“How to run a Histopathology EQA in the digital age”

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How to run a Histopathology EQA in the digital age

- Introduction to EQA – setting the scene
- Practicalities of running an EQA scheme
- Future issues for EQA schemes – an Organiser’s perspective
Q.A. programs were being used in other Pathology disciplines in the late 1980’s
No such system in Histopathology partly because responses textual not numerical, making analysis difficult
Slide clubs and slide circulations existed prior to this but without formalised scoring and feedback
1986 East of Scotland EQA scheme
1990 National Renal Pathology EQA Scheme
1992 OMNIS (Response analysis software)
Modern Uropathology EQA scheme started in early 2007 (120 responses) most recently 2015 (347 responses)
Stated objectives of EQA schemes

To improve diagnostic accuracy, to reduce health care costs, and to provide a basis for the continuing education of Histopathologists in laboratory investigation, organisation and management.

Registered RCPATH EQA schemes

17 Specialist
- Gynaecological
- Cervical
- National Musculoskeletal
- Dermatopathology
- Breast
- Liver
- Gastro-intestinal
- Non-gynaecological Cytology EQA
- Head and Neck
- Ophthalamic
- Lung Pathology
- National Gynae Cytology
- Gynae cytology Scot & NI
- Renal
- Neuropathology
- Urological Pathology Paediatric
- Uropathology

13 General
- Yorkshire
- Thames Valley
- Thames Valley
- Wessex and SWest
- North Thames (West)
- East Anglia
- SE England
- Scot & NI
- Wales
- North Regional Surgical Histopathology EQA
- NW histopathology
- Republic of Ireland
- E Midlands
Practicalities of running an EQA scheme

- Computer software
- Secretarial support
- Organiser
- Slide circulations or scanned images
- Anonymised
- Case submission

- Website
- Scoring/Participants’ meeting
- Poor performance
- CPD certificates
- Teaching & Education
- Scheme development
OMNIS DOS–based system (prior to invention of the internet!)

- Controls response analysis and the slide circulation
- Manual input of responses by Organiser
- Certain limitations e.g. only 10 diagnostic categories
Computer software – EQAlite

- 2010 KPMD IT Solutions Ltd
- EQAlite – Internet based platform with all of the functionality of OMNIS and some extras – drop down menu
- NM & JO no financial interests
- Uropathology scheme introduced EQAlite in 2011
- Other schemes moving to EQAlite in the future
Secretarial support

- This is essential for a scheme to work as organising and maintaining slide circulations and dealing with Participants queries can be very time consuming.

- Also the Organiser is likely also to be a Participant in the scheme and so cannot be privy to submitted diagnoses or performance scores of individuals (see anonymisation below).
Organiser(s)

- Select cases from the case pool to make up a circulation, present cases at Participants’ meeting, maintain scheme SOPs, provide annual report to the RCPath, monitor performance and deal with Participant queries.

- The larger the scheme the more work there is!
### Slide circulations or scanned images?

<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
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<tbody>
<tr>
<td>Removes the need for glass slide circulation (avoids potential breakdown</td>
<td>Takes longer to look at scanned images</td>
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<tr>
<td>of circulation, damage, loss, time restrictions, number of participants</td>
<td></td>
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<tr>
<td>in scheme, geographical area)</td>
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<tr>
<td>Less resource intensive ↓secretarial +organiser time</td>
<td>Not representative of ‘real life’</td>
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<tr>
<td>Allows inclusion of small biopsies e.g. needle biopsies</td>
<td>Image quality</td>
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<tr>
<td>Everyone looks at same slide – Can be considerable variability in what</td>
<td>Increased cost</td>
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<tr>
<td>is seen when 35x H&amp;E produced</td>
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<tr>
<td>Images can be made available retrospectively (and potentially annotated)</td>
<td>Requires fast internet access for Participants if web based – NHS</td>
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<tr>
<td>(and potentially annotated) for education and training</td>
<td>bandwidth variability and requires web space to store images</td>
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Circulated DVDs avoids internet issues (Australian scheme uses DVDs with images rather than web [3])
Uropathology EQA scheme

- We use a combination of both glass slides & scanned images (available via Leeds website + on circulated DVD)
- Participant’s value ability to review slides on the web but make diagnosis on glass slides
- Organisers can capture images from web for presentations

http://www.virtualpathology.leeds.ac.uk/eqa/
Participants joining the scheme are given a unique number (known only to themselves & scheme secretaries) and their results are plotted using these numbers rather than names.

If the organiser needs to contact a Participant this is done via the scheme secretary.
Case submission

- No more than 2 slides per case
- Only one diagnosis – Scoring becomes problematic if one of multiple diagnoses is missed
- The entire lesion should be represented in each section
- All clinical information, the macroscopic description and the results of immuno should be provided (or described)
- Cases should have a well defined and robust diagnosis
- Good examples of unusual and rare entities can also be submitted. These are no longer identified separately as educational. The Participants’ meeting (rather than the submitting Pathologist) decides if the case is suitable for scoring
Case submission form

National Slide-Based Uropathology EQA Scheme

Case Number: 3 / 311
Case type: Kidney

Educational:

Specimen: Left kidney

Age: 82
Sex: Female

Macroscopic:
Nephrectomy specimen 15 x 11 x 8cm. Separate fragments of fat, blood clot, and necrotic material.
Cut surface of kidney shows solid multinodular appearance with associated pus. Focal extension into perinephric fat. No calculi.

Original Case No.: PS30242/14

Clinical Information:
History of recurrent pyelonephritis
Lots of necrotic looking tissue at operation site

Immunohistochemistry:
Von kossa stain

Diagnosis & Notes

Date Modified: 26/11/2014 17:36:00
Date Created: 26/11/2014 17:36:00
Case History
Female 82 year-old presented with pleural effusion. Thorascopically-guided pleural biopsy. See annotations below. Cytomorphology, CEA & TTF-1 available.

Annotations
- region of interest

Keep answers brief. Offer the most likely single diagnosis on the information available if possible.

If a differential diagnosis is necessary, please indicate your opinion of the probability of each diagnosis by assigning a score to each, such that the total adds up to 10.
Case number: R1

Clinical Information:
Incidental right upper pole kidney tumour found on CT (for cholecystitis).

Specimen:
Partial nephrectomy for right upper pole kidney lesion

Main Diagnosis:
Please offer a single diagnosis if possible. If a differential diagnosis is necessary, please indicate your opinion of the probability of each diagnosis by assigning a score to each, such that the total adds up to 10 (ten).

Oncocytoma

Popularity:
10

Main Diagnosis:
Please offer a single diagnosis if possible. If a differential diagnosis is necessary, please indicate your opinion of the probability of each diagnosis by assigning a score to each, such that the total adds up to 10 (ten).

Oncocytoma

Renal cell carcinoma - Chromophobe

Popularity:
5

Secondary Diagnosis:
This is NOT a differential diagnosis of the MAIN diagnosis and should only be used if you think there is a separate, less clinically important, diagnosis present. If necessary you can also put differential diagnoses for this and weight them out of 10 as for the main diagnosis.

Oncocytoma
Scoring & the Participants’ meeting

- Participants’ meeting versus expert panel
- Meeting needs to be quorate. Most National schemes affiliated with educational meetings
- Organiser presents representative images of the case and proffered diagnoses
- Meeting decides whether case suitable for scoring 70% consensus +/- merging/ half marks
- Differential diagnoses
- Contentious decisions usually resolved on a show of hands
To whom it may concern,

This document confirms that the pathologist named above is involved in the External Quality Assessment Scheme.

They have completed the circulation listed below on the 31 July 2014:

Q

The return of responses justifies 2 C.P.D. points.

Responses have also been received from this pathologist in previous circulations:

LMNP

To be considered to have participated in this scheme, a pathologist must have returned responses bearing his/her confidential code number in at least two out of three consecutive rounds of the scheme calculated on a rolling basis providing the first action point has not been reached.

The Scheme Organisers undertake to monitor all participants' scores after each circulation. In the event of a participant fulfilling the criteria for persistent sub-standard performance', as defined by the Histopathology Advisory Panel of the Joint Working Group on Quality Assurance, the Organisers undertake to implement the agreed procedures to permit appropriate investigation.

Organisers: Dr N. Mayer & Dr J Osley
Department of Cellular Pathology
Level 3 Sandringham Building
Most schemes use RCPath method of bottom 2.5% in two of three consecutive circulations (1\textsuperscript{st} action point)

In Uro scheme after 14 circulations 7 ‘Dear colleague’ letter in total

No one has triggered 2\textsuperscript{nd} action point (Referral to NQAAP)

Recommendations for the development of histopathology/cytopathology external quality assessment schemes, April 1998 at:
http://www.rcpath.org/Resources/RCPath/Migrated\%20Resources/Documents/G/G012-RecsForDevpmntOfHisto-CytoEQASchemes.pdf
Teaching & Education

Virtual Pathology at the University of Leeds

Urology EQA circulation B

<<< back to Urology EQA page

B13
Male 64 years
Symptoms not known. Fronded tumour on trigone at TURBT.

Specimen: Bladder biopsy.
Macro: 1ml polypoid tissue - not embedded.

Show Diagnosis

Inverted papilloma

Meeting comments:
There was very high agreement that this case represented inverted papilloma (96% of responses). Several participants commented on the presence of occasional papillae and the clinical description as 'fronded', but the meeting felt there was less architectural and cytological atypia than would be expected for either PUNLMP or inverted TCC. Responses 2 and 4 were therefore regarded as incorrect. Inverted papilloma with atypia was agreed to merit half marks.
Scheme development

Tell us about your scheme membership and practice, tick as many choices as apply.

- Full member of slide...
- Trainee member
- Overseas member
- Report prostate cores...
- Report radical prostatectomies
- Report TURBT/bladder...
- Report Cystectomies
- Report Nephrectomies
- Report penile biopsies
- Report Penectomies

Answered: 100  Skipped: 0
Future issues for EQA schemes – an Organiser’s perspective
Founding principles of EQA schemes

- Voluntary
- Anonymous
- Representative of everyday practice
- Confidential feedback to individual Pathologist
- Comparison of diagnostic performance against ones peer group
- Onus on individual to improve diagnostic performance in relevant areas

Education
EQA & Revalidation

- Compulsory participation in EQA schemes

- EQA performance formalised as part of appraisal process – ‘Pathologists should discuss the content of detailed EQA reports with their appraiser’ – not just satisfactory participation

Supporting information for appraisal and revalidation: guidance for pathologists Based on the Academy of Medical Royal Colleges and Faculties’ core guidance for all doctors. RCPATH Revised June 2014
A cautionary note

- The main criteria of any form of testing are reliability, validity, appropriate difficulty and discriminatory power.


- High quality evidence for EQA schemes conspicuously absent from the literature probably reflecting the subjectivity of defining these criteria for interpretative schemes

- Takes a long time to reach 2\textsuperscript{nd} action point – Minimum amount of time 2 years in Uropathology EQA scheme
Ongoing issues for the profession

- Accreditation – Should all schemes be UKAS accredited to ISO standard 17043?
- Lack of standardisation between schemes: number of cases, scoring system, % agreement, proportion unscored cases, definition of poor performance (% v’s centiles)
- Specialist versus general schemes
- Collusion – Matter of professional probity
Concluding remarks

- Interpretative EQA schemes are approaching three decades in existence and there is increasing use of digital technology.

- The digital era has seen the introduction of web-based EQA platforms and increasing use of scanned images – Although this has many practical advantages this is moving away from ‘everyday practice’ and many Pathologists remain uncomfortable diagnosing from digital images alone.
Concluding remarks

- Electronic response submission using dropdown menus and direct links to scanned images have been major advancements in our own scheme – particularly with increasing numbers of participants.

- Other advantages online EQA platforms include: electronic case submission, direct printing of EQA certificates and the digital archive from old circulations is a valuable education and training resource.
Because of a lack of proven validation, reliability and discriminatory power, EQA performance should be only one of multiple factors required to demonstrate satisfactory personal proficiency in Pathology.

Very little evidence that poor EQA performance equates to poor clinical performance (and equally good performance no guarantee of good clinical performance!)
References

2. http://www.kpmd.co.uk/scripts/ProgramMan.htm
Acknowledgements:
EQA Secretaries – Loren, Wendy and Adam
KPMD – Mick Daniels
Leeds website and Martin Waterhouse