



Digital Haematology Morphology Program - Cellavision

SA PATHOLOGY

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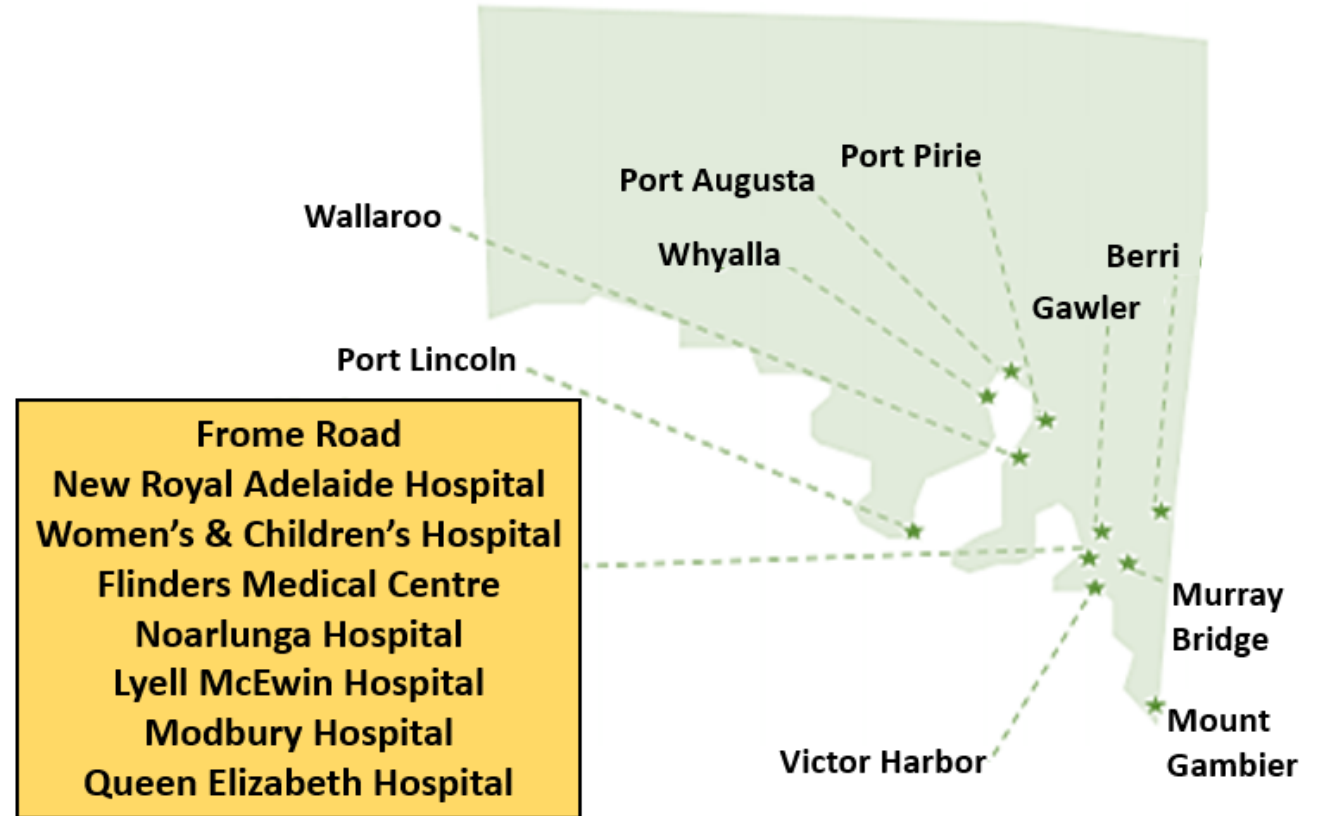
PPA Quad State National Forum, Innovations Plenary
QLD 2022

Aim of this Innovation

What were you aiming to achieve?

To implement digital microscopy for standardisation of work practices, training and competency and provide a real time high level microscopy review solution to 7 metropolitan and 10 regional centres

Location of Laboratories



Aim of this Innovation

What was the problem or situation before you implemented this innovation?

- Inconsistency and subjectivity of locating abnormal cells via manual microscopy
- Complaints raised due to mis- and delayed diagnosis (? New Leukemia presentations)
- Difficulties in meeting increased training demands via traditional teaching methods, especially when staff have to travel from regional centres
- Limited ability to assess and maintain the ongoing competency of a large and growing group of morphologists

Aim of this Innovation

What prompted you to undertake the project?

- Greenfield site at new Royal Adelaide Hospital
- New analytical platforms (haematology/chemistry/immunoassay – first fully integrated track system in Australia) Sysmex haematology platforms.
- New LIS system (Cerner Millennium)
- Cellavision (DM9600) DI-60 was (unexpectedly) scoped with the new track system, providing an opportunity to trial and utilise the advantages of digital microscopy.



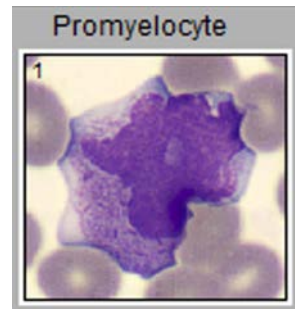
Aim of this Innovation

CellaVision went live in mid-2019



Early Challenges

- Staff were eager but wary
- Constantly wanting to return to the glass slide “FOMO” as CellaVision only scans the monolayer, excluding the tail and periphery of the slide
- Some resistance from staff due to traditional work practices and not yet having complete faith in the new system (a need to retrain ourselves to trust the system)



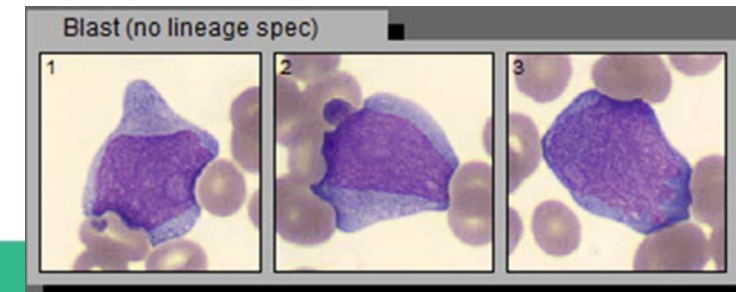
Aim of this Innovation

ICT Challenges

- Restricted storage capacity
- Local network required – single site only i.e. RAH
- Planning expansion
 - Funding – server large enough to store images and opportunity to move to cloud
 - Scoping – for network to cover all our laboratories
- Not connected to Millennium; risk of manual transcription errors. No interface with Millennium at this point

Addressing these Challenges – will provide the following

- NPAAC requirements re-storage
- Development of a state wide CellaVision Network
- Interfacing in Millennium now in scope (moving form IT3000 to Infinity)



Aim of this Innovation

What was the improvement you were seeking?

To increase staff's confidence with CellaVision

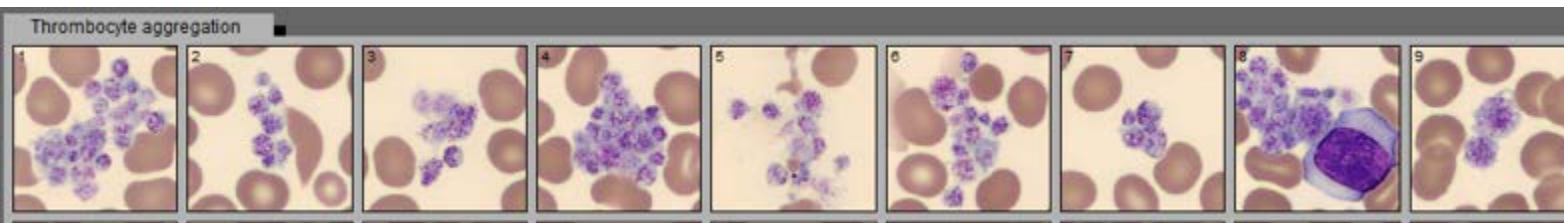
- 250-cell differential to improved detection of abnormal cells rather than manual count of 100.

To reduce delays in diagnosis

- Implemented real time higher level review, even for regional centres

To address the morphology skills shortage

- Increased the number of morphologists for the network via new training approach
- Provided non-subjective competency assessment of morphology skills



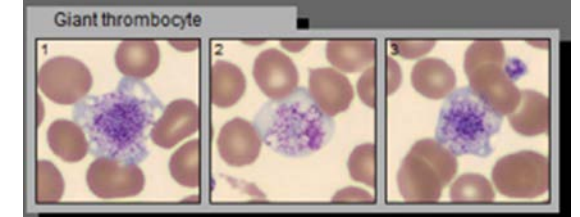
Key Changes Implemented

What were the changes that were implemented that contributed to the project's success?

Adopting a digital workflow

Turning point

- Differential count increased to 250 cells
- Ease of use
- Confidence in the technology's capabilities
 - Efficiency
 - Accuracy
 - Detecting anomalies/changes missed by conventional means
- Very rarely return to the glass slide
- Encouraging Haematologist to embrace the technology
- RCPA QAP and examination programs increasingly heading towards digital microscopy



Outcomes so Far

Digital Morphology Benefits

- Improved efficiency
- High specificity
- Sensitive to blasts
- Sensitive to some malaria parasites detected as large thrombocytes
- Advanced red cell characterisation
- Real time remote review
- Training and competency assessment
- Workforce design – building a core morphology team that can service the whole state

Outcomes so Far

Training

- Traditionally an average of 5 morphologists were signed off per year as having reached a level of competency after consolidation of knowledge from level 1 training.
- Remote training via the digital network has more than doubled our ability to achieve this, providing real efficiency
- Scope to identify and provide continuing support for staff yet to reach competency.
- Internal Proficiency program, making cases available to all relevant staff. This can be accessed across our 17 laboratories

Outcomes so Far

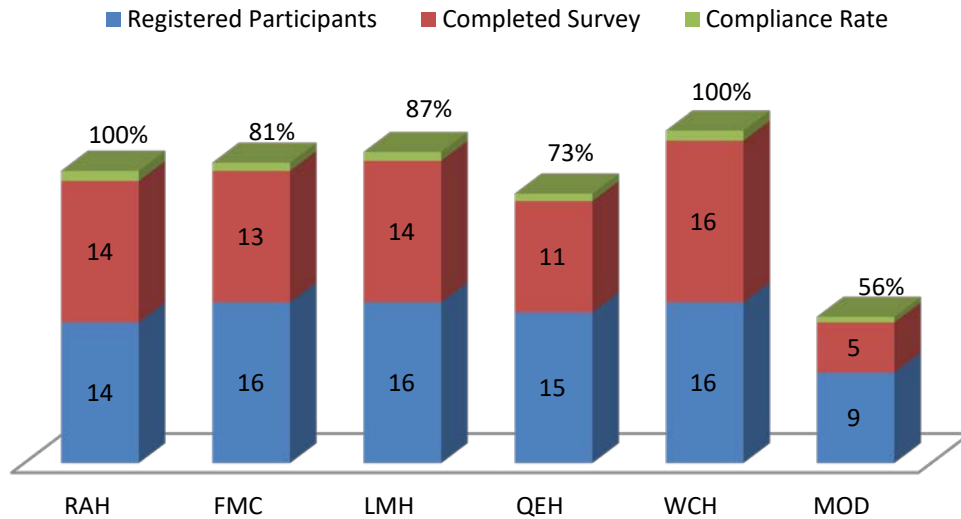
Maintaining competency

- Currently 190 morphology trained staff members (including Haematologists) from across all sites participate in the proficiency program
- Minimum 65% participation rate per staff member is required
- Morphology performance assessed against examiner and results tabulated by the proficiency software
- Staff scoring 70-79% require monitoring
- Staff scoring <70% or have <65% participation rate require follow up
- Extra training support may be provided

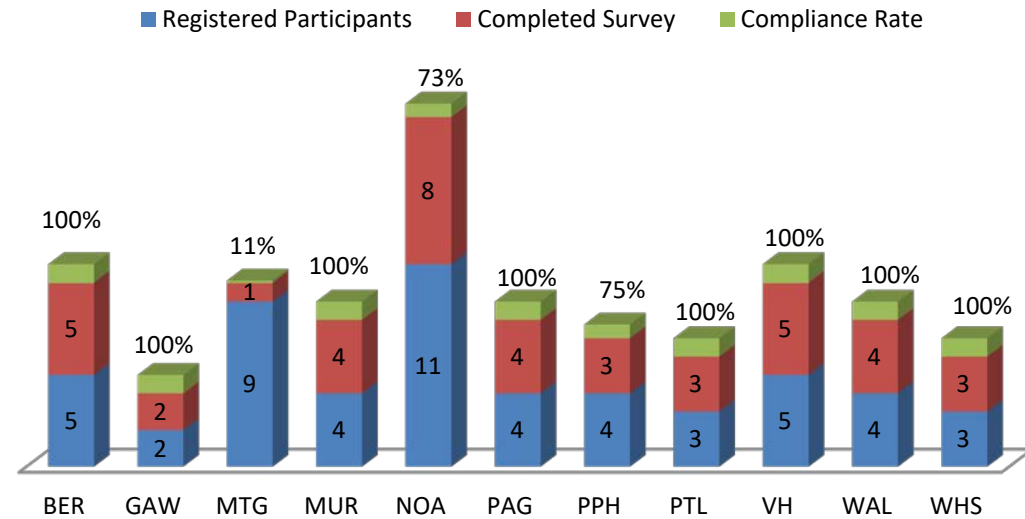
Outcomes so Far

Competency via CellaVision Proficiency program – July 2019

Metropolitan Laboratories

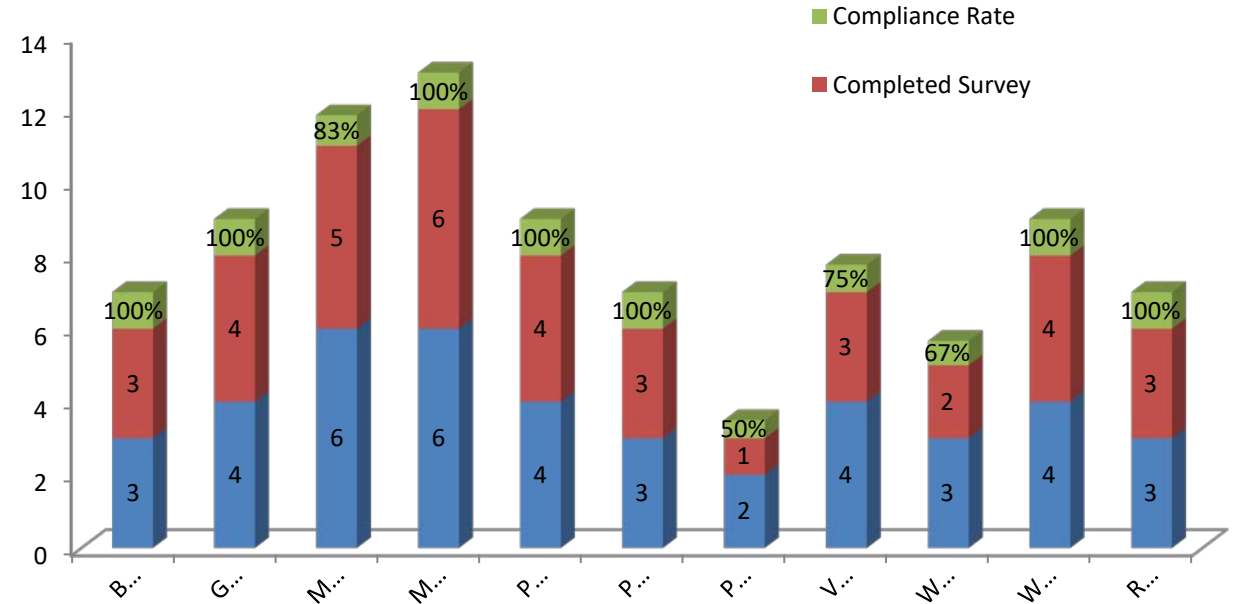
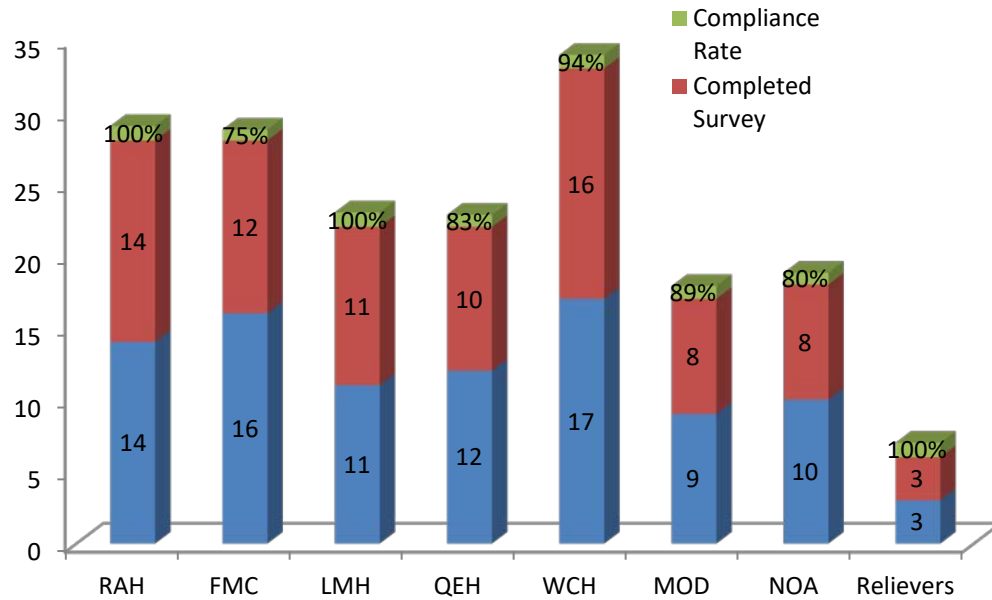


Regional Laboratories



Outcomes so Far

Competency via CellaVision Proficiency program – December 2021



Outcomes so Far

Workforce management

- Film review rate per staff member at each site is also monitored
- Helps identify workload distribution and ensuring staff perform a minimum of films required to maintain competency
- This number is dependent on workload and complexity at each site
- Can vary from 10 films per week to 60
- Paves foundation for a virtual morphology network of skilled morphologists to service the whole state

Questions ?

Acknowledgment:

- Cuong Pham – Principle Scientist, Haematology, SA Pathology