

Image-based EQA

Assessment of personal competence

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EQUALIS

Equalis

**EQA schemes –
medical imaging**

Set up

Examples

Follow up

Equalis - the Swedish EQA provider

About us

- Equalis AB, founded in 1992, is a not-for-profit company owned by the Swedish Association of Local Authorities and Regions (52%), Swedish Institute of Biomedical Laboratory Science (24%) and Swedish Society of Medicine (24%).

Aim

- improve patient safety by working for reliable and comparable results in medical diagnostics.

Provider of

- External quality assessment schemes in laboratory medicine, diagnostic imaging, and point-of-care testing.
- Education (user meetings), recommendations, standardization, terminology

Equalis



Helene Sténhoff
CEO



Anna Norling
Head of EQA and R&D



Anna Karlsson
Quality manager



Emilia Svala 2024-10-17

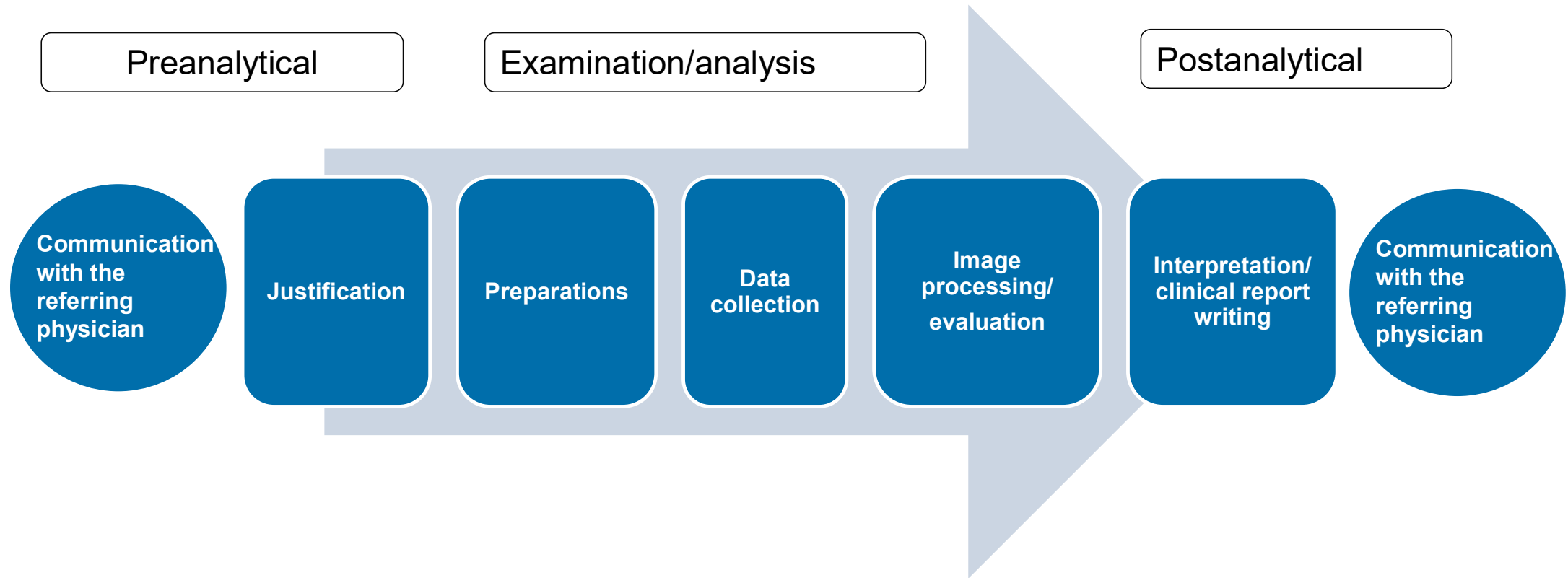
Equalis advisory groups

Cervix cancer prevention	Clinical Immunology	Clinical Microbiology	Coagulation	Echocardiography	Endocrinology	Exercise and respiratory physiology
General Clinical Chemistry	Haematology	Histopathological techniques	Human genetics	Nuclear medicine	Pathology and cytology	Paediatric radiology
Point-of-care	Point-of-care ultrasound	Protein analysis	Physiological vascular diagnosis	Terminology and e-health	Therapeutic drugs and drugs of abuse	Transfusion medicine

Equalis EQA schemes – imaging

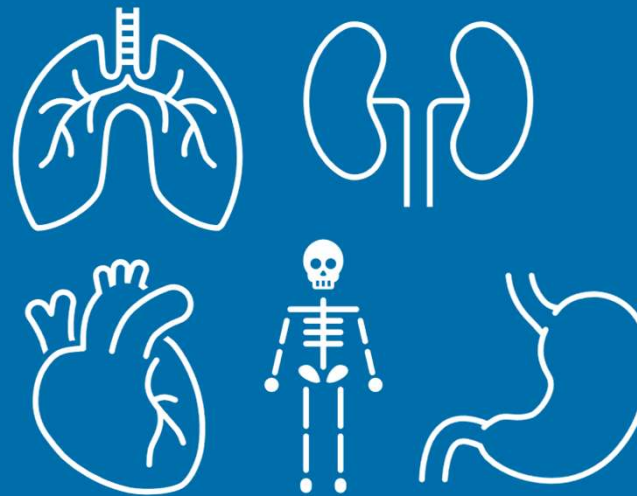
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EQA of the complete process



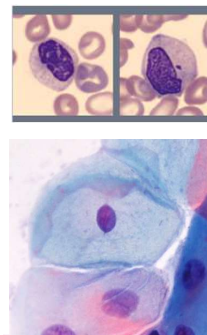
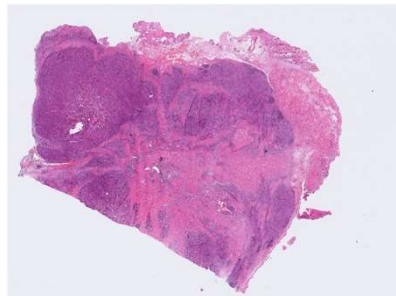
Setup of EQA schemes – methods

- Identifying/classifying pathology
- performing measurements
- multiple-choice questions
- providing clinical diagnostic opinions/writing clinical reports

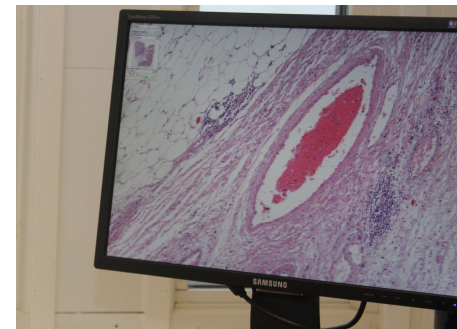


Setup of EQA schemes – medical imaging

Test material



Imaging systems



- Equalis Online
- TomTec (ultrasound)
- Cellavision (cell morphology)
- Collective Minds Radiology (radiology, pathology and nuclear medicine)

Setup of EQA schemes – user accounts



- Personal user accounts
- Anonymous

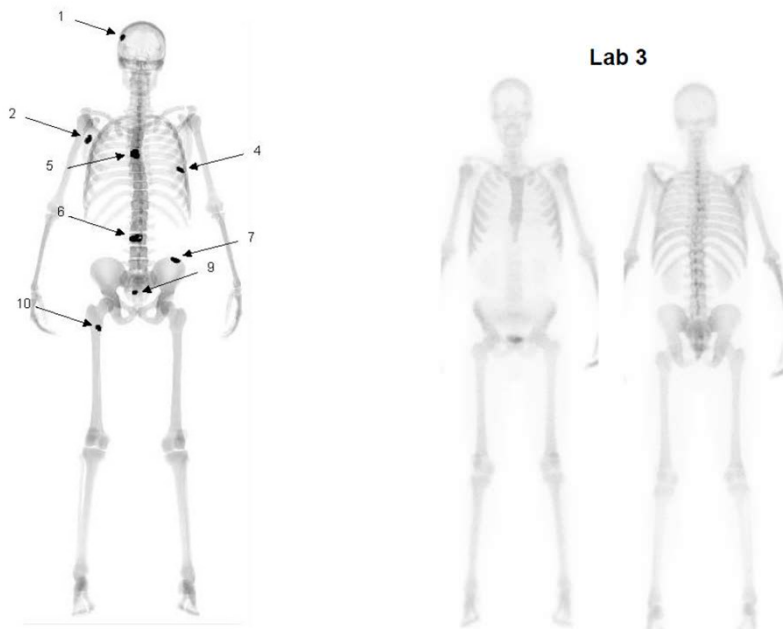


- Shared account
- Representative response OR
- Consensus response



Examples from EQA schemes – Nuclear medicine

EQA scheme of planar whole-body bone scintigraphy



Is there an increased activity –
relative to normal activity?

Reports – example from a report for two clinics

Clinic A

Is there an increased activity in position 1 (the cranium)? Expected result: **Yes**

User account	Registered result
Clinical response	Yes
Individual response no 1	Yes
Individual response no 2	Yes
Individual response no 3	Yes
Individual response no 4	Yes
Individual response no 5	Yes

Clinic B

User account	Registered result
Clinical response	Yes
Individual response no 1	No
Individual response no 2	No
Individual response no 3	Yes
Individual response no 4	Yes
Individual response no 5	Yes

Is there an increased activity in position 4 (the rib)? Expected result: **Yes**

User account	Registered result
Clinical response	Yes
Individual response no 1	No
Individual response no 2	No
Individual response no 3	Yes
Individual response no 4	No
Individual response no 5	Yes

User account	Registered result
Clinical response	Yes
Individual response no 1	No
Individual response no 2	Yes
Individual response no 3	Yes
Individual response no 4	Yes
Individual response no 5	Yes

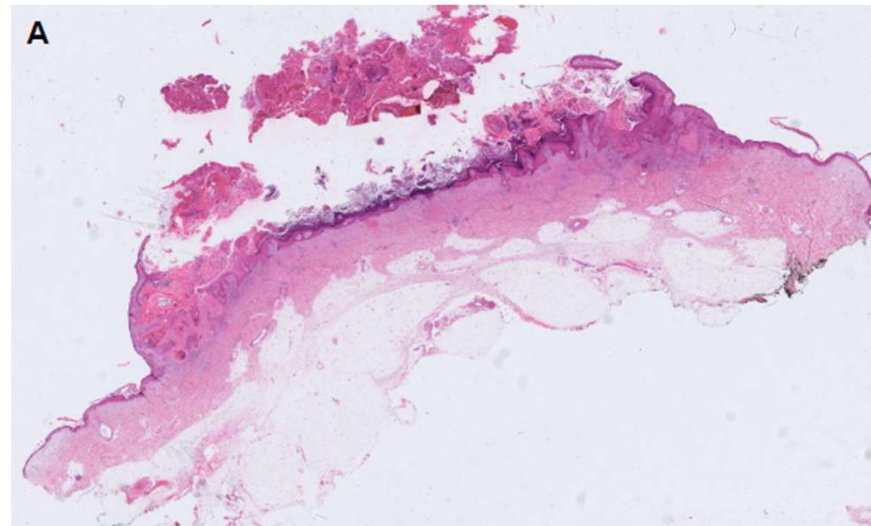
Examples from EQA schemes – Pathology

EQA scheme of squamous cell skin cancer

Medical history: Male born in 1932. Skin tumor on the front of the right thigh, described in August as approximately 2 cm. Since then, growth has occurred, and the patient now presents for excision of an exophytic growing tumor measuring approximately 2 x 3 cm. Excised with a minimum clinical margin of 6–7 cm.

Clinical question/diagnosis: Squamous cell carcinoma?

Determine the degree of differentiation

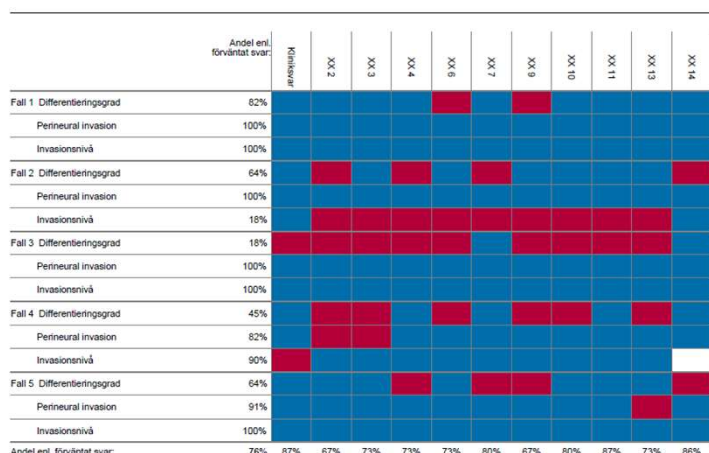


Examples from EQA schemes – Pathology

EQA scheme of squamous cell skin cancer

Determine the degree of differentiation

	Proportion (%) according to expected result	Clinical response	Individual response 1	Individual response 2	Individual response 3	Individual response 4	Individual response 5	Individual response 6	Individual response 7	Individual response 8	Individual response 9	Individual response 10
Case 1 Degree of differentiation	45%											



■ According to expected result
■ Not according to expected result

Examples from EQA schemes – Echocardiography

Medical history: Non-smoking, 80-year-old woman with tablet-treated hypertension, Metformin-treated type 2 diabetes, and chronic atrial fibrillation for which she is also treated with Warfarin. She underwent open heart valve surgery in the 1970s. She is now seeking medical attention due to worsening dyspnea and is referred for a cardiac echo.

Clinical question: Assess the presence and severity of valvular disease in this patient.

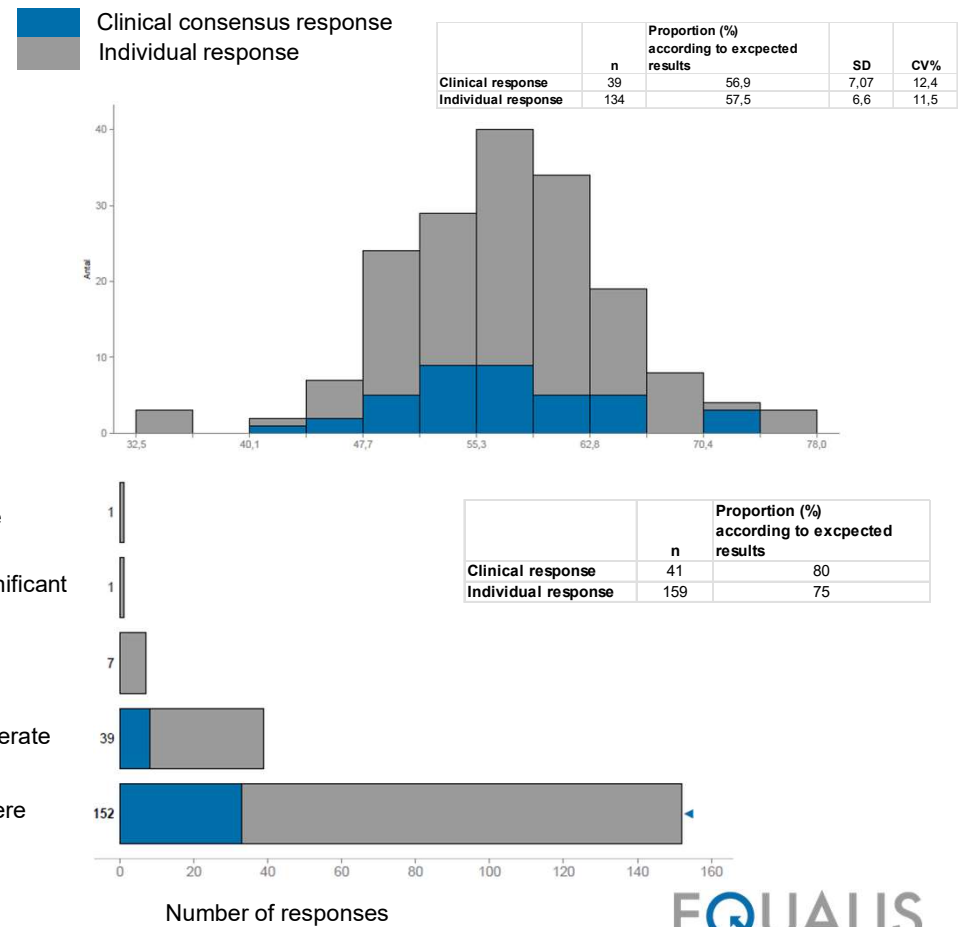


Examples from EQA schemes – Echocardiography

Combination of measurements, calculations and multiple-choice questions

- Measure the diastolic mean pressure gradient across the mitral valve (mmHg)
- Measure the maximum velocity of tricuspid regurgitation (m/s)
- Measure the aortic VTI (cm)
- Calculate the stroke volume (mL)
- Calculate the aortic valve area (cm²)

- Mitral valve stenosis**
- None
 - Insignificant
 - Mild
 - Moderate
 - **Severe**



Examples from EQA schemes – digital classification of blood cells

The screenshot displays a digital interface for blood cell classification. On the left, a table lists various white blood cell (WBC) types and their counts. The main area shows a grid of microscopic images of blood cells, with one cell highlighted in blue. The interface includes a navigation bar at the top with icons for menu, search, and settings.

WBC differential		
Unidentified	Count	%
Unidentified	54	
WBC		
Band neutrophil	-	-
Segmented neutrophil	-	-
Eosinophil	-	-
Basophil	-	-
Lymphocyte	-	-
Monocyte	-	-
Promyelocyte	-	-
Myelocyte	-	-
Metamyelocyte	-	-
Promonocyte	-	-
Prolymphocyte	-	-
Blast	-	-
Lymphocyte, variant form	-	-
Reactive lymphocyte	-	-
Abnormal lymphocyte	-	-
Plasma cell	-	-
Large granular lymphocyte	-	-
Hairy cell	-	-
Sézary cell	-	-
Other	-	-
Total	0	
non-WBC		
Nucleated RBC	-	-

Follow up

- The participants receive four kind of reports.

Type of report	Receiver of reports
Overview (summary of all results - anonymized)	All participants
Individual report	Each personal account
Report for the clinic where all results from each personal account is shown	A designated contact person at the clinic
Report comment (often written in part by the advisory groups)	All participants

- As a participant in Equalis EQA scheme, the participants are responsible for **assessing their own results**, and for taking appropriate actions if necessary. Participants who report deviating results are **not** normally contacted by Equalis directly other than the individual reports.
- In the area of personal competence, a corrective action may include the need for **professional development** or **skills enhancement**.

Follow up – user meetings and recommendations

- Gather professionals within medical diagnostics for education, exchange of experiences, and networking.
- Results from the EQA schemes are presented and discussed.

Recommendations

The image displays three overlapping EQALIS recommendation documents for echocardiography. The top document is titled "EQUALIS Rekommendation" and "Expertgruppen för ekkokardiografi". It includes sections for "Rekommenderade transstoror", "Sammanfattning", and "Förklarande". The middle document shows diagrams of aortic diameters (Fig. 2) and aortic valve position (Fig. 3). The bottom document shows an ultrasound image of the aortic valve (Fig. 4) and aortic valve position (Fig. 5).

Thank you for listening!

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