

An integrated IT approach to Chronic Disease Management

Presented by:
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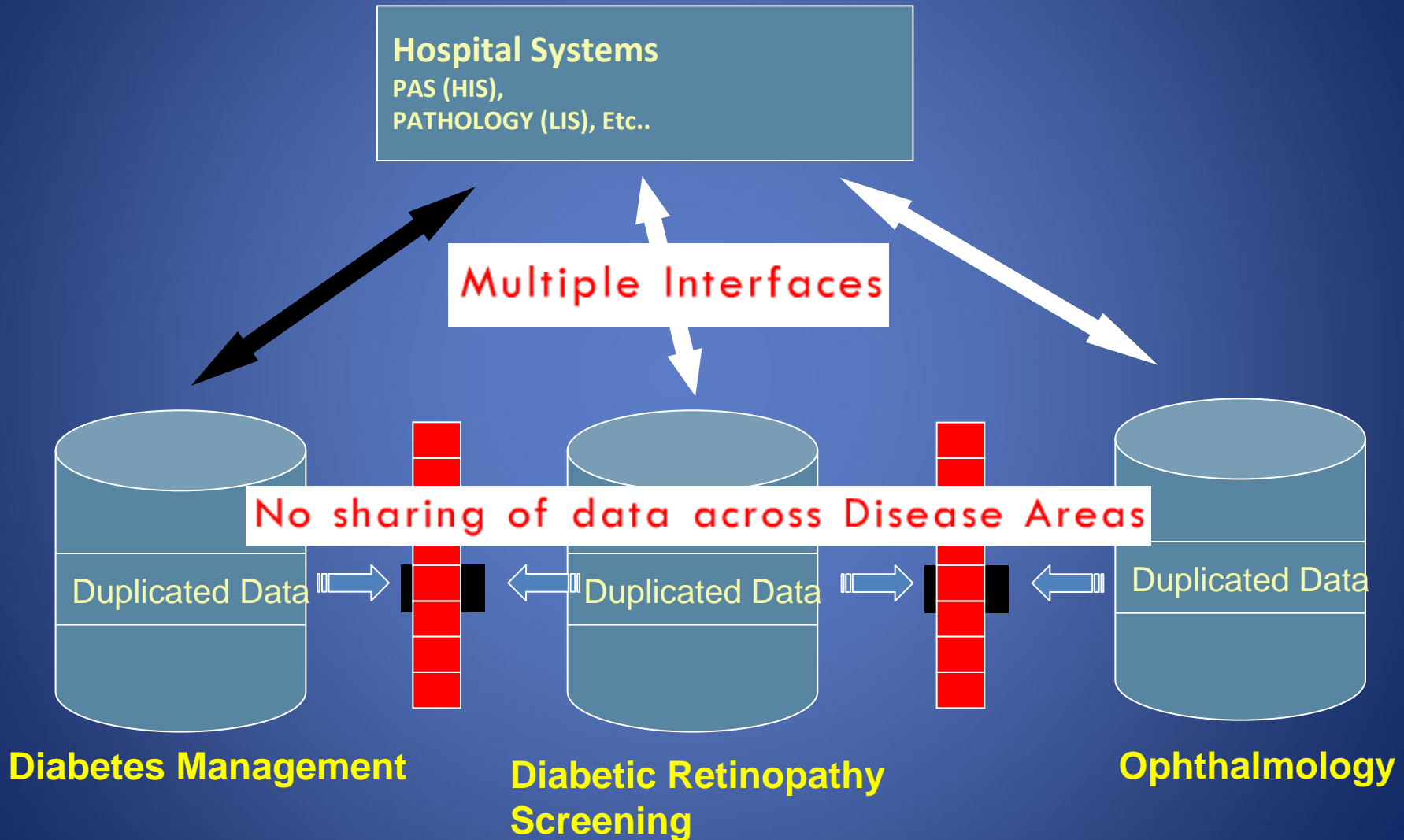
Who are Health Information Systems (UK) Ltd

Company Background

- Formerly based at Guys' & St. Thomas' NHS Trust (GSTT), London, as Diabeta3 team.
- Market the VECTOR, a flexible, configurable and highly scalable multi-disease chronic disease platform, giving the depth of functionality required by clinicians for day-to-day patient care, and not available from 'enterprise-wide' systems.

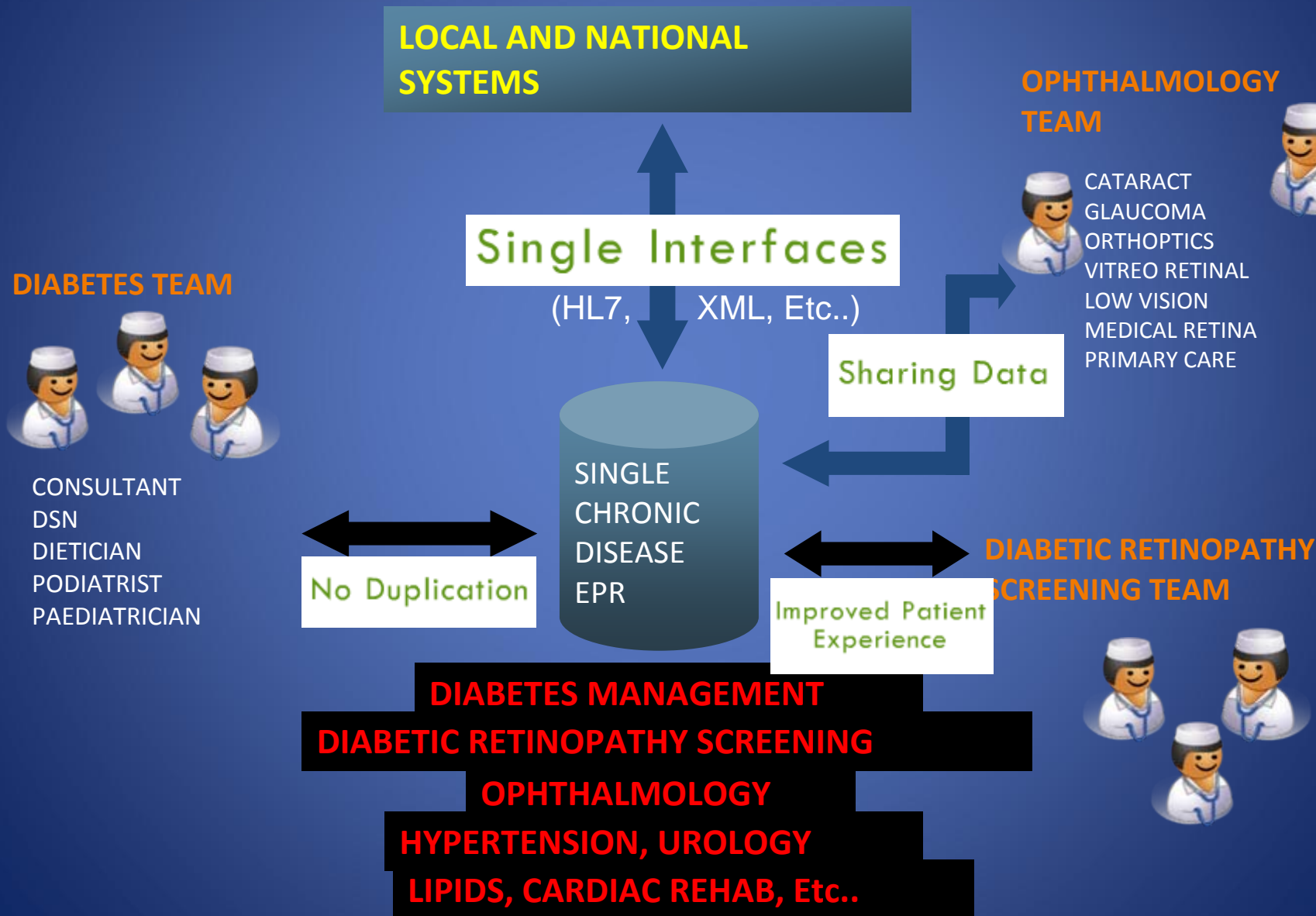
We're moving away from this.....

'SILO' Single Disease Approach



And moving towards this.....

VECTOR Multi-Disease Platform Approach



An integrated IT approach to Chronic Disease Management

- EHR in the UK – Learning from the mistakes
- My definition of an EHR
- Diabetes – A costly epidemic
- Sharing data across multiple care teams

An integrated IT approach to Chronic Disease Management

EHR in the UK – Learning from the
mistakes

Some Facts about the UK National Health
Service National Programme for IT (NPfIT)

EHR in the UK – Learning from the mistakes

Some Facts About NPfIT

- Started in 2004
- Little Clinical engagement in the beginning
- ‘Big Bang’, not ‘Best of Breed’ approach
- Multiple agendas
- Cost £12.4 billion, or 74.74 billion Riyals
- “The largest non-military IT project in history”
- Now judged by many to be an expensive failure

However.....

EHR in the UK – Learning from the mistakes

Some good things have come from it !!

- N3 – A high-speed broadband connecting all NHS locations, allowing the movement of patient data in a secure environment
- A greater understanding of the need for strong inter-operability standards
- Clinical teams now know more about what they don't want, and are prepared to become involved

EHR in the UK – Learning from the mistakes

- ***What Can Be Learned?***

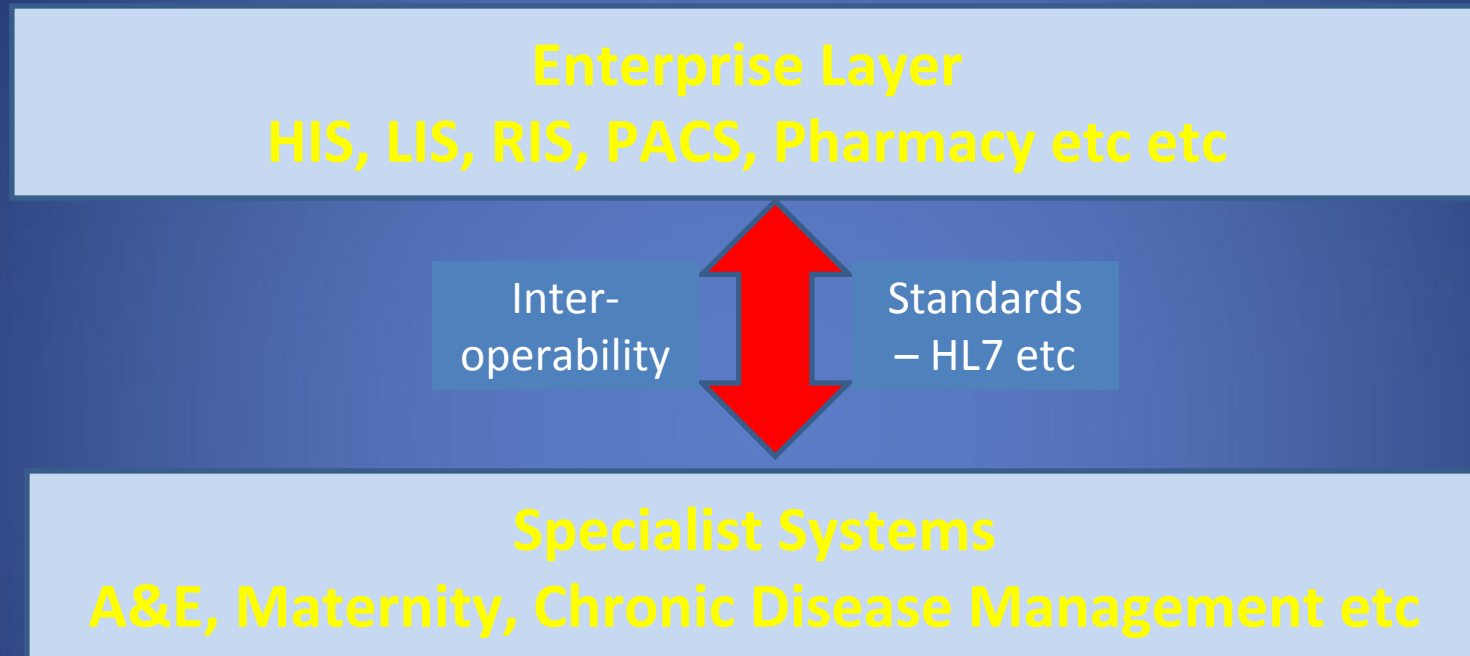
1. Big is NOT necessarily best!! The bigger the system, the more complicated it becomes, and the greater risk of failure.
2. Early Clinical engagement is critical.
3. 'Best of Breed' approach gives more chance of success.
4. Inter-operability standards (HL7 v2.x, HL7 v3) should be mandatory.
5. Patient-facing systems give the fastest return on investment.

Deliver Value Early!!!!

My Definition of an EHR

“An Electronic Health Record is a collection of inter-linked IT systems which, together, present a comprehensive, up-to-date, lifelong record of all details of care of a patient, to the clinical depth required, where it is required and when it is required.”

The Layered EHR





Specialist systems contain considerably more in-depth information, with more comprehensive datasets than a typical HIS (which may contain subsets).



Glucose Control

Glucose Control (D_DS0981)

User: **Mr STEVE COURTNEY** Today's Date: **20-Mar-2011**
 Patient: **JO BLOGGS (A123456)** Age: **44 (07-Jul-1965)** Visit Date: **24-Jan-2010**

Glucose Control (D_DS0981)

Haemoglobin A1c level (DCCT) 14  27-Jan-2009 13 26-Jan-2007 12.5
Fructosamine level  31-Jul-2006 29 06-Dec-2005 3

Admissions with Hyperglycaemia last 12m 
HONK/DKA episodes last 12m 


HMBG book seen

HMBG record

HMBG quality

HMBG meter down load

HMBG meter down load reviewed

Home Monitoring Entry ranges only day by day 

Home Monitoring Range

Back

Enter Home Monitoring Results Minima and Maxima Home Monitoring Entry by range (D_DS...)

User: **Mr STEVE COURTNEY** Today's Date: **20-Mar-2011**
 Patient: **JO BLOGGS (A123456)** Age: **44 (07-Jul-1965)** Visit Date: **24-Jan-2010**

Enter Home Monitoring Results Minima and Maxima

| | Pre-Breakfast | Post-Breakfast | Pre-Lunch | Post-Lunch | Pre-Dinner | Post-Dinner | Pre-Bed | During Night |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Min Home Monitoring Result | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Max Home Monitoring Result | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

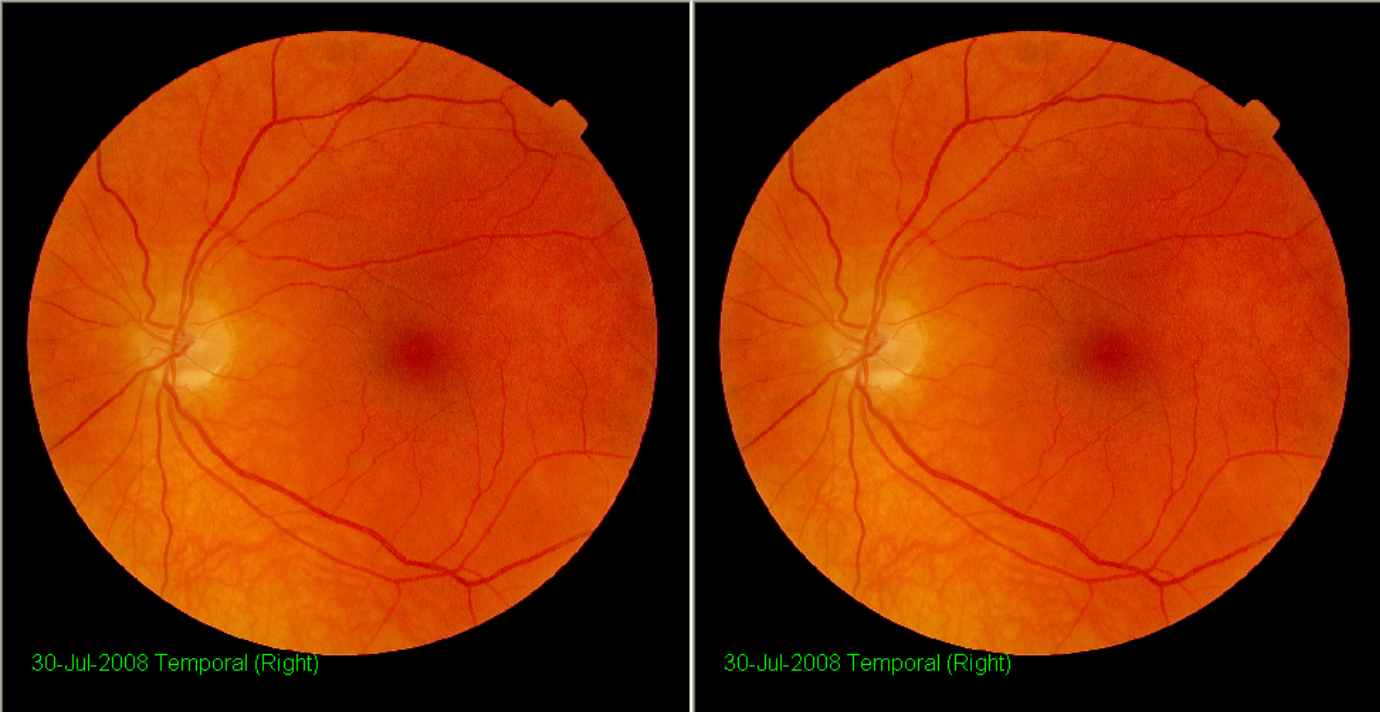
OK

Fundus images taken by The Retinal Screening Module

VECTOR Clinical Information System - [Eye Review (D_DISP4)]

Eye Review (D_DISP4)

JO BLOGGS (A123456) Age: 44 (07-Jul-1965)



30-Jul-2008 Temporal (Right)

30-Jul-2008 Temporal (Right)

Images 0

default view large

30-Jul-2008
30-Jan-2007
10-Aug-2006
23-Jun-2006

Temporal (Right)
Temporal (Left)

Zoom 47

Red free

Brightness

Lock view

30-Jul-2008
30-Jan-2007
10-Aug-2006
23-Jun-2006

Temporal (Right)
Temporal (Left)

Zoom 47

Red free

Brightness

Lock view

OK

Start | Google - ... | D3Presen... | saudiArabia | Microsoft ... | Diabeta3 ... | SOLID Wo... | VECTOR ... | EN << >> 17:13

Images of Foot Ulcers taken by the Podiatry Module

VECTOR Clinical Information System

Compare Past Foot Images (D_IL00 PopUp)

JO BLOGGS (A123456) Age: 44 (07-Jul-1965)

User: Mr STEV
Patient: JO BLOG

observations
Limb examination
The last limb exam
months ago - not i
Last podiatry visit

23-Jan-2007 Foot 1 (Right)

23-Jan-2007 Foot 1 (Left)

23-Jan-2007 Foot 1 (Right)
Foot 1 (Left)
Foot 2 (Right)
Foot 2 (Left)

Brightness

Zoom 30

Red free

Lock view

OK

Start | Google ... | D3Pres... | saudiar... | Microso... | Diabeta... | SOLID ... | VECTO... | Docume... | 17:15

Education

DNS Education Overview - 1 of 2 (D_DS1050)

User: **Mr STEVE COURTNEY**
 Patient: **JO BLOGGS (A123456)**

Age: **44 (07-Jul-1965)**

Today's Date: **20-Mar-2011**
 Visit Date: **24-Jan-2010**

DNS Education Overview - 1 of 2 (D_DS1050)

Overview Accessed today Accessed last Completed

| | Overview | Accessed today | Accessed last | Completed |
|------------------------------------|--|-------------------------------------|---------------|-------------------------------------|
| What is Diabetes? Education | <input checked="" type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 23-Nov-2009 | <input checked="" type="checkbox"/> |
| Lifestyle Education | <input type="radio"/> good <input checked="" type="radio"/> acceptable <input type="radio"/> poor | <input checked="" type="checkbox"/> | 24-Jan-2010 | <input checked="" type="checkbox"/> |
| Diet Education | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 09-Aug-2006 | <input checked="" type="checkbox"/> |
| Tablets | <input checked="" type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 26-Jan-2007 | <input checked="" type="checkbox"/> |
| Insulin Dose Titration | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 23-Jan-2007 | <input checked="" type="checkbox"/> |
| Self Monitoring | <input type="radio"/> good <input checked="" type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 16-Aug-2006 | <input checked="" type="checkbox"/> |
| Hypoglycaemia Education | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 23-Jan-2007 | <input checked="" type="checkbox"/> |
| Hyperglycaemia Education | <input type="radio"/> good <input checked="" type="radio"/> acceptable <input type="radio"/> poor | <input checked="" type="checkbox"/> | 24-Jan-2010 | <input checked="" type="checkbox"/> |
| Sick Day Rules Education | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 09-Aug-2006 | <input checked="" type="checkbox"/> |
| Ketones and Acidosis | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 09-Aug-2006 | <input type="checkbox"/> |
| Ketone Testing | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 09-Aug-2006 | <input type="checkbox"/> |
| Complications | <input type="radio"/> good <input type="radio"/> acceptable <input type="radio"/> poor | <input type="checkbox"/> n/a | 11-Aug-2006 | <input checked="" type="checkbox"/> |
| Foot Education | <input type="radio"/> good <input type="radio"/> acceptable <input checked="" type="radio"/> poor | <input checked="" type="checkbox"/> | 24-Jan-2010 | <input checked="" type="checkbox"/> |
| Acting on results | <input checked="" type="radio"/> discussed <input type="radio"/> not discussed <input type="radio"/> n/a | | | |
| Action of insulin | <input checked="" type="radio"/> discussed <input type="radio"/> not discussed <input type="radio"/> n/a | | | |
| Advice - not specific | <input checked="" type="radio"/> discussed <input type="radio"/> not discussed <input type="radio"/> n/a | | | |
| Adjustment of Insulin | <input checked="" type="radio"/> discussed <input type="radio"/> not discussed <input type="radio"/> n/a | | | |
| Action of tablets | <input checked="" type="radio"/> discussed <input type="radio"/> not discussed <input type="radio"/> n/a | | | |

Education Comments

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Risk of Chronic Heart Disease

VECTOR Clinical Information System

Help

BP and CHD Risk Factor Calculations (D_DS0684)

User: **Mr STEVE COURTNEY**
Patient: **JO BLOGGS (A123456)**

Age: **44 (07-Jul-1965)**

Today's Date: **20-Mar-2011**
Visit Date: **24-Jan-2010**

23-Nov-2009
SC
Diabetes Visit

BP and CHD Risk Factor Calculations (D_DS0684)

yes
current

start today
no
no
secondary

observations

Hypertension therapy
Patient Smokes?
BP (Sitting or Lying)
Cholesterol level
HDL - High density
Lipid Therapy
Anti-platelet Therapy
Set High Risk HT plan
Vascular Risk

yes
current

2¹ 3
2¹ 3
start today
no
no
secondary

diagnoses

Atrial fibrillation
Type 1 diabetes mellitus
Type 2 diabetes mellitus
ECG-LVH
Family History of Coronary Artery Disease
H/O: cardiovascular disease
Ischaemic heart disease
Cerebrovascular accident
Transient ischaemic attack

08-Jan-2007

 08-Jan-2007
 08-Jan-2007
 31-Jul-2006

42.66%
80.07%
53.38%

Risk Prediction of 10 year stroke
Risk Prediction of 10 year CHD (UK)
Risk Prediction of 10 year CHD (International)

4.77%
50.38%
33.59%

The following past values were found:
-Systolic BP=120 (26-Jan-2007)
-Cholesterol=28 (06-Dec-2005)
-HDL=3 (06-Dec-2005)

High Risk BP plan ...
Include Risk Predictions in letter

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Diabetes – A Costly Epidemic

Diabetes in the UK

- It is estimated that in 2007 there were 2,465,000 people in UK with a prevalence of diabetes (4.82% of the population)
- Deaths from diabetes in upper and middle income countries are predicted to increase by 80% between 2006 and 2015
- There were 5243 deaths from diabetes in 2005. However, these mortality figures are almost certainly an underestimate..... as deaths in diabetic people are often coded to secondary complications associated with the disease
- A male non-smoker diagnosed with the disease at 45.....has an 11.5% chance of dying before his 60th birthday. This equates to a life expectancy of 17.4 years compared to 34.5 years for all men aged 45 in the UK

Diabetes – A Costly Epidemic

Diabetes in the UK (continued)

- In 2006 a total of 28.4 million items to treat diabetes at a cost of £561.4M were prescribed
- Diabetes prescribing now accounts for 7% of all prescription costs
- A hypothetical male non smoker with diabetes at 45 has a 15.2% chance of having a myocardial infarction in the next 15 years
- Recent estimates are that 9% of NHS spending goes on diabetes. This equates to £3.5Billion a year, or £9.6M each day.
- Diabetes causes more deaths than breast and prostate cancer combined
- It is estimated that someone going blind costs the UK economy £250,000 (1,524,775 riyals) in healthcare and loss of the ability to work..

Diabetes – A Costly Epidemic

Diabetes in Saudi Arabia?

- Population 22 million people
- Incidence of diabetes in adult population is 23.7% according to a study by Department of Medicine, College of Medicine and King Khalid University Hospital, Riyadh, Kingdom of Saudi Arabia. (malnozha@hotmail.com) in 2004
- If 60% of people in SA are over 16 years of age, then:
 - 13,200,000 are adults, of whom 3,128,400 have diabetes, compared to 2,465,000 in the UK.
- 5243 deaths (minimum) in UK population in 2005 equates to 6457 deaths in Saudi Arabia (minimum).
- How much does diabetes cost the SA economy (£3.5 billion/year in UK and rising fast!)?

Diabetes – A Costly Epidemic

Diabetes in Saudi Arabia?

- *If Diabetes cost the UK £3.5 billion in 2007, this would equate to 21.35 billion Riyals !!*
- *BUT:*
- *3,128,400 people in Saudi Arabia have diabetes, compared to 2,465,000 in the UK.*
- *Is true cost of diabetes in Saudi Arabia 21.35 billion *
3,128,400 / 2,465,000 = 27.1 billion Riyals per year?*

EVEN IF THIS IS ONLY HALF TRUE

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FACT: There is no current cure for Diabetes

BUT: Prevention and control can reduce the effects of the disease, and save very large sums of money.

- Educating people about the need to change their lifestyle can reduce the need for drugs.
- Eye screening everyone with diabetes will reduce the on-set of eye disease (diabetes is a major cause of premature blindness).
- Controlling disease progression will reduce the need for limb amputation.

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A few slides earlier I asked:

*“Is true cost of diabetes in Saudi Arabia 27.1
billion Riyals per year?”*

*So, if we could save only 5% of this, it would equal
1.355 billion Riyals each year!*

How can this be achieved ?

An integrated IT approach to Chronic Disease Management

- Saudi Arabia MoH has already taken a big step in this direction with the building of Diabetes Clinics across the country.
- Diabetes is a lifelong disease, and caring for patients requires a huge amount of information to be made available over a long period of time. This information includes clinical observations, medications, procedures, retinal images, podiatry images, education programme, diet and lifestyle, glucose control, insulin pumps etc, etc. This makes it ideal for computerisation.

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That is Why I'm Here Today!!

- Attended Arab Health 2006, 2007, 2008, 2009, & 2010
- 2006 – Met with Dr Nasser Al-Hamdan (Director General of Non Communicable Diseases Directorate) and Dr Anzar Baig (Consultant, Medical Informatics, Non Communicable Diseases Directorate). Organised visits to Vector sites in London as part of supplier survey, and Dr Baig's report recommended the adoption of Vector as a multi-disease platform for Saudi Arabia
- 2008 - Met Dr Khaled Tayeb , National Diabetes Committee, at Arab Health – Dr Tayeb approved of the system
- Visited Saudi Arabia 2008, including presentation to Dr Tayeb, and also to MoH team.
- 2009 – Visited Saudi Arabia again.
- 2011 – Here I am again !!

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Conclusions:

“From all the above mentioned aspects it can be safely concluded that the VECTOR System suits the Ministry of Health requirements and is more economical as well as feasible for us to adopt.”

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Where Can Vector Diabeta3 Help?

- In 12 month period following implementation, typically 30% more patients can be seen by the clinical team with no increase in human resources.
- Vector reduces the administration overhead dramatically (automation of patient, primary care and referral letters, reduction in reliance of paper notes, automation of appointment recall process, etc etc.). This is a real cost saving!!
- Improves the handling of 'walk in' patients, where no hospital notes are immediately available.
- Reduces clinical team frustration.
- Reduces risk of clinical error.
- Improves the patient experience

Options for Saudi Arabia

1. Build your own system – but:
 - Vector took many years to develop to the current levels of functionality
 - Why build your own when there is a proven system already available, incorporating international best practice?
2. Ask a software house to write a system for you – but:
 - There have been many disasters doing it this way!!
 - What appears to be a cheap option actually ends up costing a lot more!
3. Implement a well proven system, and capitalise on the experiences already gained in other countries –
 - More guarantee of success
 - May appear more expensive at first, but, in the longer term, this is usually the cheapest option!!
 - New developments can be incorporated into the system

When Should You Do It?

- It is very important to have an overall strategic direction for the implementation of an Electronic Health Record, and to ensure that each implementation project fits within that strategy. However:
 - Vector can operate in a fully integrated, partially integrated or stand-alone mode.
 - Vector can be implemented NOW, and integrated into the full EHR as that develops over time.

Conclusions

- There is a diabetes epidemic in this region
- Significant moves have been made to address this.
- Diabetes care needs to be supported by strong, in-depth clinical IT systems, which, themselves, can inter-operate via industry standards such as HL7
- Vector is such a system, proven through many implementations.
- An IT solution to underpin diabetes care can be implemented now, and will integrate with medium and long-term strategies as a multi-disease, chronic disease/long term care platform.

Deliver Value Early!!

Thank you all for your attention.

Any questions, please?