**Puzzling Phosphorus: Unlikely Results**
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**CASE DESCRIPTION**

Discordant plasma phosphorus concentrations (Table 1) were obtained with 2 clinical instruments (concentration range, 4.5–23.8 mg/dL; reference interval, 2.5–4.6 mg/dL) for a 50-year-old woman. Her medical history was positive for idiopathic pulmonary arterial hypertension, chronic kidney disease (stage 1), severe right heart failure, ascites, and thrombocytopenia. During hospitalization, the patient received enteral feeding, cefuroxime, docusate, dronabinol, gabapentin, metolazone, nafcillin, and morphine.

**QUESTIONS**

1. In what clinical settings can increased plasma phosphorus be seen?
2. What methodology is used to measure plasma phosphorus?
3. What preanalytical factor may be responsible for the discordant phosphorus results?

* The answers are on the next page.

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**Table 1. Plasma phosphorous results.**

<table>
<thead>
<tr>
<th>Samples</th>
<th>PHOSm assay (DxC 800; Beckman Coulter), mg/dL</th>
<th>PHOS assay (Dimension RxL; Siemens), mg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9.8</td>
<td>4.7</td>
</tr>
<tr>
<td>2</td>
<td>11.6</td>
<td>5.7</td>
</tr>
<tr>
<td>3</td>
<td>5.6</td>
<td>4.5</td>
</tr>
<tr>
<td>4</td>
<td>23.8 Insufficient volume for analysis</td>
<td></td>
</tr>
<tr>
<td>Healthy volunteer</td>
<td>3.2</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* Reference interval, 2.5–4.6 mg/dL. None of the samples were icteric, lipemic, or hemolyzed.

* Timed-rate absorption method; interferents include rifampin and amphotericin B.

* Preblanked-sample method; reaction measured at 340 nm.
Hyperphosphatemia can occur in renal failure, diabetes, endocrinopathies, hypoparathyroidism, increased dietary/pharmacologic intake of phosphates or vitamin D, and immunoproliferative diseases such as multiple myeloma, in which paraproteins interfere with the colorimetric method (1, 2). Plasma phosphorus is quantified through reaction with ammonium molybdate to form a colored phosphomolybdate complex (3). The manufacturer of the DxC 800 System (Beckman Coulter) lists nafcillin as an interferant; however, the interference mechanism is unknown (4). Unlike other known antibiotic interferants, nafcillin is colorless and lacks protein and lipid components. Investigation revealed that the patient’s blood sample had been collected through the same intravenous line that had administered nafcillin. In-house in vitro nafcillin-spiking studies revealed substantial interference only with the DxC 800 instrument.

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References

The SYCL Toolkit: Creating a Program within a Professional Organization for Young Scientists
Christopher R. McCudden,1,2* Mark A. Cervinski,3,4 David G. Grenache,5 Shannon Haymond,6,7 Nichole Korpi-Steiner,8,9 Ross J. Molinaro,10,11 and Amy K. Saenger12

The Society for Young Clinical Laboratorians (SYCL) is a program created by the AACC to serve the needs of its younger members. The goal of SYCL is to provide clinical laboratorians early in their professional lives with career-enhancement opportunities that include programs, resources, and advice to enrich their professional development. A smaller group of SYCL members selected by the AACC president forms the Executive SYCL Committee, which is tasked with representing the larger SYCL membership and leading the development and support of the Society’s goals in collaboration with the organization’s leadership. The SYCL program is uniquely supportive of young scien-

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