

ABSTRACT

Background: The Pneumatic Tube System (PTS) is a technique for sending samples quickly and directly to and from the unit for which they are intended. Blood samples sent by the Pneumatic Tube System (PTS) were subject to hemolysis due to the high conveying speed, sudden change of direction, and stress caused by the system. Rupture of erythrocytes caused free hemoglobin to enter the serum, causing hemolysis. Hemoglobin in the serum can bind with NaOH so that it can interfere with the reaction of picric acid and creatinine, resulting in decreased creatinine levels. It needs to be studied whether the difference in distance between the Pneumatic Tube System (PTS) and the blood can affect the results of examining creatinine levels.

Research objective: This study aimed to determine the difference in the length of the Pneumatic System Tube (PTS) based on the results of examining creatinine levels.

Research method: This study was analytic and observational in nature, with a comparative research design. The research was carried out on November 14–December 3, 2022, with a total sample size of 28 samples for each treatment. Research data were analyzed using the *Paired Sample T-Test*.

Research results: The results of this study showed a statistical analysis of p (0.774 and 0.948) ≥ 0.05 , which means there was no difference in the length of the Pneumatic System Tube (PTS) distance. The mean results of the patient's creatinine levels sent by delivery personnel (manually) and the Pneumatic Tube System (PTS) at a distance of 100 meters were 1.040 and 1.047 mg/dL. The average creatinine levels of patients who were sent by delivery personnel (manually) and the Pneumatic Tube System (PTS) at a distance of 450 meters were 1.128 and 1.126 mg/dL, respectively.

Conclusion: There was no difference in the length of the Pneumatic Tube System (PTS) distance to the results of examining creatinine levels.

Keywords: Pneumatic Tube System (PTS), hemolysis, creatinine.

ABSTRAK

Latar Belakang: *Pneumatic Tube System* (PTS) merupakan teknik pengiriman sampel secara cepat dan dapat langsung dari dan ke unit yang akan dituju. Sampel darah yang dikirim dengan *Pneumatic Tube System* (PTS) dapat mengalami hemolisis karena kecepatan pengangkutan yang tinggi, perubahan arah yang tiba-tiba, dan tekanan yang disebabkan oleh sistem. Pecahnya eritrosit menyebabkan hemoglobin bebas masuk kedalam serum sehingga menyebabkan hemolisis. Hemoglobin dalam serum dapat berikatan dengan NaOH sehingga dapat mengganggu reaksi asam pikrat dan kreatinin, akibatnya kadar kreatinin mengalami penurunan. Hal ini perlu diteliti apakah ada perbedaan panjang jarak *Pneumatic Tube System* (PTS) dapat mempengaruhi hasil pemeriksaan kadar kreatinin.

Tujuan: Penelitian ini bertujuan untuk mengetahui perbedaan panjang jarak *Pneumatic System Tube* (PTS) terhadap hasil pemeriksaan kadar kreatinin.

Metode: Jenis penelitian ini adalah analitik observasional dengan desain penelitian komparatif. Penelitian dilaksanakan pada tanggal 14 November – 3 Desember 2022. Dengan jumlah sampel 28 sampel pada masing-masing perlakuan. Data hasil penelitian dianalisis menggunakan Uji *Paired Sampel T-Test*.

Hasil: Hasil penelitian ini menunjukkan analisis statistik p (0,774 dan 0,948) \geq 0,05 yang artinya tidak ada perbedaan panjang jarak *Pneumatic System Tube* (PTS). Hasil rerata kadar kreatinin pasien yang dikirim manual (petugas antar) dan *Pneumatic Tube System* (PTS) pada jarak 100 meter sebesar 1,040 dan 1,047 mg/dL. Rerata kadar kreatinin pasien yang dikirim manual (petugas antar) dan *Pneumatic Tube System* (PTS) pada jarak 450 meter sebesar 1,128 dan 1,126 mg/dL.

Kesimpulan: Tidak ada perbedaan panjang jarak *Pneumatic Tube System* (PTS) terhadap hasil pemeriksaan kadar kreatinin.

Kata Kunci : *Pneumatic Tube System* (PTS), hemolisis, kreatinin.