

## DML Move to Automated Screening of Cervical Cytology

In 1997 DML was the first laboratory in New Zealand to introduce liquid based cytology using the ThinPrep® system. Over the past 13 years we have built up substantial experience in the processing, screening and reporting of liquid based cytology. It was only in 2009 that liquid based cytology finally became standard practice in New Zealand.

In January 2011 DML launched automated primary screening of liquid based cytology using the ThinPrep® Imager system. DML will be the only laboratory in Auckland using this method. The move to automated screening meets the objectives of the NCSP and reflects a world wide trend to automated primary screening for cervical cancer.

Training of the DML cytology screeners at Ellerslie is well underway and meets the NCSP requirements for validation of individual screeners. Full implementation of automated screening will be completed by mid-April.

### ThinPrep® Imager Study at DML

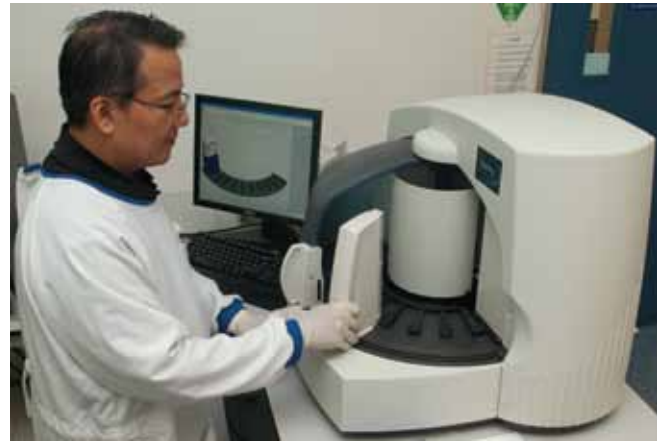
The launch of automated screening at DML follows on from a study at the laboratory in 2008 of the relative efficacies of manual screening and ThinPrep® Imager assisted screening. Although several large international studies already existed, the DML study was undertaken to determine the concordance rate in our regional setting, and to see if automated screening could be practiced under the stringent operational policy and quality standards of the NCSP. We felt confident that some variability of results in other studies may in part be related to the various experience of screeners.

Automation is a joint process between the ThinPrep® Imager and screener interpretation which remains a critical component of Imager assisted screening.

Our study results are soon to be submitted for publication in a peer reviewed journal.

### Conclusions from the Imager Study

- **Imager assisted screening is as good as manual screening in the detection of abnormalities.**
- **There is an improved pick-up rate of high grade lesions with Imager assisted screening.**
- **There is a high concordance rate for the pick up of low grade abnormalities in the order of 95%.**
- **Imager assisted screening showed a 50% reduction in the reporting rate of 'Unsatisfactory' smears.**
- **Screeners can safely report 40% more samples per day.**
- **The screener is greatly aided by the highly standardized computer assisted detection of abnormality. However interpretation of that abnormality, whether it is a low grade or high grade lesion, is still dependent on the skill and expertise of the screening scientist.**



### How does Automated Screening Work?

After initial processing of the ThinPrep® sample, the slide is stained with a highly specialized nuclear stain. Cellular nuclei stain with varying intensities depending on the amount of DNA present, ie. dysplastic nuclei will stain darker than normal nuclei, or those with benign changes. The stained slides are then scanned by the Imager which identifies and marks 22 fields of view (FOV).

It is a requirement that the cytology scientist must screen the entire area of each of the marked 22 FOV. A full re-screen of the slide is performed where an abnormality is identified in a FOV, or where the risk of an abnormality is known to be higher than that of the total screening population. A further full re-screen is performed for all abnormalities and the slide is then sent to a cytopathologist for reporting.

The adoption of automated screening is a significant departure from traditional screening methods and is a move towards a higher level of objectivity for the screening process. Screening is now a "partnership" between computerized science and a skilled specially trained scientist.

This "partnership" has proven successful in studies comparing the efficacies of manual and automated screening, the majority of these using the ThinPrep® Imager. These studies have demonstrated a higher pick-up rate for abnormalities, higher pick-up rate of high grade lesions and fewer smears interpreted as 'Unsatisfactory'.

The ThinPrep® vial contains a preservation solution which serves as a transport and antibacterial medium. It is designed to ensure the preservation of the cells in solution, prior to processing, for up to 3 weeks at room temperature.

DML has an unbroken record of prompt turnaround time for the reporting of smears and the current turnaround time will remain the same.

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***The result turnaround time is on average 3 days for smears and 5 days for smears with an accompanying HrHPV result.***

