Applying STAMP in Healthcare;
The potential for leading safety indicators

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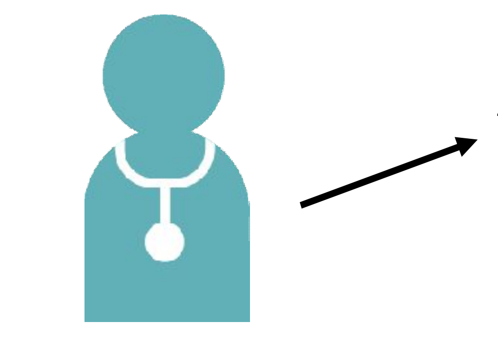
Healthcare

Healthcare

- Definition: "*services provided to people or communities by agents of the health services or professions for the purpose of promoting, maintaining, monitoring, or restoring health*"
  (Farlex Partner Medical Dictionary)



A. Primary: *"provides the first point of contact in the health care system. In the NHS, the main source of primary health care is **general practice**"* *(University of Bristol)*

B. Secondary: "*services such as planned **hospital** care, rehabilitative care, urgent and emergency care (including out-of-hours), most community health services, mental health and learning disability services*" *(NHS)*

Patient safety

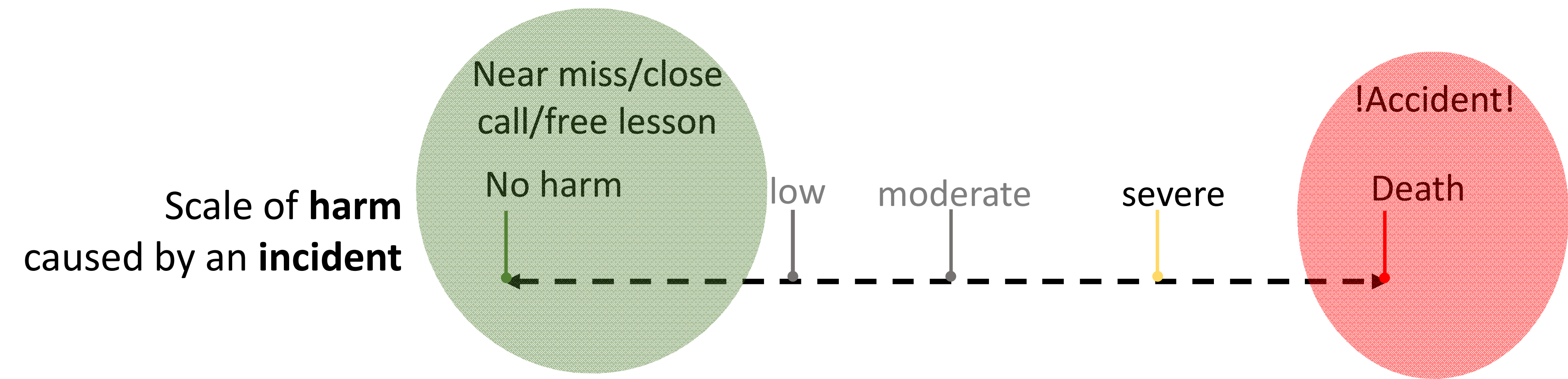
- Definition: *“freedom from healthcare associated preventable harm”* *(NHS)*

“when things go right, nothing bad happens” *(NHS)*

Patient safety incident

- Definition: *"any unintended or unexpected incident which could have, or did, lead to harm for one or more patients or staff"* *(NHS)*

Example: A patient's breathing is suppressed after a syringe driver's flow rate is set inappropriately high



- Alerts: require actions (by the NHS) to prevent potential incidents that may lead to harm/death
- Signals: risks emerging from review of serious incidents; perceived as a source of rich learning

Central Alerting System

Home Help Login

Central Alerting System Homepage

WELCOME TO THE CENTRAL ALERTING SYSTEM

The Central Alerting System (CAS) is a web-based cascading system for issuing patient safety alerts, important public health messages and other safety critical information and guidance to the NHS and others, including independent providers of health and social care.

Alerts available on the CAS website include safety alerts, CMO messages, drug alerts, Dear Doctor letters and Medical Device Alerts.

Useful links:

The Medicines and Healthcare products Regulatory Agency: http://gov.uk/mhra

NHS England: http://www.england.nhs.uk/ourwork/patientsafety/psa/

National Reporting & Learning System: email: patientsafetyhelpdesk@nrls.nhs.uk

The Chief Medical Officer (for England): https://www.gov.uk/government/people/sally-davies

The Central Alerting System has been approved by the Review of Central Returns - ROCR. Under reference ROCR/OR/0110/006MAND

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Latest Alert Broadcasts

Alert	Date
Ambulatory syringe pumps (T34 and T60) and syringe extension sets used with the T34 pump, manufactured by Caesarea Medical Electronics (CME).	02/Mar/2016
DRUG ALERT CLASS 2 (ACTION WITHIN 48 HOURS); AMCO; MALOXON (METOCLOPRAMIDE) 5mg/ml, SOLUTION FOR INJECTION	29/Feb/2016
Reporting of Defects and Failures and disseminating Estates and Facilities Alerts	10/Feb/2016
Baxter Urology Irrigation sets ('Easyflow' and 'Uromatic' brands) - Supply Disruption	09/Feb/2016
Baxter IV Administration Sets (Colleague pump compatible and gravity) - Supply Disruption	09/Feb/2016

Search alerts ...

News

HEADLINES:

URGENT -- ALL TRUSTS PLEASE READ, NHS/PSA/D/2014/010 NHS ENGLAND ALERT STANDARDISING THE DETECTION OF AKI - full details can be found below in full news added 21/10/2015

CEM/CMO/2015/007 - THIS ALERT IS BEING RE-ISSUED AS CEM/CMO/2015/007R WITH AN AMENDMENT TO INCLUDE A WIDER RANGE OF RECIPIENTS. NO CHANGES HAVE BEEN MADE TO THE ORIGINAL ALERT - added 05/10/2015

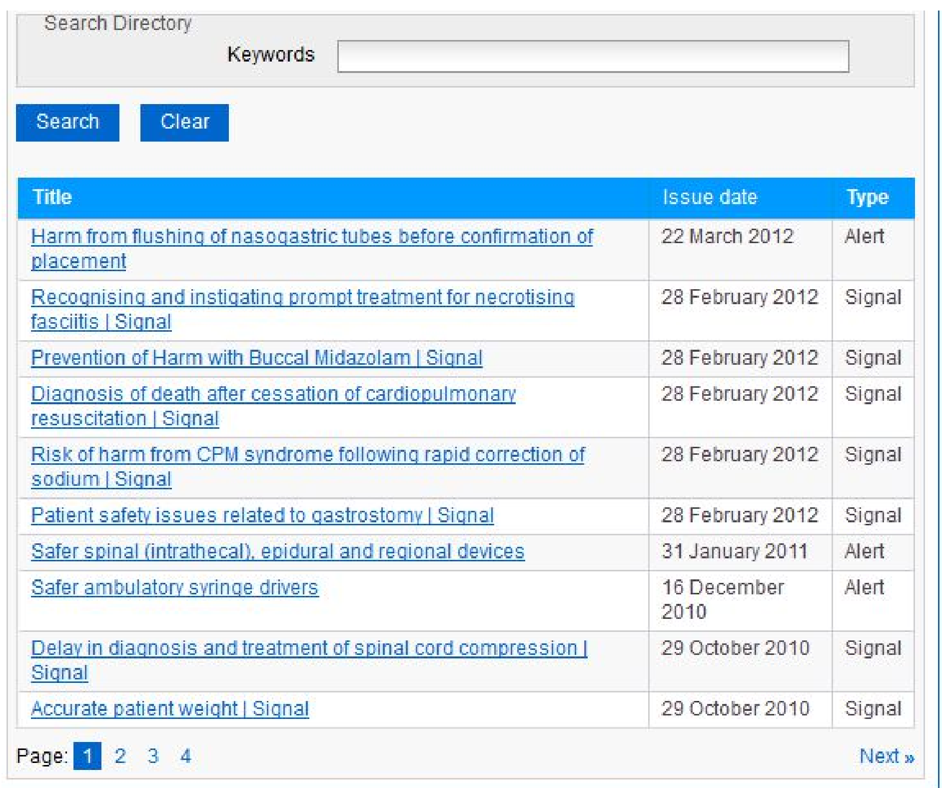
NEW UPDATED PROCESS IN PLACE FOR PUBLISHING ESTATES AND FACILITIES NOTIFICATIONS (EFN's). DETAILS CAN BE FOUND IN THE 'UPDATED EFN NOTIFICATIONS JULY 2015' DOCUMENT FROM THE HELP SEC ...

More News...

Contact the CAS helpdesk

Telephone: 020 3080 6747
Email: safetyalerts@dh.gsi.gov.uk

The National Reporting and Learning Service (NRLS) provides publications on **cancer & oncology**, including thematic reviews (note: 40 in total)



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Keywords

Search | Clear

Title	Issue date	Type
Harm from flushing of nasogastric tubes before confirmation of placement	22 March 2012	Alert
Recognising and instigating prompt treatment for necrotising fasciitis | Signal	28 February 2012	Signal
Prevention of Harm with Buccal Midazolam | Signal	28 February 2012	Signal
Diagnosis of death after cessation of cardiopulmonary resuscitation | Signal	28 February 2012	Signal
Risk of harm from CPM syndrome following rapid correction of sodium | Signal	28 February 2012	Signal
Patient safety issues related to gastrostomy | Signal	28 February 2012	Signal
Safer spinal (intrathecal), epidural and regional devices	31 January 2011	Alert
Safer ambulatory syringe drivers	16 December 2010	Alert
Delay in diagnosis and treatment of spinal cord compression | Signal	29 October 2010	Signal
Accurate patient weight | Signal	29 October 2010	Signal

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[case1] Delay in diagnosis and treatment of spinal cord compression | Signal: This **signal** concerns the harm associated with failure to rapidly diagnose and treat spinal cord compression and poor handling of patients where it is suspected or diagnosed.

[case2] Early identification of failure to act on radiological imaging reports: Radiology imaging tests are requested by a registered health professional who relies on a report and image usually generated by a radiologist or radiographer. These are sent to the referring health professional, who then acts on the result. This system is unreliable and has been proven to fail. Thus it was issued as patient safety **alert**.

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Late cancer diagnosis 'costing lives and money'

Behind the Headlines

Share: Save: Subscribe: Print:

Monday September 22 2014

"Almost half of cancer patients diagnos[ed] late," says The Guardian, citing a new r[eport] that explored both the financial and hea[lth] impact of late cancer diagnosis.

The late diagnosis of almost all types o[f] cancer usually means the disease has spread within the body, making it less treatable, reducing a patient's chances [of] survival, and potentially increasing the [need for] effective treatments.

This means an enduring aim of cancer [...] disease as soon as possible, so treatm[ent]

The report predicted around 52,000 cas[es] (colon, rectal, lung and ovarian) may be [...] costing the NHS around an extra £150 [...]

Various theories have been put forward [...] case, including "patients put[ting] their [...] feared cancer", and how "doctors [...] quickly".

Who produced this report on late cancer diagnoses?

The report was produced by Incisive Health, a specialist health

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Cancer diagnosis 'within four weeks for England'

13 September 2015 Last updated at 08:09 BST

The government has given more details of a package of measures to improve cancer treatment in England.

People in England who suspect they have cancer will be given a

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Waiting time targets: What they mean for you

By Eleanor Bradford
BBC Scotland Health Correspondent

21 January 2013 | Scotland

BBC Sc[otlan]d has been examining the treatment of patients within the Scotti[sh] government's 18-week guarantee and the knock-on effect into pl[...] [th]e spend.

[...] a guide to waiting times guarantees in Scotland, and what they mean for pa[tients].

12-w[ee]k 'right to treatment'

Legislation passed by the Scottish Parliament last year means that, from the start of this year, you have a legal right to be treated within 12 weeks, unless you're

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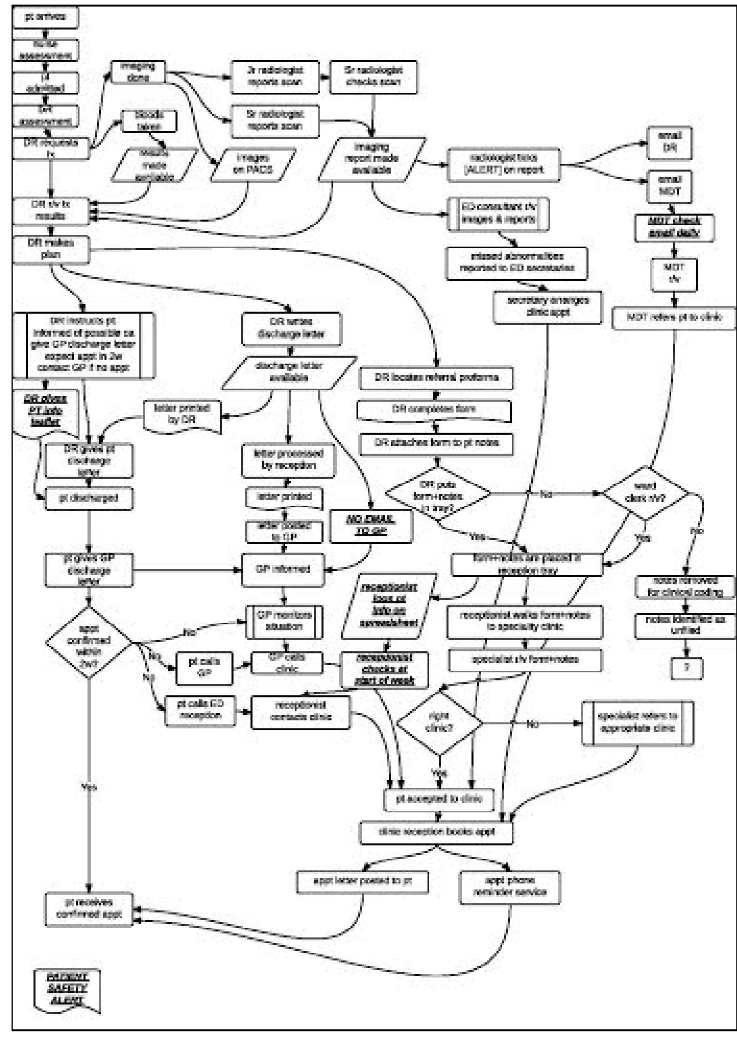
Health

Child cancer concerns 'ignored by GPs'

By Sarah Bell
Victoria Derbyshire programme

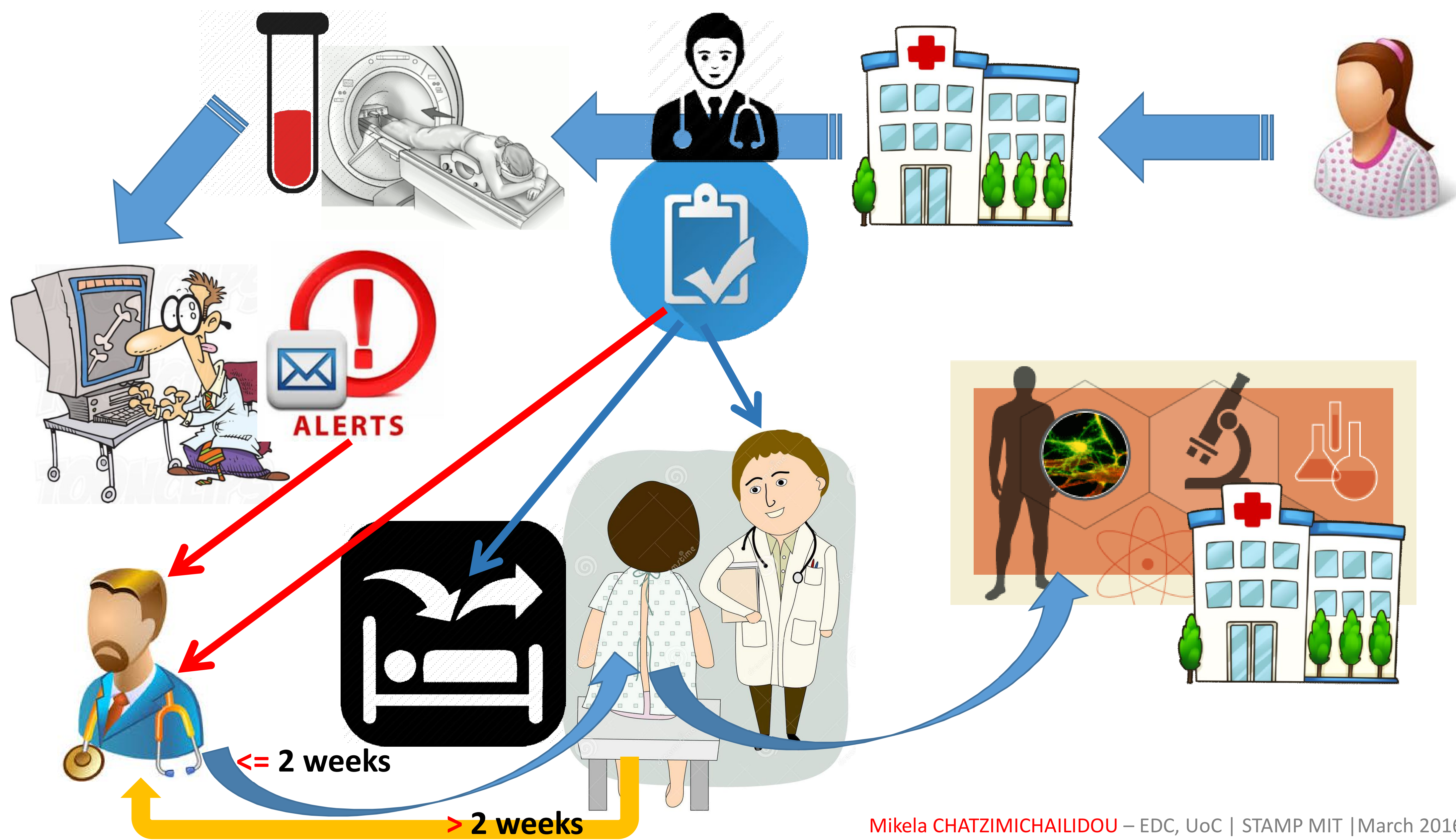
11 February 2016 | Health

Cancer referral process



'Spaghetti': Tasty but Messy
Using STAMP to Model a Cancer Referral & Diagnosis Process

[by Mikela Chatzimichailidou]


ALERTS
<= 2 weeks
> 2 weeks

The delays

Cancer patient *(NHS 2010)*

- not investigated or referred for investigation
- having been investigated, but not diagnosed at the time of the investigation
- diagnosed incorrectly
- positive test result/diagnosis not communicated effectively to a clinician with the ability to act on the information
- positive test result/diagnosis not acted upon & treatment commenced as appropriate

Real case of cancer patient (Cambridge, UK)

♦ pt → ED

♦ ED → imaging

♦ imaging → cancer

--- pt expects appointment with clinic in 2w ---

♦ discharge letter sent to GP but not received

♦ pt didn't go to GP → GP unaware

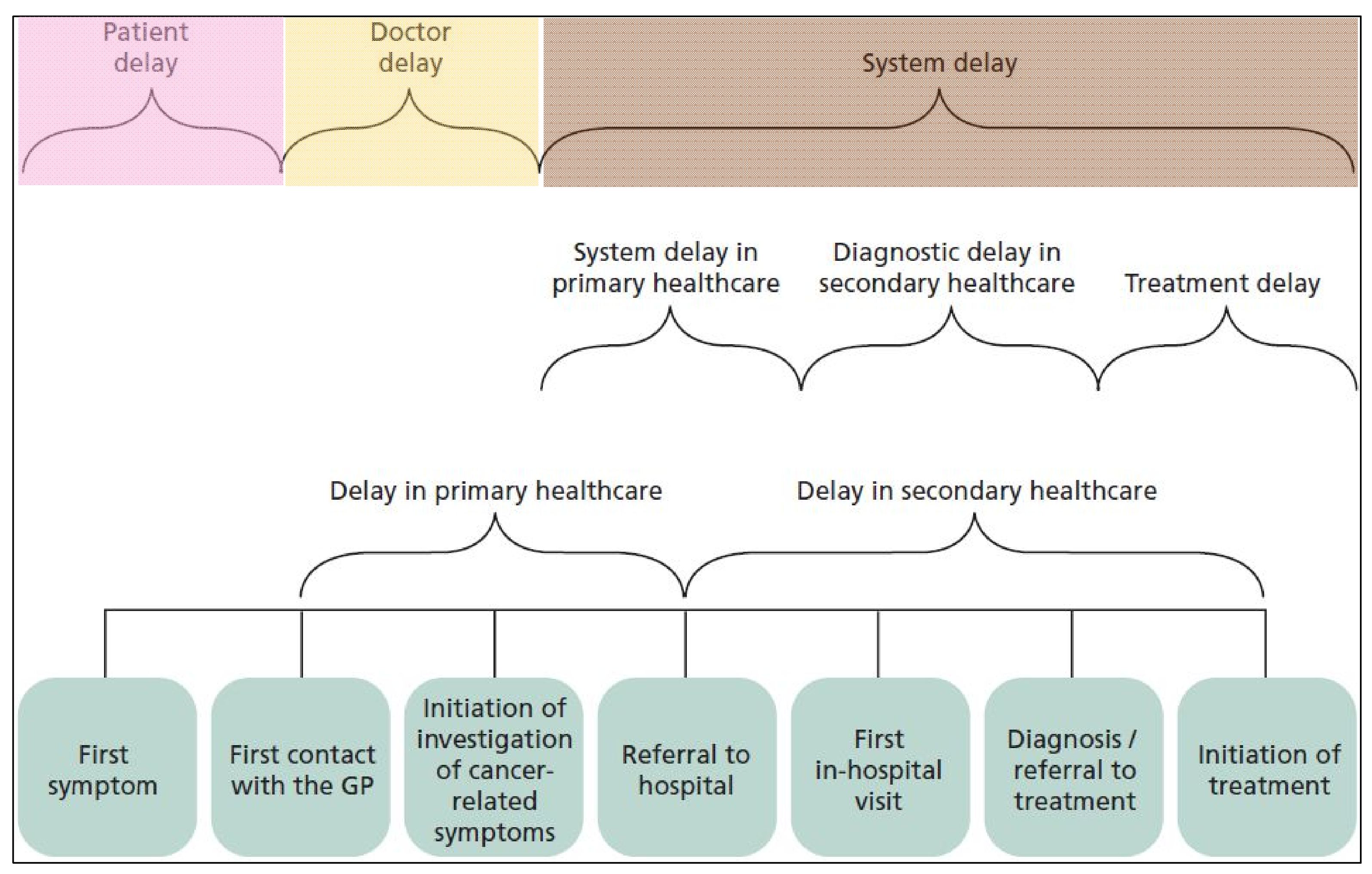
♦ referral not delivered to clinic

♦ pt off radar

--- after months; cancer progressed ---

♦ pt → clinic

Delays in Primary & Secondary healthcare



(NHS 2010)

Categories of delay in the cancer referral & diagnostic pathway:

- Patient delay
- Doctor delay
- System delay

"Healthcare practitioner or provider delay:
Patients who did not see their GP prior to diagnosis had shorter delays"
(NHS 2010)

Acknowledged need for leading indicators

- Record & reporting systems
- Accumulated experience of healthcare practitioners

- NHS (2010): acknowledges the use of systematic monitoring of leading indicators as a mechanism that may lead to improvements in the referral & diagnosis process of cancer

- NHS (2014): pilot for a *"multi-disease early diagnosis strategy"* considered for the prevention of delay

Towards *leading (patient) safety indicators*

- Leveson (2015): *"a warning sign that can be used in monitoring a safety-critical process to detect when a safety-related assumption is broken or dangerously weak and that action is required to prevent an accident. Alternatively, a leading indicator is a warning signal that the validity or vulnerability of an assumption is changing"*

In healthcare..

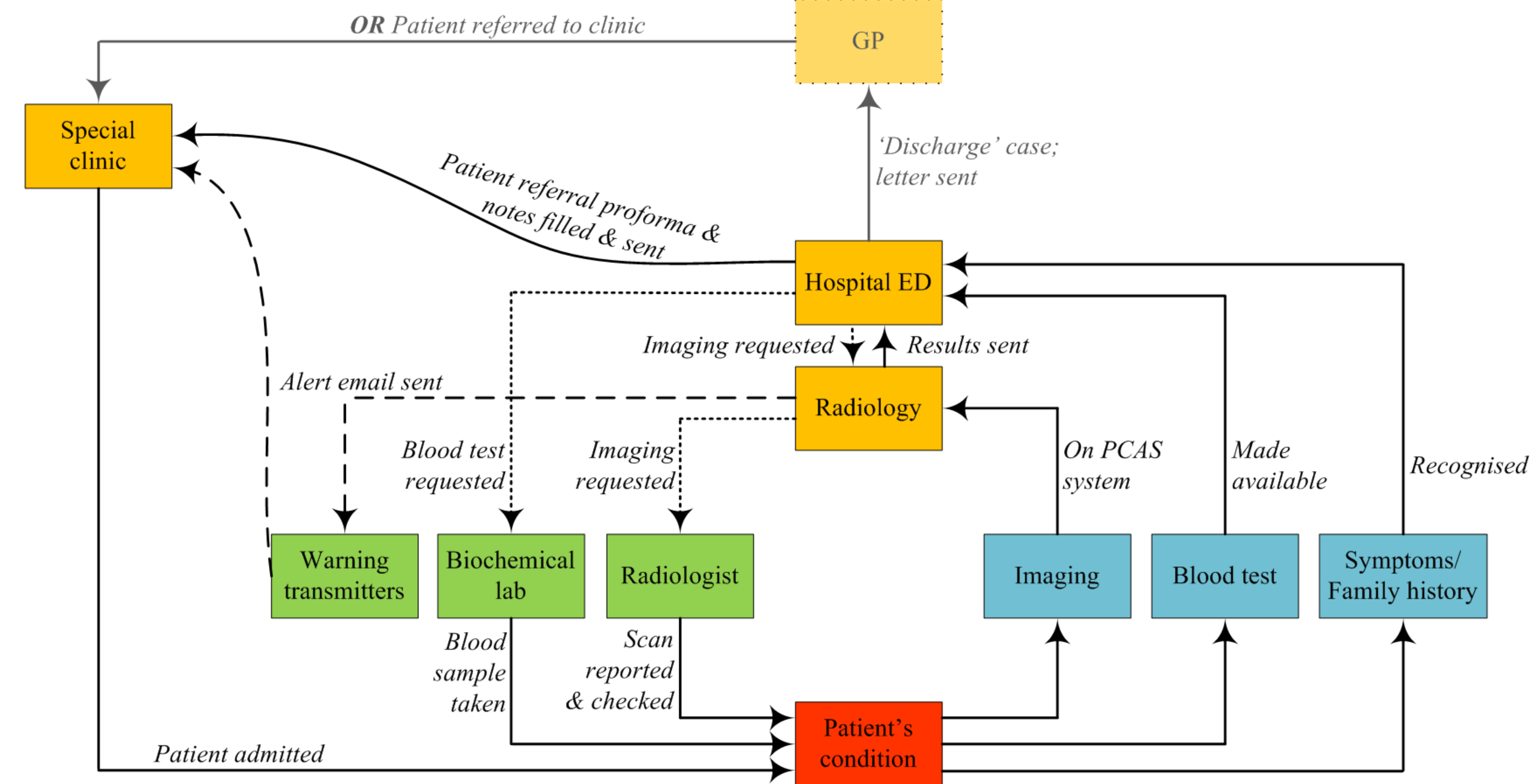
The identification of *leading (patient) safety indicators* can be:

(a) encouraged with the use of the STAMP model

&

(b) built upon a structured approach, i.e. STPA

Safety control structure



At first glance..

- Flowcharts: product of the analysis
  - *And then what?*

- STAMP scs:
  - **orderly** illustration of the operators involved in the process
  - abstracting & concentrating on **parts** of the **overall** structure
  - understanding & communicating the **controls**
  - **guidance** for detecting possible inherent flaws of the process
  - uncovers delays not directly observable
  - brings awareness to points where delays are possible to occur → **'hotspots'**

‘Hotspots’

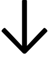
- Hotspot 1: **Patient** the **controller** of his/her health condition until admitted to hospital
  - *What if he/she ignores the possibility of having cancer?*
- Hotspot 2: **Secondary care** the **controller** of patient’s condition from the time admitted to hospital
  - *What if in-hospital clinical evaluations do not dictate the need for imaging?*
- Hotspot 3: **Multiple controllers** in charge of urging special clinic to arrange appointment with patient; Radiology & DR conflicting roles/actions
  - *What if incompatible assessments, complacency or overreliance?*
- Hotspot 4: Placing notes/forms in trays & walking them to recipient considered as **best practices**
  - *What if not delivered or stored in the medical record library?*

Assumptions & leading indicators

- ✓ STPA [CA & UCAs]
  - Controllers: Hospital ED (DR) [7 CA]; GP [2 CA]; Radiology [2 CA]
  - 50 UCAs in total:
    - Request imaging not provided when blood tests not conclusive
    - Monitor patient's situation not provided when patient belongs to a high-risk group

- ❖ Assumptions underlying the (a) design decisions, (b) management & organisational components of the scs

Assumptions upon which the safety of the system is assured *(?)*



Leading safety indicators to monitor the ASMPs

1. ASMP: Blood tests & imaging ordered **together**, the **same day (1st day)** the patient is admitted; both results available the **same day**

[Ind.] Not available in (a) the **1st** day and (b) the **same day**

2. ASMP: Imaging results made available on PACS (Picture Archives & Communications System) the **same day (1st day)** the patient is admitted

[Ind.] Not available on PACS in the **1st day**

3. ASMP: Radiologist considers imaging as abnormal and sends **alert message** (i.e. "[ALERT]") to special clinic

[Ind.] "[ALERT]" on report **not checked**

4. ASMP: Referral proforma attached to patient notes; put in a tray **together** at the **same time**

[Ind.] One of them (or both) **missing**

5. ASMP: Referral proforma & patient notes walked to special clinic the **same day (1st day)** the patient is admitted

[Ind.] Do not arrive in (a) the **1st** day (b) the **same day**

6. ASMP: Discharge letter & referral proforma (written and) delivered the **same day (1st day)** the patient is admitted

[Ind.] Not delivered in (a) the **1st** day (b) the **same day**

7. ASMP: Proforma & [ALERT] message **both** sent to special clinic

[Ind.] One of them (or both) **missing**

8. ASMP: Specialist reviews proforma & patient notes the **next day (2nd day)** after the patient is admitted

[Ind.] Not reviewed the **2nd day**

9. ASMP: Patient with suspected cancer seen by special clinic **within 2 weeks**

[Ind.] Arrangement of appointment **> 2w**

10. ASMP: Appointment with special clinic not arranged **within 2 weeks**, then **patient** (according to NHS guidelines) **calls** clinic

[Ind.] **Overlooks** guidelines

What's next..

The need/goal: an integrated monitoring program & operationalisation of warning signs to raise the awareness of system threats and vulnerabilities & act upon them

The facts:

1. NHS: fragmented electronic systems
   - *Central Alerting System* for issuing patient safety alerts
   - *Datix Risk Register &* Risk Management information system (*RMIS*) to identify & prioritise risks; uses incidents, complaints, claims, patient feedback
   - *EPIC* electronic health record system for clinical information, registration, patient scheduling & billing
2. STAMP-STPA to identify hotspots, assumptions & leading indicators
3. EWaSAP *(Dokas et al. 2013)* to define observations: (a) to be provided by sensors & (b) to indicate presence of causal factors for potential loss or violation of safety constraints & assumptions

Thank you!

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