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NEWSLETTER

HISTOPATHOLOGY UPDATE

Liquid-based cytology

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This newsletter will focus on liquid-based cytopathology (LBC) detailing the LBC technique and differences between conventional Pap smears and LBC cervical smears.

WHAT IS LIQUID-BASED CYTOLOGY?

Liquid-based cytology (also known as thin layer cytology, commonly referred to as LBC) is a technique that employs a special liquid preservative which immediately maintains the quality of cells obtained for cytological analysis.

Although LBC has been tested on a wide range of cytology specimens, it has been extensively validated for cervical smear analysis. LBC kits for cervical screening can be obtained from your local Lancet Laboratory.

These single use kits provide a sampling tool (cervical broom or brush), instruction pamphlet and a sealed bottle filled with the preservative liquid. The sampling tool is applied to the cervix and rotated clockwise twice (recommendations may vary according to the brush type). The entire head of the broom is removed and placed in the labelled specimen container filled with preservative. No slide is produced by the doctor or nurse. The bottle containing the liquid medium and sampling brush head is transported to the laboratory and processed in the laboratory to produce a slide that is screened for cytological abnormalities.

Figure 1. The single use LBC collection kit.

This technique is faster and simpler, eliminating the following steps which are required in producing a conventional smear:

- Smearing the sample material across a glass slide
- Cytofix spray application and drying time
- Glass slide handling, labelling and transport
- Exposure to biological material

The advantages of liquid-based cytology are:

- Elimination of sample wastage – all sampled cells collected using the brush are available for assessment. Previously sampling tools/brushes were discarded once conventional smears were made, which resulted in cell wastage.
- Improved smear adequacy rates due to adequate cellularity and transformation zone sampling.
- Superior cell preservation with no air drying/smearing artefacts.
- Excessive blood, debris and inflammation, which can obscure the cell content, is removed during processing.
- Human papillomavirus (HPV) DNA testing can be performed on the same sample, which may enhance clinical decision making.
- There is a reduction in the time taken to read a slide, as the material is evenly dispersed over a smaller, defined circular area on the glass slide. Conventional smears result in cellular material being spread unevenly across the entire slide surface area.
- LBC Pap smears are validated for FDA approved automated screening platforms, which have been implemented in some countries.

Figure 2. Conventional smears (left) have unevenly dispersed material which is smeared across the entire area of a slide. The uneven dispersion can obscure cell detail and results in extended screening times. LBC smears (right) produce evenly dispersed material within a confined area reducing screening time. The agitation of the sample in the laboratory ensures that cell content is evenly dispersed.

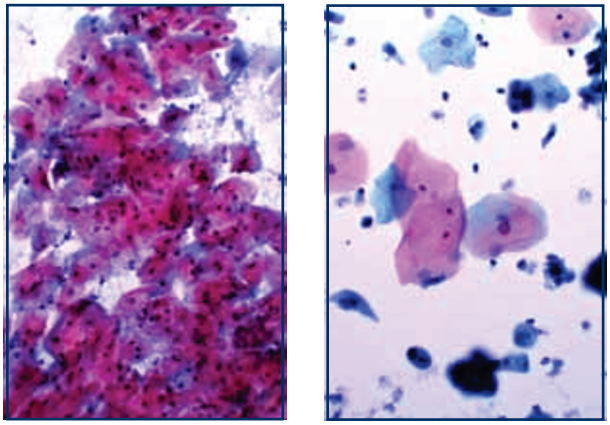

Figure 3. Conventional smears (left) may have large amounts of obscuring blood, debris and inflammation, which are removed by the processing utilised with the LBC technique (right).

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