

# Gorga I.V.W Udjung (Profile of Sexually Transmitted Infections in Quarantine Blood at the Indonesian Red Cross Blood Transfusion Unit, Depok City)

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# Profile of Sexually Transmitted Infections in Quarantine Blood at the Indonesian Red Cross Blood Transfusion Unit, Depok City

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## ABSTRACT

Sexually Transmitted Disease (STDs) is a group of infection which is responsible for morbidity and mortality in developing country. This group of infections plays its role in the transmission of the Human Immunodeficiency Virus (HIV). DKI Jakarta, Papua, and East Java are the provinces responsible for 90% of the STD incidence. STDs are caused by 30 types of bacteria, viruses, parasites, and fungi, which are transmitted by sexual contact and are asymptomatic. This study used a cross-sectional approach and a univariate test. The result is Hepatitis B was most found in 2017, as many as 30,7%; Hepatitis C in 2017, as many as 24,7%; Syphilis in 2017, as many as 25,9%; and HIV in 2018, as many as 27,2%.

**Keywords:** STD, blood screening, HIV

## INTRODUCTION

According to WHO, sexually transmitted infections are infections that are transmitted sexually. These infections include Syphilis, Chancre, Chlamydia, and Gonorrhea, which are generally known as sexually transmitted diseases. [1] Sexually transmitted infections (STIs) are a group of infections that are responsible for a large number of morbidity and mortality rates in developing countries; these infections have a role in facilitating the

transmission of the Human Immunodeficiency virus (HIV). [2]

Sexually Transmitted Infections (STIs) are infections that are transmitted vaginally, anally and orally. This disease is caused by more than 30 types of bacteria, viruses, parasites, and fungi, which are spread through sexual contact, and most of these infections are asymptomatic. STIs can be grouped into two based on their cure, namely those that can be cured, such as Syphilis, Gonorrhea, Chlamydia, and Trichomoniasis, and those that cannot be cured but can be alleviated through treatment, such as Hepatitis B, Herpes, Human Immunodeficiency Virus/HIV, and Human Papilloma Virus/HPV. [3; 4 In DKI Jakarta Province, according to Ministry of Health data, in 2014, there were 5,851 cases, then in 2015 there were 4,695 cases, then in 2016 it increased to 6,019 cases. In West Java in 2014, were 3,740 cases found, which increased by 3,741 cases, and then in 2016, there were 5,466 cases.

Data from the Indonesian Ministry of Health in 2012 showed that the total number of new STI cases reached 5,608 from 440 STI services. The most cases of this infection are in Papua, Java, Bali, Sumatra, and Kalimantan. The provinces accounting for almost 90% of the

highest in Indonesia are DKI Jakarta, Papua, and East Java. [5]

The increase in STIs and their spread worldwide cannot be predicted precisely. In several countries, it has been stated that implementing intensive education programs will reduce the incidence of STIs, or at least the incidence will remain relatively constant. In the young adult age group, the level of effectiveness of the prevention efforts that have been carried out can be known.

The Blood Donation Unit (UDD) has made many contributions to saving people through blood donation. The Indonesian Red Cross (PMI) screens every person who wants to donate blood. Government Regulation No. 7/2011 concerning blood services states that the organization of blood donations and blood processing is carried out by the Blood Donor Unit (UDD), which is organized by a social organization with the main tasks and functions in the field of the Indonesian Red Cross (PMI). [6]

This unit is one of the places that can be used as a source to obtain data regarding syphilis, hepatitis, and HIV in Jabodetabek. Blood Donation Units are regulated in Law No. 36/2009 concerning health, and Government Regulation No. 7/2011 concerning blood services states that the government is responsible [36] implementing blood services that are safe, easy to access, and meet the needs of the community. The Blood Donor Unit maintains blood safety against the risk of infection transmission from blood donors to blood recipient patients. Each blood bag must be screened for infections, including syphilis with Treponema pallidum antibodies using [43] HA reagent, Hepatitis B screening test with HBsAg, Hepat[12] C with anti-HCV, and HIV with anti-HIV. This research was conducted to determine the profile of STI sufferers in quarantine blood in PMI Depok City in 2014 - 2018. This research aimed to discover the profile of sexual[35] transmitted infections in quarantined blood in the Indonesian Red Cross

blood transfusion unit in Depok City from 2014 to 2018.

#### 4 LITERATURE REVIEW

Sexually transmitted infections (STIs) are infections that are transmitted through sexual contact, whether vaginal, anal or oral. STIs are caused by more than 30 different bacteria, viruses, parasites, and fungi, which can be spread through sexual contact, and most of these infections are symptomatic or show no symptoms at all. [7] STIs can be grouped into two based on their cure, namely those that can be cured, such as syphilis, gonorrhea, chlamydia, and trichomoniasis, and those that cannot be cured but can be alleviated through treatment, such as hepatitis B, herpes, human immunodeficiency virus (HIV), and human [23] pillomavirus. (HPV). [8]

Human Immunodeficiency Virus (HIV) is a virus that weakens the human immune system. HIV infection at an advanced stage can cause AIDS (Acquired Immuno Deficiency Syndrome), which is a gr[46]p of symptoms that arise due to a weakening of the body's immune system. [9] HIV/AIDS is still a serious health problem on an inte[10]tional scale. It is estimated that around 2 million new cases of people with HIV/AIDS worldwide in 2014. Around 36.9 million people live with HIV/AIDS in the world. An estimated 1.2 million people died each year from HIV/AIDS-related illnesses in 2014. Since 2000, around 25.3 million have died from HIV/AIDS-related illnesses. [10] Sub-Saharan Africa is the region with the heaviest bu[11]n of AIDS in the world, contributing around 66% of new HIV/AIDS cases. Other regions affected by HIV/AIDS include Asia and the Pacific, Latin America and the Caribbean, and Eastern Europe and Central Asia. The method of transmission is the group most at risk of HIV infection: 9 a) Patients who receive blood product transfusions or organ/tissue transplants; b) Perpetrators of unsafe sex or other behavior which allows contact between

sperm or vaginal fluids and the pubic mucosa without a barrier (condom); c) Injecting drug users, especially those who use injecting equipment interchangeably; d) Those who use sharp/injecting tools interchangeably, for example, tattoo needles, piercing needles, unsterilized or disposable acne-squeezing equipment; e) Babies conceived and given birth by HIV-infected mothers; f) Babies who HIV-infected mothers breastfeed; and g) Medical personnel who are frequently exposed contaminated syringes.

HIV is not transmitted through casual contact, such as shaking hands, hugging, using the same toilet, sneezing, coughing, insect bites, or drinking from the same glass. The HIV does not survive long outside the body, especially in dry places.

Hepatitis B is a disease caused by the hepatitis B virus, which can damage the liver. The disease can spread through unsafe injections from mother to baby during the birth process and through sexual intercourse. Infections in children usually involve stomach upset, weakness, and yellow urine. This disease can become chronic and cause hepatic cirrhosis (liver cancer) and can cause death. The number of hepatitis B cases in 2012 reported from community health centers was 9 cases, and reports from hospitals did not specifically mention hepatitis B cases. Hepatitis cases reported from hospitals were 40 cases. The number of hepatitis A cases reported from community health centers was 172. [11]

Hepatitis C virus is the second epidemiological cause of viral infection after human immunodeficiency virus (HIV) in the last two decades. Hepatitis C infection is generally found in HIV patients because the two viruses have similar transmission routes. The United Nations Program on HIV/AIDS (UNAIDS) reports that the majority of HIV infections in Indonesia occur through the use of contaminated injection equipment. [12] Blood transfusion is one of the factors associated with the incidence of hepatitis C, especially before

routine screening of blood donor products was implemented. The variable associated with hepatitis C is reactive HIV sufferers.

Syphilis is a systemic infection caused by the spirochaete, *treponema pallidum* (T. Pallidum), and is a form of sexually transmitted infection. Apart from syphilis, there are three other types of infections in humans caused by *treponema*, namely nonvenereal endemic syphilis, yaws (T. Pertenu), and pinta (T. care team in South America).[13] Syphilis is known as a classic venereal disease that can be controlled well. Due to changes in the socio-economic level of society, the incidence of syphilis in developed countries has decreased since the end of the 19th century, even though treatment at that time still used mercury. A sharp decline occurred in Sweden after World Wars I and II. In World War I, the decrease in incidence occurred possibly due to the sharpness of the initial diagnosis, considering that treatment at that time still used arsenic, in contrast to the decrease in incidence that occurred in World War II, reaching its peak with the number of cases being 76 per 100,000 population in 1958. 1959, this situation changed, and the number of cases began to increase again. 12 per 100,000 population, and in 1965, it had tripled. In the high-risk group, 41% of female syphilis patients were narcotic addicts, 19% were WTS, while in the male group, 21% were narcotic addicts, and 31% consisted of people who frequently had sexual relations with FSW. In Malaysia, 13.6% of 370 WTS found syphilis. A survey of the WTS group in Burkina Faso-Africa showed a syphilis incidence of 22%. In the US, the proportion of syphilis among WTS is 18%. Incidents in several cities in Indonesia have also been reported in 10 cities in Indonesia in 2007. Two hundred seventeen syphilis patients were reported in 10 cities, including Medan, Tanjung Pinang, Palembang, West Jakarta, Bandung, Semarang, Banyuwangi, Surabaya, Bitung, and Jayapura. (8.7%) patients from a

total of 6746 sexually transmitted infection patients. The data above shows that syphilis, which is considered the easiest to control among STIs, is still experiencing an increase and decrease in incidence, and this is possibly due to the influence of socio-cultural factors. Syphilis can generally be divided into two, namely, congenital syphilis (transmitted from mother to fetus during the womb) and acquired syphilis (transmitted through sexual intercourse or needles and contaminated blood products) [14]. Acquired syphilis is divided based on clinical manifestations, namely: a) Primary stage: ulcer/wound/ulcer, usually solitary, painless, firm borders, induration with enlarged regional lymph nodes (lymphadenopathy), usually lasting up to 3 weeks [24] b) Secondary stage: polymorphic red spots usually on the palms of the hands and soles of the feet, papulosquamous skin and mucosal lesions, fever, malaise, generalized lymphadenopathy, condyloma lata, patchy alopecia, meningitis, uveitis, retinitis, usually lasting 2-12 weeks. c) Latent Stage: Asymptomatic, usually occurs early <1 year; and advanced age >1 year; d) Tertiary Stage: tissue destruction in infected organs and locations (Gumma) for 1-46 weeks; aortic aneurysm, aortic regurgitation, osteoarthritis stenosis (cardiovascular syphilis) for 10-30 years; varies from asymptomatic to headaches, vertigo, personality changes, dementia, ataxia, Robertson's argyle pupils (neurosyphilis), usually occurs at the age of >2 years – 20 years. Congenital syphilis can be differentiated based on clinical manifestations, namely: a) Early stage: 70% are asymptomatic; in babies aged <1 month, skin abnormalities in the form of vesicles and/or bullae may be found; fulminant and disseminated infections, mucocutaneous lesions, osteochondritis, anemia, hepatosplenomegaly, neurosyphilis, usually present from birth to <2 years; and b) Advanced stage: interstitial keratitis, lymphadenopathy, hepatosplenomegaly, bone damage, anemia, Hutchinson's teeth,

neurosyphilis, usually persistent >2 years after birth. [15]

The incidence of STDs of 340 million new curable cases (syphilis, gonorrhea, chlamydia infections, and trichomonas infections) occurs every year in men and women aged 15-49 years. Epidemiologically, this disease is spread worldwide; the highest incidence rate of 106 was recorded in South and Southeast Asia, followed by Saharan Africa, Latin America, and the Caribbean. In America, the number of women suffering from chlamydia infections is three times higher than men. Of all women who suffer from chlamydia infection, the age group that makes the largest contribution is 15-34 years old. [16]

The prevalence of PMS in developing countries is much higher than in developed countries. In pregnant women in the world, the incidence of gonorrhea is 10-15 times higher, chlamydia infection is 2-3 times higher, and syphilis is 10-100 times higher compared to the incidence in pregnant women in industrialized countries. Adolescents (15-24 years) account for 25% of all new STD cases acquired. Detected STD cases only represent 50-80% of all STD cases in America. It reflects the limitations of "screening" and low coverage of STDs. [11]

In Indonesia, based on the integrated behavioral and biological survey (STBP) report by the Indonesian Ministry of Health (2011), the prevalence of sexually transmitted diseases (STDs) in 2011 was gonorrhea and chlamydia infections at 1.79% and syphilis at 0.4%. Cases of Human Immunodeficiency Syndrome (AIDS) over the last eight years, starting from 2005-2012, have shown an increase. New cases of HIV infection increased from 859 cases in 2005 to 21,511 cases in 2012. Meanwhile, new cases of AIDS increased from 2,639 cases in 2005 to 5,686 cases in 2012. [11] [28]

The distribution of HIV in Indonesia is divided into five categories, namely <90-206 cases, 207-323 cases, and 324-440 cases. The figure

7 below shows the distribution of HIV in Indonesia. There are 15 provinces in Indonesia with several HIV cases > 740, including all provinces on the islands of Java, Bali, and Papua, as well as several provinces in Sumatra (North Sumatra and Riau), Kalimantan (West Kalimantan and East Kalimantan), and one 45 province in Sulawesi namely South Sulawesi. The number of HIV cases 7 these fifteen provinces accounts for almost 90% of the total number of HIV cases in Indonesia. The provinces with the highest number of HIV are DKI Jakarta, East Java, and West Java. Four provinces have less than 90 HIV cases, namely Gorontalo, West Sulawesi, Aceh, and Maluku. According to gender, the percentage of new AIDS cases in 2014 in the male group was 1.8 times greater than in the female group. Male AIDS sufferers are 61.6%, and 34.4% of female AIDS sufferers are of unknown gender. Several new AIDS cases from DKI Jakarta and West Papua provinces did not report their gender.

The descriptive 7 of new AIDS cases by age group shows that the majority of new AIDS cases are found in those aged 20-29 years, 30-39 years, and 40-49 years. This age group is included in the productive age group who are sexually active and includes the age group who use injectable drugs. HIV/AIDS can be transmitted through several ways of transmission, namely opposite-sex sexual relations (heterosexual), homosexual/bisexual same-sex relations, 442 rinate use of injecting equipment (IDUs), blood transfusions, and transmission from mother to child (perinatal). [5]

Viral hepatitis is an iceberg phenomenon, where those registered or coming to services are fewer than the actual number of sufferers. Considering that this disease is a chronic, chronic disease, where when the person is infected, they are still healthy and do not show typical symptoms and signs, but the transmission continues.

According to the 2013 risk, the number of people diagnosed with hepatitis in healthcare facilities based on existing symptoms showed a 2-fold increase when compared to data from 2007 and 2013; this can give us an initial clue about control efforts in the past increased access, potential problems in the future if 31 ious efforts are not made immediately.

The five provinces with the highest prevalence of hepatitis are East Nusa Tenggara, Papua, Central Sulawesi, North Maluku, Central Kalimantan, North Sumatra, and South Kalimantan. The table above shows that the highest prevalence of Hepatitis is found in the 45-54 and 65-74 age groups (1.4%). The proportion of hepatitis sufferers for both men and women is not significantly different. The type of work also influences the prevalence of Hepatitis, which is more commonly found in farmer 7 fishermen/laborers than other types of work. The figure above shows that the highest prevalence of donor blood detected positive for hepatitis C occurred in 2009 and 2010 (0.59%), while in 2012, the prevalence was the lowest (0.39%). And the highest prevalence of donor blood detected HBsAg was (1.64%).

The problem of sexually transmitted infections (STIs) is sensitive and involves personal issues that are often kept confidential by patients, especially issues of sexuality. Therefore, basic communication skills are much more important than simple history-taking. Clinical examination of STI patients places more emphasis on examining the genitals and related organs. The principles are the same as in other clinical examinations: History, physical examination, collection of materi 44 for laboratory examination, and human immunodeficiency virus (HIV) blood examination.

The HIV test is 47 blood test that is used to confirm whether a person is positively infected with HIV or not, namely by detecting the presence 27 of HIV antibodies in their blood sample. There are two types of HIV tests: namely a) ELISA (Enzyme-linked

immunosorbent assay). The ELISA test is a serological test used to analyze the interaction of antigens with antibodies in a sample using enzymes. The advantages of ELISA are that the technique is relatively simple, economical, and has high sensitivity and b) Western Blot. The Western Blot test is a method for detecting proteins in tissue samples. Samples that are positive in the ELISA test can be confirmed with the Western Blot test. [17; 18]

The examination method is to take serum from a skin lesion and look at its shape and movement with a dark field microscope. Inspections were carried out on three consecutive days. If the results on days I and II are negative. Meanwhile, the lesion is compressed with a saline solution. If it is negative, it does not always mean that the diagnosis is not syphilis; perhaps there are too few germs. Treponema appears white on a dark background. Its movements rotate about its axis, moving slowly across the field of view, if not moving quickly like Borelia Vincent, which causes stomatitis.

According to Buri, another examination using staining means that movement cannot be seen because the treponema has died, so only its shape can be seen. Meanwhile, the lesion is compressed with a saline solution every day. A non-routine examination is with the fluorescent technique. T. pallidum cannot be differentiated microscopically and serologically from T. Pertenu, which causes yaws, and T. carateum, which causes pinta. TSS.

TSS or serological tests for syphilis (STS) are important diagnostic aids for syphilis. This article will not explain the examination technique but only interpret it. The measures for evaluating serological tests are sensitivity and specificity. Sensitivity is the ability to react to syphilis. Meanwhile, specificity means the ability to be non-reactive in non-syphilitic diseases. The higher the test's sensitivity, the better the test is used for screening tests. Tests with high specificity are excellent for

diagnosis. The more specific a test is, the less likely it is to give false positive results. S I initially gave TSS negative results (seronegative), then became positive (seropositive) with a low titer, so weakly positive. In early S II, the reaction becomes rather strong positive, which will become very strong in advanced S II. In S III, the reaction decreases again to become positive or negative. TSS is divided into two based on the antigen used: Nontreponemal (reagin test) and the nontreponemal test.

In this test, a non-specific antigen is used, namely cardiolipin combined with lecithin and cholesterol; this test can give a pseudo-biological reaction (RBS) or biological positive phase (BFP).

The antibodies, called reagents, formed after infection with T. pallidum but are also present in various other diseases and during pregnancy. This reagin can combine with a suspension of lipid extracts from animals or plants, clumping together to form a mass seen in a flocculation test. The mass can also combine with complement, the basis for the complement binding test.

HIV prevention is very similar to STI prevention and adds the aspect of using narcotics and sharp equipment. This prevention is known as the ABCDE method. A (Abstinence), namely not having sexual relations outside of marriage; B (Be faithful), namely remaining faithful to one sexual partner. C (Condom) is to use a condom when having sexual intercourse. D (Don't use drugs) means not consuming drugs, especially those who use injections; E (Equipment), be careful of equipment that is at risk of causing injuries and is used interchangeably (at the same time), for example, syringes, razors, etc.

The risk of HIV transmission can also be prevented after exposure to the virus, for example, when someone is accidentally pricked by an HIV-contaminated syringe or after sexual intercourse with an HIV-infected person in a pregnant woman infected with

HIV. Transmission to unborn babies can be prevented by using antiretroviral therapy (ARV) given under the supervision of a doctor. [19]

HIV has symptoms of opportunistic infection when the immune system of AIDS sufferers is weak, and the body no longer responds to the treatment given. So, the opportunistic infections found are [20] Lung inflammation by pneumocystis carinii (PCP).

PCP is caused by a type of protozoan parasite which, without HIV infection, does not cause serious conditions, but in AIDS sufferers whose immune system is already weak, this protozoa attacks the lungs and ultimately causes the patient's death. Mycobacterium tuberculosis infection in AIDS sufferers often spreads widely outside the lungs. This disease is highly resistant to commonly used anti-TB drugs. It will burden TB sufferers with AIDS and can cause death. [21] Mucocutaneous candidiasis is a fungal infection that is often found accompanying AIDS. Symptoms include white spots in the oral cavity and around the mouth. This disease is easy to treat but can recur in the throat, esophagus, small intestine, and large intestine and will cause continuous diarrhea. This situation will result in death.

The herpes zoster infection that accompanies AIDS initially takes the form of a unilateral lesion on one side of the body, but as it progresses, it will affect the entire body and become a generalized herpes zoster. Herpes zoster can also spread to attack internal organs such as the liver, lungs, and brain. This infection results in death. Infection with salmonella and other viruses, such as cytomegalovirus in the gastrointestinal tract, causes long-lasting symptoms of diarrhea and is difficult to treat. Continuous diarrhea will result in weight loss and dehydration and, if accompanied by other diseases, can cause death.

Syphilis is a disease that has chronic exacerbations and has a latent period, and can

be transmitted from baby to fetus. If syphilis enters the final stage, durum ulcers can be found with ulcers in herpes simplex, scabies, and pyogenic ulcers. Stage II syphilis must be diagnosed differentially with psoriasis, mobile, and pityriasis rosea. Condyloma lata must be differentially diagnosed with condyloma acuminata which has a pointed shape resembling a cock's comb, while condyloma lata has a flat surface and is covered with crusts.

## RESEARCH METHOD

The type of research used in this research is retrospective descriptive research with a cross-sectional approach. The cross-sectional approach method is a research method where the research subject is observed only once; then, measurements are taken of the subject's variables during the examination. The retrospective descriptive research intended in this research aims to objectively interpret phenomena that occur in the form of forms, activities, changes, relationships, similarities, and differences by looking back at the past. This research was conducted at UTD PMI Depok City at Grand Depok City, Kembang City, Jl. Boulevard Raya, Jember, Cilodong, Depok, West Java 16413. The research was carried out from September 2018 to October 2018. The population of this study was all data on prospective donors who were included in quarantine blood at the Indonesian Red Cross blood transfusion unit (UTD PMI) in Depok City for the period September 2014 – September 2018, namely 2,228 medical records. The sample used in the study was quarantined blood from donors and was determined based on the total sampling method, namely a sampling technique where the number of samples is the same as the population based on predetermined inclusion criteria and exclusion criteria. Primary data and secondary data were collected in the medical records section of PMI Depok City. Primary data was obtained from laboratory



examination results for HBsAg, HIV, HCV, and RPR (TPHA), and secondary data was obtained from patient status. Inpatient status data regarding demographics is obtained; the data is in the form of gender, age, occupation, and patient's blood type. Data collected through medical records was processed using the SPSS (Statistics Program for Social Science) program for Windows edition 24.0 and the Microsoft Office Excel 2013 program. Microsoft Office Excel was used to record raw data originating from the results of certain blood tests (HBsAg, HIV, RPR, HCV) and patient status. The SPSS program was used to analyze the obtained raw data recorded in Microsoft Office Excel.

Univariate analysis aims to explain or describe the characteristics of each research variable. The use of univariate analysis depends on the type of data. Numerical data with normal distribution uses the mean ( $\bar{x}$ ) as a measure of centering and standard deviation (SD) as a measure of spread. If the data distribution is abnormal, use the median (Me) as a measure of

centering and percentile (Q) as a measure of spread. In this study, the normality test uses the Kolmogorov-Smirnov test method, where the number of subjects in this study must be  $\geq 50$ . Research data falls within the normal distribution criteria if the p-value is  $> 0.05$ .

The results of this research are presented in the form of bar graphs according to variables according to the objectives, accompanied by an explanation of the meaning of each graph's contents. This research follows the rules of applicable research ethics by keeping the patient's identity confidential. This research has received permission from UTD PMI Depok city based on letter number 13/02.03.20/UTD/PMI.Dpk/VIII/2018.

Documents regarding identity and data related to research regarding the results of laboratory examinations for STIs, along with donor demographic data, are the researcher's responsibility to maintain confidentiality and are only used for research purposes.

## RESULT AND DISCUSSION

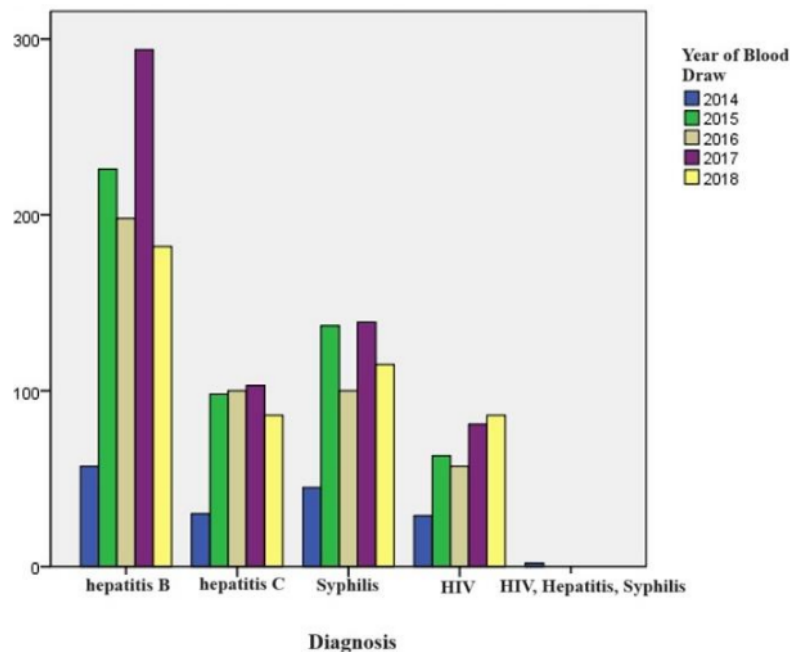


Diagram 1. Distribution of Respondents Based on Year of Blood Collection with Sexually Transmitted Infectious Diseases at ITD PMI Depok City

Based on quarantine blood data from year to year with sexually transmitted infections (STIs), namely in 2014, Hepatitis B 57 respondents (6%), Hepatitis C 30 respondents (7.2%), Syphilis 45 respondents (8.4%), HIV 29 respondents (9.2%). In 2015, Hepatitis B had 226 respondents (23.6%), Hepatitis C 98 respondents (23.5%), Syphilis 137 respondents (25.6%), and HIV 63 respondents (19.9%). In 2016, Hepatitis B 198 respondents (20.7%), Hepatitis C 100 respondents (24%), Syphilis 100 respondents (18.7%), and HIV 57 respondents (18%). In 2017, Hepatitis B had 294 respondents (30.7%), Hepatitis C 103 respondents (24.7%), Syphilis 139 respondents (25.9%), and HIV 86 respondents (27.2%). In 2018, Hepatitis B had 182 respondents (19%), Hepatitis C 86 respondents (20.6%), Syphilis

115 respondents (21.5%), and HIV 86 respondents (27.2%).

Based on Diagram 1, the distribution of respondents based on sexually transmitted infections found in quarantine blood in 2014-2017. Hepatitis B was the highest, reaching 294 sufferers. These results show that according to the 2013 Riskesdas, the number of people diagnosed with hepatitis in healthcare facilities based on existing symptoms has doubled when compared to data from 2007 and 2013. [22] Hepatitis sufferers are men and women; the proportion is not significantly different.

In 2018, there was a slight decrease in all levels of sexually transmitted infections. This data shows that perhaps socialization about sexually transmitted diseases has decreased.

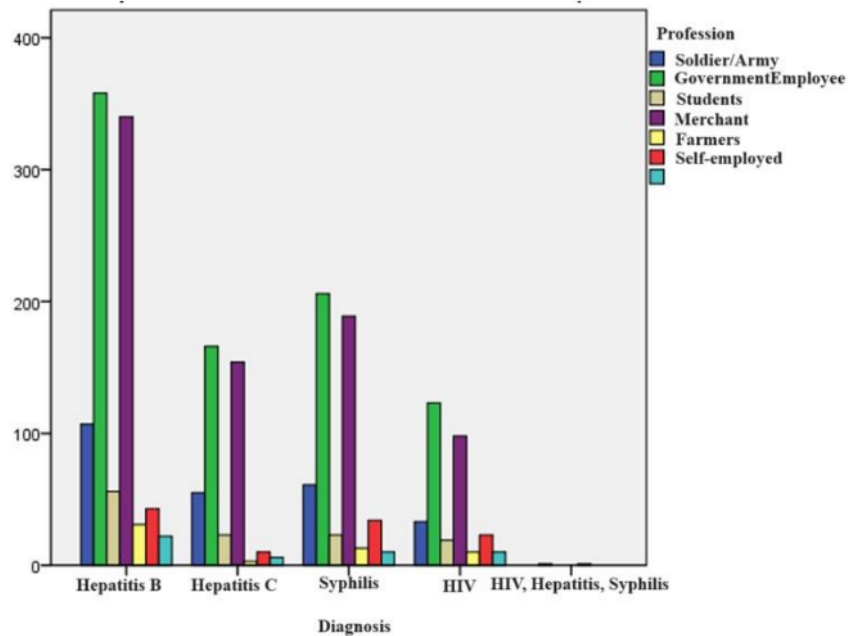


Diagram 2. Distribution of Respondents Based on Profession with Sexually Transmitted Infectious Diseases at ITD PMI Depok City

Based on the results of occupational data, the highest incidence of sexually transmitted infections is hepatitis B, civil servants/private

employees, 358 respondents (37.4%), traders, 340 respondents (35.5%), TNI/POLRI 107 respondents (11.2%), students. Fifty-six

respondents (5.9%), self-employed 43 respondents (4.5%), farmers/laborers 31 respondents (3.2%), others 22 respondents (2.3%). The highest results for Hepatitis C were for Public/Private Employees 166 respondents (39.8%), Traders 154 respondents (36.9%), TNI/POLRI 55 respondents (13.2%), Students/Students 23 respondents (5.5%), Entrepreneurs 10 respondents (2.4%), others six respondents (1.4%), Farmers 3 respondents (0.7%). The highest results were for Syphilis for Public/Private Employees 206 respondents (38.4%), Traders 189 respondents (35.3%), TNI/POLRI 61 respondents (11.4%), self-employed 34 respondents (6.3%), students /students 23 respondents (4.3%), Farmers/Laborers 13 respondents (2.4%), Others 10 respondents (1.9%). The highest results for HIV were civil/private employees

123 respondents (38.9%), Traders 98 respondents (31%), TNI/POLRI 33 respondents (10.4%), Entrepreneurs 23 respondents (7.3%), Students/students 19 respondents (6%), farmers/laborers and others 10 (3.2%).

Based on Diagram 2, the distribution of respondents based on work with sexually transmitted infections in UTD PMI Depok City in 2014-2018 showed that civil servants had the highest incidence of hepatitis B and syphilis. The type of work also influences the prevalence of Hepatitis, which is more commonly found in farmers/fishermen/laborers than other types of work. [23]

This data shows that entrepreneurs, farmers/laborers, and students are below 100, indicating that the government's health promotion has been able to educate the public.

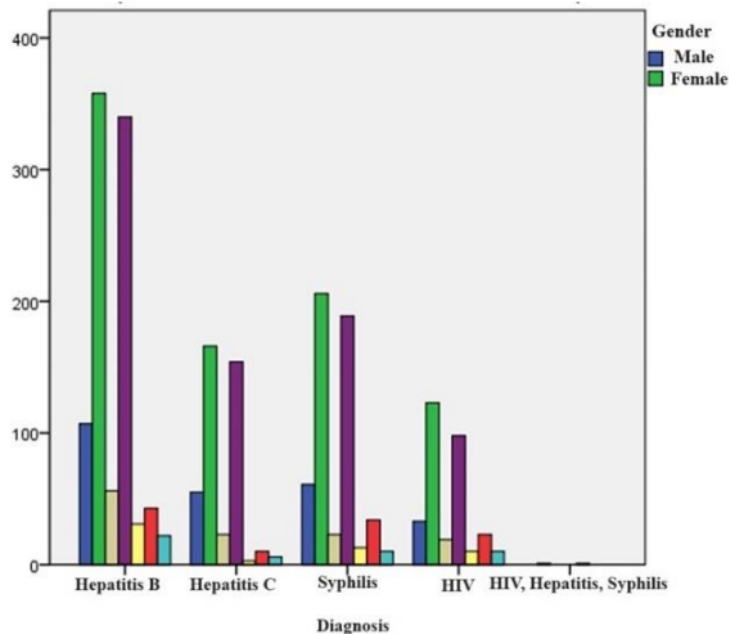


Diagram 3. Distribution of Respondents Based on Gender with Sexually Transmitted Infectious Diseases at ITD PMI Depok City

Based on the results of the data, the highest gender was male 648 respondents (67.7%), female 309 respondents (32.3%). The highest data results for hepatitis C were 308 male respondents (73.9%) and 109 female

respondents (26.1%). The highest data results for syphilis were 371 male respondents (69.2%) and 165 female respondents (30.8%). The highest HIV data results were 222 male

respondents (70.3%) and 94 female respondents (29.7%).

Based on Diagram 3, the distribution of respondents based on this data on gender with sexually transmitted infections shows that men are more likely to suffer from hepatitis, syphilis, and HIV. According to Riskesdas 2017 gender, the percentage of new AIDS

cases in 2014 in the male group was 1.8 times greater than in the female group. AIDS sufferers in men are 61.6%, and in women, 34.4%, and 4% of AIDS sufferers have unknown gender. Several new AIDS cases from DKI Jakarta and West Papua provinces did not report their gender.

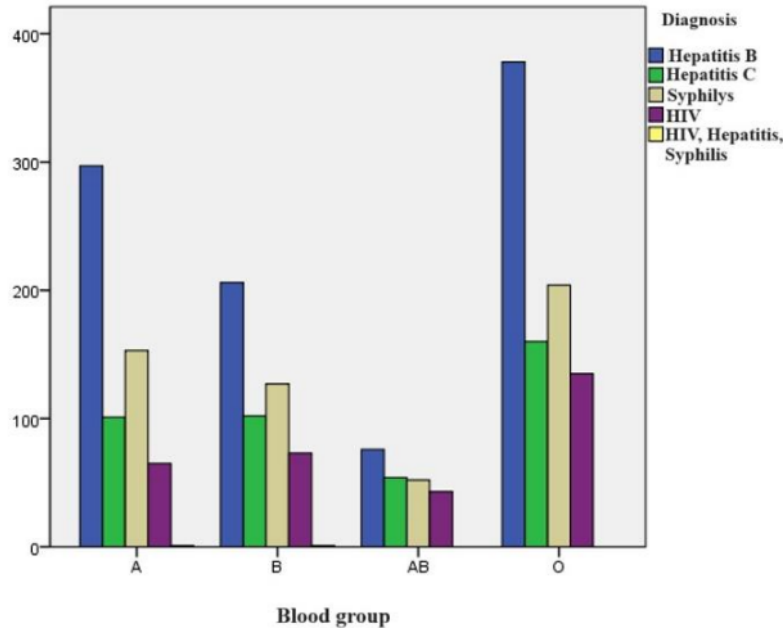


Diagram 4. Distribution of Respondents Based on Age with Blood Contaminated by Sexually Transmitted Infectious Diseases at ITD PMI Depok City

Based on the results of blood group data on sexually transmitted infections, namely blood group O, 378 respondents (43.1%) had Hepatitis B, 160 respondents (18.2%) had Hepatitis C, and 204 respondents (23.3%) had syphilis. HIV has as many as 135 respondents (15.4%). Then, blood group A was found to be hepatitis B by 297 respondents (48.1%), hepatitis C by 101 respondents (16.4%), syphilis by 153 respondents (24.8%), and HIV by 65 respondents (10.5%). Blood group B was found to be hepatitis B by 206 respondents (40.5%), hepatitis C by 102 respondents

(20%), syphilis by 127 respondents (25%), and HIV by 73 respondents (14.3%). Blood group AB was found to be hepatitis B by 76 respondents (33.8%), hepatitis C by 54 respondents (24%), syphilis by 52 respondents (3.1%), and HIV by 43 respondents (19.1%). Based on Diagram 4, the distribution of respondents based on this data has the highest blood type being O in sexually transmitted infections such as hepatitis B and C, syphilis, and HIV. It is possible that blood type O does not have antigens, so it is easy to get infected. Blood type A is the highest in hepatitis B.

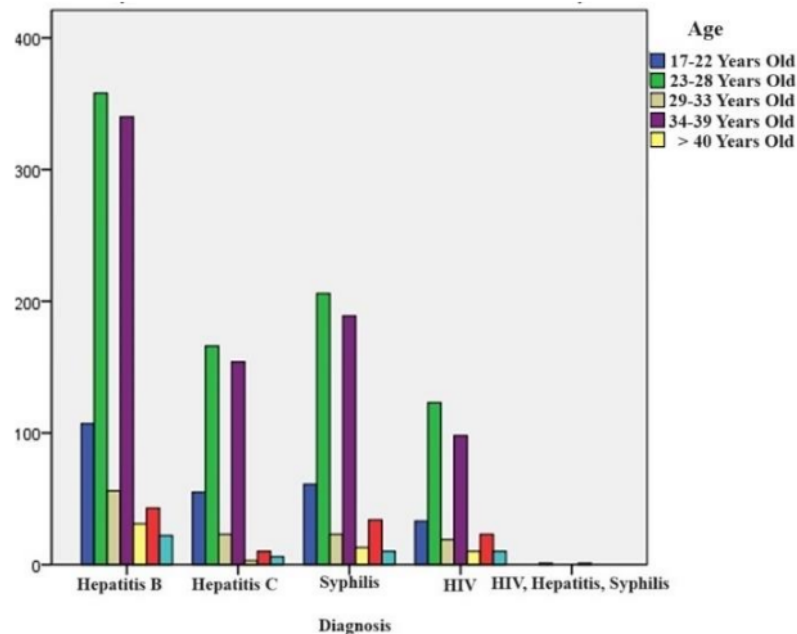


Diagram 4. Distribution of Respondents Based on Age with Blood Contaminated by Sexually Transmitted Infectious Diseases at ITD PMI Depok City

Based on Diagram 5, the highest Hepatitis B results were at ages 27-36 years 314 respondents (32.8%), ages 37-46 years 272 respondents (28.4%), ages 47-56 years 219 respondents (22.9%), aged 17-26 years 133 respondents (13.9%), aged 57-66 years 19 respondents (2%). Hepatitis C results were highest at ages 27-36 years, 198 respondents (47.5%), ages 17-26 years, 103 respondents (24.7%), ages 37-46 years, 94 respondents (22.5%), 47-56 years, 22 respondents (5.3%). Syphilis results were highest at ages 27-36 years 237 respondents (44.2%), ages 37-46 years 135 respondents (25.2%), ages 17-26 years 123 respondents (22.9%), ages 47-56 years 39 respondents (7.3%), aged 57-66 years two respondents (0.4%). HIV results were highest at ages 27-36 years, 153 respondents (48.4%), ages 17-26 years, 91 respondents (28.8%), ages 37-36 years, 51 respondents (16.1%), ages 47-56 years 21 respondents (9.6%).

Based on Diagram 4, the distribution of respondents based on age data with sexually

transmitted infections shows that men are more likely to suffer from hepatitis, syphilis, and HIV. The table in Chapter II shows that the highest prevalence of Hepatitis is found in the 45-54 and 65-74 age groups (1.4%). The proportion of hepatitis sufferers for both men and women is not significantly different.

## DISCUSSION <sup>5</sup>

### Analysis of the incidence of sexually transmitted infections

In this study, 2228 respondents were classified as quarantine blood from 2014 - 2018 at PMI Depok City. The research results found that in 2014, there were 57 respondents suffering from Hepatitis B, and the lowest was 37 respondents from Hepatitis C. In 2015, there was an increase from the previous year, the highest being Hepatitis B, 226 respondents, and the lowest HIV, 63 respondents. In 2016, the highest was hepatitis B, decreasing by 198 respondents, and the lowest was HIV by 57 respondents. In 2017, hepatitis B was found to have increased by 294 respondents, and HIV

was the lowest at 86 respondents. In 2018, the highest was hepatitis B, with 182 respondents, and the lowest, Hepatitis C and HIV, with 86 respondents. Hepatitis is a disease caused by a virus that quickly damages the liver and becomes chronic, causing liver cirrhosis (liver cancer). The number of cases in 2012 stated that hepatitis B was reported as 9 cases in community health centers but not specifically in hospitals.

### Age Analysis

This study found that age influenced the increase in the number of STI cases in 2014 - 2018. Based on research, aged 23-36 years, the increase in hepatitis B disease reached 198 respondents. Then, syphilis caused by treponema pallidum was highest at the age of 23-36 years, with 237 respondents. The highest HIV results were 153 respondents aged 23-36 years. These results show that the increase from 2014 to 2018 was very high, and based on the last reported age in 2013, the highest hepatitis risk was in the 45-54 and 65-74 age groups (1.4%), occurring in both men and women.

### Job Analysis

In this study, the results showed that the spread of sexually transmitted infections was high in every sector, such as civil servants/private employees, traders, TNI/POLRI, students/students, farmers/laborers, and entrepreneurs. The data collected from 2014-2018 shows that the occupation with the highest level of sexually transmitted infections is civil/private employees, with 358 respondents identified as having hepatitis B. Then for Hepatitis C, 166 respondents were identified as civil/private employees, and 166 respondents for syphilis. by treponema pallidum was the highest, namely 206 respondents. These results show that UTD PMI has classified jobs based on the risk of spreading sexually transmitted infections.

### Gender Analysis

In this study, it was found that gender influences the increase in the number of sufferers of sexually transmitted infections. Data collected from 2014-2018 shows that the highest number of men was 648 respondents, suffering from Hepatitis B, and the number of men with hepatitis C was 308 respondents. The highest number of men suffering from HIV and syphilis was 371 respondents (syphilis) and 222 respondents (HIV). This data matches the 2017 Riskesdas report, which reported that in 2014, the male group was 1.8 times larger, 61.6%, and females were 34.4%.

### Blood Group Analysis

In this study, the results showed that blood type was more at risk of contracting sexually transmitted infections such as hepatitis B, hepatitis C, syphilis, and HIV.

### CONCLUSION

Profile of Sufferers from Sexually Transmitted Infectious Diseases, namely from the results of research regarding "Profile of Sexually Transmitted Infections (STIs) in Quarantine Blood at UTD PMI Depok City in 2014-2018" it can be concluded from medical record data that there is a relationship between the age of 23-36 years who are at risk of being infected or exposed to sexually transmitted infections. In the occupational data obtained, there is a risk of sexually transmitted infections, namely that civil/private employees and men are more at risk of sexually transmitted infections. The medical record data shows that age, gender, occupation and blood type play a role in increasing the number of incidents of sexually transmitted infections in the Depok City area. The author's suggestions regarding this research are: a) It is necessary to add aspects in the form of risk factors to the questionnaire that can complement this research, and b) Further research needs to be carried out in various large cities to obtain more accurate information.

### Declaration by Authors

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**Conflict of Interest:** The authors declare no conflict of interest.

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