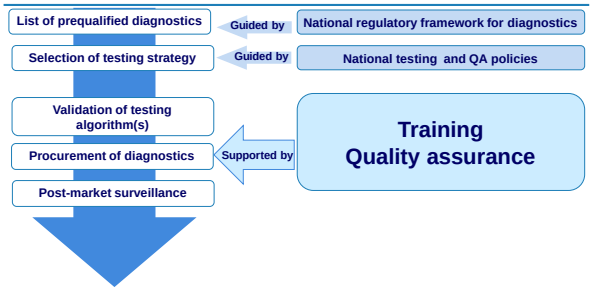
WHO Prequalification of In Vitro Diagnostics Programme

International HIV/Viral Hepatitis Co-Infection Satellite Meeting
19 July 2014, Melbourne

Anita Sands
Prequalification – Diagnostics Team
Department of Essential Medicines and Health Products

World Health Organization

Framework for quality of testing



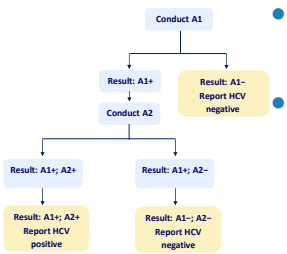
Basic principles

- **Testing strategies and testing algorithms**
- Test kits
- Specimen management
- QA
- Training

Testing strategies/algorithms

- Testing strategy
  - describes a generic testing approach for a specific need, e.g. transfusion/transplantation safety, surveillance of acute or chronic infection, and/or diagnosis of acute or chronic infection
    - takes into account presumed prevalence in the population being tested
- Testing algorithm
  - describes the combination and sequence of specific test kits used within a given testing strategy.
    - combinations of EIAs or combinations of RDTs or mixed combinations of EIAs and RDTs, or molecular technologies

Testing strategies



- Illustrative example testing strategy for chronic HCV seroprevalence
- If Assay 1 and Assay 2
  - sensitivity ≥99%
  - specificity ≥98%
  - PPV of algorithm should be ≥99%

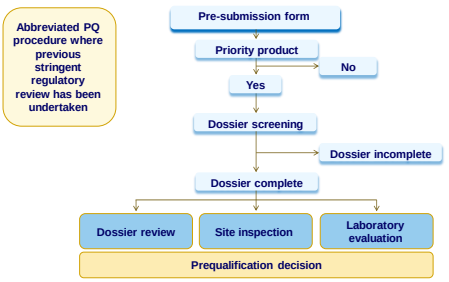
Basic principles

- Testing strategies and testing algorithms
- **Test kits**
- Specimen management
- QA
- Training

WHO Prequalification of In Vitro Diagnostics Programme

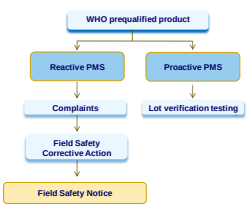
- Regulation specifically for in vitro diagnostics (IVDs) is often poorly understood and/or poorly enforced
- Increasingly production is out-sourced to countries with lower labour costs & less stringent regulatory oversight
- The WHO Prequalification of IVDs Programme independently evaluates the quality, safety & performance of diagnostics that are destined for sale and use in resource-limited settings

WHO Prequalification of In Vitro Diagnostics Programme



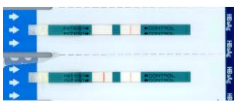
WHO post-market surveillance

- WHO is developing guidance for both reactive and proactive post-market activities
- End-users must report quality issues to NRAs (and WHO)
- Manufacturers are obliged to carry out PMS activities
  - Including recalls



Test formats

- Rapid diagnostic tests to detect anti-HCV antibodies
  - Immunofiltration vs. immunochromatographic
  - Beware of fifferent test procedures, ambiguous reading times, etc.



HBsAg immunochromatographic RDT

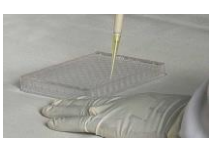
HIV/HCV immunofiltration RDT

Rapid diagnostic tests

- Use of rapid diagnostic tests for community based testing
- Simple procedure
  - Uses finger-stick blood or oral fluid
- Non-laboratory staff can be trained
- Rapid results
  - Incubation time ~ 5 to 30 minutes

Test formats

- Enzyme immunoassays for detect anti-HCV antibodies and/or HCV antigen
  - Manual EIA
  - Random access analysers (multi-analyte)



Test formats

- Molecular technologies for confirmation of viremia
  - Quantitative HCV RNA validated for serum and plasma, not validated for DBS
    - COBAS® AmpliPrep/COBAS® TaqMan® HCV Test
    - Abbott RealTi*m*e HCV assay
    - VERSANT® HCV RNA 1.0 Assay (kPCR)
    - **HIV viral load assays on these platforms are already WHO PQed**
  - Qualitative RNA mostly used in blood screening, single or multiplex tests available
- Need for simpler molecular technologies
  - Qualitative HCV RNA for confirmation of viremia and of cure

Basic principles

- Testing strategies and testing algorithms
- Test kits
- **Specimen management**
- QA
- Training

Specimen management

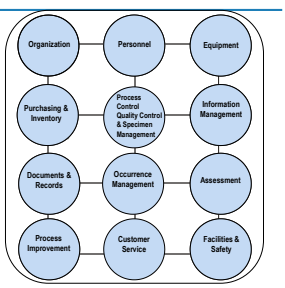
- Specimen type
  - Serum, plasma, fingerstick whole blood, oral fluid, dried blood spot
    - Has manufacturer validated their assay for the specimen type
- Specimen collection
  - Venous vs. capillary, skilled phlebotomist required?
- Specimen processing, transport, storage
  - If serum/plasma, centrifugation & separation within 6 hours
  - Cool storage required but -20ºC for periods longer than 5 days

Basic principles

- Testing strategies and testing algorithms
- Test kits
- Specimen management
- **QA**
- Training

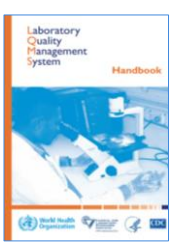
Quality assurance

- Using ISO 15189 and CLSI GP26-A4
- External quality assessment (EQA)
  - Verifies the proficiency of the testing process
- Quality Control (QC)
  - Verifies the test is working correctly



WHO guidance on quality assurance

- WHO and CDC are developing guidance on QA for HIV-related testing at POC
  - Also applicable to viral hepatitis
  - To be launched later in 2014
- WHO/CDC/CLSI training package on laboratory quality management system
  - http://www.who.int/ihr/training/laboratory_quality/en/

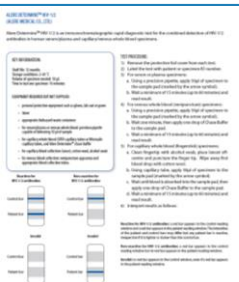


Basic principles

- Testing strategies and testing algorithms
- Test kits
- Specimen management
- QA
- **Training**

Training and proficiency

- Competency-based training for RDTs
- Proof of proficiency with panel of HCV + and HCV - specimens
  - Proficiency for the entire testing algorithm, not just test procedure
- Simple SOPs
  - Easy to read job aids



Contact us

- Contact us by email
  - diagnostics@who.int
- Sign up to our mailing list
  - By emailing diagnostics@who.int
- Check our website
  - http://www.who.int/diagnostics_laboratory/evaluations/en/