



Description of Data on Screening Results for Infections Infectious Through Blood Transfusion (IMLTD) at Unit Donor Darah Palang Merah Indonesia DKI Jakarta Province in 2023

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Abstract. The Blood Donor Unit (UDD) is a unit that facilitates the community, especially in the field of blood services, under the auspices of the Indonesian Red Cross (PMI). Some of the activities at UDD PMI include providing blood and distributing blood. Before blood is given to the recipient, it must first pass testing, namely the Infection Transmitted Through Blood Transfusion (IMLTD) screening test to prevent the risk of disease transmission. The aim of this research is to determine the results of examinations for Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immunodeficiency Virus (HIV), and Syphilis at UDD PMI DKI Jakarta Province in 2023. This research uses secondary data from January to December 2023 obtained from archives of screening tests and screening results for infectious infections through blood transfusion (IMLTD) on donor blood at the PMI DKI Jakarta Blood Donor Unit (UDD) in 2023. This research was conducted in February–April 2024. Detection of Infectious Infections Through Transfusion Blood (IMLTD) was performed using the chemiluminescence immunoassay (ChLIA) technique. The results show that of the 368,615 samples submitted, 3,429 samples fell into the reactive category. The number of reactive donors in 2023 for Hepatitis B testing will be 1078 (0.29%), Hepatitis C will be 796 (0.22%), HIV will be 360 (0.10%), and Syphilis will be 1195 (0.32%). The most reactive donors in 2023 for Hepatitis B will be in July, for Hepatitis C will be in December, for HIV will be in March, and for Syphilis will be in April.

Keywords: Hepatitis, HIV, IMLTD, Screening, Syphilis.

1 Introduction

Blood transfusion services are a form of health service that uses human blood for humanitarian, not commercial purposes (Nurprihatin et al., 2019; Saraswati et al., 2019). This service includes planning, mobilizing, and preserving donated blood, supplying blood, distributing blood, and the medical act of giving blood to patients to help them

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heal and recover from illness (Kusumaningrum, 2020). People who donate blood are at risk of transmitting infectious diseases transmitted through blood transfusion, especially HIV/AIDS, Hepatitis C, Hepatitis B, and syphilis. Most of these diseases can also be transmitted through open wounds, sexual intercourse, blood transfusions, intravenous drugs or needles, or vertically through mother-to-fetus blood and breast milk (Bachowski, 2021).

Blood safety is key to reducing the spread of infectious diseases through blood transfusion (Busch et al., 2019). IMLTD screening test is one of the blood safety methods (Sukorini et al., 2023). According to PMK No. 91 of 2015, every blood donation with a reactive IMLTD screening test result must be separated and destroyed as soon as possible. Government Regulation No. 7 of 2011 concerning Blood Services requires notification of reactive filter test results to the donor concerned through counseling to maintain donor confidentiality and provide follow-up diagnostic examinations and appropriate treatment (Bhasker et al., 2021; Akbar et al., 2020).

One of the health facilities assigned to screen for infectious infections through blood transfusion is the Blood Donor Unit (UDD) of the Indonesian Red Cross (PMI) DKI Jakarta. This study aims to determine the frequency of infectious infection through blood transfusion (IMLTD) in donor blood at the PMI DKI Jakarta Blood Donor Unit (UDD).

2 Research Methods

This study is a quantitative descriptive type of research with a cross-sectional approach. This study uses secondary data obtained from the archive of the results of screening tests/screening tests for Infectious Infection Through Blood Transfusion (IMLTD) on Donor Blood at UDD PMI DKI Jakarta in 2023. This research was conducted in February April 2024. The population in this study is the data of blood donor screening results at UDD PMI DKI in Jakarta in 2023. The research sample is data from screening results that are declared reactive at the DKI Jakarta Province Indonesian Red Cross Blood Donor Unit. The data were analyzed using univariate analysis to see the description of the IMLTD screening results of donors at the DKI Jakarta PMI UDD in 2023.

3 Results and Discussion

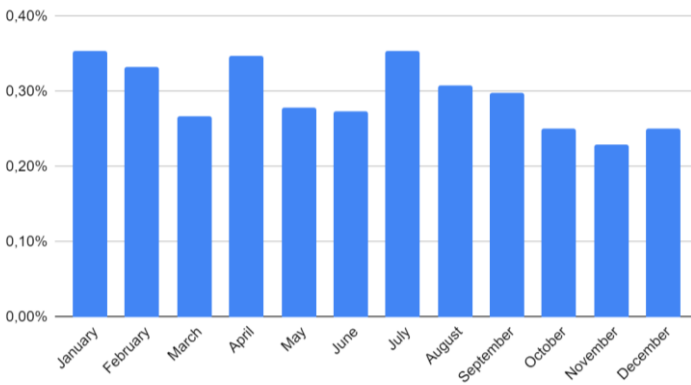
This study uses secondary data obtained from the IMLTD reactive database at UDD PMI DKI Jakarta in 2023.

Table 1. Frequency Distribution Table of IMLTD Parameters at UDD PMI DKI Jakarta in 2023

Sample Quantity		Reactive Parameters	Number of Reactive	Percentage (%)
Incoming	Reactive Sample			

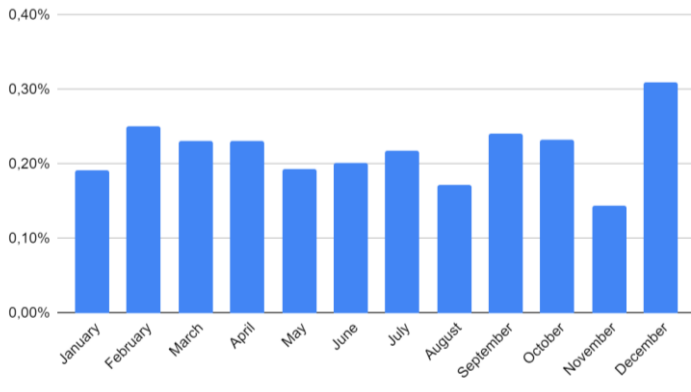
Samples				
368.615	3.429	HBsAg	1.078	0,29%
		Anti-HCV	796	0,22%
		Anti-HIV	360	0,10%
		Anti-Treponema	1.195	0,32%

Table 1 shows that the lowest reactive parameter in the UDD PMI of DKI Jakarta Province in 2023 is the Anti-HIV reactive parameter of 360 (0.10%) followed by Anti-HCV of 796 (0.22%), then HBsAg of 1,078 (0.29%) and the highest reactive parameter is the Anti Treponema parameter of 1,195 (0.32%).



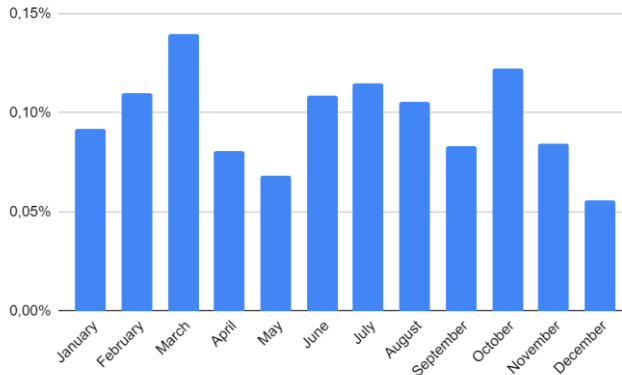
Graph. 1. Percentage of HBsAg Reactivity by Month at UDD PMI DKI Jakarta in 2023

Based on Graph 1, the highest percentage of HBsAg reactive was in January, April, and July 2023 at 0.35%. While the lowest HBsAg reactive percentage was in November 2023 at 0.23%.



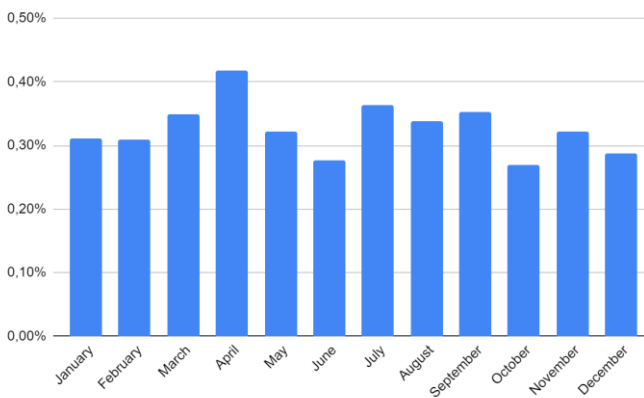
Graph 2. Graph of Percentage of Reactive Anti-HCV by Month at UDD PMI DKI Jakarta in 2023

Based on Graph 2 shows that the highest percentage of Anti-HCV reactive was in December 2023 at 0.31%. While the lowest Anti-HCV reactive percentage was in November 2023 at 0.14%.



Graph 3. Graph of Anti-HIV Reactive Percentage by Month in UDD PMI DKI Jakarta in 2023

Based on Graph 3, it shows that the highest percentage of Anti-HIV reactives is in March 2023 at 0.14%. While the lowest Anti-HIV reactive percentage was in December 2023 at 0.06%.



Graph 4. Percentage of Reactive Anti-Treponema by Month at UDD PMI DKI Jakarta

Based on Graph 4, it shows that the highest percentage of Anti-Treponema reactive was in April 2023 at 0.42%. While the lowest Anti-Treponema reactive percentage was in October 2023 at 0.27%.

3.1 HBsAg

Based on the results of the HbsAg examination conducted by UDD PMI DKI Jakarta in 2023 on 368,615 donor blood, it was found that 1,078 samples (0.29%) were HbsAg reactive. In another study conducted by Saputro and Lestari, it showed that as many as 0.07% were HBsAg reactive at UDD PMI Kudus Regency in 2021 (Saputro & Lestari, 2023). Meanwhile, research conducted by Wulandari and Mulyantari showed that only 0.01% were HBsAg reactive at the UDD PMI of Bali Province for the period January July 2014 (Wulandari & Mulyantari, 2016). It can be concluded that the percentage of HbsAg reactive at the DKI Jakarta PMI UDD in 2023 is higher than at the Kudus PMI UDD in 2021 and the Bali Province PMI UDD for the period January July 2014.

Meanwhile, in a study conducted by Djirimu et al, the percentage of HbsAg reactive at UTD PMI Bantul Regency in January March 2020 obtained a reactive percentage of 0.54% (Djirimu et al., 2022). In addition, based on research conducted by Maharani at UDD PMI Madiun City in 2017-2020, a percentage of 0.84% of donor blood was HBsAg reactive (Maharani et al., 2023). Thus, the results of HbsAg reactive at UDD PMI DKI Jakarta are lower than those at UTD PMI Bantul Regency in January March 2020 and UDD PMI Madiun City 2017-2020.

The highest prevalence of HBsAg positive blood donors in Indonesia between 2008 and 2013 was 2.13% in 2008 and the lowest prevalence was 1.63% in 2013 (Ministry of Health, 2014). So it can be connected that the percentage of HBsAg reactive in UDD PMI DKI Jakarta in 2023 is low because it is only 0.29% when compared to the prevalence. Based on the analysis, the difference in HBsAg reactive percentage in each region can be known by several factors, for example, the prevalence rate of an area affects the reactive percentage of an area (Lelie et al., 2017). In addition, population density or areas with high population density tend to have a greater risk of transmission (Li et al., 2017). Areas with high vaccination coverage usually have a lower percentage of HBsAg reactive (Supadmi & Purnamaningsih, 2019).

3.2 Anti-HCV

Based on the results of the Anti-HCV examination carried out by UDD PMI DKI Jakarta in 2023 on 368,615 donor blood, the results were 796 (0.22%) Anti-HCV reactive samples. Meanwhile, research by Saputro and Lestari showed that at the UDD PMI Kudus Regency in 2021, the percentage of reactive Anti-HCV parameters was 0.04%. While in 2022, it showed an increase to 0.11% which showed reactive results in the Anti-HCV test (Lestari et al., 2021). This shows that the percentage of Anti-HCV reactive at the DKI Jakarta PMI UDD in 2023 is higher than at the Kudus Regency PMI UDD in 2021-2022.

Furthermore, the results of research in the 2017 period at PMI North Aceh Regency showed a reactivity rate on Anti-HCV parameters of 0.5% (Akbar et al., 2020). The research conducted by Wulandari and Mulyantari (2016) at UDD PMI Bali Province in 2014 screening results showed that of the total blood bags, 78 (0.4%) blood bags showed the presence of reactive Anti HCV. So it can be connected that the percentage

of reactive Anti-HCV in UDD PMI DKI Jakarta in 2023 is lower than in PMI Aceh Regency in 2017 and in UDD PMI Bali Province in 2014.

It is possible that there are regional factors, namely the reactive level in each region is different depending on the prevalence rate in the region (Kishta et al., 2020), besides the time period factor also affects the difference in the percentage of reactive due to the seasonal pattern of the disease (Supadmi & Purnamaningsih, 2019).

3.3 Anti-HCV

Based on the results of the examination of Anti-HIV reactive parameters conducted by UDD PMI DKI Jakarta in 2023 on 368,615 donor blood, the results showed that 360 (0.10%) samples were Anti-HIV reactive. Anti-HIV reactive percentage is the lowest compared to HBsAg, Anti-HCV, and Anti-Treponema. This is in line with research conducted by Chusna and Sari at PMI Banda Aceh in the period February 1 to May 5, 2023 that the percentage of Anti-HIV reactive was the lowest, which was 14.3%.

Research conducted by Saputro & Lestari at UDD PMI Kudus Regency in 2022 showed that the percentage of HIV reactive was only 0.05%. Meanwhile, data generated at UDD PMI Jayapura City from May 2019 to June 2019 showed an HIV reactive percentage of 4.4% (Sinaga et al., 2022). It can be concluded that the HIV reactive presentation at the DKI Jakarta UDD PMI in 2023 is higher than that of the Kudus District UDD PMI in 2022. This percentage difference is in line with the population, where the population in DKI Jakarta is higher at 10,672,100 people compared to 874,632 people in Kudus.

The risk of HIV transmission can be influenced by several factors such as social factors and also population levels (Eshraghian et al., 2020). HIV can be transmitted through sexual activity both with the same sex and heterosexual, as well as by injecting drug use (Chen et al., 2019). In addition, it can be transmitted through contact between mother and fetus, blood, semen, vaginal fluids, breast milk, or the use of unsterilized injections (Showa et al., 2019; Burman, 2020; Masenga et al., 2023).

3.4 Anti-Treponema

Treponema pallidum bacteria are the cause of the sexually transmitted infection known as syphilis (Chematielly et al., 2019). The genus *Treponema* is a spiral-shaped bacterium rich in an outer phospholipid membrane that belongs to the spirochaetal order (Santo et al., 2022). Venereal Disease Research Laboratory (VDRL) non-specific serological examination is performed to detect IgG and IgM antibodies to lipid material released by damaged host cells and *Treponema pallidum* (*T. Pallidum*) (Lestari et al., 2021). In general, syphilis is divided into two types: congenital syphilis and systemic syphilis (Saputro et al., 2023).

Based on the results of the reactive parameter examination conducted by UDD PMI DKI Jakarta in 2023 on 368,615 donor blood, it was found that there were 1,195 (0.32%) Anti-Treponema reactive samples. The highest reactive percentage was in April 2023 at 0.42%, while the lowest was in October 2023 at 0.27%. In a study

conducted by Akbar (2020) at UTD PMI North Aceh Regency from 12,305 donors in 2017, Anti-Treponema reactive was found to be 4%; then from 11,573 samples in 2018, it was found to be 2.2%. This shows that the percentage of Anti-Treponema reactive parameters at the DKI Jakarta PMI UDD in 2023 is lower than the North Aceh District PMI UTD in 2017 and 2018. This decrease can occur partly due to the implementation of a good donor selection with a good data collection and documentation system (Akbar et al., 2020).

4 Conclusion

In 2023, the frequency of HBsAg-reactive donor blood was 1078, Anti-HCV was 796, Anti-HIV was 360, and Anti-Treponema was 1,195 in donor blood at the PMI DKI Jakarta Blood Donor Unit (UDD).

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Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article

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