



## EARLY HIV DETECTION: A DESCRIPTIVE STUDY USING RAPID DIAGNOSTIC TESTS AT THE MARINA PERMAI COMMUNITY HEALTH CENTER

### DETEKSI DINI HIV: STUDI DESKRIPTIF MENGGUNAKAN RAPID DIAGNOSTIC TEST DI PUSKESMAS MARINA PERMAI

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#### Abstract

Early HIV detection is a key strategy in control HIV/AIDS epidemic in Indonesia. Research This aim For analyze effectiveness of the Rapid Diagnostic Test (RDT) as method detection early HIV in the workplace Marina Permai Community Health Center 2025. Research use design descriptive with total sample of 58 people who did HIV test . Examination done use Three immunochromatographic RDT strategies : ViroCheck ® HIV 1/2, Arkan Medical One Step Anti-HIV (1/2), and d3TEKS1 HIV 1/2 Antibody Rapid Test. Research results show that Of the 58 respondents , 5 people (9%) indicated results reactive and 53 people (91%) non- reactive . Based on characteristics demographics , cases reactive found in 3 women (5%), 2 men (3%), with distribution largest in the group aged 18–59 years (4 people, 7%) and 1 case (2%) in the group aged 0–5 years . This study conclude that immunochromatographic RDT effective as tool detection early HIV at the level service primary health with sensitivity and specificity high . Findings This support use of RDT as screening beginning in HIV prevention and control programs in facilities health community.

**Keywords :** Early HIV Detection, Rapid Diagnostic Test, Marina Permai Health Center.

#### Abstrak

Deteksi dini HIV merupakan strategi kunci dalam pengendalian epidemi HIV/AIDS di Indonesia. Penelitian ini bertujuan untuk menganalisis efektivitas Rapid Diagnostic Test (RDT) sebagai metode deteksi dini HIV di wilayah kerja Puskesmas Marina Permai tahun 2025. Penelitian menggunakan desain deskriptif dengan sampel total 58 orang yang melakukan pemeriksaan HIV. Pemeriksaan dilakukan menggunakan tiga strategi RDT imunokromatografi: ViroCheck® HIV 1/2, Arkan Medical One Step Anti-HIV (1/2), dan d3TEKS1 HIV 1/2 Antibody Rapid Test. Hasil penelitian menunjukkan bahwa dari 58 responden, 5 orang (9%) menunjukkan hasil reaktif dan 53 orang (91%) non-reaktif. Berdasarkan karakteristik demografi, kasus reaktif ditemukan pada 3 perempuan (5%), 2 laki-laki (3%), dengan distribusi terbesar pada kelompok usia 18–59 tahun (4 orang, 7%) dan 1 kasus (2%) pada kelompok usia 0–5 tahun. Studi ini menyimpulkan bahwa RDT imunokromatografi efektif sebagai alat



deteksi dini HIV di tingkat pelayanan kesehatan primer dengan sensitivitas dan spesifisitas tinggi. Temuan ini mendukung penggunaan RDT sebagai skrining awal dalam program pencegahan dan pengendalian HIV di fasilitas kesehatan komunitas.

**Kata Kunci :** Deteksi dini HIV, Rapid Diagnostic Test, Puskesmas Marina Permai.

## 1. INTRODUCTION

HIV/AIDS remains become problem global health with impact significant on the system health, economy and social society, According to UNAIDS report (2023), available approximately 39 million people living with HIV worldwide by 2022, with estimated 1.3 million infection new. In Indonesia, data from the Indonesian Ministry of Health (2022) shows trend improvement HIV cases with 36,665 cases new reported in the third quarter of 2022.

Detection early HIV is component critical in HIV/AIDS control strategies because allows appropriate intervention time, including initiation early antiretroviral therapy (ARV), counseling prevention transmission, and planning maintenance comprehensive health (WHO, 2023). Detection early No only beneficial for infected individuals, but also plays a role important in cut off chain transmission in the community.

Rapid Diagnostic Test (RDT) has become method choice For detection early HIV in various countries, including Indonesia, because its advantages in give results fast (15-20 minutes), easy done, no need equipment complex, and has sensitivity as well as high specificity (Anderson et al., 2024). The immunochromatographic method in RDT allows detection HIV-1 and HIV-2 antibodies in various specimen including blood whole, serum, and plasma.

Marina Permai Community Health Center in Palangka Raya City, Central Kalimantan, is one of the facility primary health care that implements detection programs early HIV through Work The same with Association Family Indonesian Child Protection Agency (PKBI) in the Mobile Voluntary Counseling and Testing (VCT) program. Research This aim For analyze effectiveness of RDT as method detection early HIV and describe characteristics demographics HIV cases detected in the work area Marina Permai Community Health Center 2025.

## 2. RESEARCH METHOD

Study This use design studies descriptive observational with cross-sectional approach (Nugraha, 2025). Research implemented in the work area Marina Permai Community Health Center, Palangka Raya City in the period April-May 2025.

Population study covers all individuals who access service HIV examination at Marina Permai Community Health Center during period research. Total sampling technique was used with amount sample A total of 58 people complied criteria inclusion: minimum age 0 years (with parental / guardian consent For children under age), willing participate in research, and not yet Once previously diagnosed with HIV.

Inspection detection early HIV testing is carried out use three Rapid Diagnostic Test (RDT) reagents based on the examination strategy recommended by the Indonesian Ministry of Health:



- a. ViroCheck ® HIV 1/2 (R1) with 100% sensitivity and 100% specificity
- b. Arkan Medical One Step Anti-HIV (1/2) Rapid Test (Colloidal Gold) with sensitivity 100% and specificity 99.68%
- c. d3TEKS1 HIV 1/2 Antibody Rapid Test (3 lines) with 100% sensitivity and 100% specificity

Third reagent the use principle double-antigen sandwich immunochromatography which can detect HIV-1 and HIV-2 antibodies in specimen blood whole blood, serum, or plasma (Lee & Patel, 2024). Procedure inspection follow protocol standard listed in the leaflet of each reagent, with interpretation results in 15-20 minutes after application specimen.

Data collected through two approach: (1) primary data from results RDT examination, and (2) secondary data in the form of characteristics demographics (type gender and age) recorded in form examination. Data analysis was carried out in a way descriptive with count distribution frequency and percentage For every variables studie.

### 3. RESULT AND DISCUSSION

Analysis demographics in study detection early HIV function as runway crucial interpretative, because characteristics screened population in a way direct influence detected prevalence and implications policies that can taken Profile respondents based on type gender and age disclose No only who has accessible by screening programs, but also identify possible groups Still not enough served in effort HIV prevention. The data in Table 1 illustrates distribution participants study this, which will later will associated with results inspection For understand dynamics HIV epidemiology at the community level community as well as evaluate effectiveness of detection strategies early implemented at Marina Permai Health Center.

**Table 1. Distribution Respondents By Gender and Group Age (N=58)**

Characteristics	Category	Frequency	Percentage
Gender	Man	2	3.4%
	Woman	56	96.6%
Group Age	0–5 years	1	1.7%
	10–18 years	1	1.7%
	18–59 years	56	96.6%

The data shows that majority respondents is women (96.6%) and are in group age productive 18–59 years (96.6%). Profile This reflect pattern access service health where women tend more proactive in do inspection health, including HIV screening (Sari et al., 2023)

**Table 2. Results of the HIV Rapid Diagnostic Test (RDT) (N=58)**

RDT Results	Frequency	Percentage
Reactive	5	8.6%
Non- reactive	53	91.4%

**Table 3. HIV RDT Results Based on Gender**

Gender	Reactive	Non- reactive	Total
Man	2 (3.4%)	0 (0%)	2
Woman	3 (5.2%)	53 (91.4%)	56

**Table 4. HIV RDT Results Based on Group Age**

Group Age	Reactive	Non- reactive	Total
0–5 years	1 (1.7%)	0 (0%)	1
10–18 years	0 (0%)	1 (1.7%)	1
18–59 years	4 (6.9%)	52 (89.7%)	56

Research result show that Rapid Diagnostic Test (RDT) method was successful detected 5 cases reactive (8.6%) of 58 individuals screened in the work area Marina Permai Community Health Center. Detection rate This Enough significant remember study conducted on the population public access service health, not group risky tall in a way specific. Findings This in line with Smith & Johnson's (2023) research reported effectiveness of RDT in detect HIV cases at the stage beginning infection.

Distribution case reactive based on type sex show that although Woman own percentage reactive more tall in a way numerical (5.2% vs 3.4% in men), interpretation must done with Be careful remember proportion respondents Woman Far more large (56 vs 2). However, the findings This consistent with pattern HIV epidemiology in Indonesia where women the more prone to to HIV infection due to various factor biological, social, and economic (Made et al., 2022).

Analysis based on group age disclose that part big case reactive (4 out of 5 cases) are in the group age productive 18–59 years (6.9% of the total sample group age this). Findings This in accordance with national data showing that group age productive is group with the highest incidence of HIV in Indonesia (Ministry of Health of the Republic of Indonesia, 2022). Cases reactive in groups aged 0–5 years (1.7%) indicated possibility transmission vertical from



Mother to children, who are still become challenge in HIV prevention in Indonesia even though has there is a prevention program transmission from Mother to comprehensive child (PPIA) (Natasya et al., 2024).

The effectiveness of RDT as method detection early HIV in study This supported by characteristics technical third the reagent used, which has sensitivity and specificity approaching 100%. This result consistent with findings of Anderson et al. (2024) who reported that RDT generation latest own equivalent accuracy with ELISA method in detect HIV infection, especially in the early stages infection after period window period. The advantages of RDT in aspect practicality, speed results, and convenience procedure making it ideal for implementation in facilities primary health such as community health center with source Power limited (Lee & Patel, 2024).

However, it is necessary noted that RDT has limitations in detect HIV infection during the period window (3-6 weeks) after infection), where HIV antibodies have not yet been produced formed in sufficient concentration For detected. Therefore that, for individual with risk exposure high and RDT results are negative, it is recommended For do inspection repeat after 3 months or use method HIV antigen/RNA detection if available (WHO, 2023). Implications practical from study This is the need RDT integration in detection programs early HIV in facilities primary health care, equipped with system effective counseling and referral. Findings case reactive to various group age also shows importance HIV screening that is not only focused on groups risky high, but also in the population general as part from service health routine.

#### 4. CONCLUSION

Study This conclude that the Rapid Diagnostic Test (RDT) is effective method For detection early HIV at the level service primary health care. With high sensitivity and specificity, RDT is capable of detect HIV cases in various group demographics, including group age productive (18–59 years) which is group with prevalence highest in studies This.

Findings of 5 cases reactive of the 58 individuals screened (8.6%) indicated that HIV infection is still become problem relevant health in the work area Marina Permai Community Health Center . Detection cases in groups ages 0–5 years also highlights importance strengthening prevention programs HIV transmission from Mother to child.

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