Singapore Healthcare Management 2016

Review of liquid based Cytology (LBC)- BD CytoRich™ System implementation for processing body fluids in Non-Gynaecological Cytology examination.

Joyce Tan, KK Womens' and Childrens' Hospital
Karen Chee, KK Womens' and Childrens' Hospital

Background

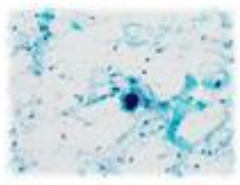
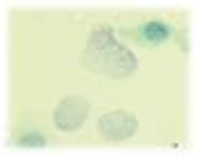
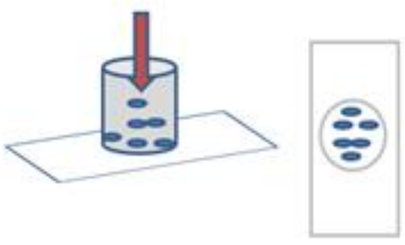
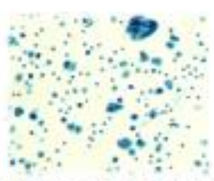
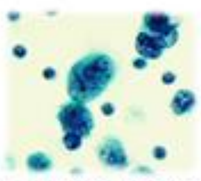
Processing body fluids for Non-Gynaecological cytology examination has been a specimen-driven and operator-dependent process. With the advances in medical technology, Liquid Based Cytology(LBC) technology have been available to help improve the processing methodology.

In Sep 2015, we implemented LBC- BD CytoRich™ System which is used in conjunction with the BD Prepstain™ slide processor in our hospital for processing body fluids.

Specimen is concentrated by centrifugation and its residual cell pellet is fixed in BD CytoRich™ System which consist of either lysing or non-lysing ethanol-based fixative. These fixatives help to preserve cellular materials. Following which, a single smear is produced by gravity sedimentation and stained individually in the BD Prepstain™ slide processor for microscopic evaluation.

Result

We compared conventional direct smearing method vs LBC technology and observed significant savings and value-added qualities in LBC.

Methods	Quantity of smear submitted	Qualities of smears	Total Screening time spend (by medical technologists and Pathologists)*
Direct smearing (conventional) 	 **3** Pap-stained smears are submitted. Operator dependent.  Entire smear have to be screen. As diagnostic material are scattered around.	  Blood elements obscuring epithelial cells.   Operator-dependent issue faced such as thick smears, smearing and air-drying artefacts. Risk of cross containment of specimen during batch staining	On average, per specimen produced 2.9 pap-stained smears that required **40.6 mins** of screening time
LBC Technology 	 **1** Pap-stained smear is submitted. Smaller area to screen (13mm in diameter) with diagnostic cells being concentrated. Preparations are standardized with discrete individual staining that eliminate cross contamination.	  Uniform, homogenous, highly cellular and well fixed smears produced  Crisp chromatin observed in epithelial cells. Able to produced reproducible smears for additional ancillary testing such as special stains and molecular tests.	On average, per specimen produced 1.03 pap-stained smear that required **14.42 mins** of screening time. 64% reduction in screening time was achieved.

* Based on data collected during the period Mar 2015 to Feb 2016.

Using LBC, there was **64% reduction** of PAP-stained smears being produced and screened.

Conclusion

Using medical technology, healthcare cost can be reduced and patient treatment is being improved. In this instance, LBC have added value to laboratory examination by producing quality material and elevated its diagnostic value. Cost-savings associated with labours and storage is seen as wastage is being reduced.