Project LINNAEUS
A classification system for adverse events in healthcare
Carl Linnaeus

- The son of a Lutheran pastor, the Swedish botanist and physician Carl Linnaeus (1707-1778) is known as the father of modern taxonomy, the science of categorizing elements into a coherent system.
- The aim of Linnaeus’ “natural classification” was to reveal the Divine Order of things in nature. He chose to classify plants by reference to their reproductive systems, a recent discovery at the time.
Project Linnaeus - Aims

• To build a classification system for adverse events in healthcare
• In particular, to identify the correctable causes which numerous patient safety events have in common.
• Correctable causes should point the way to improvements in the healthcare system that are feasible at local or national level
• The result will be known as the Common Classification System Version 2 (CCS 2)
Project Linnaeus - Sources

- Mainly, the Datix Common Classification System (CCS). The CCS is used by providers of health care to over 55 million people in the UK, Canada and, soon, the USA.
- The International Classification for Patient Safety (ICPS), a World Health Organisation initiative.
- Possibly, the “Common Formats”, produced on behalf of the Agency for Health Research and Quality (AHRQ), an agency of the US federal govt.
- Clinical indicators from various sources
Project Linnaeus – Why is it necessary?

• The “Common Formats” produced by AHRQ are user-friendly. It remains to be seen how the will relate to a standard taxonomy. Some people are already using the Common Formats to capture data which is then coded into the Common Classification System (CCS)

• The WHO’s International Classification for Patient Safety (ICPS) has some good points, but it is too unwieldy for a user-friendly software programme. It is also not strong enough in the area of causes and may not advance rapidly.
Linnaeus: How does the project work?

- **Steering group:** Members from United Kingdom, USA, Canada and Europe, most with experience in national or regional healthcare systems
- **Webinars:** Every couple of months
- **Website:** http://forums.datix.co.uk/linnaeus/index.php?board=1.0
- **Results** will be embedded in CCS Version 2
- **Diploma course in patient safety:** will build on the diploma Brian Capstick started in 1993
- **What about** non-Datix users?
- **Contact** londonoffice@esqh.net
Progress - a classification tree has been developed for the following Domains:-

- Surgical treatments and procedures
- Anaesthesia
- Maternity Care
- Neonatal Intensive care
- Emergency medicine
- General ward care / management
- Medication errors, IV fluids; Blood; Gas
- Healthcare Associated Infections
- Laboratory tests and Diagnostic Imaging
- Accidents (e.g. lifting, falls, fires and other hazards)
- Medical devices
- Security (e.g. assaults)
- Mental health
Linnaeus: What is a patient safety event?

- A woman attends in labour at term for an apparently normal delivery. After a time, the CTG trace shows suspicious signs but the clinicians do not summon obstetric help or take any action themselves. The baby is born flat with Apgars of 4 at 5 mins, and sent to NNU. Eventually he is diagnosed with cerebral palsy.
- What is the patient safety event here?
  - The occurrence of a complication (fetal distress)
  - The lack of action on the suspicious CTG? – the lapse in the standard of care
  - The admission to NNU? – the unplanned process variation
  - The outcome for the baby i.e. the harm done
  - All of the above?
  - Some would question whether this is a patient safety event at all – the harm has been caused by the disease not the doctor.
Simplified schema for classifying patient safety events (with example)

- **Domain**: Maternity care
- **Adverse Event**: Medical Complication
- **Detail**: Non-reassuring CTG trace
- **Unplanned care**: Unplanned Admission to Neonatal Intensive Care
- **Harm**: Intrapartum-related hypoxic injury
- **Severity**: Severe
- **Correctable cause**: Junior clinicians did not refer upwards / seek supervision when indicated
CCS schema – the importance of filters

• This schema has proved easy to learn and adaptable to many types of event!

• By applying filters to the different strata of the data set, we have created a flexible classification system that is both comprehensive and easy to navigate.

• The filters have proved to be the most difficult but also the most useful element of the system to get right
Adverse Events in e.g. maternity care

- Unplanned mode of delivery
- Wrong or delayed diagnosis or assessment
- Complication arising without a concern about the standard of care
- Concern about shortcoming or delay in acting on a complication
- Injury or unexpectedly poor outcome for the fetus / neonate
- Injury or unexpectedly poor outcome for the woman
Details of Adverse Event in e.g. Unplanned mode of delivery

- Cesarean section for non-reassuring CTG
- CS following unsuccessful forceps or vacuum
- Delivery using more than one instrument
- Delivery unattended by a properly qualified person

So far as possible, we have matricised the classification of Adverse Events and details by establishing a consistent lexicon.

Matricisation makes a classification system easier to learn and more powerful as a research tool.
Queen’s Award

DATIX has won a Queen’s Award for Innovation for this work.

This is the highest award a UK enterprise can win.
How can we reduce the number of serious patient safety incidents?
Serious cases in UK tend to result from:

- Delays in diagnosis or treatment,
  
  Delay in recognising the severity of the patient’s condition accounts for about 65% of all serious incidents

- Complications of surgery
  
  accidental damage to peri-operative tissues (about 50% of all claims in surgery)
  a few wrong site (2%) or unnecessary (7%) procedures
  delayed diagnosis of post-operative hemorrhage or infection
  pressure sores

- Perinatal brain damage
  
  sometimes due to delay in acting on CTG evidence
  of birth asphyxia / fetal distress
Reducing the number of serious patient safety events is about discovering *correctable* causes

- A correctable cause is a cause or contributory factor that can be corrected by feasible action taken at local or national level

- Correctable causes often take the form of processes which cause serious harm when they fail

- Datix / Linnaeus has identified about 25 of them
Shortcomings in 25 processes contribute to 70% of claims. The Big Five are:

1. Lack of a management plan
2. Supervision of junior clinicians
3. Empowerment of the patient
4. Adverse test results or image not acted on
5. Leadership of the clinical team

NB Inadequate credentialing of skills is a common theme.
Lack of a management plan

- Patient had sight in only one eye and was listed to undergo prophylactic retinal laser treatment for which the chosen anaesthetic procedure was called a peribulbar block
- No-one told the anaesthetist that the patient had only one working eye
- The anaesthetist did not tell the surgeon that he had never done a peribulbar block before.
- The retina was punctured by the anaesthetist, so the patient went blind
- With the planning appropriate to a high risk patient / procedure the surgeon said that he would have done the anaesthetic himself or used another anaesthetic procedure (AW)
Patient empowerment, test results and leadership of the clinical team

- P was a 29 year-old fitness instructor who had a lump in his groin removed. Histology was ‘granulomatous’ - ? toxoplasma ?TB ‘. A routine chest X-Ray had been done and reported as ‘infiltrate at R apex - probably TB’, but P was discharged without treatment as ‘probable toxo - will resolve’.

- Over the next 18 months P lost weight, lost drive, lost his job and lost his wife. He was referred to a tertiary referral centre for tropical diseases, which carried out no investigation and diagnosed chronic fatigue syndrome.

- Some months later he developed backache and was referred to a rheumatologist who concentrated solely on his back - ?spondylitis.

- It was a further year before someone realised that P was systemically ill and finally got round to a full examination, by which time most of one lung had been obliterated by TB.
Supervision - perinatal brain damage

- Mother admitted in labour at term. Labour augmented with syntocinon.
- CTG deteriorated and became suspicious to the point where expeditious delivery was indicated. Clinicians delayed seeking obstetric help.
- Obstetric help eventually arrived and attempted forceps delivery. Shoulder dystocia – delay in seeking pediatric help.
- Baby born with low Apgars, neonatal encephalopathy, cerebral palsy.
- Claim settled for about Euro 5 million
Train your juniors to seek supervision!!!

- Make sure supervision is available!!!
- The message is to seek help rather than carry on alone!
- Cultural blocks against seeking help are a common feature in the claims
- Emphasize that no stigma will attach to seeking help, but failure to do so may attract blame
- Create a protocol which defines the “triggers” for seeking supervision, with contact numbers. (2 / 120)
- A most effective risk management measure and costs nothing
Link process improvements to standards e.g.

- Departments will maintain documented processes to ensure that –
  - Juniors are aware of the circumstances in which they must seek help or supervision
  - Adequate supervision is available at all relevant times

You can create a **joined-up** quality system by analysing serious adverse events by reference to processes that can be made the subject of standards. E.g the IHI’s 5 million lives campaign
Credentialing is the process of ensuring that staff possess the skills required of their grade or post.
Include the credentialing of skills in your HR processes, i.e.

- engagement of locum / agency staff
- recruitment
- induction
- supervision / mentoring
- appraisal
- revalidation
- discipline

Use them to assess and manage the extent to which each person has the skills for the grade