

# Scoring systems for qualitative schemes

---

Response to the EQALM questionnaire

Vivienne James

UK NEQAS for Microbiology on behalf  
of the EQALM Board

# Background

---

- Consistency in how performance is assessed in quantitative EQA schemes is considered beneficial
  - participants
  - accreditation bodies
- International drive to harmonise qualitative schemes
  - Current work item for the EURACHEM PT working group

# Qualitative Assessment

---

Categorical measurement expressed by means of a natural language description (Nominal) e.g.

- organism name/identity
- genotype
- presence/absence
- positive/ negative

Ordinal e.g.

- 1+, 2+, 3+ (can be ordered)

# Questionnaire

---

1. Field (eg, clinical chemistry, immunology, microbiology)
2. Parameter (eg, glucose in urine sticks, HIV antibodies)
3. Are the results, nominal or ordinal
4. How the target value/correct result determined
5. When scoring what tolerance is permitted for a full score (eg, target value only, +/- 1 interval) ?
6. Is performance evaluated over several surveys (eg, score based on 5 surveys) ?

# Questionnaire response

---

- Sent to all members >50
- Responses received from 34
  - 25 provide qualitative schemes
  - Represent 20 countries (18 European)
  - All major disciplines represented
  - 18 providers score some or all their qualitative schemes
- 4 responders have been asked to present their scoring scheme

# By discipline

## Scored schemes with ordinal results

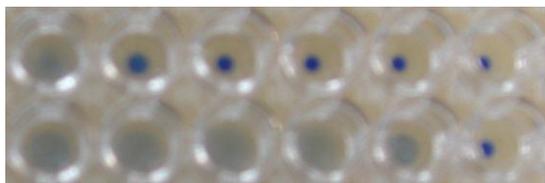
---

### ○ Chemistry

- Urine test strips - Target +/- 1 interval
- Drugs of abuse - Target +/- 1 interval
- D-Dimer – Target value only
- Faecal Occult blood – Target value only
- Synovial fluid crystals – not stated
- Troponin T – not stated

### ○ Microbiology

- Acid Fast Bacilli microscopy – Target only
- Serological antigens/antibodies – Target only



# By discipline

## Scored schemes with ordinal or nominal results

---

### ○ Chemistry

- Neonatal G6PD on dried blood spots – Target only

### ○ Immunology

- Serum IgE - Target +/- 1 interval

### ○ Microbiology

- Urine test strips – Target only

# By discipline

## Scored schemes with nominal and ordinal results

---

- Chemistry

- Urinalysis and PBG – Target value weighted score

- Haematology

- Blood group serology - Target only

- Microbiology

- Parasitology identification – Target only



# By discipline

## Scored schemes with nominal results (1)

---

### ○ Chemistry

- Troponin – survey dependant
- D-Dimer – survey dependant
- Urine pregnancy test – target value weighted score
- Urine microscopy – target value weighted score
- Serum analytes – Target only
- Urine -phosphobilinogen and porphyrine – Target only
- Drugs of abuse – Target only
- Drug screening – survey dependant

### ○ Physiology

- ECG spirometry – Target only

# By discipline

## Scored schemes with nominal results (2)

---

- Haematology
  - Blood film morphology – Target only & survey dependant
  - D-Dimer, FOB, Parasites –Target only
  - Blood transfusion – Target only
  - Leucocyte immunophenotyping – Target only
- Histopatholgy
  - Diagnosis - Target value weighted
- Immunology
  - IgE classification – survey dependant
  - HLA-B27 – survey dependant
  - RF – survey dependant
  - ASO – survey dependant

# By discipline

## Scored schemes with nominal results (3)

---

- Microbiology
  - Bacteriology and mycology ID/susceptibility
    - – Survey dependant/Target only/Target value weighted score
  - Molecular microbiology– Target only/Target value weighted score
  - Parasitology ID - Target only/Target value weighted score
  - Serology - Target only/Target value weighted score
  - Virology - Target value weighted score
- Molecular genetics –Target only



- 
- Is the way schemes are scored provider dependant?



# By provider and discipline

## Scored schemes with ordinal results

---

- SNEQAS
  - Chemistry – Target value weighted score
- Referenzinstitut für Bioanalytik
  - Chemistry – survey dependant
- INSA
  - Microbiology – Target only
- Noklus
  - Chemistry –Target only/ Target +/- 1 interval
- CSQC –
  - Chemistry - Target +/- 1 interval
- Qualiquant
  - Chemistry, Immunology and Microbiology- Target +/- 1 interval

# By provider and discipline

## Scored schemes with ordinal results or nominal results

---

- Noklus
  - Microbiology –Target only
- Preventative Medicine Foundation
  - Chemistry – Target only
- CSCQ
  - Immunology - Target +/- 1 interval
- SKML
  - Most disciplines – Target value weighted score

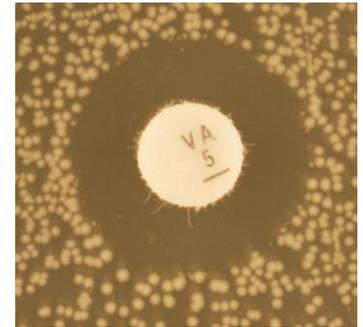


# By provider and discipline

## Scored schemes with nominal and ordinal results

---

- WEQAS
  - Chemistry – Target value weighted score
- Labquality
  - Microbiology – Target only
- Qualiquant
  - Haematology – Target only



# By provider and discipline

## Scored schemes with nominal results (1)

---

- Centre for Biomedical Research
  - Chemistry – Target value weighted score
- CPHL Oman
  - Microbiology - Target value weighted score
- CSCQ
  - Chemistry, Haematology and Microbiology – Target only
- IEQAS
  - Histopathology – Target value weighted score
- INSA
  - Microbiology –Target only
- Labquality
  - Physiology, Haematology, Microbiology – Target only
- LGC
  - Chemistry – Target only

# By provider and discipline

## Scored schemes with nominal results (2)

---

- QCMD
  - Molecular diagnostics – Target value weighted score
- Qualiquant
  - Microbiology and Molecular genetics – Target only
- Referenzinstitut für Bioanalytik
  - Chemistry, Haematology, Immunology, Microbiology – survey dependant
- RoEQALM
  - Chemistry – Target only
- Spanish EQAS
  - Haematology – Target only
- UK NEQAS
  - Haematology – Target only
  - Microbiology - Target value weighted score
- WEQAS
  - Chemistry and Microbiology - Target value weighted score



# Non scored qualitative schemes

---

- 11 providers offer qualitative schemes (covering all disciplines) that are not scored
  - 3 of these providers evaluated performance annually over several rounds
  - 1 required 75% correct results for successful participation
  - 9 providers did not score schemes with nominal results
    - 2 of these evaluated performance over several rounds
  - 3 providers did not score schemes with both nominal and ordinal results
    - 1 of these evaluated performance over several rounds
  - 1 provider did not score a scheme with ordinal or nominal results
  - 1 provider did not score schemes with ordinal results
- For the parameters offered that were not scored other providers did score

# Summary

---

- Majority of qualitative tests have nominal results
  - parameters that are considered to have ordinal results by one provider are considered nominal by others even within the same discipline
- If the results are nominal the target value is required for a full score
  - however some providers weight the score depending on the clinical importance of the result
- If the results are ordinal or can be ordinal or nominal a tolerance of one interval is accepted by some providers

# Unanswered questions

---

- Does whether scoring is used reflect the approach to quality in the country that the scheme is based (participants will actively review all EQA results) ?
- Would providers introduce a score if there was a recommendation on suitable scoring systems for qualitative schemes in ISO 13528?
- Examples from providers.....