# Platelet Refractoriness in Transfusion Medicine

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**Lisa Tomcko:**

Welcome to the latest episode of the CAP’s CAPcast series. I'm Lisa Tomcko, Content Specialist at the College of American Pathologists.

Platelet refractoriness can be life-threatening for thrombocytopenic patients. Narrowing the differential diagnosis for poor platelet transfusion response is critical to guide appropriate management and product selection. Joining me today are Dr. Melissa George and Dr. Sarah Kesterson, authors of the recent Clinical Pathology Improvement Program course on platelet refactoriness in transfusion medicine. Would you like to introduce yourselves?

**Dr. Sarah Kesterson:**

Hi, my name is Sarah Kesterson, and I'm a transfusion medicine fellow at Penn State Health.

**Dr. Melissa George:**

And I'm Dr. Melissa George, and I'm the Medical Director of the Blood Bank at Penn State Health.

**Lisa Tomcko:**

Great. Thank you both for being here, and let's get into it. Dr. George, as a practicing pathologist, have you ever been called on to diagnose a case where a patient doesn't seem to be responding appropriately to a platelet transfusion? Does this type of response happen often outside of academic medical centers?

**Dr. Melissa George:**

Yes. I'm definitely frequently consulted for poor response to platelet transfusion. Even starting in my residency training, and actually as a resident, I actually dreaded my transfusion medicine rotations, especially dealing with platelet refractoriness because I realized that so much of my day was spent on the phone essentially serving as the guardian of platelets, navigating the complexities of ordering specialty products. Then I gradually came to appreciate the important role of pathologists in this aspect of patient care, and I became very comfortable with handling this because I do it regularly. However, I also realize that my colleagues in general practice might be called upon to weigh in on these issues, even if transfusion medicine's not their direct area of expertise.

**Lisa Tomcko:**

Well, I think we're all glad you changed your mind about transfusion medicine. And Dr. Kesterson, what have your experiences been like with this topic?

**Dr. Sarah Kesterson:**

Well, I would say I have not been working in the blood bank all that long, and it's already been obvious that you can't avoid platelet refractoriness when you work in the blood bank. So I've had many conversations with clinicians and it's about which patients should be evaluated for refactors in the first place, what testing is actually involved, what those results mean, and then eventually who should receive specialty products?

**Lisa Tomcko:**

So is platelet refractoriness is common? Are most physicians familiar with it?

**Dr. Sarah Kesterson:**

So some clinicians, I would say particularly hematologists and oncologists are familiar. It's something that they see regularly and are probably even familiar with the treatment, but other providers may be seeing this for the first time. So we want to be available for them and for these cases so that we can help them find the best options for the patients. I'm certainly willing to accept that platelets are not near and dear to everyone's heart like they are to mine. So we really wanted to try and build a framework for how you could work through these cases, because they're often going to involve complex clinical histories and even multiple factors that are affecting the patient's thrombocytopenia.

**Dr. Melissa George:**

We can get into a lot more detail in the CPIP case, but a few questions that we think about upfront are, how do I know if my patient's truly refractory to platelets? Is it more likely an immune or non-immune etiology? Because there are different treatment options. And lastly, will specialty products be needed? And which, if any, will be the best option for the patient?

**Lisa Tomcko:**

Thanks for sharing those questions. They sound like a good starting point. Is it true that physicians may struggle to interpret platelet refractoriness testing results? And if so, how can you help them?

**Dr. Sarah Kesterson:**

Honestly, I can't blame them. Even the testing that we use, for example, it may be resulted as positive, but that alone doesn't mean that the patient needs a specialty product. So you really have to consider other factors as well, like the strength of the antibody and the frequency of that corresponding antigen in the general population. So that helps us determine whether a positive result is clinically significant or not.

**Lisa Tomcko:**

What impact, practically speaking, do those types of considerations have on clinical practice?

**Dr. Sarah Kesterson:**

So we in the blood bank are always considering inventory. It's always very high on our list of practicalities. So ordering specialty products that aren't needed, isn't going to help anyone, but for certain patients, these products can be absolutely necessary. So specialty products require dedicated donors specifically for that patient, and they do carry additional cost. So stewardship for us is always paramount.

**Dr. Melissa George:**

I fully agree. If this condition isn't recognized and diagnosed accurately, the patient may continue to receive suboptimal products with little to no effect on their platelet count, and that causes serious bleeding, potentially. So it's important to identify the cause of the poor response to transfusion to get the patient on the best course of therapy as soon as possible.

**Dr. Sarah Kesterson:**

And really for us, often the best course of therapy from our standpoint is getting the patient to that next procedure. So we've had patients that urgently need a medical procedure. For example, one patient of ours had a very wide range of HLA antibodies, so it really made getting compatible products difficult for us. She needed an Ommaya reservoir, so that's for administration of chemotherapy directly into this cerebral spinal fluid. So if you're dealing with any sort of neurosurgical procedure, you really want to optimize that platelet count. You're trying to avoid bleeding in a space that you cannot apply pressure. So through several doses of HLA compatible platelets we're able to get her platelet count up. The neurosurgeons were comfortable enough to attempt the procedure, and they were able to successfully place that reservoir.

**Lisa Tomcko:**

Wow, that's amazing. Thanks for sharing that case.

**Dr. Melissa George:**

So you can see platelet refractoriness is a critical area of clinical pathology and the topic of our current case in the Clinical Pathology Improvement Program or CPIP from the College of American Pathologists. To learn more about this case for CME credit or the other clinical pathology topics covered in other cases, visit the CAP website at www.cap.org and search for CPIP.

**Lisa Tomcko:**

Well, thank you both for joining me to discuss this topic. And for those listening, be sure to check out the CPIP case on platelet refractoriness as well as our other CAPcast episodes.