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A CASE STUDY ON THE ADOPTION OF SNOMED CT WITHIN UNIVERSITY HOSPITALS OF MORECAMBE BAY (UHMB) IN THE UK

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Outline

- Organisations
 - HSCIC – UK National Release Centre
 - CSC
 - University Hospitals of Morecambe Bay (UHMB) NHS Foundation Trust
- SNOMED CT
 - NHS strategy
 - LORENZO implementation
 - UHMB adoption

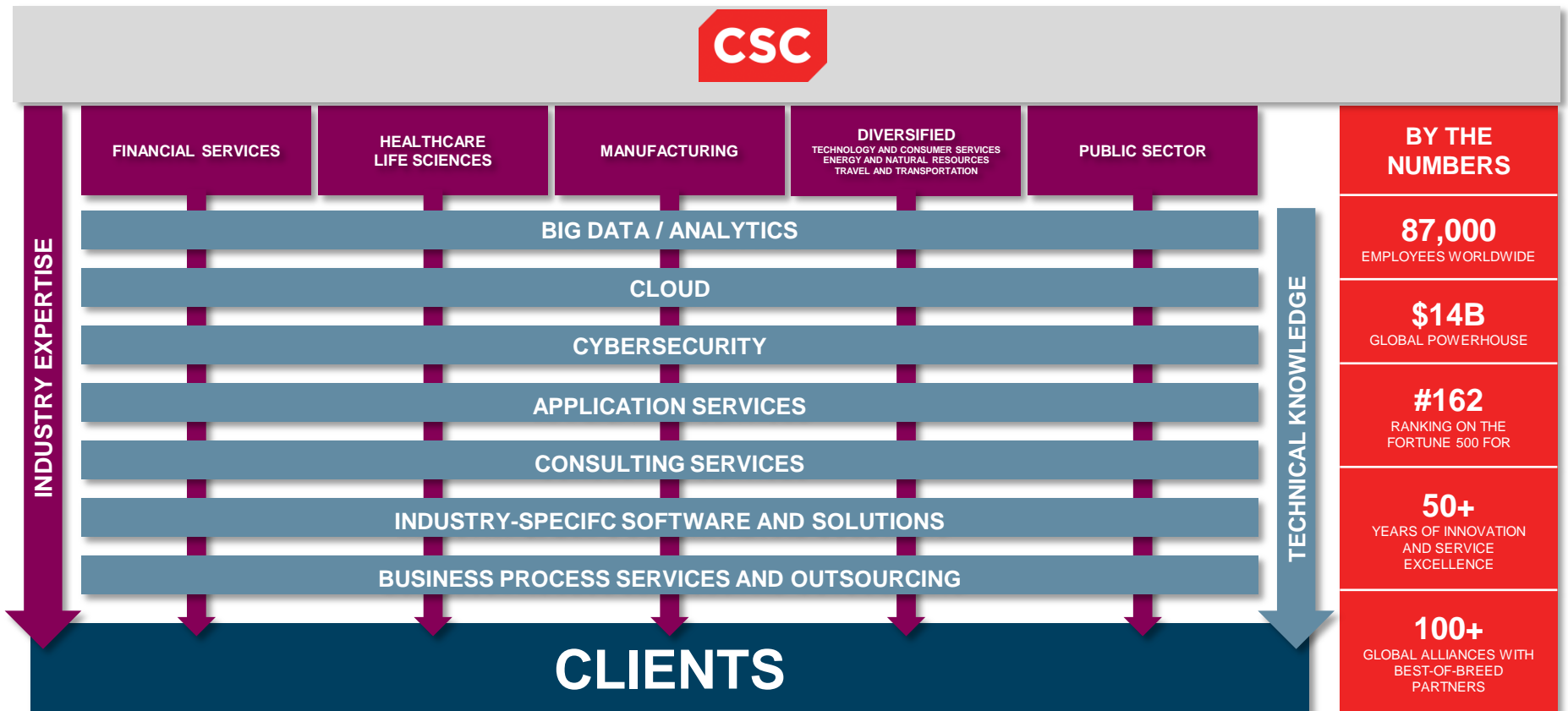
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A Global Powerhouse in Business and IT Transformation

Combining next-generation technology capabilities with strong industry focus

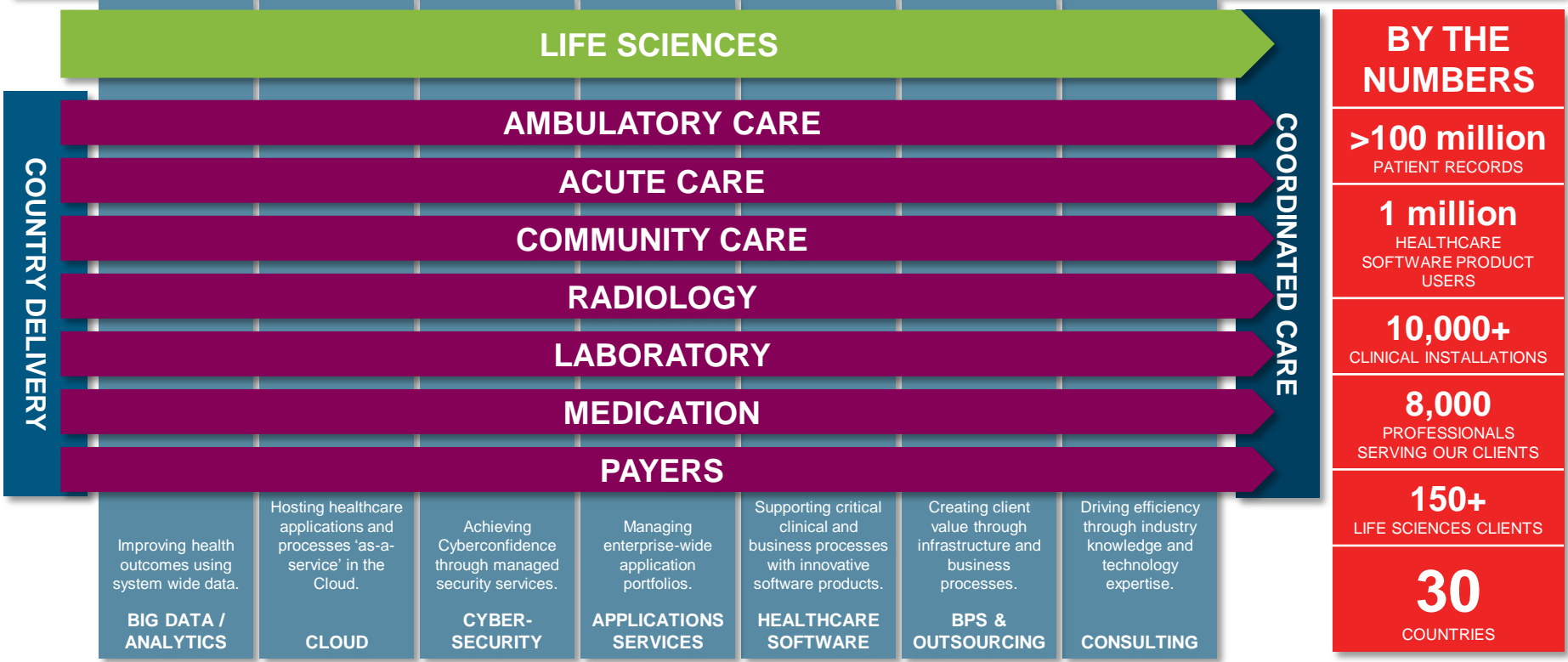


Market shifts and technology trends demand fresh thinking. CSC helps clients capitalise on trends and anticipate what's ahead. Our people help businesses, governments and communities solve their toughest challenges.



Proposition: Uniquely Positioned in Healthcare & Life Sciences

Combining specialist IP, next-generation technology and extensive experience



CSC serves public and private healthcare and life sciences clients all over the globe, helping them achieve their goals of maximising efficiency and effectiveness and improving health outcomes for patients and citizens.



Distinctive Vision for Healthcare and Life Sciences

HEALTHCARE AND LIFE SCIENCES: MARKETS IN TRANSITION

Cost pressures

- U.S. spend: 18% of GDP
- ...and rising

Demographics

- Ageing populations
- Emerging economies

Medical advances

- Genomics
- Personalized medicine

Technology

- Ubiquitous patient access
- Cloud
- Big Data / Analytics

OUR VISION:

CONNECT. CARE. COLLABORATE.

Building on our position as a leading healthcare systems integrator with a rich portfolio of intellectual property, we will offer innovation through the use of technology to enable Coordinated Care and help healthcare organisations to improve health outcomes.

LIFE SCIENCES

Driving transformation through capital efficient and agile innovation..

COORDINATED CARE

Enabling people, processes and systems to work together to optimize care outcomes.

HEALTH ENTERPRISE

Providing BPS and advisory for healthcare enterprises.

POPULATION HEALTH

Pioneering Big Data and Analytics to improve healthcare for populations.

HEALTH CONSUMER

Helping patients use personal data to manage their own health.

- Global focus
- Regional delivery

- Innovative software
- Next-generation technology services

- Top 5 player in global healthcare and life sciences

WHY CSC:

UNRIVALLED STRENGTHES

Market Position

- Market leader in multiple geographies segments.

Global Reach

- Seven regional business units spanning the globe.

Capabilities

- Broad range of technology-enabled solutions.

Software Portfolio

- Category leading products in Acute Care, Primary Care, Community Care, Medication Management, Laboratory, Radiology and Life Sciences.

WHY NOW?

Market Need

- Healthcare systems need to address spiralling costs, changing demographics, and new medical technologies.

Technology Maturity

- Technology can contribute in new ways.

Healthcare and Life Sciences are markets in transition. We help our clients use technology to respond to market dynamics and achieve their goals of maximising efficiency and effectiveness and improving health outcomes for patients and citizens.

Focus on Healthcare

MARKET BACKGROUND		CSC STRATEGIC FOCUS
COST PRESSURES, DEMOGRAPHICS AND MEDICAL ADVANCES		COORDINATED CARE
UK and Ireland	<ul style="list-style-type: none"> • Leading provider of hospital PAS/EMR • Strong position in departmental solutions (labs, radiology, maternity, medication, emergency room) • Leading provider of ambulance management systems • Established provider of primary care systems • Established provider of outsourcing and BPS 	<ul style="list-style-type: none"> • Innovative IP supporting coordinated care
Central Europe	<p>DACH</p> <ul style="list-style-type: none"> • Established provider of hospital PAS (Germany) • Established provider of departmental systems – labs, radiology (Germany) • Established provider of payer solutions (Austria) <p>Netherlands</p> <ul style="list-style-type: none"> • Established provider of hospital PAS/EMR • Established provider of primary care systems • Established provider of IT infrastructure 	<ul style="list-style-type: none"> • Business Process Services
North America	<ul style="list-style-type: none"> • Established provider of outsourcing and BPS • Strong position in applications management and consulting services • Established provider of payer solutions • Emerging provider of cybersecurity services 	<ul style="list-style-type: none"> • Next-generation technology solutions
Asia Pacific	<p>Australia / New Zealand</p> <ul style="list-style-type: none"> • Leading provider of hospital PAS/EMR • Leading provider of departmental systems – pharmacy, theatres, emergency • Leading position in Electronic Medication Management • Strong position in systems integration <p>Asia, Middle East and Africa</p> <ul style="list-style-type: none"> • Established provider of hospital PAS 	<ul style="list-style-type: none"> • Big Data / Analytics
Nordics	<p>Denmark</p> <ul style="list-style-type: none"> • Largest provider of healthcare IT – acute care, aged care, community care, labs, medication, payer <p>Sweden, Norway</p> <ul style="list-style-type: none"> • Emerging position in acute care, aged/social care, labs, payer. 	<ul style="list-style-type: none"> • Cybersecurity
Southern Europe and Latin America	<p>Iberia (Spain, Portugal)</p> <ul style="list-style-type: none"> • Established provider of primary care, acute care and laboratory systems. <p>Latin America (Mexico, Peru, Honduras, Ecuador, Panama, Dominican Republic)</p> <ul style="list-style-type: none"> • Emerging leader in coordinated care solutions bringing together acute and primary care. 	

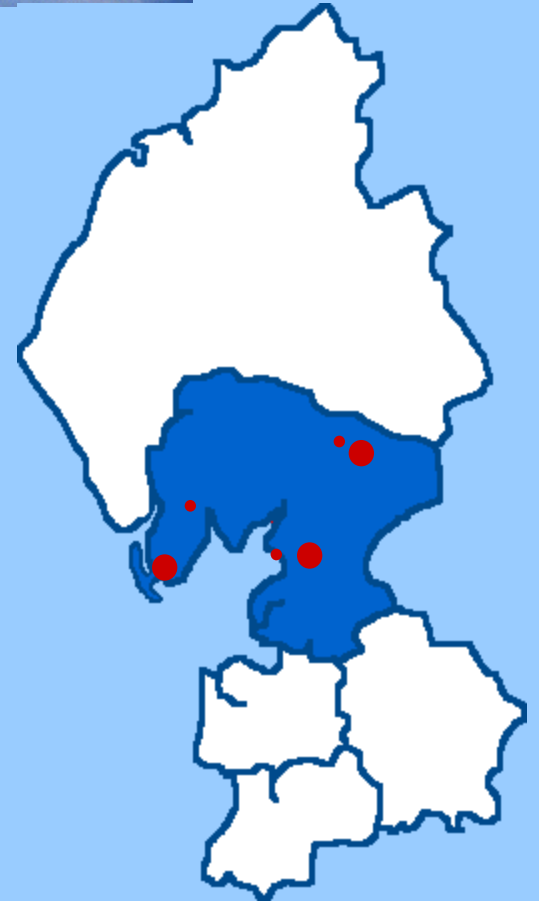
Our innovative software, combined with our leading next-generation technology capabilities, help our clients respond to the challenges of a healthcare system in transition.



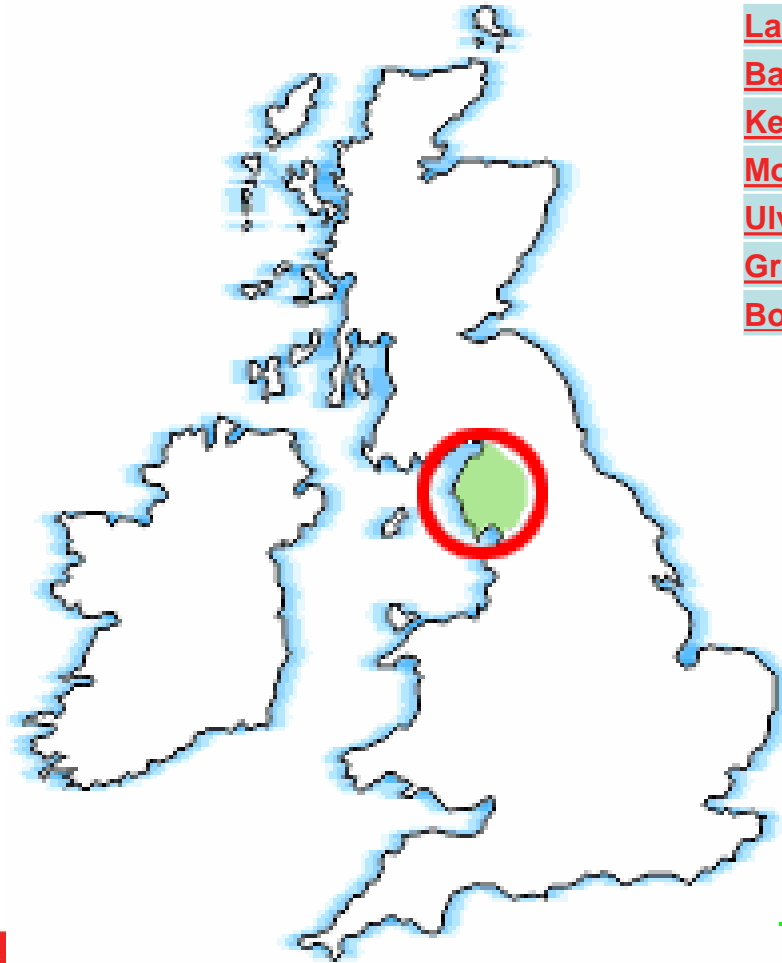
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MORECAMBE BAY (UHMB)
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Geographical Locations



Town	County	Population
<u>Lancaster</u>	Lancashire	134,000
<u>Barrow-in-Furness</u>	Cumbria	59,256
<u>Kendal</u>	Cumbria	28,300
<u>Morecambe</u>	Lancashire	45,000
<u>Ulverston</u>	Cumbria	11,210
<u>Grange-Over-Sands</u>	Cumbria	4,000
<u>Bowness-on-Windermere</u>	Cumbria	8,400



Numbers

- Almost 1000 square miles of the most picturesque countryside in England
- 320k resident population
- 400k activity based population
- Local GPs have 98% of the population registered with them
- 95% of all patient activity at local Trust
- 3 acute hospital sites and 2 community treatment centres
- 12m visitors to the Lakes each year – more than twice the population of Scotland

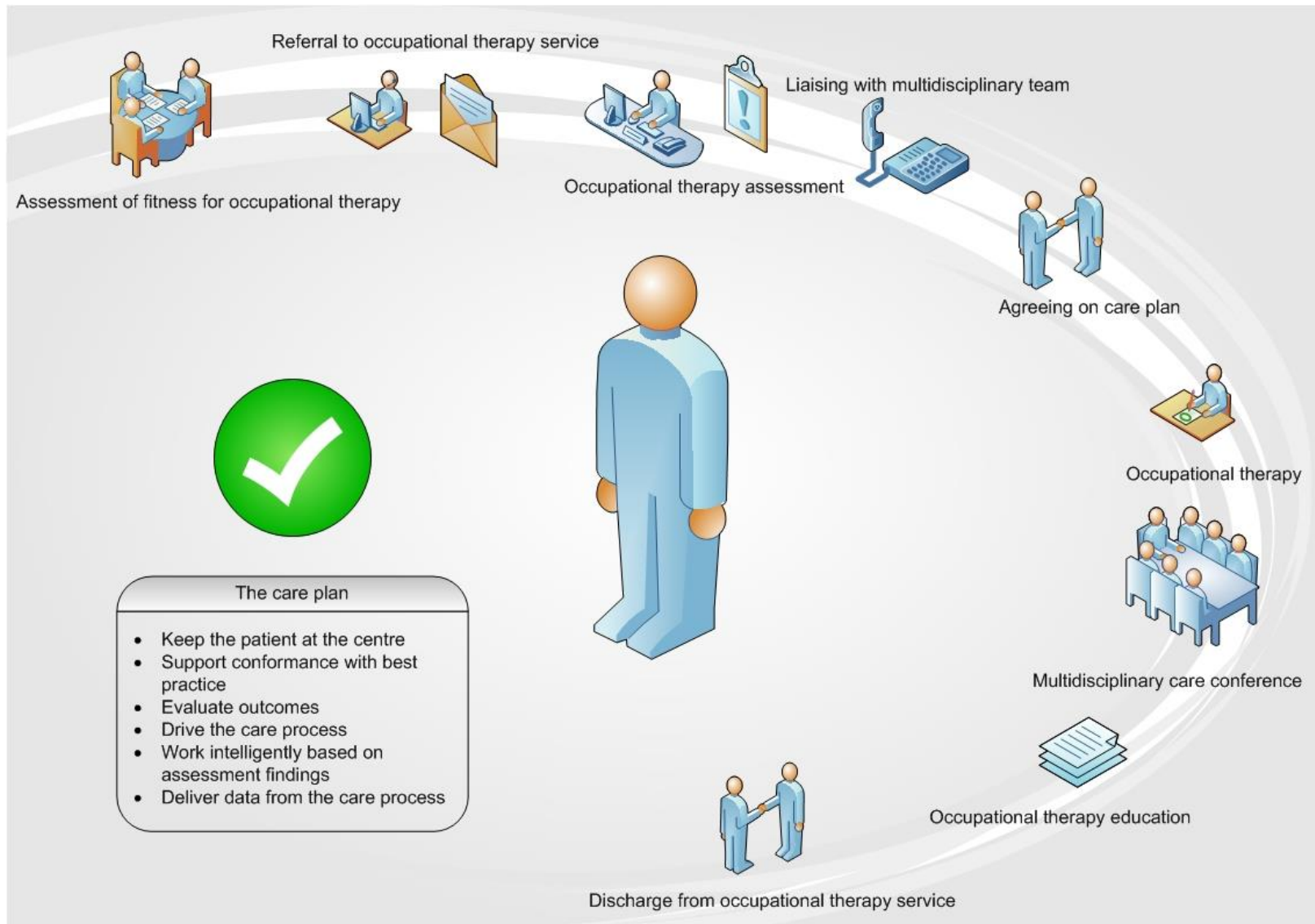
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NHS STRATEGY



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Focus on Interoperability



Power of Information

Information Strategy:

3.58 At the moment of
cannot flow around
number of inconsis
systems and across
patient care purpos
adapted to fit all ne
referenced, system

All relevant systems should use the same terminology to exchange coded information – SNOMED CT

means that information
t. Reducing the
ration between
e. In due course, for
on; SNOMED CT,
be consistently

Action: The **NHS Com**
collection from sec

Systems will consistently use the electronic drugs dictionary (dm+d)

ets (the main data

Information Standard

The standard applies
Healthcare profess
should use SNOM
SNOMED CT will i
social care, health

The **NHS Commissioning Board** will ... allow data returns in SNOMED CT from April 2014

g with patients
be required to use
include public health,

The standard may be

- In messages th
- Patient Summaries including Discharge summary.
- Problem lists.
- Allergy Lists and Allergy Management.
- Clinical Documentation.
- Order Communication and Results reporting.
- Care Plans; in particular for clinical content that will be transferred between systems.
- Keyword lists for metadata in care pathways, research documents, evidence based content.

Recent Strategic Documents



SAFER HOSPITALS SAFER WARDS

Achieving an integrated digital care record

WORLD CLASS CUSTOMER SERVICE: INFORMATION, TRANSPARENCY AND PARTICIPATION

CLINICAL AND PROFESSIONAL LEADERSHIP

PEOPLE ACCESSING THEIR DATA

RIGHT DATA, RIGHT PLACE, RIGHT TIME

use the NHS number

NHS INTEGRATED

High quality care for all, now and

The key standards to which local organisations should start to adhere are:

**Semantic
SNOMED CT**

If we are to achieve a single reliable source of data for multiple purposes, record keeping and data definitions must be standardised, including the implementation of SNOMED Clinical Terms (systematically organised, computer processable collection of medical terms) on all clinical information systems



Future Hospital Commission

**Future hospital:
Caring for
medical
patients**

A report from the Future Hospital Commission
to the Royal College of Physicians
September 2013

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LORENZO IMPLEMENTATION



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LORENZO

- LORENZO is CSC's strategic next generation electronic patient record system
- Multi-professional multi-specialty multi-care setting
- Comprises both administrative and clinical functionality
- Deployed in UK and the Netherlands to date
- All structured patient clinical data underpinned by use of clinical terminologies

SNOMED CT in LORENZO

- First release of LORENZO targeted for NHS in England
- National Programme for Information Technology (NPfIT) in England stipulated use of SNOMED CT
- Hence SNOMED CT was chosen as clinical terminology for clinical data in LORENZO in NHS England

Where is SNOMED CT used in LORENZO?

- Clinical statements
 - Problems
 - Diagnosis / Symptom / Presenting complaint
 - Allergies
 - Drug allergy / Drug adverse reaction / Drug intolerance
 - Food allergy / Food adverse reaction / Food intolerance
 - Non-drug allergy / Non-drug adverse reaction / Non-drug intolerance
 - Procedures
- Clinical noting
 - Smart tags
- Structured assessments (forms)
 - Data items linked to SNOMED CT expressions
- Medication management
 - Drugs (through mapping to dm+d)

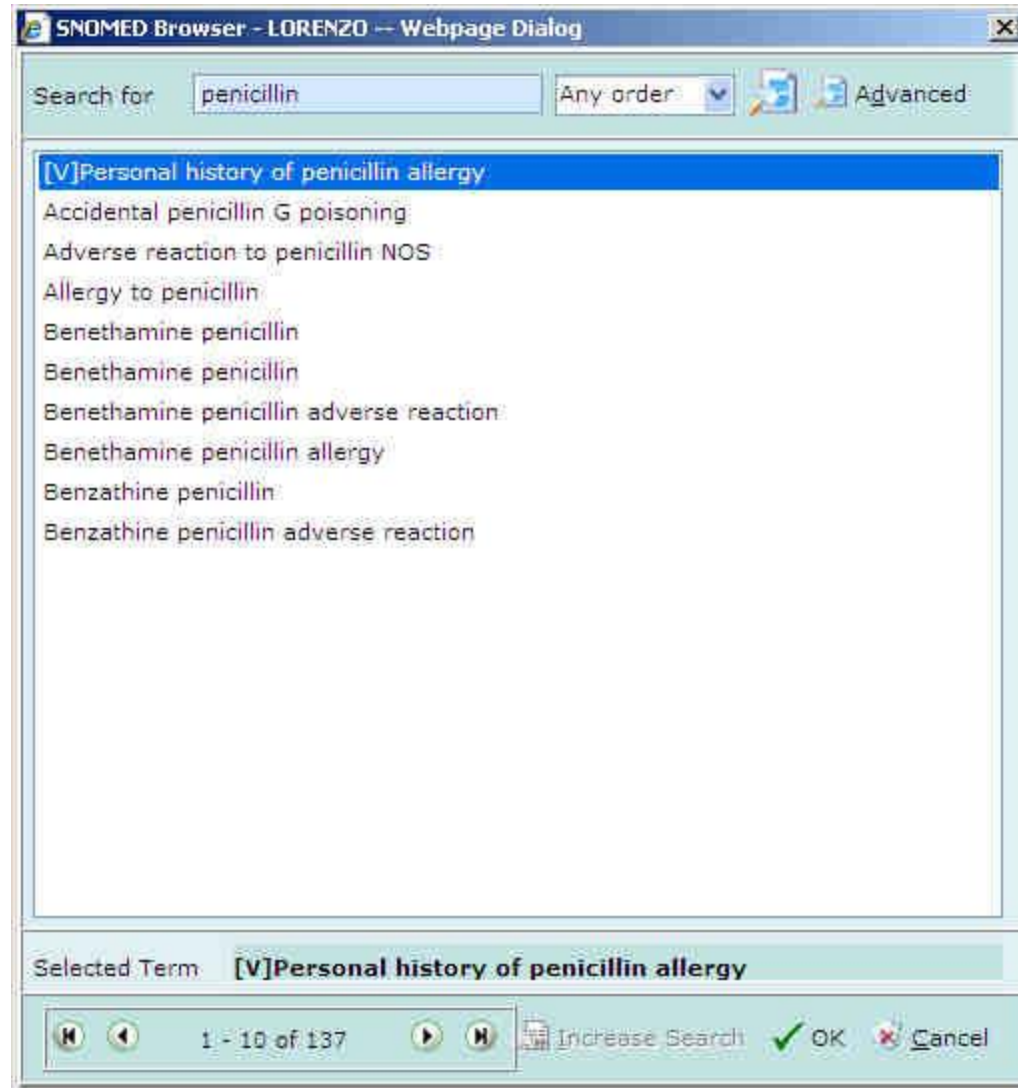
SNOMED CT Subsets

- A key underlying artefact within the LORENZO approach is the use of SNOMED CT subsets to constrain user search
- Subsets include concepts from UK Extension, but exclude non-current and veterinary concepts and some hierarchies
- Subsets are created for each clinical statement type i.e. diagnosis, drug allergy, etc.
- Subsets for allergies are derived from the national subsets created and maintained by HSCIC
- Same subsets are used by all the NHS Trusts using LORENZO

Searching for SNOMED CT Terms in LORENZO

- LORENZO supports five different ways of searching for SNOMED CT terms
 - Basic search
 - Advanced search
 - Favourites
 - Recently used
 - Frequently used

LORENZO SNOMED CT Basic Search



LORENZO SNOMED CT Advanced Search

The screenshot displays the SNOMED Browser interface for a search. The search term 'penicillin' is entered in the 'Search For' field. The results are categorized into 'Search Results', 'Parents', and 'Children'. 'Natural penicillin' is highlighted in the search results. The 'Alternative descriptions' section lists 'Natural penicillin' and 'Natural penicillin (substance)'. A pagination bar shows '11 - 20 of 137' results.

SNOMED Browser - LORENZO -- Webpage Dialog

Advanced Search

Search For: Pattern:

Search Results

- Benzathine penicillin allergy
- Combined penicillin preparation
- Combined penicillin preparation adverse reaction
- Combined penicillin preparation allergy
- Extended spectrum penicillin
- Extended spectrum penicillin
- H/O: penicillin allergy
- Infection resistant to penicillin
- Intentional penicillin G poisoning
- Natural penicillin**

Parents

- Penicillin -class of antibiotic-

Children

- Benzylpenicillin
- Phenoxymethylpenicillin

11 - 20 of 137

Alternative descriptions

- Natural penicillin
- Natural penicillin (substance)

LORENZO SNOMED CT Favourites

Clinical terminology advanced browser -Lorenzo -- Webpage Dialog

Advanced Search

Search By: Code /Text

Search Results **Favourites** Recently Used Frequently Used

- User Favourites
- [-] Shared Favourites
 - [-] New Folder
 - + New Folder
 - [-] **New Folder**
 - [-] Active rheumatic fever with valvulitis
 - + New Folder

LORENZO SNOMED CT Recently Used

Clinical terminology advanced browser -Lorenzo -- Webpage Dialog

Advanced Search

Search By : Code /Text Pattern

Search Results Favourites **Recently Used** Frequently Used

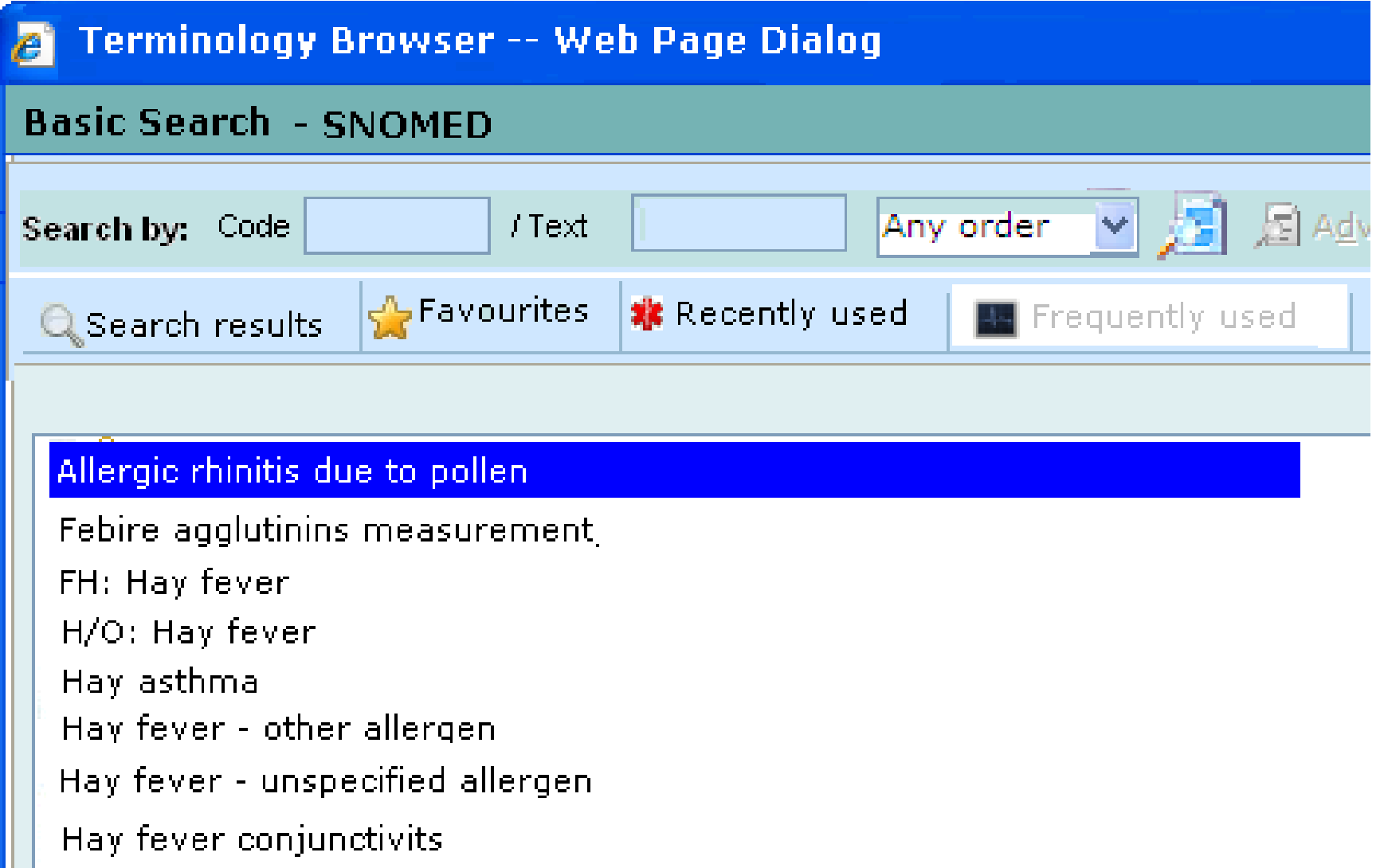
3M Cavilon No Sting barrier film foam 3ml applicator 3345P (3M Health Care Ltd)

24 hour Bence-Jones screening test

2 way foley all silicone catheter female 16Ch 085016101 10ml balloon (L.In.C. (Leicester Integrated Clinical)

[V]Screening for haemorrhagic fever



LORENZO SNOMED CT Frequently Used







The screenshot shows a web browser window titled "Terminology Browser -- Web Page Dialog". The main content area is titled "Basic Search - SNOMED". Below the title, there is a search bar with the following elements: "Search by: Code" followed by an input field, "/ Text" followed by another input field, and "Any order" with a dropdown arrow. To the right of the search bar are icons for a magnifying glass, a document, and a document with a magnifying glass, followed by the text "Adv". Below the search bar is a navigation bar with four buttons: "Search results" (with a magnifying glass icon), "Favourites" (with a star icon), "Recently used" (with a red asterisk icon), and "Frequently used" (with a dark square icon). The main content area displays a list of search results. The first result, "Allergic rhinitis due to pollen", is highlighted in blue. Below it are several other results: "Febire agglutinins measurement", "FH: Hay fever", "H/O: Hay fever", "Hay asthma", "Hay fever - other allergen", "Hay fever - unspecified allergen", and "Hay fever conjunctivits".

Terminology Browser -- Web Page Dialog

Basic Search - SNOMED

Search by: Code / Text Any order   Adv

 Search results  Favourites  Recently used  Frequently used

Allergic rhinitis due to pollen

Febire agglutinins measurement,

FH: Hay fever

H/O: Hay fever

Hay asthma

Hay fever - other allergen

Hay fever - unspecified allergen

Hay fever conjunctivits

LORENZO SNOMED CT Clinical Noting Smart Tags

>> Create note

Create note



Completed Convert to document Print Distribute

Arial 10 B I U

Hnew

This is test the font size

Hsp4

This is to test the font size

H Allergies

She appeared well-developed and well **nourished**, and in mild **distress**. The only positive physical findings were limited to the abdomen and pelvis. Her abdomen was mildly distended, and it was tender, especially in the lower left quadrant. At **pelvic examination** examination **examination her cervix** cervix **cervix was tender** on motion, and the **uterus was of normal size**, retroverted, and somewhat fixed. There was a tender cystic **mass** about 4-5 cm in the left adnexa. **Rectal examination** was negative

LORENZO SNOMED CT Clinical Noting Smart Tags

>> Create note

Create note ?

Completed Convert to document Print Distribute

Arial 10 **B** *I* U [List icons] [Clipboard icons] [Undo/Redo] [Table] [Link] [Print]

Hnew
This is test the font size

Hsp4
This is to test the font size

H Allergies

She appeared well-developed and well **nourished** and in mild **distress**. The only positive physical findings were limited to the abdomen and pelvis. Her abdomen was mildly distended, and it was ten **examination her cervix** cervix **size**, retroverted, and somewhat fixed. There was a tender cystic **mass** about 4

Record Problem : Well nourished(Symptoms)

LORENZO SNOMED CT Forms Data Items

Initiate Personal Care ?

Page 2 - Mobility/Getting Out and About SetContext Finalise Mark as significant

Actual date of assessment: 03/12/2009 18:04:05 Assessed by: JAC, jac Copy from previous form

<p>Mobility</p> <p>Mobility within the home <input type="text" value="Independent"/></p> <p><input type="checkbox"/> Add details</p> <p>Getting in/out chair <input type="text" value="Independent"/></p> <p><input type="checkbox"/> Add details</p> <p>Getting in/out bed <input type="text" value="Independent"/></p> <p><input type="checkbox"/> Add details</p> <p>Managing steps <input type="text" value="Independent"/></p> <p><input type="checkbox"/> Add details</p> <p>Managing stairs <input type="text" value="Independent"/></p>	<p>Getting Out and About</p> <p>Can you get to local shops and facilities? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not given <input type="radio"/> Not know</p> <p><input checked="" type="checkbox"/> Add details</p> <p>Details</p> <p><input type="text"/></p> <p>How do you usually get to local shops and facilities? <input type="text" value="Other"/></p> <p><input type="checkbox"/> Add details</p> <p>Other, please specify</p> <p><input type="text"/></p>
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LORENZO SNOMED CT to ICD/OPCS Mapping

https://t006-native-lor1045.lgn.mpe.ncrs.nhs.uk/?TITLE=Coding&_PageName=AppWizardPage.aspx - C - Windows Internet Explorer

Mr TRIAGE Thirdscenario 01-Jan-1980 33 Yrs Male SIA010044
Encounter Closed Emergency: 02-Aug-2013

Entity details >> **Coding and Grouping**

Coding and Grouping

Summary: Event-AE Departure, 02-Aug-2013, Melbourne Mark, Encounter-Emergency,02-Aug-2013,02-Aug-2013,Melbourne Mark,UHMB Triage Area

Quick links

- Coding history
- Clinical notes
- Documents
- Favourites
- Problems
- Procedures**
- Results

<input type="checkbox"/>	Procedure name	Tr...	Performed da...	Performed by	Coding scheme and version
<input type="checkbox"/>	Advice about treatment	+	02 Aug 2013	Melbourne Mark	SNOMED CT 20120401
<input type="checkbox"/>	Nasal bones X-ray	+	02 Aug 2013	Melbourne Mark	SNOMED CT 20120401
<input type="checkbox"/>	Removal of foreign body from skin	+	02 Aug 2013	Melbourne Mark	SNOMED CT 20120401

Category: Treatment Coding scheme: AETRE 1.0

Code: Warning component:

<input type="checkbox"/>	1°	Category	Code	Description	Coding	Additional description	Location
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Diagnosis	010068	Laceration Nose	AEDIG 1.0	010068-Laceration Nose	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Investigations	01	X-ray plain film	AEINV 1.0	01-X-ray plain film	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Treatment	08	Removal foreign body	AETRE 1.0	08-Removal foreign body	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Treatment	222	Guidance/advice only - verbal	AETRE 1.0	222-Guidance/advice only - verbal	

Remove
 Pair
 Associated codes
 Record Problem
 Record Procedure
 Add to favourites
 Group

On behalf of:
 Authorise all
 Status: Pending coding

Suspend Previous Finish Cancel

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**UNIVERSITY HOSPITALS OF
MORECAMBE BAY (UHMB)
NHS FOUNDATION TRUST
ADOPTION**

CSC

single Patient Record (sPR)

Introduction and Context

- Longstanding patient record vision
- Strong Executive and Senior Clinical Leadership from the start
 - Full visibility at Trust Board
- Organisation transformational change project
- Long term investment – 10 years+ programme of work
- Strategic relationship with CSC
- Benefits being realised
 - Immediate Discharge Summary; Infection Prevention; Paperlight Outpatients, etc.

single Patient Record (sPR) Informatics Profile

- Substantive staff base of 75 WTE
- 6000 named users representing 3700 WTE
- 4000 trained users – smart cards issued
- Concurrent user base of 600 with 1500 unique logons per day

single Patient Record (sPR) LORENZO Core Capability

- Clinical Documentation
 - Letters, notes and forms
- Care Management (PAS function)
 - ADTs
 - Access Planning
 - OP management
- Requesting and Resulting
- Emergency Care
- PACS viewing
- TTO prescribing
- Advanced Bed Management
- Maternity

Where is SNOMED CT used?

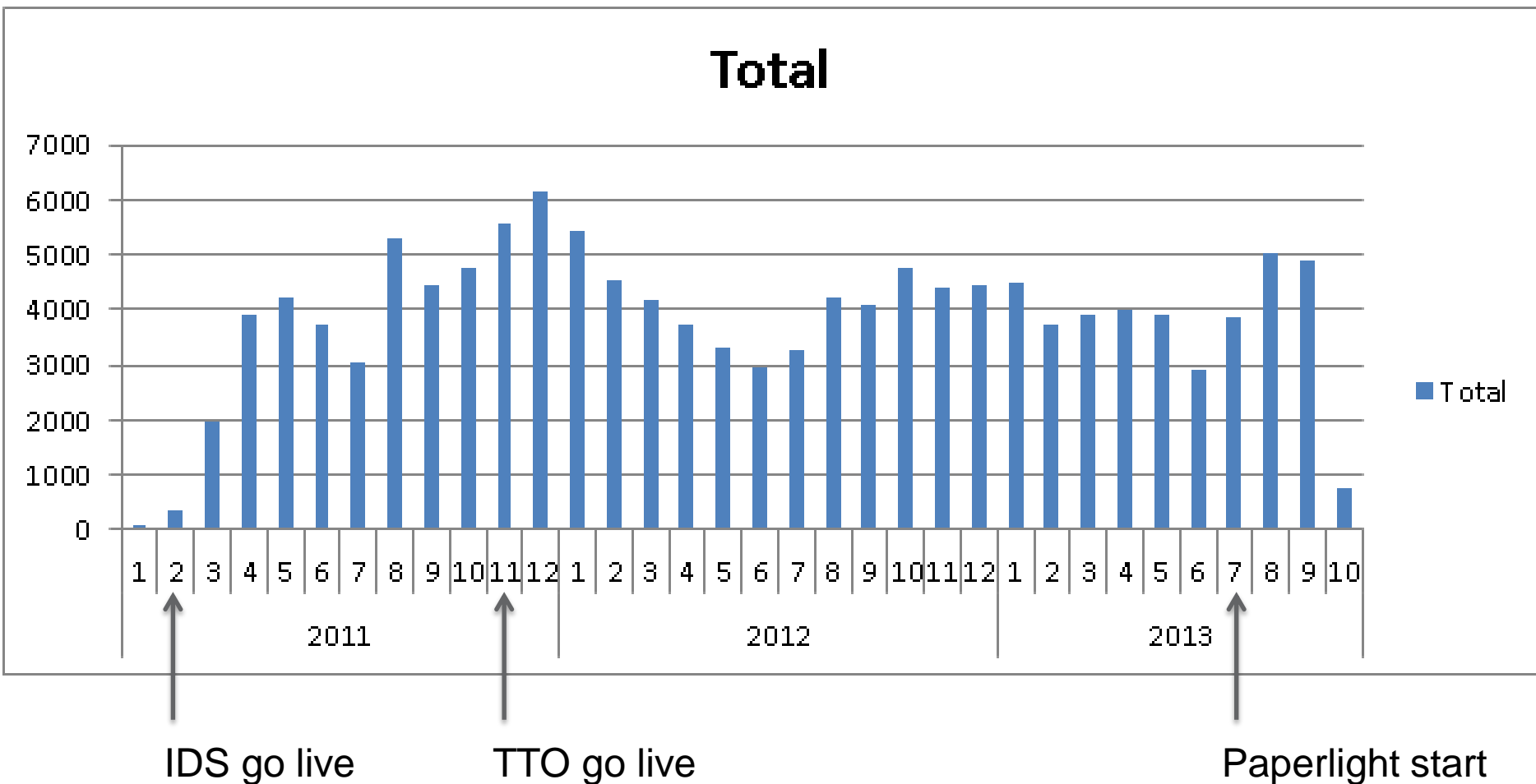
- Data recording
 - Problems
 - Allergies
 - Procedures
- Care settings
 - Inpatient
 - Outpatient
- Business processes
 - Discharge summary
 - Clinical noting
 - Admissions

Who uses SNOMED CT?

- Over 800 clinicians are using SNOMED CT for recording structured data at point of care
 - Out of total clinician community of 3500
- Introduced to clinicians as ‘structured terms’

How often do they use SNOMED CT?

Total



How is SNOMED CT use facilitated?

- Every clinician is trained on how to find the SNOMED CT terms that they need to use
 - Training
 - Coaching
 - Shadowing by trainer
 - One-to-one
- Clinicians need to demonstrate competency before being allowed to access system
- New doctors must undergo training as part of their induction
- Training support available 24/7 during go live

Benefits

- Immediate Discharge Summary being populated with relevant structured data
- TTO prescribing supported by prescribing decision support
- Building rich structured patient record which will yield more benefits in the future

- HSCIC case study available at <http://systems.hscic.gov.uk/data/uktc/snomed/training/mcmbaycs.pdf>
- HSCIC eLearning 'SNOMED CT in Action' available at <http://www.infostandards.org/learning/>



BUSINESS SOLUTIONS
TECHNOLOGY
OUTSOURCING