

Conditions that Interfere with Most Hematology Analyzers

**= Listed previously

Conditions that cause a ↓ RBC:

Condition	Parameters Affected	Rationale	Instrument Indicators	Corrective Action
Cold Agglutinin	RBC ↓, MCV ↑, MCHC ↑, grainy appearance	Agglutination of RBCs	Dual population on RBC map, or right shift on RBC histogram	Warm specimen to 37°C and rerun
Hemolysis	RBC ↓, HCT ↑	RBCs lysed and not counted	HGB x 3 ≠ HCT May show lipemia pattern on histogram/cytogram	Request new specimen
Microcytes or schistocytes	RBC ↓, ↑ PLT	Volume of RBC/ RBC fragments less than RBC threshold but within PLT threshold	-Left shift on RBC histogram -MCV flagged if less than limits -Abnormal PLT histogram	Review blood film

Conditions that cause a ↑ WBC:

Condition	Parameters Affected	Rationale	Instrument Indicators	Corrective Action
Platelet Clumps	WBC ↑, PLT ↓	Large clumps counted as WBC not PLTs	-Platelet clumps/N flag	Redraw specimen in sodium citrate, multiply result by 1.
Nucleated RBCs, megakaryocyte fragments, or micromegakaryoblasts	WBC ↑ (older instruments)	Nucleated RBCs or micromegakaryoblasts counted as WBCs	-NRBC flag	Newer instruments correct this condition.
Lysis-resistant RBCs with abnormal hemoglobin's	WBC ↑, HGB ↑	RBCs with Hb S, C, or F may fail to lyse. Will be counted as WBCs	Interference at WBC histogram	Perform manual dilutions, allow incubation time for lysing

Conditions that cause a ↑ HGB:

Condition	Parameters Affected	Rationale	Instrument Indicators	Corrective Action
Lipemia, Icterus	HGB ↑, MCH ↑	↑ Turbidity affects spectrophotometric reading for HGB	HGB x 3 ≠ HCT May show abnormal histogram/cytogram	Plasma replacement
WBC >100,000	HGB ↑, RBC ↑, HCT incorrect	↑ Turbidity affects spectrophotometric reading for HGB -WBCs counted with RBC count	HGB x 3 ≠ HCT WBC count may be above linearity	-Manual HCT -Manual HGB -Correct RBC -Recalculate indices above linearity -Dilute WBC for count
Lysis-resistant RBCs with abnormal hemoglobin's **	WBC ↑, HGB ↑	RBCs with Hb S, C, or F may fail to lyse. Will be counted as WBCs	Interference at WBC histogram	Perform manual dilutions, allow incubation time for lysing

Conditions that cause ↑ PLT:

Condition	Parameters Affected	Rationale	Instrument Indicators	Corrective Action
Leukemia, esp. with chemo	PLT ↑ WBC ↓	Fragile WBCs, fragments counted as PLTs	PLT count inconsistent with previous results	Review film, perform PLT count or CD 61 count
Microcytes or schistocytes **	RBC ↓, ↑PLT	Volume of RBC/ RBC fragments less than RBC threshold but within PLT threshold	-Left shift on RBC histogram -MCV flagged if less than limits -Abnormal PLT histogram	Review blood film

Conditions that cause ↓ PLT:

Condition	Parameters Affected	Rationale	Instrument Indicators	Corrective Action
Old Specimen	MCV ↑ MPV↓ PLT↓ Automated differential may be incorrect	-RBCs swell with age -PLTs swell/degenerate -WBC affected by prolonged exposure to EDTA	ABN clustering on WBC histogram/cytogram	Est. stability and specimen rejection criteria
Platelet Clumps **	WBC ↑, PLT ↓	Large clumps counted as WBC not PLTs	-Platelet clumps/N flag	Redraw specimen in sodium citrate, multiply result by 1.