# Blood Cell Agglutination Interference in Complete Blood Count Analysis

Kwaku Baryeh,[a,b] Nicole J. Mathewson,[a,b] and Lauren N. Pearson[a,b,*]

[a]Department of Pathology, University of Utah Health, Salt Lake City, UT, United States; [b]ARUP Laboratories, Salt Lake City, UT, United States.

*Address correspondence to this author at: Department of Pathology, University of Utah Health, 50NMedical Drive, Salt Lake City, UT 84112, United States. E-mail lauren.pearson@aruplab.com.

## CASE DESCRIPTION

A 40-year-old female presented with a history of recurrent triple negative breast adenocarcinoma. The patient was treated with lumpectomy and sentinel lymph node biopsy followed by chemotherapy and radiation. Five years later, a mass grew at the lumpectomy site. Biopsy confirmed invasive ductal adenocarcinoma with bone metastasis upon subsequent mastectomy, lymph node excision, and imaging evaluation. The patient was treated with chemotherapy and radiation and enrolled in Magrolimab clinical trials. Table 1 shows the results for complete blood count (CBC) testing reported prior to the initiation of Magrolimab therapy, followed by preliminary CBC results from the Sysmex XN-3000 post-Magrolimab administration.

| QUESTIONS TO CONSIDER | |
|---|---|
| 1. | How does the expression of cluster of differentiation 47 on both cancerous and noncancerous cells impact the specificity and potential side effects of Magrolimab therapy? |
| 2. | In what ways can the presence of Magrolimab in the bloodstream affect the ability of hematology analyzers to quantify blood cells? |
| 3. | How should clinical laboratories prepare for and address unusual drug interferences, such as those caused by Magrolimab? |

**Table 1. Summary of select components of the CBC results prior to Magrolimab infusion and 5 hours postinfusion.**

| Test | Results pre-Magrolimab administration | Results post-Magrolimab administration | Reference interval |
|---|---|---|---|
| White blood cells | $3.80 \times 10^3$/μL | $4.12 \times 10^3$/μL | $(4.30–11.30) \times 10^3$/μL |
| Red blood cells | $3.58 \times 10^6$/μL | $0.56 \times 10^6$/μL | $(4.08–5.47) \times 10^6$/μL |
| Hemoglobin | 10.3 g/dL | 8.5 g/dL | 12.6–15.9 g/dL |
| Hematocrit | 30.0% | 8.1% | 36%–49% |
| Mean corpuscular volume | 97.4 fL | 144.6 fL | 81.9–101 fL |
| Mean corpuscular hemoglobin | 33.4 pg | 151.8 pg | 25.8–33.1 pg |
| Mean corpuscular hemoglobin concentration | 34.3 g/dL | 104.9 g/dL | 31.2–34.5 g/dL |
| Platelets count | 243×K/μL | 242×K/μL | 159–439 K/μL |
| Mean platelet volume | 8.3 fL | 8.6 fL | 8.6–12.3 fL |

https://doi.org/10.1093/clinchem/hvae218 

## Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the June 2025 issue of *Clinical Chemistry*. To view the case and comments online, go to https://academic.oup.com/clinchem/issue/71/6 and follow the link to the Clinical Case Study and Commentaries.

## Educational Centers

If you are associated with an educational center and would like to receive the cases and questions 1 month in advance of publication, please email clinchemed@myadlm.org.

All previous Clinical Case Studies can be accessed and downloaded online at https://www.myadlm.org/science-and-research/clinical-chemistry/clinical-case-studies.



---



https://doi.org/10.1093/clinchem/hvae218 