CBC APPLICATION

Know more.
Decide with confidence.
Act faster.

Together for a better healthcare journey

More than just a CBC: Up-front NRBC determination in routine diagnostics

- ✔ Complete blood count (CBC) including nucleated red blood cells (NRBC%, #)
- ✔ Correct white blood cell counts enabled by metrological separation from NRBC

Neonatology

Premature baby in the 36th week of gestation.
The routine determination of NRBC with every CBC replaces the manual white blood cell count correction and ensures a reliable white blood cell count, even at high cell concentrations.

Intensive care units

Critically ill patients under monitoring.
Published research studies show that routine determination of NRBC with every CBC helps early recognition of additional critical developments [1], even at low NRBC concentrations.

Your benefits in daily routine

- Thanks to the routine NRBC quantification in all of the measurement profiles, a reflex test is no longer necessary. This eliminates the need for a new analysis and can therefore reduce the turnaround time significantly.
- Correct white blood cell counts save time spent on smear preparation and manual counting, particularly during the blood analysis of neonates, and reduce sources of potential errors.
  As a result, the work process is both accelerated and standardised. This leads to an improved comparability of the results.

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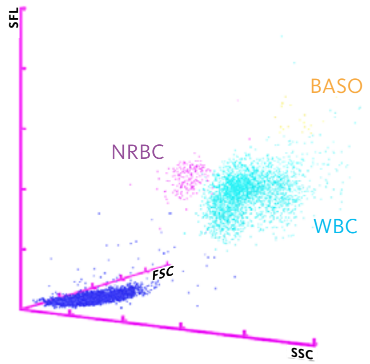
Diagnostic parameters	■ WBC, NRBC%, NRBC#, RBC, HGB, HCT, MCV, MCH, MCHC, RDW-SD, RDW-CV, PLT, PDW, MPV, PCT, P-LCR ■ MicroR: the percentage (ratio) of microcytic red blood cells MacroR: the percentage (ratio) of macrocytic red blood cells ■ With every CBC measurement, the analyser counts the nucleated red blood cells. Even when NRBC are present, they do not interfere with the white blood cell count.

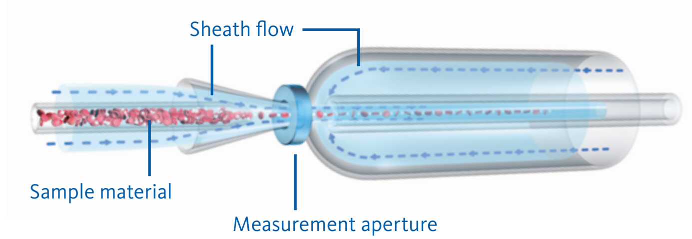
Technology of WBC and NRBC detection



Fluorescence flow cytometry	First, the cell membrane of the white blood cells is perforated, during which the cells remain intact, as far as possible. Then, the intracellular nucleic acids are labelled with a specific fluorescence marker. For the NRBC, the cell membrane is completely lysed and only the nucleus is labelled. The sample is then analysed using fluorescence flow cytometry. The measurement signals related to forward scatter (FSC), side scatter (SSC) and side fluorescence (SFL) are analysed and depicted in a scattergram.
Adaptive cluster analysis system (ACAS)	The flexible gating algorithm does not use rigid gating areas. Instead, it takes the biological variance into consideration when evaluating the measured signals. Therefore, the results are assessed individually, for example independently of the ethnic origin or other characteristics of the patient.

Technology of RBC and PLT detection

Hydrodynamically focussed impedance measurement	The sheath flow increases the reliability of the results because the cells pass through the detector unit individually and centrally.



Cyanide-free SLS haemoglobin measurement method	Its reagent system lyses RBC, WBC and lipids equally and, thanks to the reduction in potential interferences, delivers particularly reliable HGB results.
Cumulative pulse height haematocrit measurement	This technology provides a direct haematocrit measurement that can be retraced to the reference method.
Measurement modes	Whole blood mode: the standard mode with an aspiration volume of only 88 µL blood. Pre-diluted mode: for capillary blood samples, only 20 µL blood are required.

Measuring intervals

NRBC#: 0.03–20 × 10^3/µL	HGB: 0.1–26.0 g/dL; 0.1–16.14 mmol/L
WBC: 0.03–440 × 10^3/µL	HCT: 0.1–75.0 %
RBC: 0.01–8.60 × 10^6/µL	PLT: 2–5,000 x 10^3/µL

References

[1] Menk M et al. (2018): *Ann Intensive Care; 8(1): 42.*

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ZE000410.EN.C.08/23