Haematology EQA: Current concepts

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1924 – 2018

Reprinted from the BRITISH MEDICAL JOURNAL
1 *November* 1969, **4**, 253–256

Quality Control in Haematology: Report of Interlaboratory Trials in Britain

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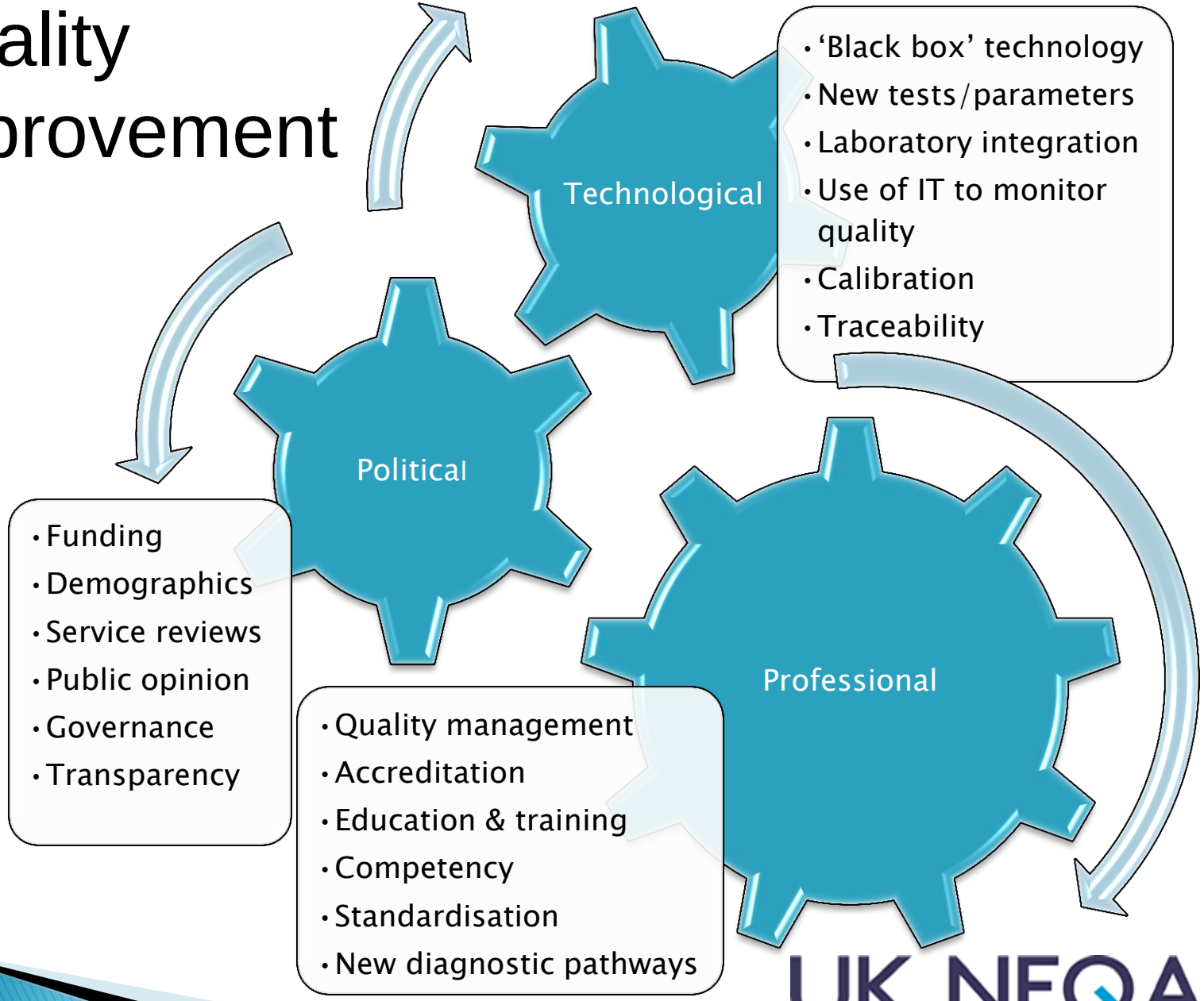
Quality Improvement



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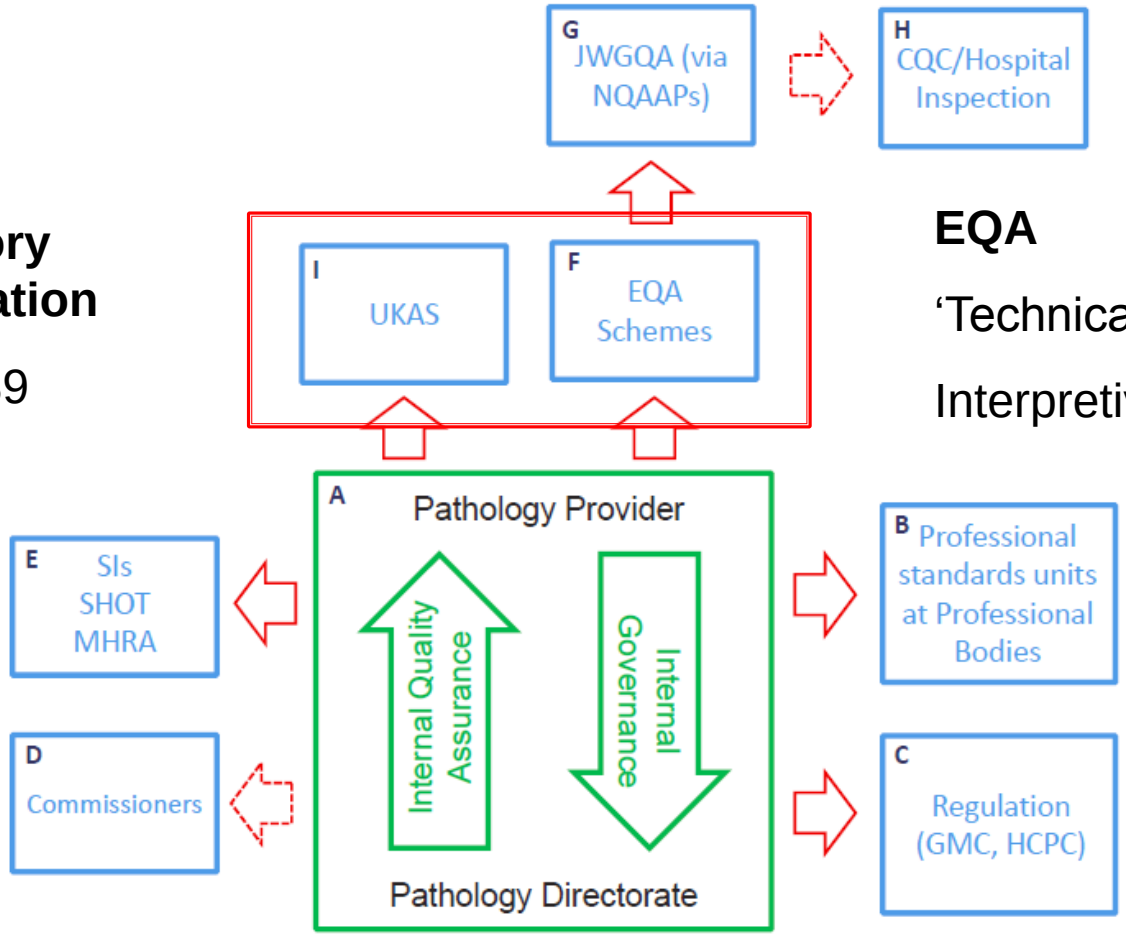
Monitoring Quality

Laboratory accreditation

ISO 15189



EQA

'Technical'

Interpretive (individual)

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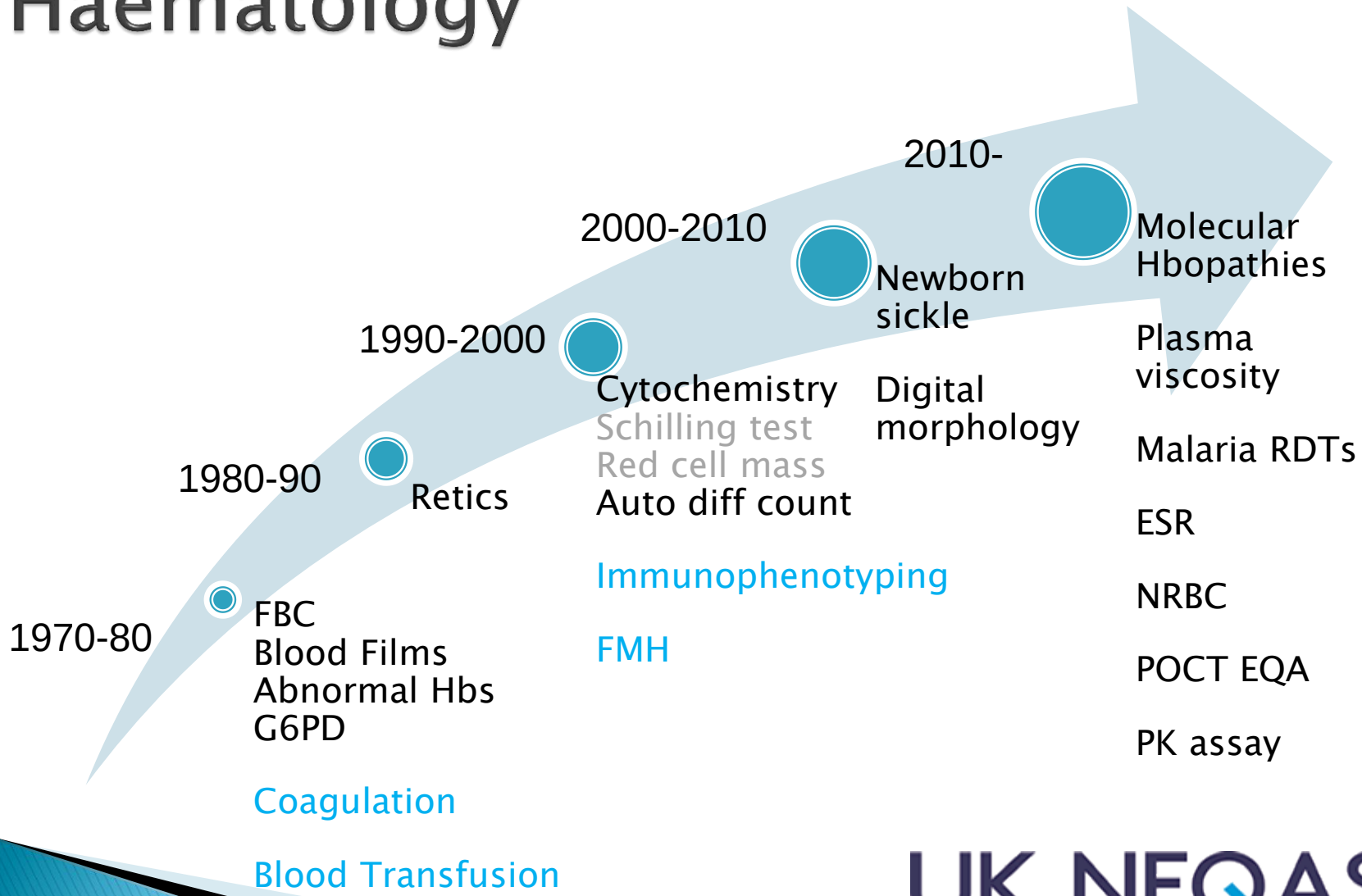
50 years of UK NEQAS Haematology



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New parameters in automated counting EQA

- Mean platelet volume (MPV)
- Red cell distribution width (RDW)
- Immature granulocyte count (Igs)
- Immature platelet fraction
- Functional iron deficiency parameters
- Body fluid counting

New PK scheme proposal: International EQA

- European collaboration: essential because of small numbers of laboratories in each country
- Performance assessment for quantitative assay initially
- Develop to include NGS methods
- Phased development
- Frequency of distribution – decide with labs
- Objectives and purpose:
  - EQA not just PT – strong educational emphasis
  - Performance assessment – Outcome orientated

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ISO/IEC 17043:2010

"Proficiency test items should match in terms of matrix, measurands and concentrations, as closely as practicable, the type of items or materials encountered in routine testing or calibration"

Holy grails:
Homogeneity, stability
Commutability, traceability
Challenge at clinical decision-making points

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FBC survey material: the options

- EDTA blood
- CPD/ACD blood
- Partially stabilised whole blood
- Commercial material

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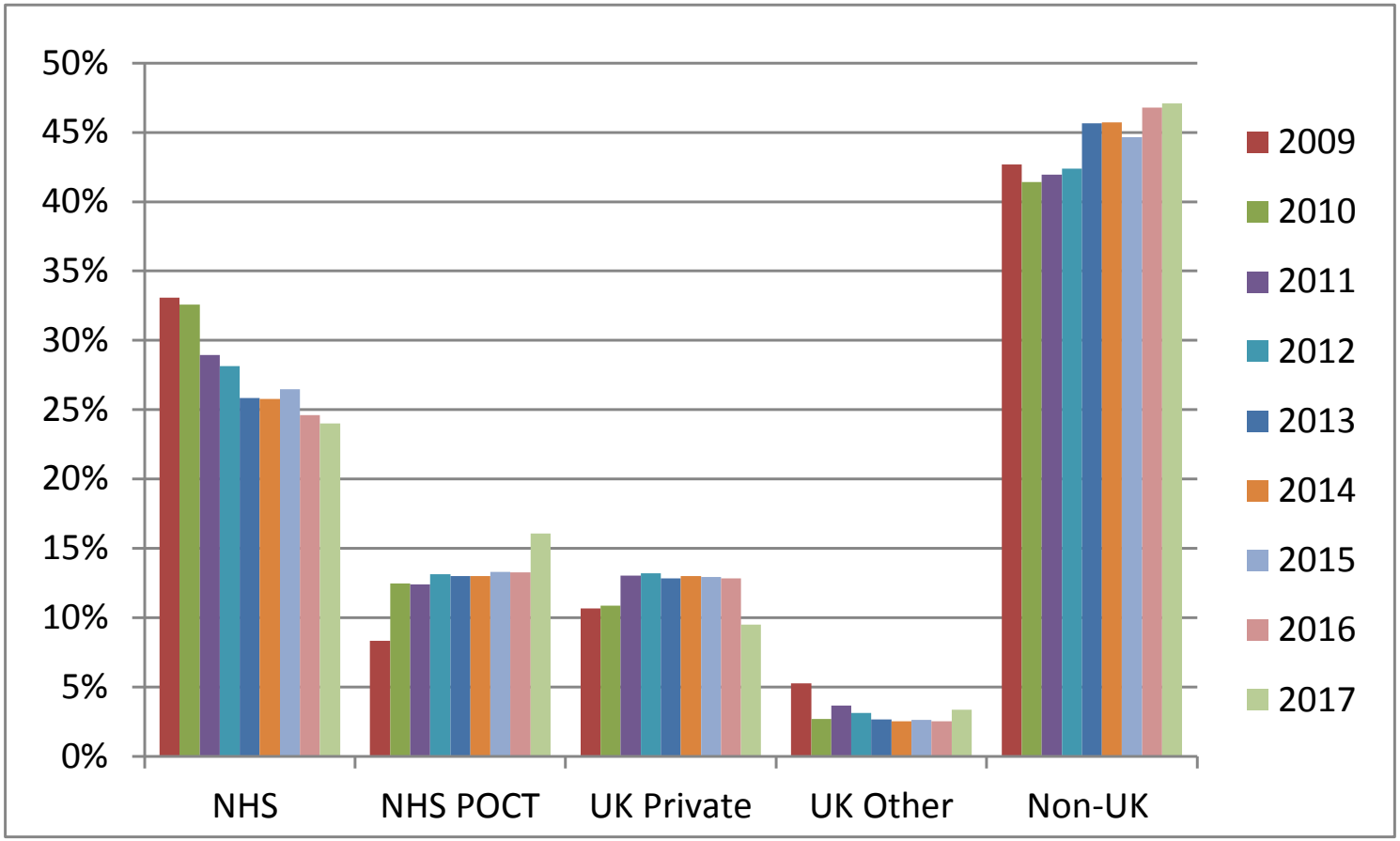
UK NEQAS Haematology Laboratories



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Conditions in transit

- Average transit time is 2 to 4 days
- Courier or first class post
- Temperature trackers sent to selected destinations
- Package temperatures may exceed 30 degrees Celsius:
  - Periods of up to 24 hours
  - July – September
  - Middle East, Eastern Mediterranean, Africa

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Instrument grouping

- Allows peer performance assessment where there is a lack of commutability, e.g. using stabilised material
- Reflects participants' and manufacturers' preferences
- Avoids consensus trimmed mean target favouring the instrument with the largest numbers

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UK NEQAS FBC Instruments 2018

- 11 instrument groups (including miscellaneous)
- 200+ different models of instruments registered in the past 10 years
- Current registrations include 86 different instrument models
- Numbers of each model range from 1 to more than 350

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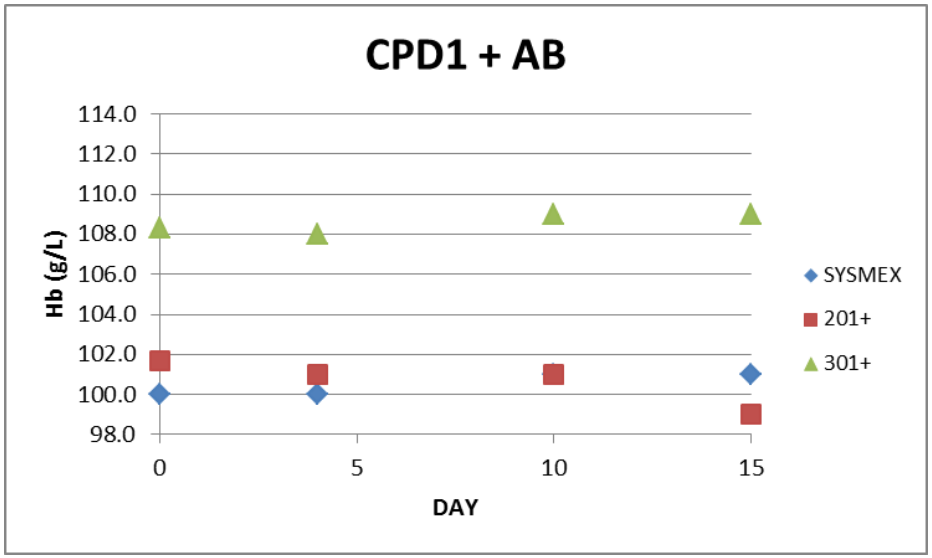
Hemocue 201 vs 301+



- Fresh blood material is commutable for almost all instruments for Hb
- HemoCue 301+ and some other POCT analysers have proved the exception
- Approximate 8 g/L difference in Hb
- The same difference in results is seen with stored EDTA samples
- Instruments are designed for capillary blood
- MetHb may be the cause

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UK NEQAS Haematology has developed a new platform for presentation of digital services

EQATE

External Quality Assessment,

Training &Education

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Quality beyond the laboratory

- End to end quality monitoring
- Defining reference intervals
- Standards in POCT

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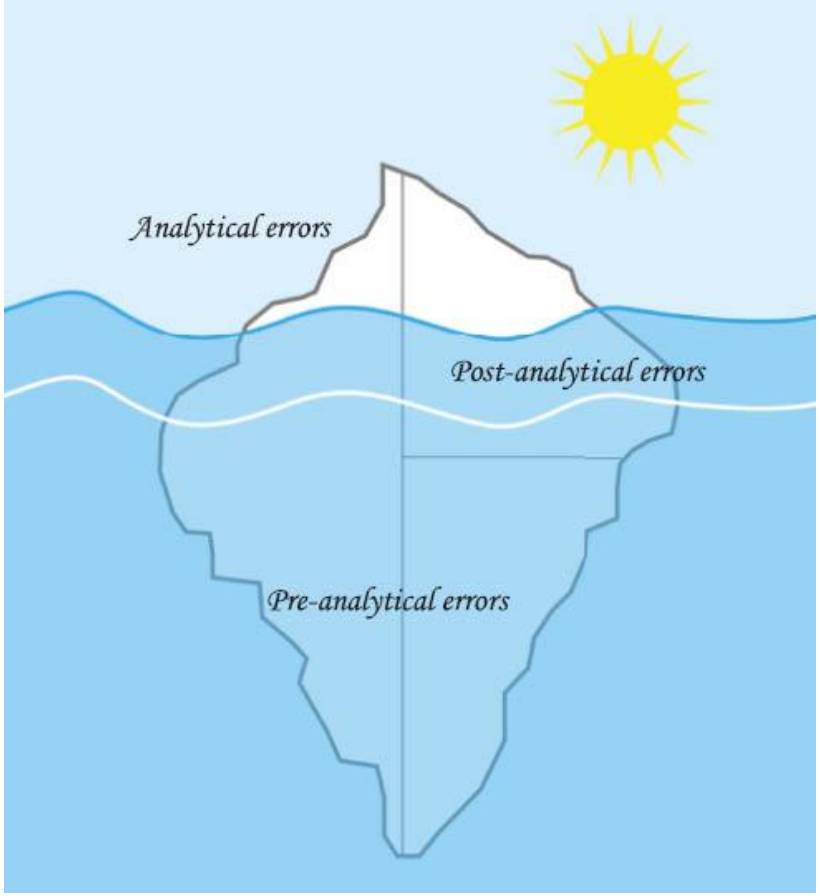
Most errors are not in the analytical phase



The Iceberg of Laboratory Errors

Plebani M *et al*

Clinical Chemistry and Laboratory Medicine (CCLM). Volume 53, Issue 3, Pages 357–370, ISSN (Online) 1437-4331, ISSN (Print) 1434-6621, DOI: 10.1515/cclm-2014-1051, December 2014

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THE QUALITY INDICATORS PARADOX

- Increasing interest of Scientific Societies, International Federations and laboratory professionals
- Availability of a list of harmonized QIs, a specifically developed website, and numerous scientific articles

- Few laboratories are making regular comprehensive data collection

Plebani M (2015) Clin Chem Lab Med Editorial
DOI 10.1515/cclm-2015-1080

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Assessment beyond the analytical phase in UK NEQAS Haematology

- Monitoring the laboratory
  - Interpretation of EQA results
  - As part of an analytical scheme, e.g. haemoglobinopathy and morphology schemes
- Monitoring the individual
  - Using stand-alone case studies
  - CPD
  - Demonstration of competence
- Pre and post-analytical monitoring

PREPQ
End to End Quality

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Where are we at with POCT in haematology? Briggs (2012), BJHaem 158:679-690

- Use of POCT will increase
- Studies on clinical impact required

- **Performance of POCT may be hampered by:**
- Lack of training
- Poor standardisation in obtaining blood samples
- Insufficient IQC and EQA

NOKLUS
sammen for god kvalitet

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The UK situation 2014

- 30% of laboratories do not monitor pre-analytical indicators routinely
- Only 2 indicators are measured by more than 50% of laboratories
  - Booking in errors
  - Mislabelling
- Approximate 50:50 split in whether specimens are counted by request or by tube
- Wide range of LIMS in use
- Errors are recorded manually (67.5%) and electronically (32.5%)

Cornes M *et al*
Ann Clin Biochem, March 2016; vol. 53, 2: pp. 279-284., first published on July 20, 2015

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Summary

- Haematology EQA services continue to expand in terms of geography, technology and concepts
- Commutability and traceability of survey materials remain major issues
- Assessing performance assumes
  - Quality can be defined
  - Quality can be quantified
  - Standards reflect the quality of service

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Thank you for your attention!

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