Lessons from my tryst with digital pathology

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Complaints from analogue pathology

- Uncertainty of measurement (MoU 0.01mm accuracy for melanoma)
- Ergonomic and work flow problems
- Rooted
- Delayed collaboration

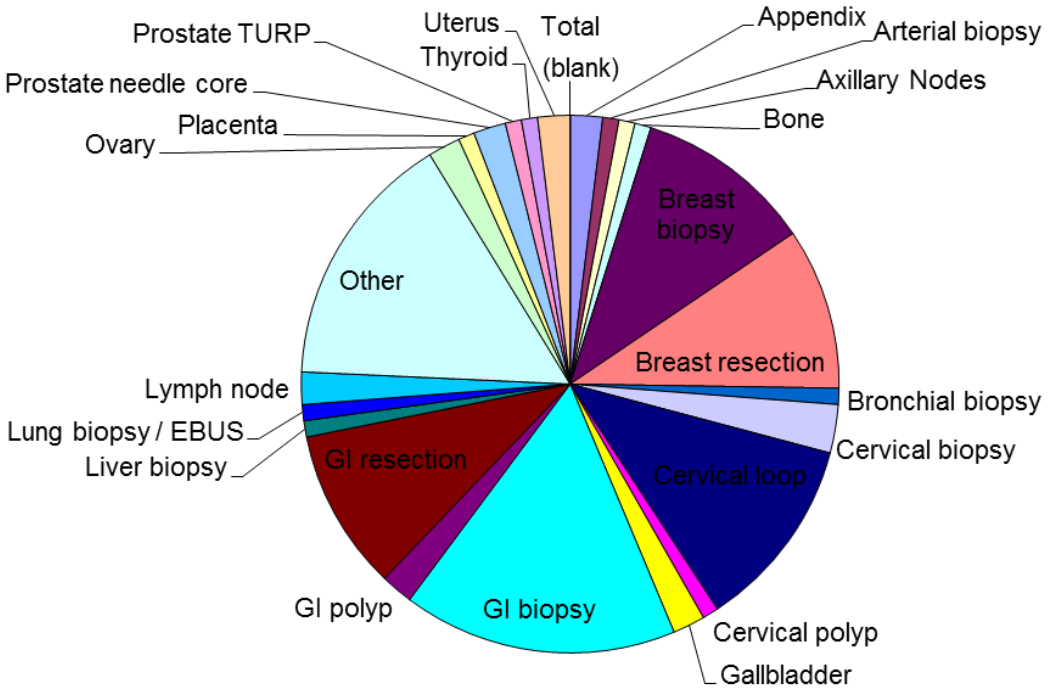
Approaches to pilot: to each his own

- Direct access to referral material
- Exception reporting
- Limited wash
- Full wash out

Will it all come out in the wash?

- 100% concordance
- Confident use of tools
- Confident of low power dx

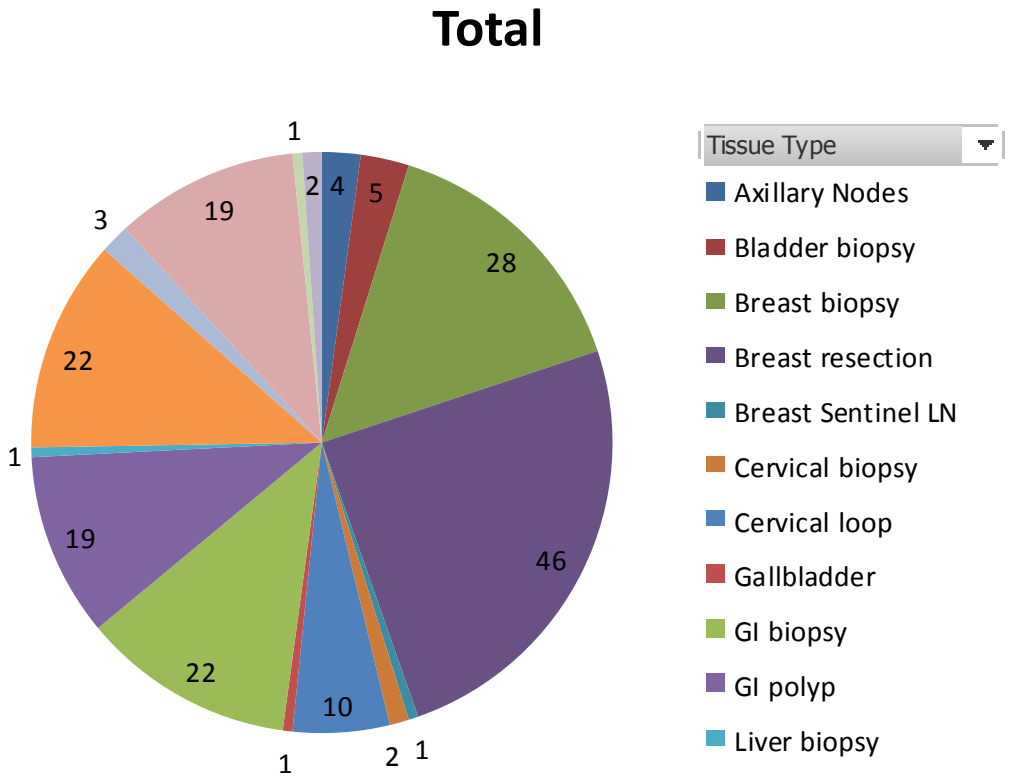
- 5/103 (4.8%) rescans
- More time than analogue (subjective)



The live experience

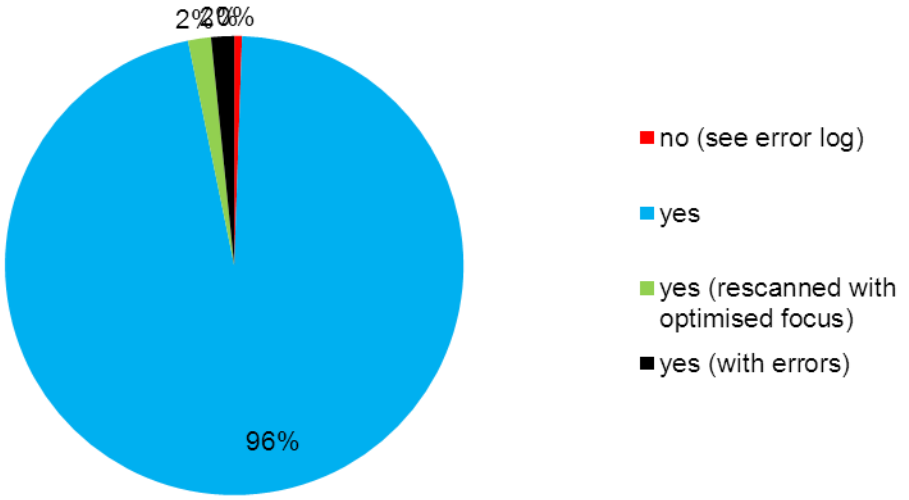
186 cases,

(24 off site/digital home reporting)

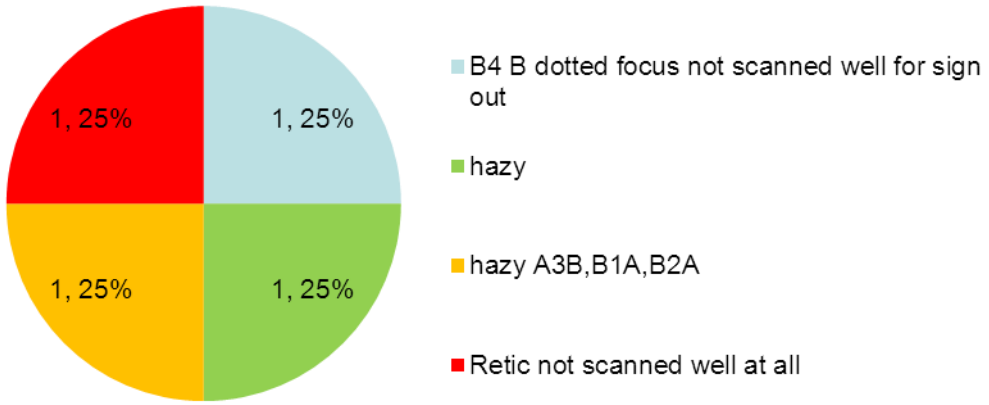


Rescans

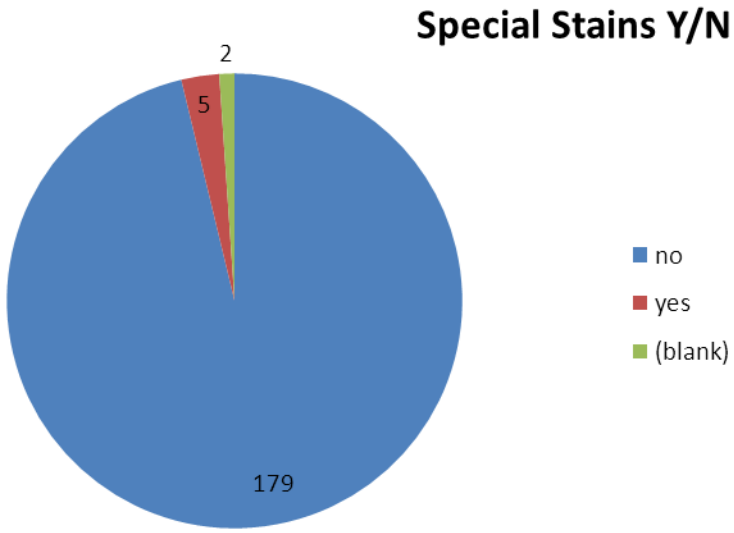
Scan OK

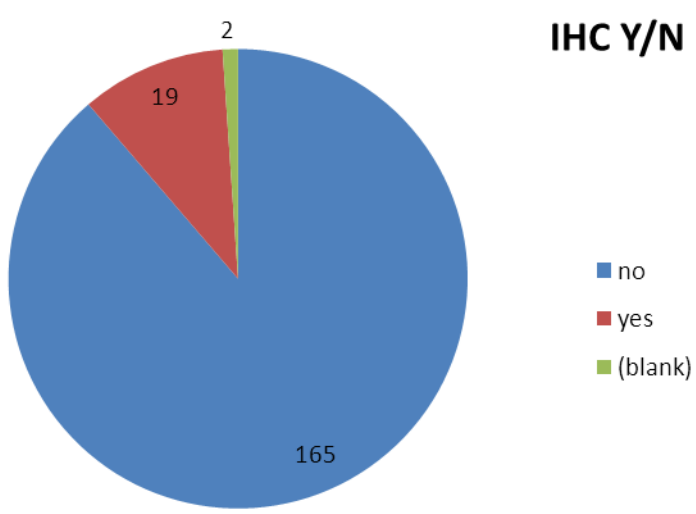


Reason for Rescan

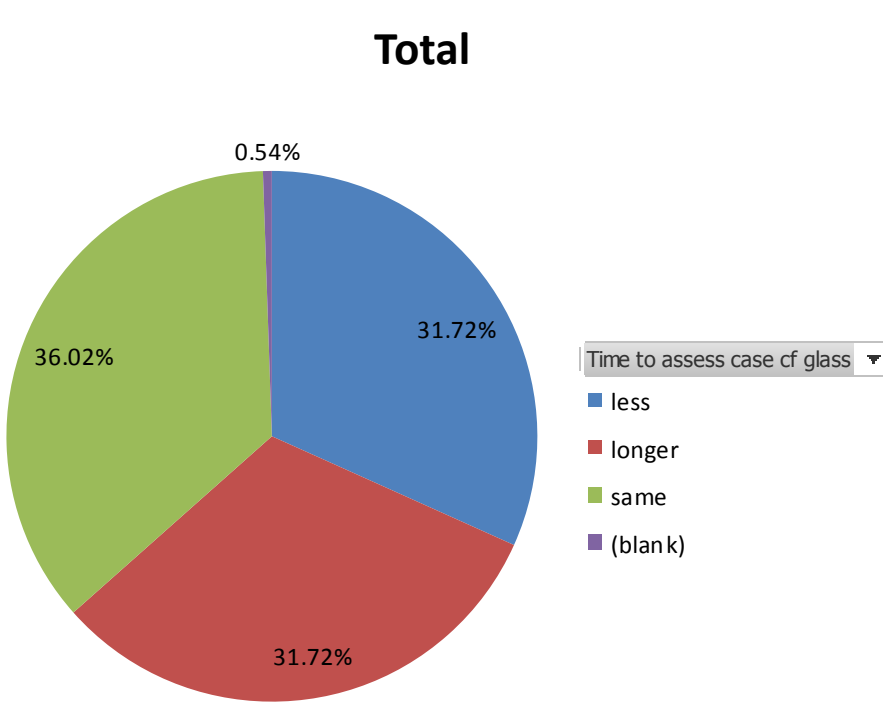


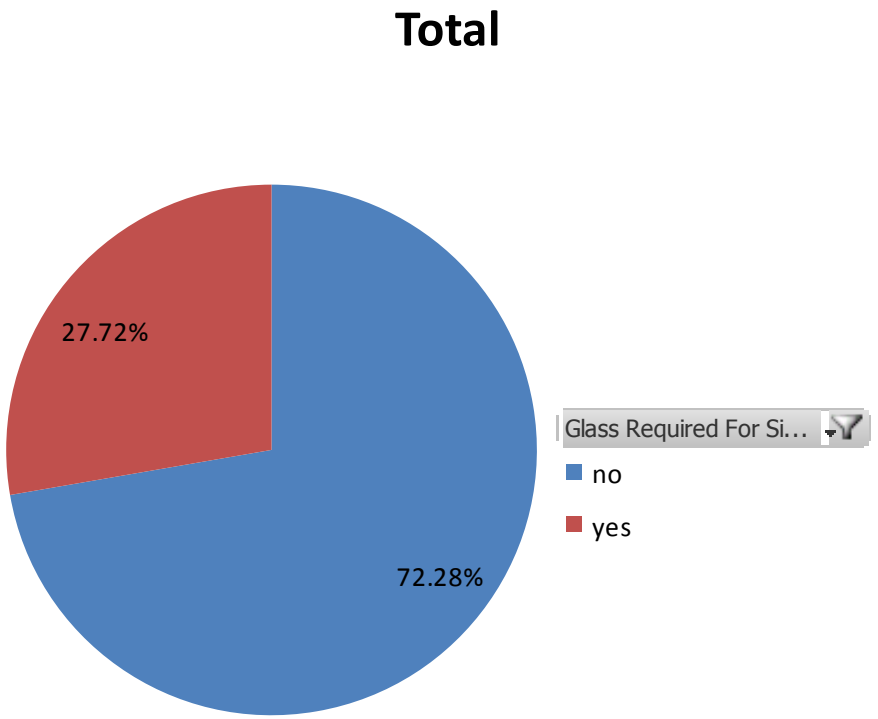
Special stains and IHC



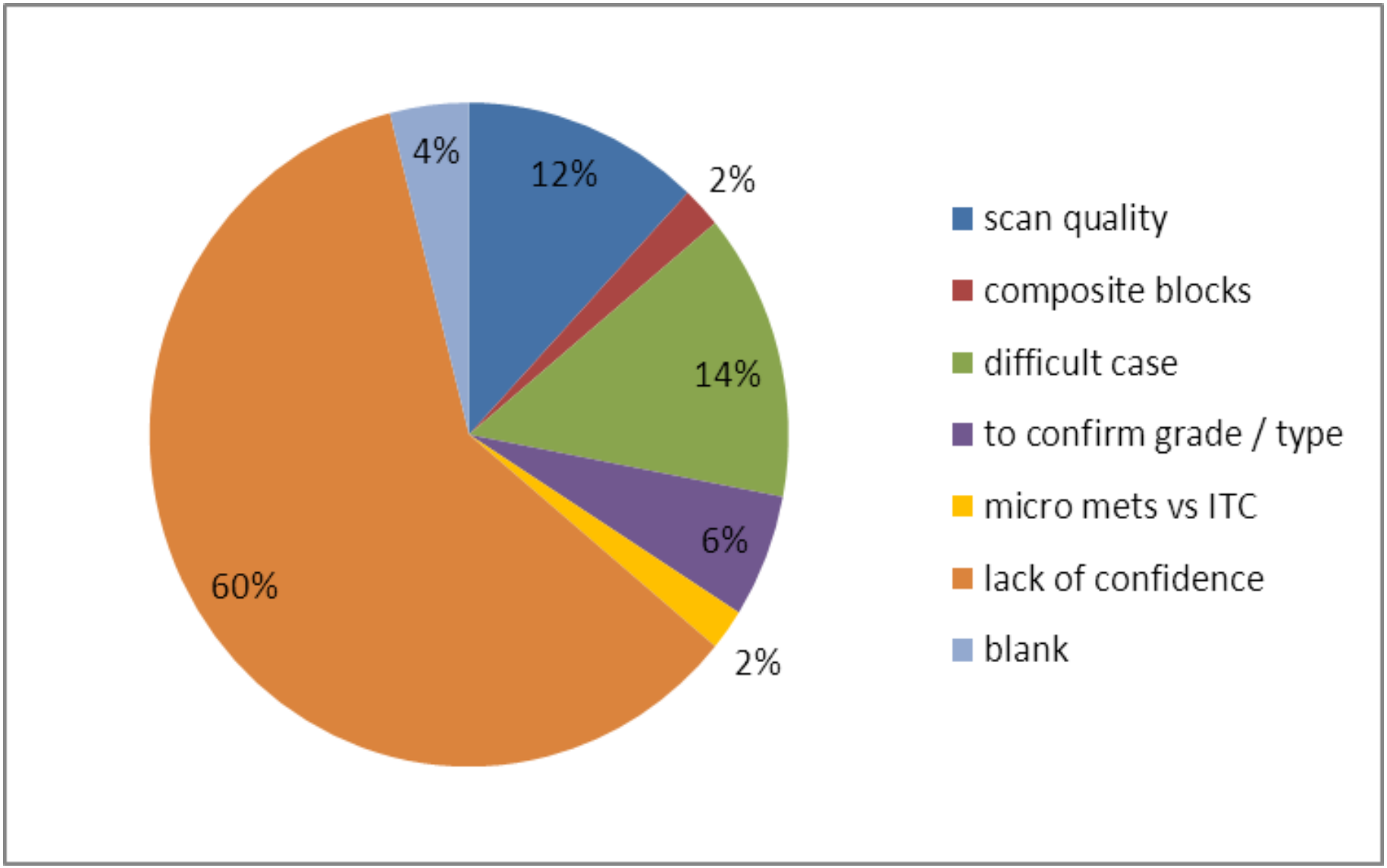


Time and analogue





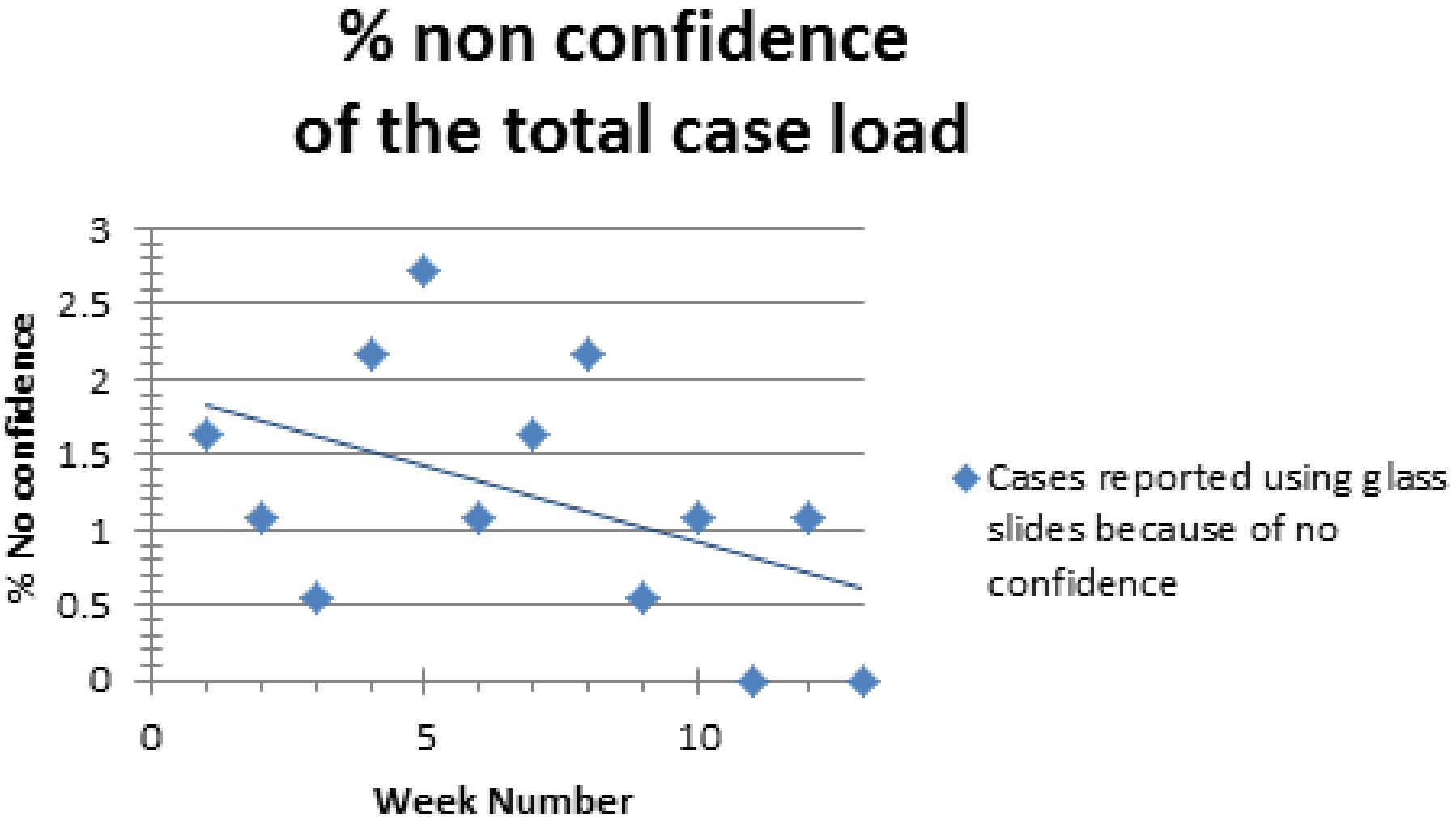
Pass the glass



Diagnostic Concordat (6)
1.35% major 0.69 % minor (2%)

Glass Required For Sign Out (Y/N)	If Yes state reason	Diagnostic Concordance (Y/N)	If No state reason
no		no	Underscoring of mitosis in scans
yes	lack of confidence	no	Difficult for VIN 1,2 at margins
yes	lack of confidence	no	Missed small foci of invasion
yes	lack of confidence	no	hazy scan
yes	lack of confidence	no	mucosal prolapse in C
yes	difficult case	no	Partial atrophy mimicking cancer

CONFIDENCE TREND



Summary (289 cases)

- Huge quality benefits- Breast, prostate, cervix- accuracy
- NHSBCSP and CRC- quality neutral
- Steep learning curve- persistent use
- Work flow, remote site reposting, virtual academy of specialists
- Dearly missed for above categories

Summary Cont'd

- Much slower for single slide, few fragments, low complexity cases (skin, GI, endometrium)
- Mental barrier for challenging cases
- CAUTION- Subtle foci of malignancy in a large volume- TURP, re resection of bladder tumours, post NAC breast/colon

Necessary improvements

- Analogous to the ease of text annotation of slide label
- Microns to be converted to decimals of mm
- Even better focus at lowest magnificatioon
- Better white balance with ambient illumination
- Memory of personal settings
- Image stitching capability

Future directions

- Tumour finding tool
- Grading algorithm
- Biomarker scoring algorithm
- Morphometry and image analysis
- Image superimposition for difficult tumours
- Man from Istanbul problem (Rosai)
- Quantitative proteomics

Barriers to implementation

- Financial
- Inertia and comfort
- Enforcement and apprehension
- Over enthusiasm for all that’s new and contempt for old

Conclusion

- How did IHC and molecular pathology get introduced in surgical pathology?
- Need to distinguish between core and non core aspect

Conclusion

- Critical mass
- To gain momentum
- Join the bandwagon

THANK YOU

ACKNOWLEDGEMENTS

T WING, GE OMNYX
D BOTTOMS
S WILLIAMS
D MEAD
IT, UHNT