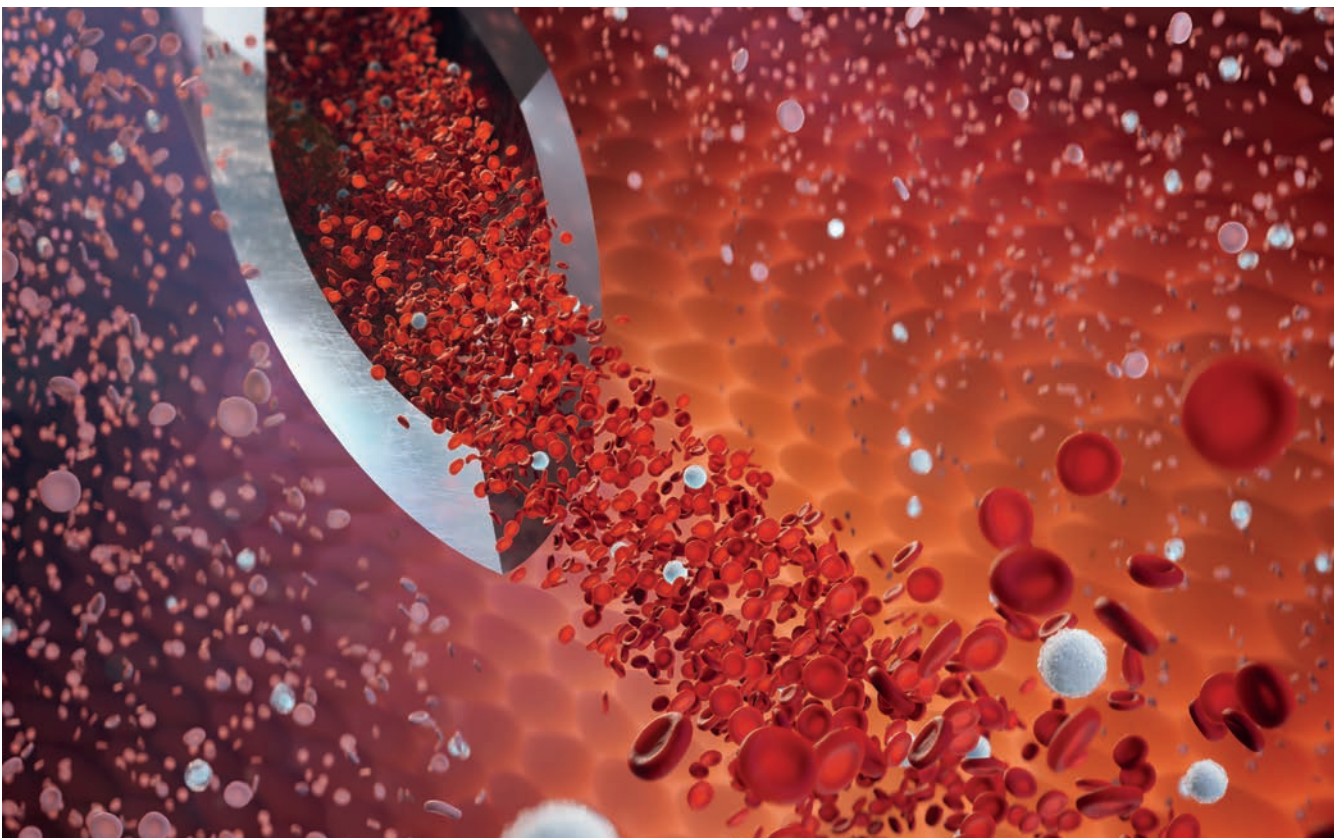


## CASE REPORT

### Interference

## Dimorphic population after transfusion

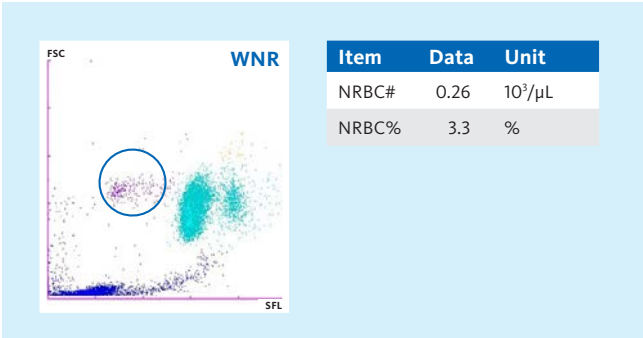


### Dimorphic population

- A dimorphic RBC population describes the presence of two distinct circulating red blood cell populations in the peripheral blood of an individual.
- This phenomenon can be easily identified from the two distinct peaks on the RBC histogram.
- Usually, one peak corresponds to a microcytic population and the other to a normocytic one.
- Several diseases or medical interventions can generate a dimorphic population
  - Myelodysplastic syndrome (MDS) with erythroid abnormalities
  - Transfusions (where one population comes from the donor)
  - Erythropoietin therapy
  - Sideroblastic anaemia
  - Post-iron treatment of iron deficiency
  - Chronic lymphocytic leukaemia (the right peak corresponds to WBC)

### Clinical case information

- Adult patient that received multiple RBC concentrates.
- The initial measurement of the patient’s peripheral blood on an XN-Series analyser showed multiple flags, prompting a reflex measurement.

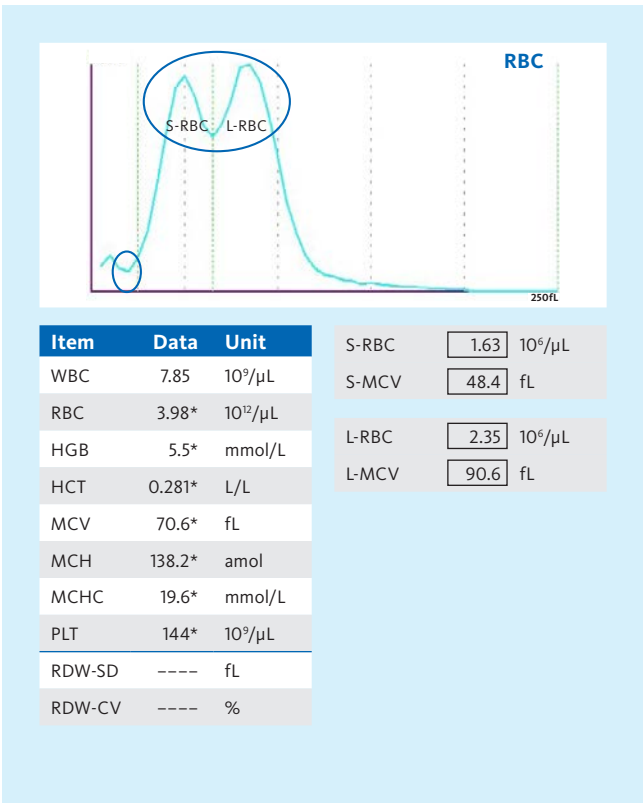


### WBC flags

- ‘NRBC Present’ was triggered due to the presence of an accurately quantified NRBC population in the WNR scattergram that exceeded the pre-defined threshold.
- The threshold is user defined and programmable; default setting is 2%.

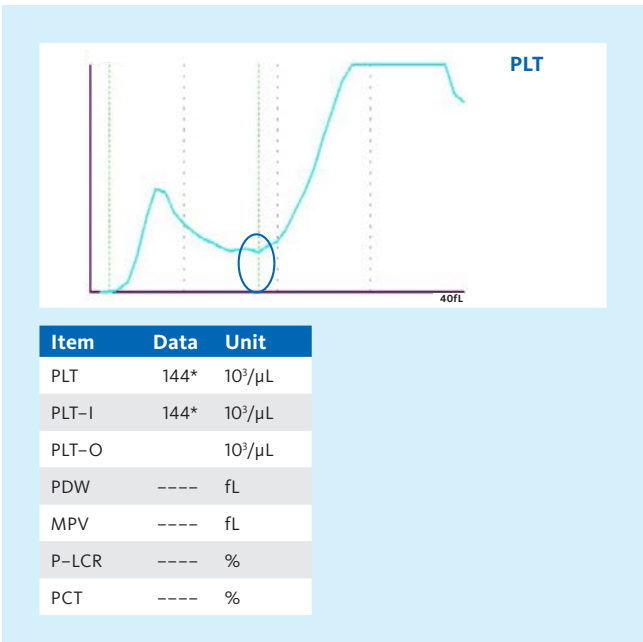
### RBC flags

- ‘RBC Abn Distribution’ was triggered from an abnormal RBC histogram distribution, due to an abnormal height at the lower discriminator and the presence of multiple peaks.
- The presence of multiple peaks was also the reason for triggering ‘Dimorphic population’.
- Due to those two flags, RDW-SD and RDW-CV could not be reliably calculated, and several other RBC parameters were deemed unreliable.
- The analyser provides individual information for the two peaks in the Service tab of the RBC/PLT channel.
  - S-RBC and S-MCV correspond to the left peak, and L-RBC and L-MCV correspond to the right peak.



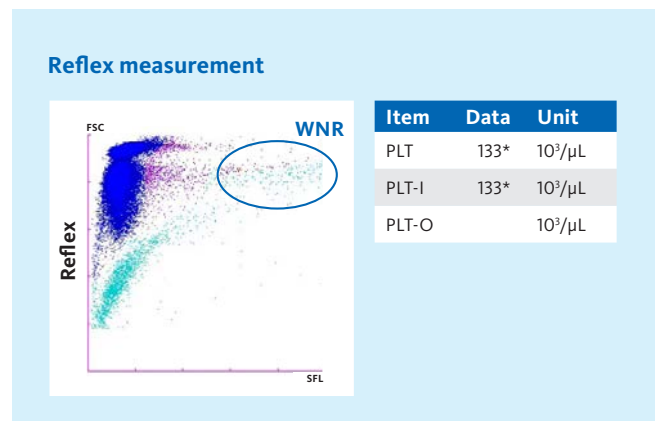
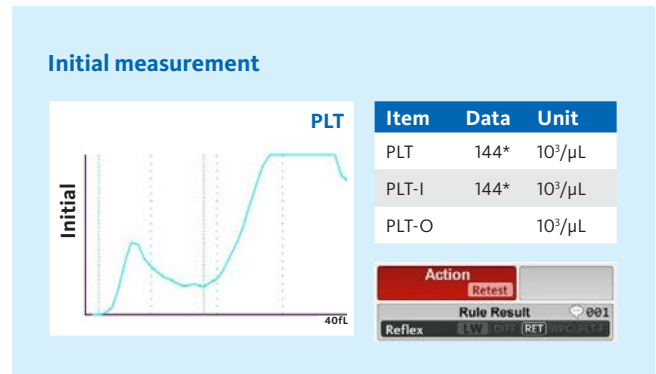
### PLT flags

- ‘PLT Abn distribution’ was triggered due to an abnormal platelet histogram distribution.
- The distribution resembles a type ‘B’ curve, typical in the presence of interference with RBC fragments or microcytes. The abnormal height at the upper discriminator makes the PLT-I results unreliable.
- Other PLT parameters that are used in the algorithm (PDW, P-LCR and MPV) were dashed out.



### Action message PLT Reflex

- In the initial measurement, the analyser displayed the action message 'Retest', prompting the user to review the sample while an automatic reflex measurement is triggered.
- The message was triggered from an unreliable PLT-I measurement due to interference from either fragmented RBC, microcytes or giant platelets.
- The suggested action is a PLT-O or PLT-F reflex. In this case, in the absence of a PLT-F channel, the sample was measured in RET channel and PLT-O was evaluated.
- In reflex measurement, PLT-O was masked because the analyser could not reliably measure PLT.



### RBC flags (RET channel)

- 'RET Abn Scattergram' was triggered due to an abnormal separation between RBC and RET, and/or due to an interference from NRBC in the RET\_UPP area.
- Subsequently the RET parameters were deemed unreliable.
- 'Fragments?' was triggered due the presence of fragmented RBC in the lower left part of the RET scattergram. The algorithm also considered certain RBC and PLT parameters (MCV, RDW-SD, MCHC, PLT, lower RBC histogram discriminator, platelet upper discriminator).

