

# Low PLT count, a side-effect of chemotherapy

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Chemotherapy-induced thrombocytopenia (CIT) is a common complication in cancer patient undergoing treatment. As platelets (PLTs) help the blood to clot, a low count (thrombocytopenia) may cause excessive bleeding in case of wounding.



## Complications of thrombocytopenia

According to literature, a normal reference interval for PLTs in adults is about  $160\text{--}390 \times 10^9/\text{L}$  (1). Kuter and colleagues at Harvard Medical School, Boston, MA, USA have defined CIT as a platelet count below  $100 \times 10^9/\text{L}$ , divided into the following grades (2):

- Grade 1:  $75 \times 10^9/\text{L}$  to  $< 100 \times 10^9/\text{L}$
- Grade 2:  $50 \times 10^9/\text{L}$  to  $< 75 \times 10^9/\text{L}$
- Grade 3:  $25 \times 10^9/\text{L}$  to  $< 50 \times 10^9/\text{L}$
- Grade 4: less than  $25 \times 10^9/\text{L}$

PLT counts below  $50 \times 10^9/\text{L}$  can complicate surgical procedures, whereas spontaneous bleeding may occur at a PLT count below  $10 \times 10^9/\text{L}$  (2).

To predict the bleeding risk, cancer patients receiving chemotherapy is therefore often regularly checked for PLT count.

## PLT extended count

To accurately determine PLT count in the critically low range, Medonic™ M32 hematology analyzer features PLT extended count. When enabled, the counting time is extended three times, counting three times as many platelets for a more reliable reporting of the PLT parameter value.

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| Sample Result |                  | Parameter values |        | Scales | Graphs |        |
|---------------|------------------|------------------|--------|--------|--------|--------|
| Seq No        | 347              | WBE DE           | 10.2   | 3.5    |        | 10.5   |
| Date          | 2018-11-28 14:32 | LYM              | 1.4    | 14.4 % |        | 2.9    |
| Profile       | Blood            | MID              | 0.6    | 6.2 %  |        | 0.9    |
| Method        | Open Tube        | GRA              | 8.2    | 79.4 % |        | 8.0    |
| Operator      |                  | HGA              | 11.2   |        |        | 16.5   |
| Sample ID 1   | 30261084         | MCH              | 31.5   |        |        | 35.0   |
|               |                  | MCHC             | 35.7   |        |        | 38.0   |
|               |                  | RBC              | 3.57   |        |        | 5.72   |
|               |                  | MCV              | 88.0   |        |        | 98.3   |
|               |                  | HCT              | 31.4   |        |        | 55.0   |
|               |                  | RDW              | 13.5 % | 62.7   |        | 15.6 % |
|               |                  | PLT*             | 24     |        |        | 450    |
|               |                  | MPV              |        | 6.5    |        | 11.0   |
|               |                  | PDW%             |        | 0.1 %  |        | 99.9 % |
|               |                  | PCT              |        | 0.01   |        | 9.99   |
|               |                  | P-LCR            |        | 0.1 %  |        | 99.9 % |

If PLT extended counting time is enabled and a low PLT is detected during analysis, the extended counting time will be displayed on the counting phase screen, and then indicated by an asterisk (\*) adjacent to the PLT parameter on the result screen and in printouts and exported PDFs.

## References

1. Mayo Clinic Laboratories. Rochester Interpretive Handbook (2021).
2. Kuter, D.J. Treatment of chemotherapy-induced thrombocytopenia in patients with non-hematologic malignancies. *Haematologica* 107, 1243–1263 (2022).



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