminology
- Database technology
- Clinical Archetype
- Interface / data entry



http://www.openehr.org/shared-resources/getting_started/openehr_primer.html

RCP - HIU



Royal College of Physicians - Health Informatics Unit

www.rcplondon.ac.uk/hiu

Standards for

- Admission
- Handover
- Dischage



Where am I ? > RCP Web Site > Clinical standards > Health Informatics Unit (HIU)

Health Informatics Unit (HIU)



Hospital Activity Data

Generic Medical Record Keeping Standards.

August 2007 & October 2008: Launch of Generic Medical Record Keeping Standards. A tool for auditing medical notes against these standards available May 2009.

standards first developed in August 2007



Results - Vendor level



Structure Input	Process Context	Utility	Implications
Vendors produce very different systems	Varying effect on clinical consultation • Picking lists • CHUI vs. GUI • Data entry forms • Search functions	Best features of each could aid coding	++ Use simulations to choose a vendor CHUI sometimes better
Single vendor based research networks	Focussed interventions to improve quality	Improves data quality in areas of focus Networks include: • GPRD • Qresearch •THIN	+ Advantages with one supplier Concentrate on strengths of data

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F - Follow up			
Q - Test Request			
R - New Referral			
G - Allergy			
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Examples of the four commonest used systems in the UK

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	6/07/06	Referral to stop-smoking clinic		+	15/09/06	take one daily 30 tab Carpal tunnel syndrome	RD 0/6	S	AB
3	30/08/06	Essential hypertension			19/09/06	Worms in the family		3	NB
	04/09/06	BP stable Musculoskeletal and connective tissue disea		_	26/09/06			S	IB
-	14709706 16709706	Schizophrenic disorders	a		26709706	Carpal tunnel syndrome		5	IR
					18/10/06	Letter sent to patient		WE	CLL
	2/09/06	First DTP polio and Hib vaccination			18/10/06	DISC: atorvastatin tablets		s	CU
	21/09/06	Pneumococcal vaccination		-	02/11/06	Medication review with pa		0	SD
-	02/11/06	Medication review with patient		_	07/11/06	подовонночен чипра			SSB
	20/04/07	Haemophilus influenzae type B and meningit			07/11/06				SSB
	20/04/07	Haemophilus influenzae type B and meningit	i		10/11/06	atorvastatin tablets 10mg			PP
	23/04/07	H/0: hypertension		•	10/11/00	take one daily 28 tab OLD	A 1/1		10
	23/04/07	Haemophilus influenzae type B and meningit	i	B	03/05/07	Referral for further care	ADI	WF	LK
	5/05/07	Asthma		_	03/05/07	Beferral for further care		W	LK
0	01/10/53	Diabetes mellitus			03/05/07	Referral for further care		Ŵ	LK
				-					

Copy of Acorn Group Practice			_ 0
- R. 38 Problems	Patient Details Consultations > Journal Filte		
- d 1413 Consultation	Date Description	Priority Clinician	
😔 🕺 8 Drug Allergies & Adverse	16/01/06 D Issue 3 FOLIC ACID tabs 5mg S	Supply (28) tablet(s) 1 DAILY	BC
38 Recalls and Reviews	05/01/06 Hd Sore throat symptom		3 BC
Patient Preference	H _d FH: Myocardial infarction < 60		3
Hx 314 Medical History	19/12/05 DV Issue 2 FOLIC ACID tabs 5mg S		
663 Therapy	15/12/05 Ha Minor surgery - enhanced servic		3
30 Lifestyle	12/12/05 Advice to patient - subject PILS (Version=20)	Leaflets PILS Leaflet L32; Cholesterol;	NJ
52 Examination Findings	read this		
53 Immunisations	ERYTHROMYCIN susp 125mg/	5ml Supply (100) mls	BC
- 102 Miscellaneous - 🗱 126 All Test Results	21/11/05 D Repeat FOLIC ACID tabs 5mg	Until: 13/02/2006 Last issued: 16/01/2006	
- 🛧 4 New Registration Exam	Issued 3 of 3 evenu 28 days 9	unnlu (28) tablet(s) 1 DAILY	
18 Child Health Surveillanc	H _k History - Display	🕫 Becali 🕌 IOS 🛛 🔛 Edit	X Close 8 Help
💙 22 Maternitu 🚬 💌			Tob
•	Event Date: Clinician:	Private	
🔺 🍈 🛞 🛞 🛞 🏠 🔺	05 January 2006 Dr Barbara Christie	In Practice	
Incomplete Registration	Read Term for Characteristic:		
Health promotion	1C9.00 Sore throat symptom		
Interventions not recorded	,		
Health Promotion out of date	Comment:	Type of Characteristic:	Episode Type:
Health Promotion data incon		🔺 Diagnosis 👻	Other 💌
Current Recalls			
) Immunisations Due in 🚽	J	×	
	Priority: End Date:		
Hepatitis ++ 01/04/2004 o/d Rubella ++ 01/01/1969 o/d	Filong, End Date.		

Results: Character user (EMIS LV) v. GUI (the rest!)

		Coded o	data entry		Acute Prescribing			Repeat Prescribing		BP recording			
	EMIS LV	EMIS PCS	INPS Vision	iSoft Synerg y	EMIS LV	EMIS PCS	INPS Vision	EMI S LV	INPS Vision	EMIS LV	EMIS PCS	INPS Vision	iSoft Synergy
N	7	24	14	18	5	7	9	1	4	1	1	5	3
Mean (SD)	11.5 (3.0)	8.1 (8.0)	6.8 (2.9)	7.9 (2.5)	23.7 (2.5)	27.1 (10.1)	27.5 (8.5)	21	8.4(3.2)	7.1	9	9.8 (3.4)	6.7 (1.3)
95% CI	8.7 -14.2	4.7- 11.5	5.1 -8.5	6.6 -9.2	20-5 -26.8	17.7 -36.5	20.9 -34.0	-	3.3- 13.5	-	-	5.6- 13.9	3.5- 9.8
Median (IQR)	12.1 (2.8)	5.9 (3.2)	5.7 (3.3)	7.2 (2.7)	23.8 (2.1)	22.1 (15.4)	23.6 (9)	21	9.4 (3.8)	7.1	9	8.8 (1)	7.3 (1.1)
MIN	5.7	2.5	3.6	5.1	21	15.7	19.1	21	4	7.1	9	6.7	5.2
MAX	14.4	40.5	12.5	13.6	27.6	41.9	46.2	21	10.7	7.1	9	15.5	7.5
NPAR* p		0.007	0.006	0.012		0.71 (NS)	0.64 (NS)						



Refsum C, Kumarapeli P, Gunaratne A, Dodds R, Hasan A, de Lusignan S. Measuring the impact of different brands of computer systems on the clinical consultation: a pilot study. Inform Prim Care. 2008;16(2):119-27.
Picking lists... Variable views of the same clinical concept

No of EU codes



🔓 Clinical Terminology Browser - Browser - 5-byte Version 2 Read Codes - 2006-04-01

File Edit Browse Advanced Window Help

no ci	D
-2	610
~	214

Bro Intervention						
Myoca Entry : MIOCARDIAL INFARCTION						
Bearch Text	MI	TRISET	EMIS	GPASS	IPS	TOREX
B MI - acut C Inferior FH: Myocard	Total No of items	12	54	9	11	13
	Total No of pages	1	5	2	1	2
F Old myocard → G Other spe +ECG: myocard → U V/0	No of diagnostic tern	8	42	6	7	9
H H/O: myoc I ECG: myoc J H/O: myoc K Silent my +Inferior my +Myocardial +Coronary th +Subsequent: +Postoperati	No of symptoms term	3	10	2	3	3
	System specific code	0	0	0	0	0
+[V]Observat Myocardial	Review codes (8)	0	0	0	0	0
	Admin codes (9)	0	0	0	0	0
ai TW, Anandarajah S, Dhoul N, de Isignan S. Variation in clinical coding	No of other terms	1	2	1	1	1

Tai Lusignan S. Variation in clinical coding lists in UK general practice: a barrier to consistent data entry? Inform Prim Care. 2007;15(3):143-50.



CVD risk calculation – EMIS LV template

nGMS Registers : 0 / No.25. Mrs Sara So	M <mark>erts:S</mark> Carlet, 12 Broken H	edge Leeds	EDI: 8 PN: 0 Email: 0 Age 54 years AN	
Prompt	Result	Date	Last Recorded Entry	B D E F
Serum cholestero Serum HDL choles	15 /day Diabet Mel Indu 28 mmol/l 20 mmol/l ECG: no LVH	1.7.2006 1.7.2006 1.7.2006 1.7.2006 1.7.2006 1.7.2006	130 mm Hg 15.1.2006 20 /day 15.1.2006 Current non-smok D1abet Mel Indu 14.2.2005 17 mmol/l 20.11.2005 10 mmol/l 20.11.2005 ECG: no LVH 5.7.2006 15 % 5.7.2006	G H J K
10 year CVD risk is 12% The system has calculated that : Average of last 3 systolic BPs is 128 The Total/HDL cholesterol ratio is 1.40 Current smoker, No ECG LVH, diabetes Is the above information correct ? (Y/N) :				

Example of a data entry form... CVD risk calculation – EMIS PCS template

1



E PCT CVD Risk Assesment - May 08.				X
no Mother Father Sister n	Hypertension 2nd degree relatives 🦵 o 🔽 Aunt 🔲 Uncle 🖵 Maternal grandmoth Paternal grandfather	er 🥅 Maternal grandfat	her 🦵 Paternal grandmother	
FH: Ischaemic heart dis. <60	Ischaemic heart dis. >60 no 1other Father Sister Brother	FH: Diabetes mellitus	emia in 1st degree relative ☐ Father ☐ Sister ☐ Brother ✓ Father ☑ Sister ☐ Brother	<u>Please, do no</u> Contact CHD for any improv
BP Systolic blood pressure 160 mm Hg 143 mm Diastolic blood pressure 100 mm Hg 90 mm 1 148/90 mmHg	5 28/03/2007 2.8 28/03/2007 2 28/03/2007 Total cholesterot:HDL ra 1.8 28/03/2007 sma glucose level not found Hg 01/07/2008 Hg 01/07/2008 Sr	nknown, value of 160/10 culated risk would be mu .3 if: o Fasting TG > 1.7 g/L o FH of premature CVD 1.4 if: o South Asian ethnicity o CKD with eGFR < 45 By 1.5 if more than one of risk estimates not far b risk estimate upwards if o	Itiplied by: in 1st degree relative ml/min/1.73m2 of the above elow a threshold revise	VD score 6 % ▼
Smoking Status Smoking Status not found 0/E - height cm 0/E - weight Kg	n/a Kg 🗆 BMI: n/a 🗖	JBS cardiovasc JBS cardiovascula	risk scular disease risk <10% over nex ular disease risk 10·20% over nex r disease risk >20% up to 30% ov scular disease risk >30% over nex	t 10 years 🗖 🔓 next 10 yr 🗖
Dr E. Cajeat - Lambeth PCT CHD Lead - V1.1			ОК Са	ancel

CVD risk calculation – INPS Vision CVD risk scores



-Displayed in the main consultation page within 'Reminders and prompts' sub window



080306 Dr Tahir

Results - Locality level



Structure Input	Process Context	Utility	Implications
Equity audits	Separate data collection (not in GP consultation) Payments	Enables specialist audit + research	+++++ Target specific research areas
specialist cross- sectional data	Needs mechanism for collection -e.g. Nasal swabs for influenza surveillance - e.g. Diabetes specialist data network	Very selected data quality improvement	+++++ If correct area is targeted

Results - Inputs at practice level



Practices and practitioners will make use of computerised systems

- Completely changes workflows + often practice staff
- Secondary uses is hardest to predict beyond payment systems

Secondary uses of data

- Prescribing audits (+)
- High cost patients (+)
- Own research (+)

Primary use of data

- Prescribing the one item that saves time (++++)
- Prescribing alerts most over alert (+)
- CDSS (Computerised decision support) (++) in niche areas (e.g. Warfarin dosage)
- IR (information retrieval) link clinical data to information support (++)
- Flagging patients recall, disease registers, screening (++)
- Reducing admin burden no "pulling notes," electronic appointments, self check-in, Internet booking of appointments (++) – (+++++ if into encounters!)

"Paperless" practice !!



Clinical records made in real time – in a 10 minute consultation



computer hold EPR

Still written records



Scan in post

Post into trays

Mark for coding

Clinical coding

Results summary

Effect on DQ	Input / structural change / mechanism				
	Health service level	Vendor / locality	Practice		
+++++	Demographic service Lab test on-line	Equity audit Specialist X-section Surveillance	Prescribing		
+++	GP2GP record transfer		Admin data (+/-)		
++	National clinical standards – ABE / QI initiatives	Work with vendors to Improve interface	Niche CDSS + IR Flagging patients		
+	ICPC (need ICD + procedure codes)	Single vendor	Audit, research, personal development		
+/-	Same data billing + care National performance data				
-		 Unlisted problems: Cost More time – except Px Change + new skills required 			
	Authentication system Summary care record On-line health space				
	On-line OPD booking	Vendor tie-in			



DISCUSSION





- Development of electronic patient record systems for needs to be driven by the required outcome/use of the records.
- Developing systems remote from usage does not work
 - Choose and book + summary care record + first on-line health records
 - "Agile" rather then "Waterfall" development of systems is essential
- Improve record quality through:
 - (1) Getting the denominator right or hard to give feedback on quality;
 - (2) Focusing on exercises which raise quality in clinically relevant areas;
 - (3) Have a strategy for improved linkage.
 - There is no single formula for raising record quality instead focus on raising standards in areas of strategic interest and where your data are most robust

Discussion (2) – Understanding change



Evolution of the clinical record



Discussion (3) - Realism

Clinical coding & using a computer takes longer

- Trade-off between additional effort improving the record + IR, CDSS, search & audit
- Feedback & data linkage further improves data quality
- Not all coded data means the same thing! (e.g. Asthma)
- Brands & coding systems vary
- Strategic support, including financial is essential



Key point:

Much quality improvement has been underpinned by IT

The four elements of the model have been tilted towards data improving data quality



Conclusions:



■ The easy wins for health IT are:

- Accurate denominator
- Linking systems holding quantiative data
- Clinical audit
- Fixed user requirements are an illusory
 - Can't develop systems remote from clinical workflow.
- No single formula for improving data quality + clinical records
- Focus instead on:
 - Raising standards where there are health priorities
 - Use routinely collected data to implement and monitor quality improvement.
- Structures and processes are only of value if they have utility in clinical care.

The End!



■ Thanks for listening...

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- <u>slusigna@sgul.ac.uk</u>

