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Can automated blood film analysis replace the manual differential? An evaluation of the CellaVision DM96 automated image analysis system

Briggs C, Longair I, Slavik M, Thwaite K, Mills R, Thavaraja V, Foster A, Romanin D, Machin SJ.

Department of Haematology, University College London Hospital, London, UK.

Automation of differentials is desirable for economic and time-saving reasons. Over the last 20 years, automated imaging processes have started to be introduced where stained blood films are scanned by a computer-driven microscope and leucocytes classified; however, early methods were slow and had difficulty in classifying abnormal cells. More recently the CellaVision trade mark DM96 (CellaVision AB, Lund, Sweden) has been introduced with added features such as continuous loading of slides and a faster throughput than previous instruments. The accuracy of CellaVision(TM) DM96 has been evaluated by comparing results to reference manual differentials. Results from different operators using the DM96 were compared with their own manual differential and to a 400-cell reference manual differential. Precision of the instrument was compared to the manual differential. The preclassification accuracy of the DM96 was 89.2%. Precision was similar to that of the 100-cell manual differential. The DM96 was faster than the manual method, even after reclassification by a laboratory scientist of any cells wrongly categorized by the instrument. The DM96 accuracy in morphological classification of leucocytes and red blood cells; depends upon both blood pathology and experience of the laboratory scientist using the instrument. For some cell types and operators, DM96 accuracy was better than the individual's 100 cell manual differential.

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