Pre and post analytical quality monitoring: What to do & how to do it?

Barbara De la Salle
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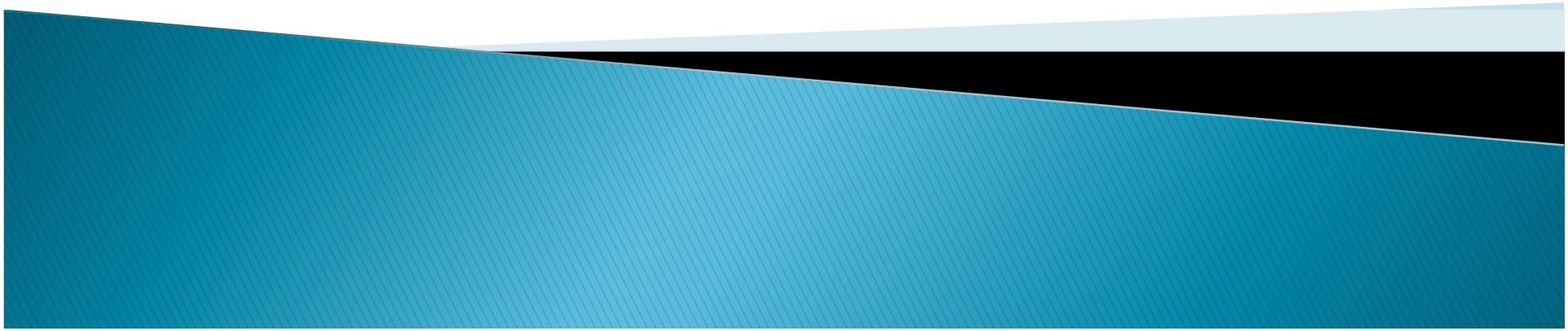

Outcome.....

Right Blood – Right Result – Right Time

Every Time

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Right Test

Right Action

Right Patient

Right Sample

Right Result

Right Experience

Right Time

Right Cost

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End to end quality monitoring

- Systematic quality improvement
- Pressure to improve non-laboratory activities
- Demonstration of leadership by pathology providers
- Cost reduction
- Key Assurance Indicators

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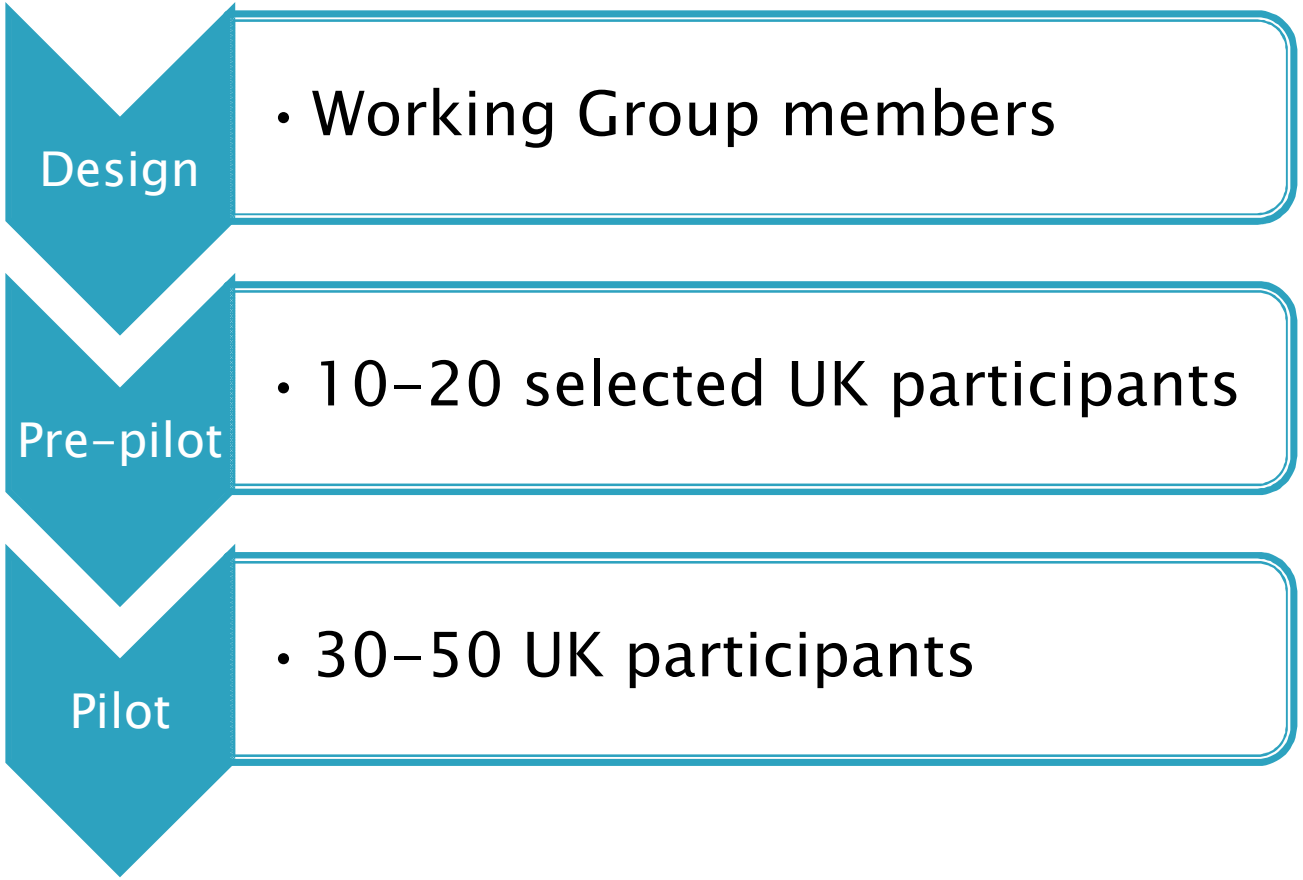
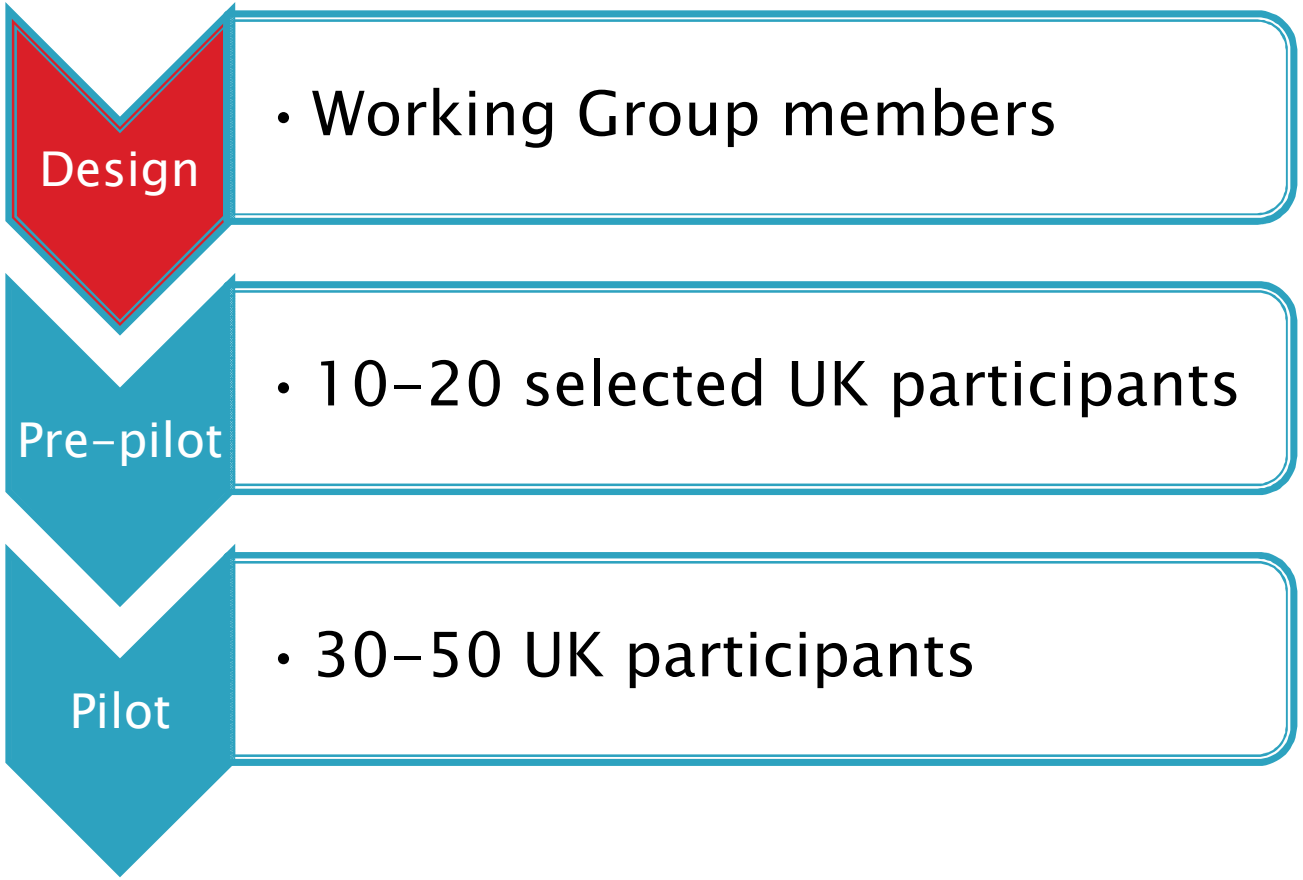

Design
• Working Group members
Pre-pilot
• 10-20 selected UK participants
Pilot
• 30-50 UK participants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Possible design models

- Type I: Registration of procedures
- Type II: Circulation of samples simulating errors
- Type III: Registration of errors/adverse events

Gunn BB Kristensen *et al.* Biochemica Medica 2014; 24 (1): 114–22

Possible design models

- Type I: Registration of procedures
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- Type III: Registration of errors/adverse events

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- EQA error rates and causes gathered through corrective and preventative actions or root cause analysis investigation

IFCC Working Group: Laboratory Errors and Patient Safety

- 59 quality indicators
  - 34 Pre-analytical
  - 7 Analytical
  - 15 Post-analytical
  - 3 Support processes

Sciacovelli L *et al.* Clin Chem Lab Med 2011; 49(5):835-844
Plebani M *et al.* Clin Chem Lab Med 2013; 51(1): 187-195

IFCC Categories: Pre-analytical

- Appropriate request
- Patient identification
- Request form
- Order entry
- Sample identification
- Sample collection
- Sample transportation
- Sample rejection

IFCC Categories: Post-analytical

- Timeliness of reports
- Accuracy of results reporting
- Timeliness and effectiveness of critical values reporting
- Effectiveness of interpretative comments
- Effectiveness of clinical audit

‘Starter for 10’: Pre-analytical 1

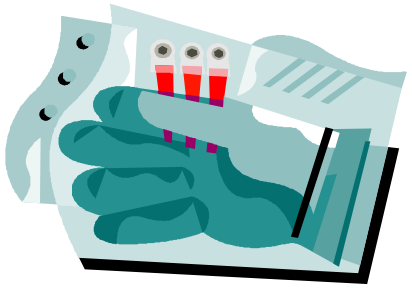
- Inappropriate test request
  - Frequency of requesting
  - Justification of request
  - Special requirements
- Communication of urgency/critical samples
- Correct/adequate clinical information
- Variability in clinical practice
  - General practice v. Hospital
- Wrong blood in tube
  - Patient identification errors

‘Starter for 10’: Pre-analytical 1

- Inappropriate test request
  - Frequency of requesting
  - Justification of request
  - Special requirements
- Communication of urgency/critical samples
- Correct/adequate clinical information
- Variability in clinical practice
  - General practice v. Hospital
- Wrong blood in tube – when identifiable

‘Starter for 10’: Pre-analytical 2

- Wrong site for sampling
- Sample identification
  - Barcode
- Sample time/temperature
- Sample quality
  - Fill volume
  - Anticoagulant
  - Order of draw
  - Mixing
  - Packaging and transport
- Lost samples



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‘Starter for 10’: Pre-analytical 2

- Wrong site for sampling – when identifiable
- Sample identification
  - Barcode
- Sample time/temperature – where critical
- Sample quality
  - Fill volume
  - Anticoagulant
  - Order of draw
  - Mixing
  - Packaging and transport
- Lost samples – *how do we know?*

‘Starter for 10’: Post-analytical 1

- Turnaround time for report authorisation
- Time between authorisation and receipt
- Communication of critical results
  - Wrong person/wrong place informed
  - Out of hours
  - Competency of lab staff/recipient
- Transcription error
- Results lost
- Results not seen
- No audit trail

‘Starter for 10’: Post-analytical 1

- Turnaround time for report authorisation
- Time between authorisation and receipt
- Communication of critical results
  - Wrong person/wrong place informed
  - Out of hours
  - Competency of lab staff/recipient
- Transcription error
- Results lost
- Results not seen
- No audit trail

‘Starter for 10’: Post-analytical 2

- Inappropriate interpretation
  - Lab
  - Clinician
- Inappropriate/no instruction from lab
- Urgency of action not conveyed
- Inappropriate action/inaction by clinician
- Results not used clinically

GENERAL PRACTICE v HOSPITAL CLINICIAN

Pre-Analytical Quality Indicators

- Identification indicators (2):
  - Patient identification
  - Sample identification
- Sample quality indicators (6)
  - Inappropriate sample type or container
  - Insufficient sample volume
  - Sample transportation
  - Sample quality (Blood Sciences)
  - Sample quality (Microbiology)
  - Contaminated blood cultures

Post-Analytical Quality Indicators (3)

- Timeliness of reports
- Accuracy of results reporting
- Timeliness and effectiveness of critical results reporting – in-patients only

Who, as well as what and how

- Blood Sciences
  - Haematology
  - Chemistry
  - Immunology
- Microbiology
- Later – roll out to Histopathology and Cytology

Pilot: UK Laboratories only

Next phase: Republic of Ireland

Then: Possible availability through EQALM or similar collaborative working

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Web interface development

- Web only service
  - Wolfson EQA database (SQL)
- ‘Pan UK NEQAS’ centre set up
  - Input screen developed
  - Vocabulary drafted to generate analyte codes
- Input items (analytes)
  - # failures
  - # opportunities (requests/patients/reports)
- Data processing
  - Defects per million opportunities
  - Sigma metric

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Design phase testing

- ‘Pre-pre-pilot’:
  - WG members only
  - Plausibility/feasibility check
  - Data not attributable to participants
  - Volatile identifier codes and passwords

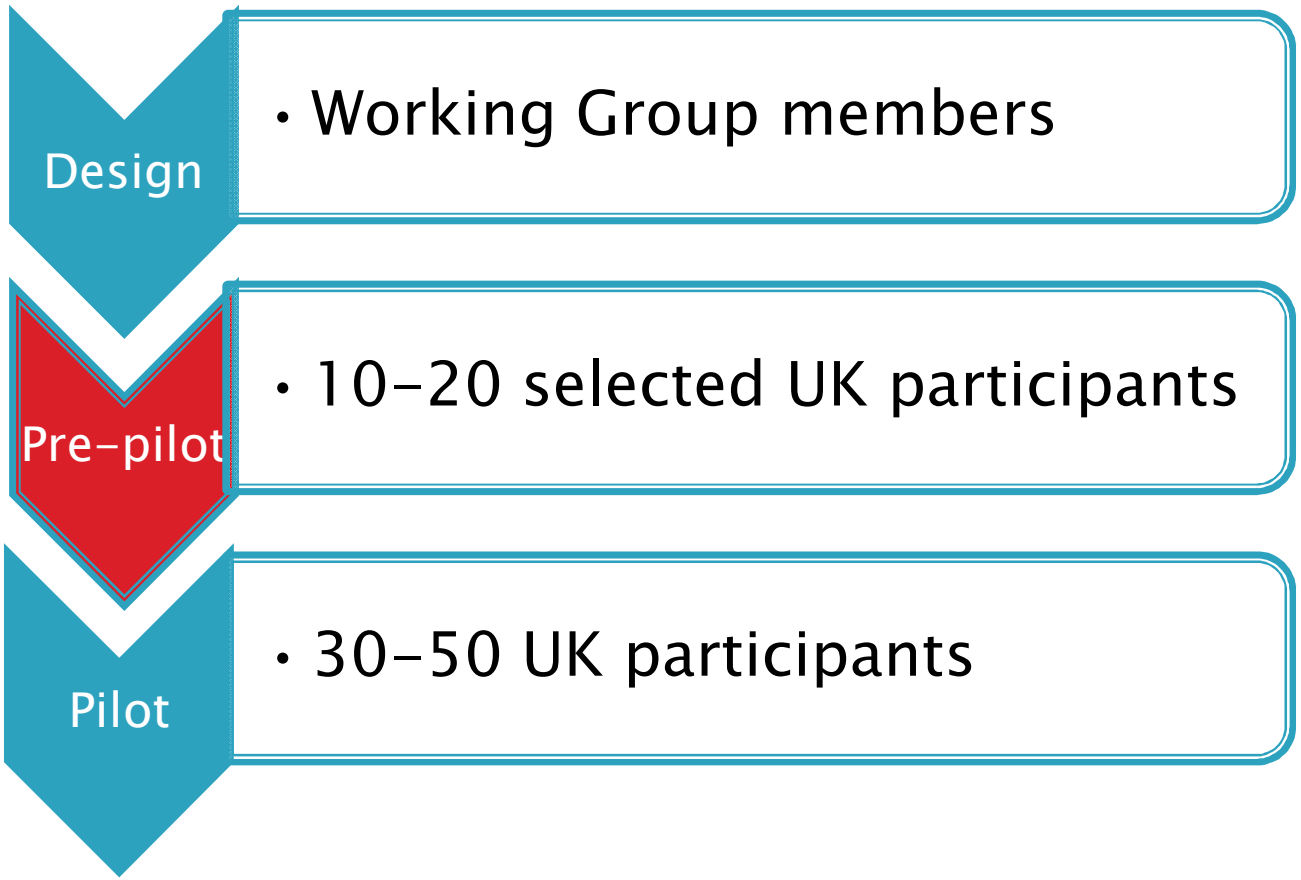
- Feedback:
  - Standardisation of data input terminology
  - Clarification of time period for data capture
  - Glossary needed, as well as standard access instructions

Glossary

To define:

- Request
- Sample/specimen
- Patient identification failure
- Sample identification failure
- Blood Sciences
- Microbiology
- Quality rejections

Etc.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Pre-pilot

- Open NOW
- Selected laboratories only (10-20)
  - Haematology
  - Chemistry
  - Microbiology
- Volatile identifiers / passwords
- Data not attributable to participants
- To assess practicality and preferences

Challenges to date

- Ownership and collaboration
- Stakeholder focus
- Who will pay?
- Feasibility
  - Practical data collection
  - Different LIMS systems
  - Networks vs individual sites
- GP vs hospital
- Service reorganisation
- Glossary

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What's in a name?

- 16 suggestions
  - Adverse incident monitoring service
  - Key Quality Indicator System
  - End to end quality assessment

and so on…

UK NEQAS Pre and Post Analytical Quality Monitoring Service

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Acknowledgements

- Jen Atherton
- Ian Mellors
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- UK NEQAS Pre and Post Analytical WG
- Participants brave enough to take part

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