ADVANCING LYMPHOMA CARE THROUGH RESEARCH IN INDONESIA

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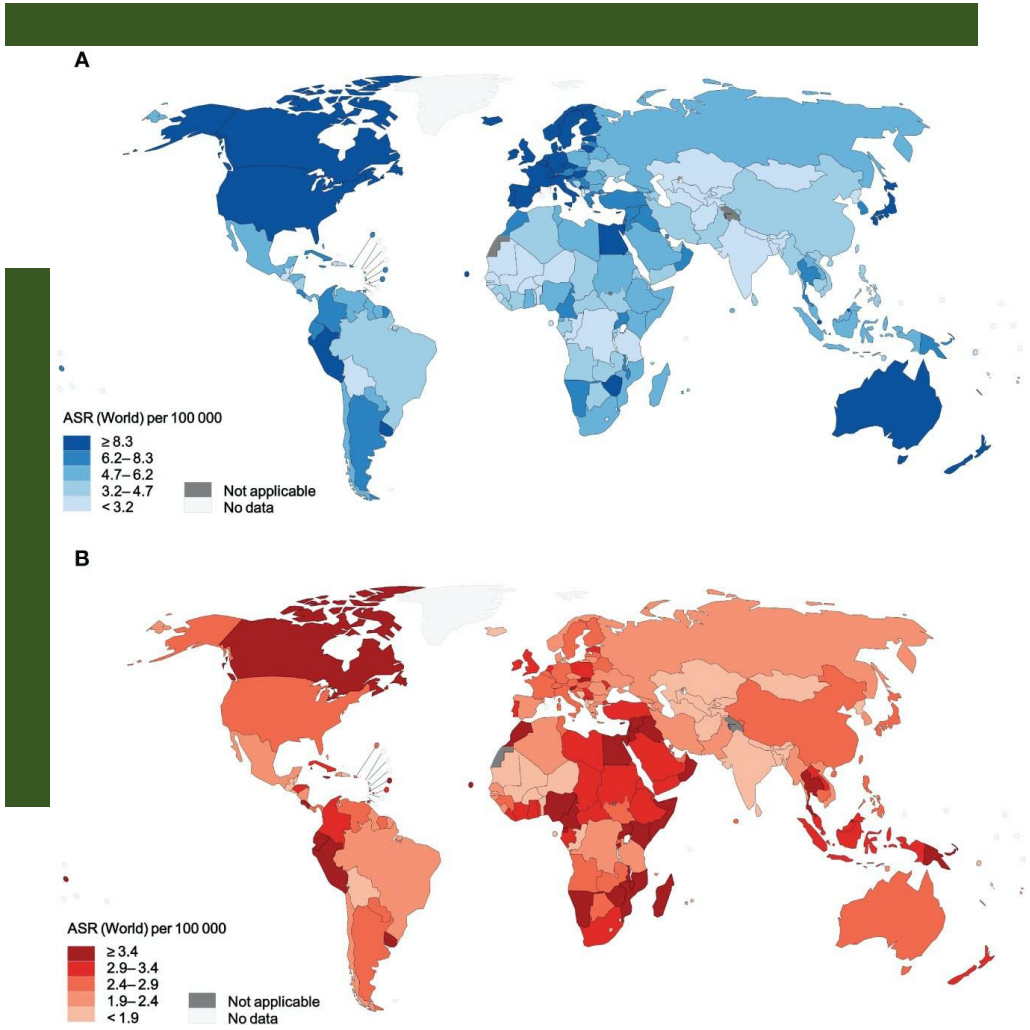
Disclosure

- No conflict of interest

Global Burden of Lymphoma



Global Burden and Rising Incidence

The global burden of lymphoma has become significant due to a **consistent increase in its incidence** across most geographic regions.

In 2022, NHL ranked as the **tenth most prevalent cancer worldwide**, and the number of NHL cases **is projected to rise to 778,000 by the year 2040**.

Geographic Patterns

Incidence rates of lymphoma are highest in Europe, Northern America. In contrast, low- to middle-income countries, including many in Africa and **Southeast Asia, tend to have higher mortality rates** from lymphoma despite lower incidence.

Chu Y, Liu Y, Fang X, Jiang Y, Ding M, Ge X, et al. Front Oncol. 2023;13:1059914

Global Burden of Lymphoma

	Incidence (2012)		Mortality (2012)		Incidence (2035)		Mortality (2035)	
	Number	Rate*	Number	Rate*	Number	% Increase	Number	% Increase
NHL	385,741	5.0	199,670	2.5	635,144	65%	344,099	72%
Higher income	190,403 (49%)	8.6	75,128 (38%)	2.7	-			
Lower income	195,338 (50%)	3.6	124,542 (62%)	2.3				
HL	65,950	0.9	25,469	0.3	88,390	34%	38,797	52%
Higher income	28,852 (44%)	2.1	6,293 (25%)	0.3				
Lower income	37,098 (56%)	0.6	19,176 (75%)	0.3				
Total	451,691	5.9	225,139	2.9	723,534	60%	382,896	70%

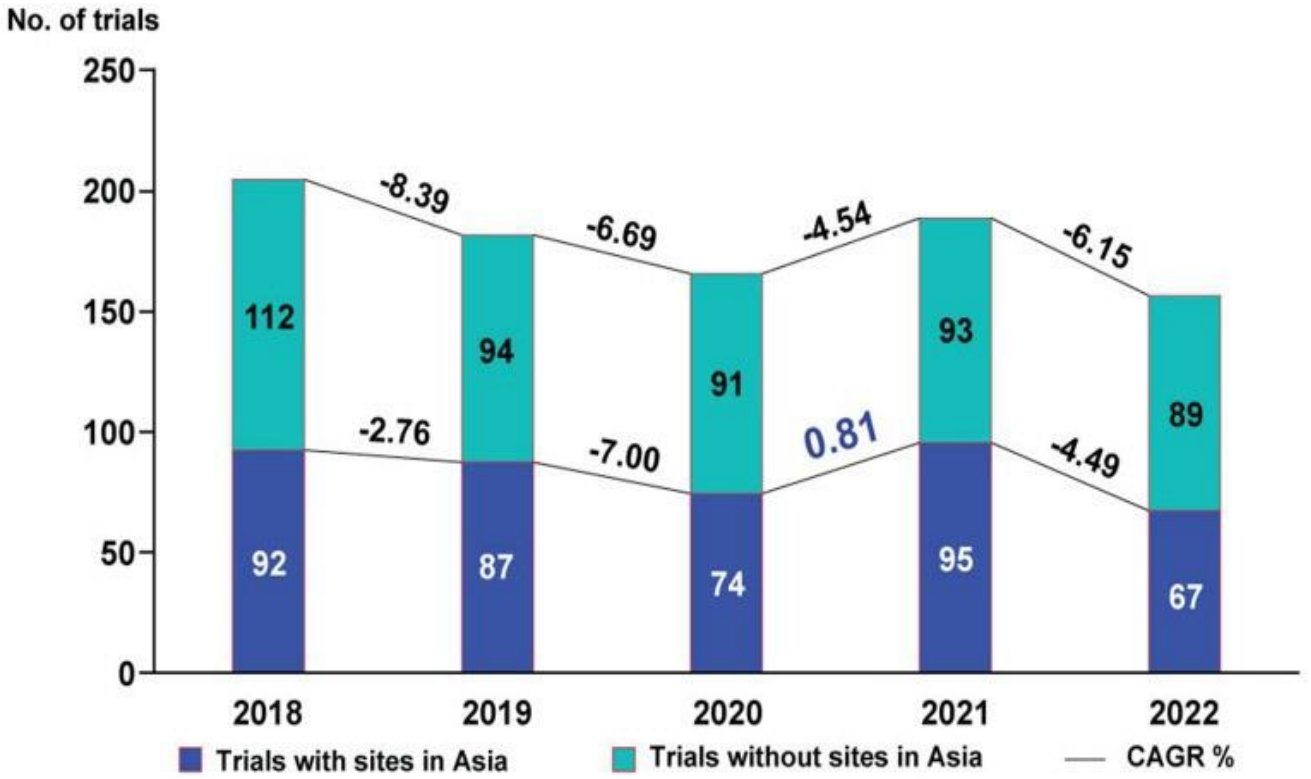
*Age-standardized rate per 100,000 person-years.

Abbreviations: NHL, non-Hodgkin lymphoma; HL, Hodgkin lymphoma.

Adapted from Ferlay et al with permission from the publisher.[15]

Chu Y, Liu Y, Fang X, Jiang Y, Ding M, Ge X, et al. Front Oncol. 2023;13:1059914

Regional Burden of Lymphoma



Bridging the Gap: Asian Representation in Global Studies

Regional Subtype Variation (Asia)

In Southeast Asian countries, the median age of patients diagnosed with NHL is **younger compared to Caucasian populations**. The distribution of lymphoma subtypes in Asia is **more varied than in North America and Western Europe**, with a higher incidence of mature extranodal natural killer (NK)/T-cell lymphoma, nasal type, and lower rates of follicular lymphoma and Hodgkin lymphoma.

Contributing Factors to Disparities

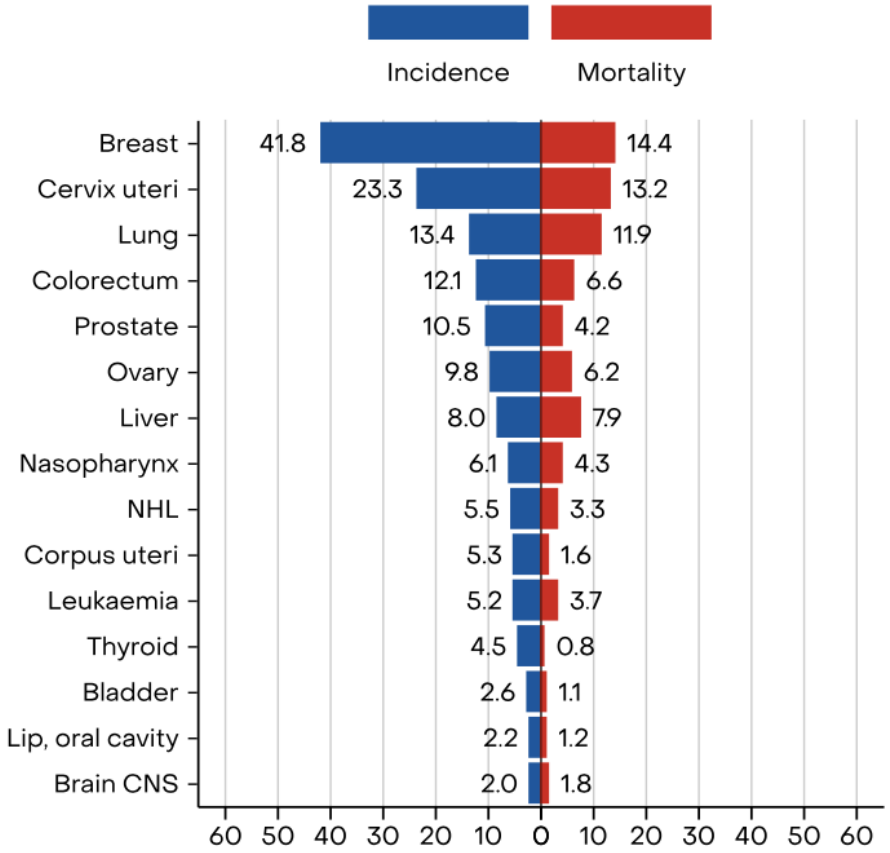
These differences are influenced by genetic and environmental factors, but **disparities** in healthcare resources, which result in suboptimal diagnosis and treatment of lymphoma, also contribute significantly to the observed regional variations in lymphoma outcomes.

Habr D, Singh M, Uehara R. Diversity in Oncology Clinical Trials: Current Landscape for Industry-Sponsored Clinical Trials in Asia. Oncol Ther. 2024;12:115–29.

Lymphoma in Indonesia

- Non-Hodgkin Lymphoma (NHL) : 16.175 new cases, ranking 7th among all cancer types and ranking 9th in deaths (9.440). Five-year prevalence: 50.496 cases

- Hodgkin Lymphoma (HL) : 1.294 new cases, ranking 27th among all cancer types and ranking 28th in deaths (373). Five-year prevalence: 4.541 cases

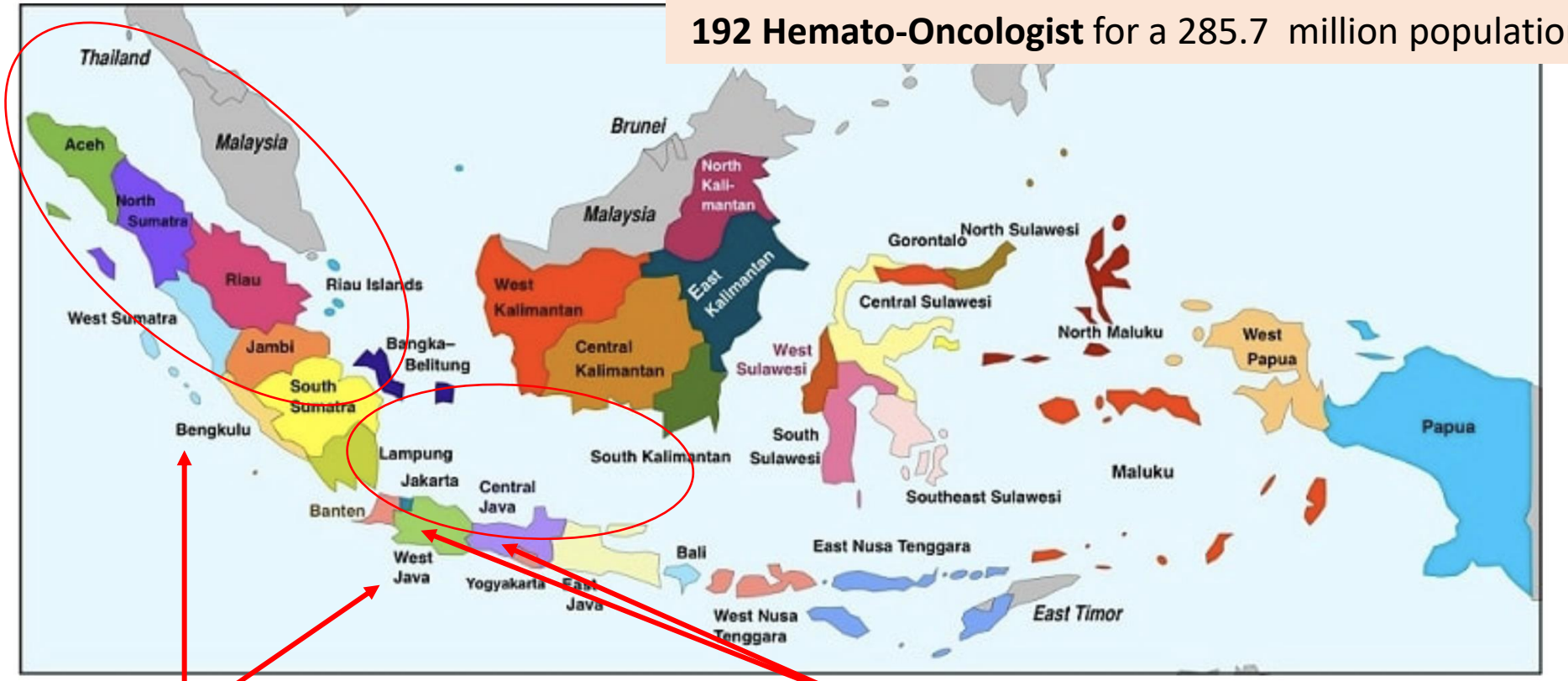


GLOBOCAN 2022

Indonesian current lymphoma care

Indonesia is the world's **4th most populous country** (275.5 million), presenting both a challenge and an opportunity for large-scale healthcare impact.

192 Hemato-Oncologist for a 285.7 million population



7 pathologic centre for full lymphoma panel
(only in Java & Sumatera Islands)

3 national Transplant Centre
(Only in Jakarta & Semarang)

restricted access/indication for certain drugs
0 access to novel treatment

Fifteen Years of Non-Hodgkin Lymphoma in an Indonesian National Referral Hospital: Epidemiologic Trends and Diagnostic Challenges

Agnes S. Harahap,; Maria F.Ham; Andree Kurniawan; Stefanny Charles ; Felix Wijovi ;Lugyanti Sukrisman

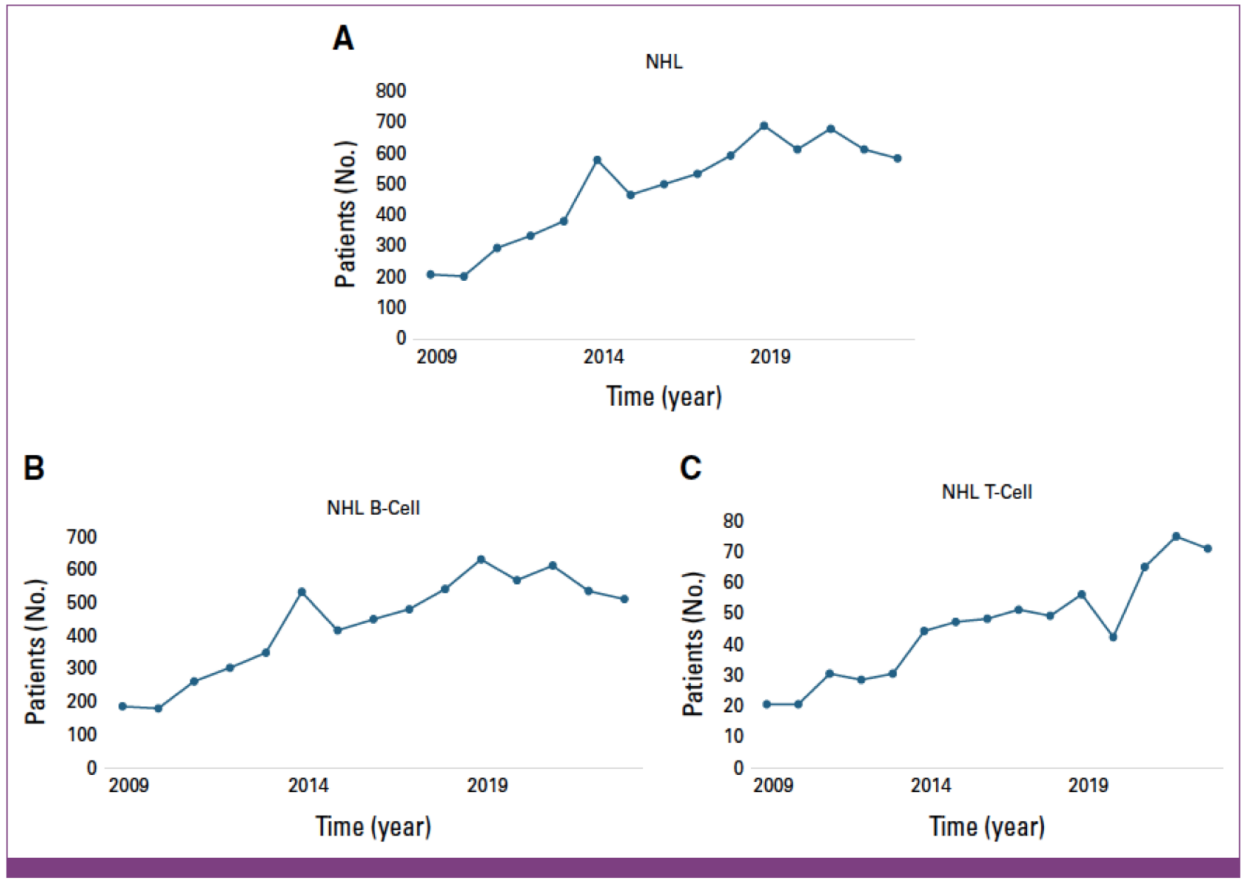


FIG 1. Annual distribution of total (A) NHL, (B) NHL B-cell, and (C) NHL T-cell. NHL, non-Hodgkin lymphoma.

Growing incidence and burden of Lymphoma in Indonesia

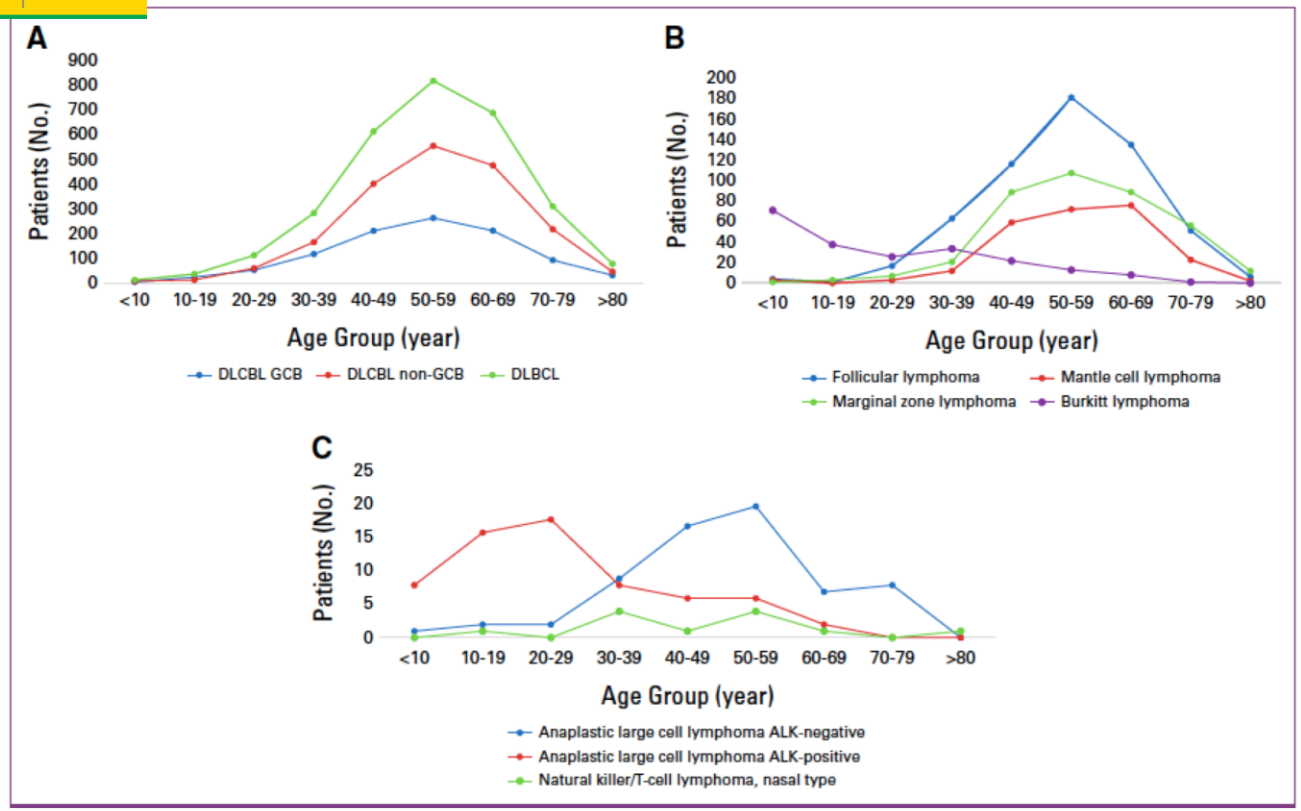
Insight from a fifteen-year cohort

Harahap et al. JCO Global Oncol. 2024

	NHL (N = 7,368)		
Characteristic	B-Cell Lymphoma (n = 6,677), No. (%)		T-Cell Lymphoma (n = 691), No. (%)
Sex		Sex	
Male	3,822 (57.2)	Male	459 (66.4)
Female	2,855 (42.8)	Female	232 (33.6)
Age, years		Age, years	
<10	156 (2.3)	<10	39 (5.6)
10-19	146 (2.2)	10-19	76 (11)
20-29	340 (5.1)	20-29	75 (10.9)
30-39	689 (10.3)	30-39	110 (15.9)
40-49	1,338 (20)	40-49	129 (18.7)
50-59	1,742 (26.1)	50-59	122 (17.7)
60-69	1,466 (22.1)	60-69	83 (12)
70-79	657 (9.8)	70-79	50 (7.2)
>80	143 (2.1)	>80	7 (1)
Subtype	6,677 (100)	Subtype	691 (100)
Precursor/lymphoblastic	70 (1.1)	Precursor/lymphoblastic	122 (17.7)
Mature		Mature	
SLL/CLL	55 (0.8)	Extranodal NK/T, nasal type	182 (26.3)
MCL	253 (3.8)	NK/T, nodal	3 (0.43)
Follicular	584 (8.8)	Mycosis fungoides	45 (6.51)
MZL	390 (5.8)	Lymphomatoid papulosis	4 (0.58)
Lymphoplasmacytic	30 (0.5)	ALCL	159 (23.0)
PCFCL	8 (0.1)	ALK-positive	66 (41.5)
DLBCL	4,592 (68.8)	ALK-negative	64 (40.3)
GCB	1,023 (22.3)	NA	29 (18.2)
Non-GCB	1,972 (42.9)	AITL	44 (6.4)
NA	1,597 (34.8)	PTCL-NOS	60 (8.7)
THRLBCL	6 (0.1)	MEITL	5 (0.7)
Plasmablastic	40 (0.6)	UCT	67 (9.7)
Primary mediastinal large B-cell	101 (1.5)		
Gray zone	16 (0.2)		
Burkitt	214 (3.2)		
UCB	318 (4.8)		

Harahap et al. JCO Global Oncol. 2024

- 7.368 pts, non-Hodgkin lymphoma (NHL) accounts for 89.2% of cases—similar to East Asia but higher than South Asia, where HL rates can reach 30%.
- B-cell lymphomas dominate (90.6% of NHL), with a notably high proportion of diffuse large B-cell lymphoma (DLBCL). Subtyping shows a **predominance of non-GCB over GCB**, unlike in Western countries.
- Follicular lymphoma (FL) remains underrepresented at 7.9%, far lower than the 10–20% seen in Europe and the U.S. Conversely, **extranodal NK/T-cell** lymphoma, nasal type, is more frequent than in Latin America or the West.
- Male predominance is seen across most subtypes, aligning with Asian and some European data, but diverging from U.S. trends showing narrowing gender gaps.



Lymphoma Type	Extranodal (%)	Nodal (%)	Lymphoma Type	Extranodal (%)	Nodal (%)
DLBCL	65.0	35.0	MZL	85.3	14.7
	Tonsil (14.9)	Cervical (58.2)		Eyes (63.4)	Cervical (73.7)
	URT (12.7)	Inguinal (12.4)		Head and neck (5.4)	Submandibular (12.3)
	Colon (9.0)	Axillary (6.9)		Stomach (4.5)	Inguinal (7.0)
FL	33.5	66.5	EN NK/T-CL	97.7	2.3
	Tonsil (17.4)	Cervical (42.7)		Nose and sinus (66.9)	Cervical (75.0)
	Salivary glands (7.9)	Inguinal (25.0)		URT (14.5)	Inguinal (25.0)
	Colon (5.6)	Axillary (8.1)		Eyes (2.9)	55.9
MCL	48.8	51.2	ALCL	44.1	Cervical (43.0)
	Tonsil (22.9)	Cervical (48.2)		Skin (19.0)	Inguinal (26.6)
	URT (14.3)	Inguinal (13.6)		Upper extremities (15.9)	Axillary (10.1)
	Colon (11.4)	Axillary (7.3)		Lower extremities (7.9)	

Harahap et al. JCO Global Oncol. 2024

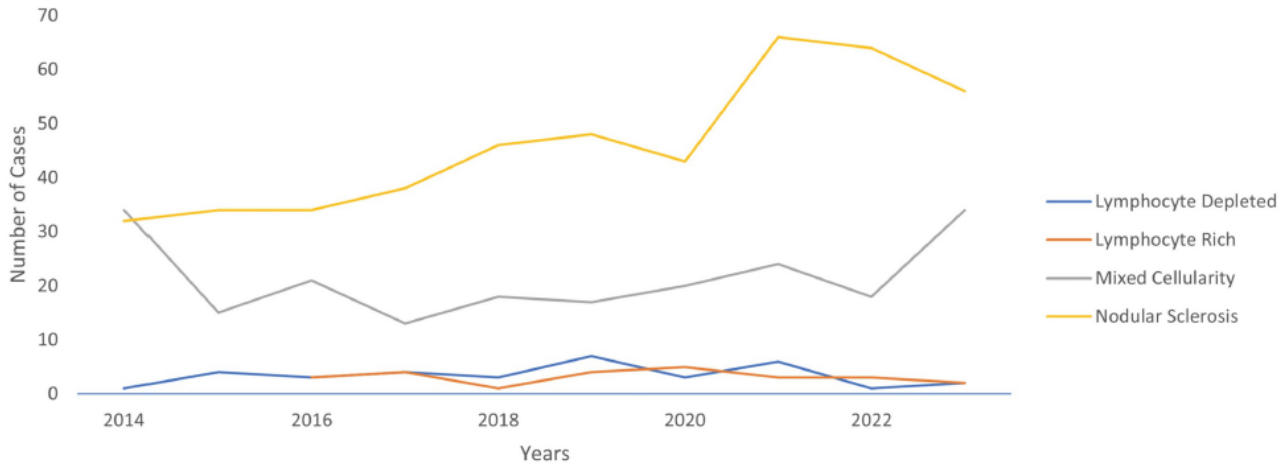
- Patients present at **younger ages than in Western** countries: B-cell lymphomas peak at 50–59, T-cell at 40–49. Burkitt lymphoma shows a unique bimodal pattern, including a pediatric peak.

- **Extranodal involvement occurred in 53.3% of cases (51.2% of B-NHL and 58.2% of T-NHL)** —far higher than typical Western rates (~30%). Common extranodal sites include the head, neck, and ocular region, not the GI tract as often seen elsewhere.

- Limited use of CD30 testing and restricted access to therapies like brentuximab vedotin and rituximab contrast sharply with standards in higher-income countries, revealing **treatment inequities despite rising case detection.**

A Decade of Prevalence and Clinicopathological Insights Into Classical Hodgkin Lymphoma: A Study From an Indonesian Tertiary Hospital

Agnes S. Harahap , Stefanny Charles , Maria F. Ham

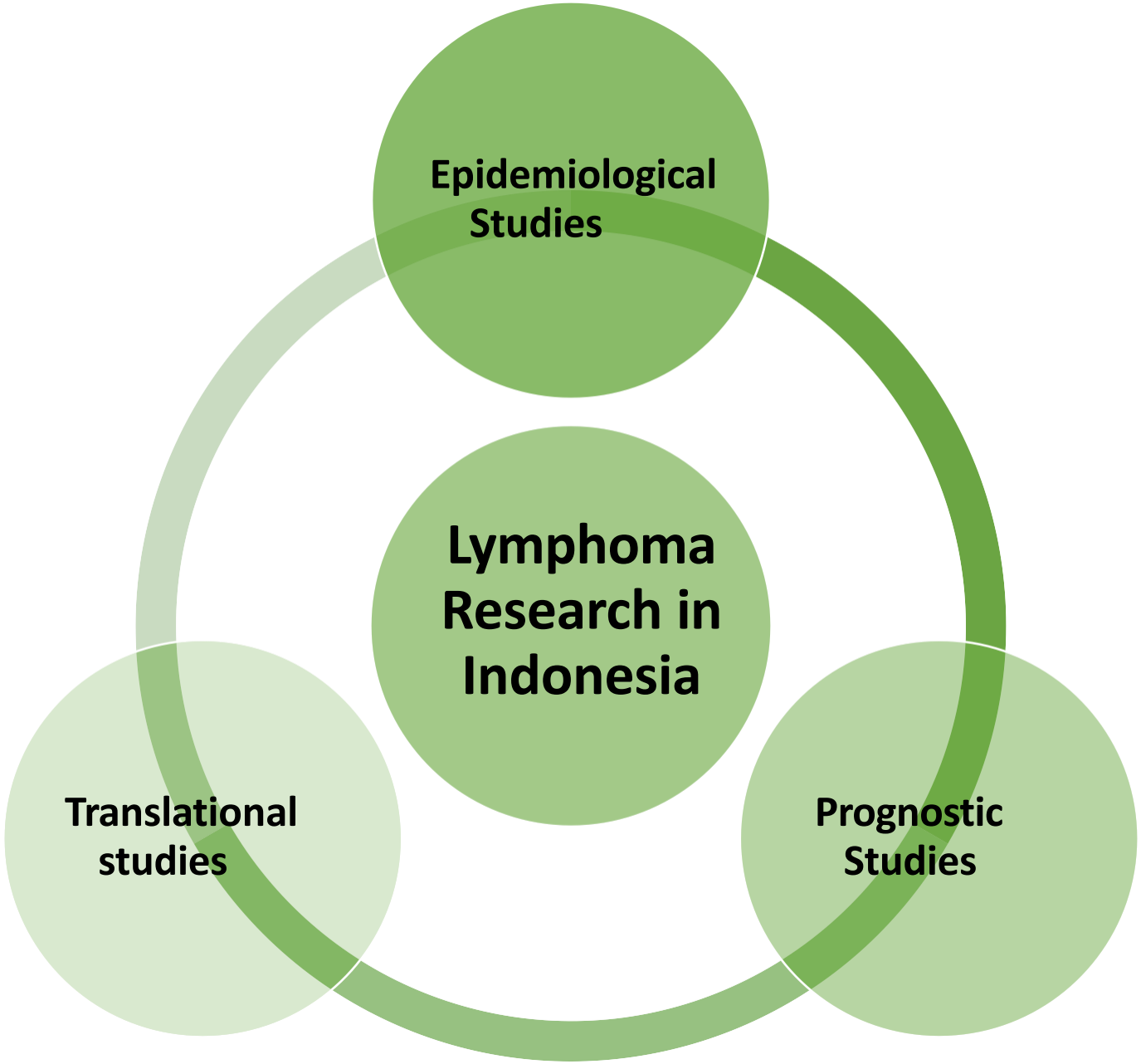


Subtypes	Age <45	Age ≥45	P-value	OR	95% CI (Lower-Upper)
Nodular sclerosis	395	66		2.21	1.35 - 3.21
Mixed cellularity	155	59	<0.001*	0.49	0.33 - 0.71
Lymphocyte rich	24	6		0.94	0.87 - 2.35
Lymphocyte depleted	24	10		0.55	0.26 - 1.17

Key Findings:

- cHL accounts for 91.3% of all HL cases (9.1% of total lymphoid malignancies)
- Rising trend in annual cHL cases, peaking in 2021 despite fluctuations
- Most affected group: ages 20–29 (32.34%); male predominance (53.59%)
- 84.31% nodal, mainly cervical region (75.56%); mediastinum is most common extranodal site (70.71%)
- Dominant histologic type: Nodular Sclerosis (62.38%), followed by Mixed Cellularity, LDCHL, LRCHL

Harahap et al. Cureus 16 (11) : e73482.2024


Epidemiological Studies
Lymphoma Research in Indonesia
Translational studies
Prognostic Studies

Association of CD47, SIRP-alpha, and NLR with 3-year EFS Among DLBCL Patients Treated with R-CHOP

Nia Siregar, Chospiadi I Maria F, Ikhwan Rinaldi

	Early Relapse	Refractory Disease
Sex		
- Male	7 (46.7%)	8 (88.9%)
- Female	8 (53.3%)	1 (11.1%)
LDH (n=21)		
- High	12 (85.7%)	6 (85.7%)
- Normal	2 (14.3%)	1 (14.3%)
B symptoms		
- Yes	13 (86.7%)	6 (66.7%)
- No	2 (13.3%)	3 (33.3%)
Stage		
- 1 – 2	9 (60%)	2 (22.2%)
- 3 – 4	6 (40%)	7 (53.8%)
ECOG		
- 0 – 1	12 (80%)	9 (100%)
- ≥2	3 (20%)	0 (0)
Extranodal		
- No	5 (33.3%)	1 (11.1%)
- Yes	10 (66.7%)	8 (88.9%)
IPI score (n=21)		
- Low – low intermediate	9 (60%)	2 (25%)
- High intermediate – high	6 (40%)	6 (75%)
Ki67 (n=22)		
- <70	6 (42.9%)	2 (25%)
- ≥70	8 (57.1%)	6 (75%)
COO (n=15)		
- GCB	1 (12.5%)	3 (42.9%)
- Non-GCB	7 (87.5%)	4 (57.1%)

- 107 DLBCL patients (RSCM, Dharmais, Persahabatan, MRCCC) treated with RCHOP from 2017 – 2021, 24 patients **(22.42%)** experienced primary refractory **(37.5%)** and early relapse **(62.5%).**
- All patients were non-elderly (<60 y.o) with a median age of 42.5 (SD 11.01) years.
- Second-line Th/ : chemotherapy (54.2% R-ICE)
- **3-year OS : 37.5%.**

Unpublished Data
Slide credit : Nia Siregar

Prognostic Role of Monocyte, Macrophages, and Lymphocyte in DLBCL patients Receiving R-CHOP : A Two-Year Survival Analisis

Faisal Syarifuddin; Anna Mira Lubis; Agnes Harahap ;Hamzah Shatri

Aim: To evaluate the association between absolute monocyte count (AMC), tumor-associated macrophages (TAMs), and tumor-infiltrating lymphocytes (TILs) on 2-year event-free survival in patients with diffuse large B-cell lymphoma (DLBCL) who received RCHOP chemotherapy.

Table 1. Demographic and clinical characteristics of study subjects.

Variable	Total (%)
Gender (n = 108)	
Male	56 (52)
Female	52 (48)
Age (Median 53 years, range 18-88 years)	
≤60 years	72 (66,7)
>60 years	36 (33,3)
Ann Arbor Staging (n = 108)	
I or II	60 (55,6)
III or IV	48 (44,4)
Extranodal lesion (n = 108)	
0-1	89 (82)
>1	19 (18)
Serum Lactate Dehydrogenase (LDH) (n = 99)	
≤1 x normal	18 (18,2)
>1 x normal	81 (81,8)
IPI Score (n = 99)	
Low risk (0-2)	75 (75,8)
High risk (3-5)	24 (24,2)
Protein expression (n = 108)	
CD8, Median (IQR)	0,23 (0,14-0,39)
CD163, Median (IQR)	21,5 (14,25-27,0)
AMC (n = 108), Median (IQR)	619,2 (455,0-759,45)
Subtypes based on Hans algorithm (n = 108)	
GCB	33 (30.6)
Non-GCB	75 (69,4)
Events in 2 years (n = 108)	
Yes	58 (53,7)
No	46 (42,6)
No Information	4 (3,7)

- This retrospective study assessed 108 DLBCL patients treated with RCHOP at RSCM (2014–2021), analyzing the role of immune biomarkers in 2-year event-free survival (EFS).
- 2-year EFS = 42.6%
- AMC showed a **moderate positive correlation** with TAMs (CD163), and a **moderate negative correlation** with TILs (CD8), both statistically significant ($p < 0.001$) → immunological link between peripheral monocyte and TME

Syarifuddin F, et al. F1000Research. 2025

Prognostic Role of Monocyte, Macrophages, and Lymphocyte in DLBCL patients Receiving R-CHOP : A Two-Year Survival Analisis

Faisal Syarifuddin; Anna M.Lubis; Agnes S. Harahap ;Hamzah Shatri

Table 2. The relationship of different variables on patient survival.

Variable	Event		HR (CI 95%)	p
	Yes (%)	No (%)		
AMC				
≥631	48 (90,6)	5 (9,4)	9,817 (4,891-19,703)	<0,001
<631	10 (18,2)	45 (81,8)		
CD163				
>23	44 (95,7)	2 (4,3)	8,571 (4,576-16,053)	<0,0001
<23	14 (22,6)	48 (77,4)		
CD8				
≥0,275	9 (19,2)	48 (80,8)	0,128 (0.064-0.256)	<0,001
<0,275	48 (85,7)	8 (14,3)		
GCB/nonGCB				
GCB	15 (45,5)	18 (54,5)	0,749 (0,416-1,349)	0,336
nonGCB	43 (57,3)	32 (42,7)		
IPI				
High	22 (91,7)	2 (8,3)	3,075 (1,768-5,349)	<0,001
Low	32 (42,7)	43 (57,3)		

- Elevated AMC and high CD163+ TAMs expression were associated with **poor 2-year EFS**, while higher CD8+ TILs were associated with **better outcomes**.
- This immune profile suggests an immunosuppressive tumor microenvironment contributes to **poorer prognosis** in Indonesian DLBCL patients.
- **AMC is a simple, cost-effective biomarker that correlates with both TAM and TIL levels**—making it a practical tool for clinical decision-making.
- Incorporating these immune markers into risk stratification may **enhance patient selection** for novel immunomodulatory therapies or intensified treatment regimens.

Syarifuddin F, et al. F1000Research. 2025

Adult Hodgkin's Lymphoma in Indonesian National Cancer Center Hospital: An Observational Study

Hilman Tadjoedin

Variable	N	%
B-Symptoms (N = 136)		
Yes	41	30.1
No	95	69.9
ECOG (N = 136)		
0	60	44.4
1	56	41.5
2	17	12.6
3	3	1.5
BMI (N = 144)		
Underweight	27	18.8
Normal	57	39.6
Overweight	28	19.4
Obesity	32	22.2
Comorbidity		
DM	14	10.3
Hypertension	11	8.1
CKD	2	1.5
Heart failure	1	0.7
Acute coronary syndrome	1	0.7
Hepatitis B	1	0.7
Epilepsy	1	0.7
LDH (N = 140)		
Mean (SD)	460.37 (290.023)	
Median (Min-Max)	379.5 (117–2019)	
> 240	120	85.7
≤ 240	20	14.3
Hemoglobin (N = 155)		
Mean (SD)	11.4 (2.20)	
Median (Min-Max)	11.8 (5.2–16.5)	
< 10.5	44	28.4
≥ 10.5	111	71.6
Leukocyte (N = 155)		
Mean (SD)	14,328,58 (8,849,45)	
Median (Min-Max)	11,540 (2,400–41,540)	
> 15,000	52	33.5
≤ 15,000	103	66.5

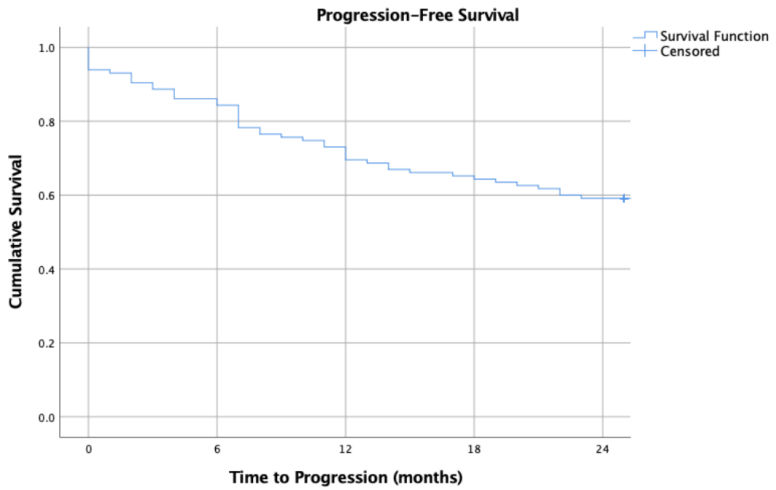
Variable	N	%
Platelet (N = 155)		
Mean (SD)	400,412 (165,555)	
Median (Min–Max)	395,000 (28,000–1,052,000)	
> 350,000	92	59.4
≤ 350,000	63	40.6
Extranodal (N = 156)		
Yes	30	19.2
No	126	80.8
Extranodal location		
Brain	1	2.6
Lung	8	22.5
Pleura	6	16.1
Bone marrow	12	32.2
Digestive tract	1	2.6
Liver	2	5.3
Lien	5	13.4
Pericardium	2	5.3
Stage (N = 149)		
I	1	0.7
II	76	51.0
III	42	28.2
IV	30	20.1
Chemotherapy (N = 110)		
ABVD	102	92.7
ICE	4	3.6
DHAP	2	1.8
BV	2	1.8
Outcome (N = 130)		
Median	65 months	
Death	40	30.8
Survive	90	69.2
Lost to follow-up	47	26.6

- 5-year study of 177 HL : median age of 32 and male predominance, aligning with Meng et al. (38 years, China) and studies by Basudan et al. (Saudi Arabia) and Anggorowati et al. (Indonesia).
- B-symptoms were present in 30% of patients, consistent with Kaseb et al. and Boo et al. (36.2%, Malaysia), supporting their association with advanced stages (III–IV).
- DM and hypertension were the most common comorbidities, reflecting national trends (IDF, Mashuri et al.).
- Mortality rate (30.8%) was higher than in other reports (9.1%, Hannuksela et al; 14.1%, Vries et al), likely due to advanced-stage presentation, bone marrow metastasis, and high LDH levels and upfront treatment option.

Tadjoedin H. Indonesian Journal of Cancer, Vol 18(4), 466–470, December 2024

Advanced stage, thrombocytosis, and elevated LDH as independent prognostic factors of two-year progression-free survival in Hodgkin's lymphoma patients

Muhamad R. Prabowo, Anna M. Lubis, Robert Sinto



Progression-Free Survival	N (study)	Western countries	Asian Countries
Progression-free within 24 months	68 (59.13%)	91.2% [Kredátusová et al]	71.1% [Boo et al]
Progressive within 24 months	47 (40.87%)	8.8% [Kredátusová et al]	28.9% [Boo et al]
Relapsed	6 (5.22%)		
Refractory	26 (22.61%)		
Death	15 (13.04%)		

Key Findings:

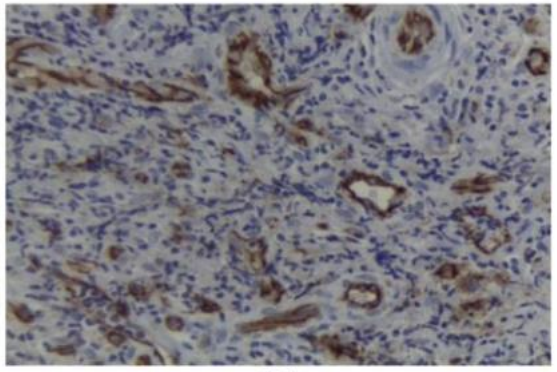
- **2-year PFS was 59.13%** → lower than studies from western and Asian countries
- 5.22% relapse, 22.61% refractory
- Advanced stage (HR 7.85), Plt count > 450.000 (HR 2.77) and LDH > 250 were prognostic factors
- Late stadium (2 points), platelets >450.000 (1 point), LDH >250 IU/L (1 point) may serve as prognostic scoring for two-year progression-free survival for Hodgkin Lymphoma
- Risk groups: low (score 0–1), intermediate (score 2), high (score 3–4). Scoring system showed good calibration (Hosmer-Lemeshow p = 0.467).

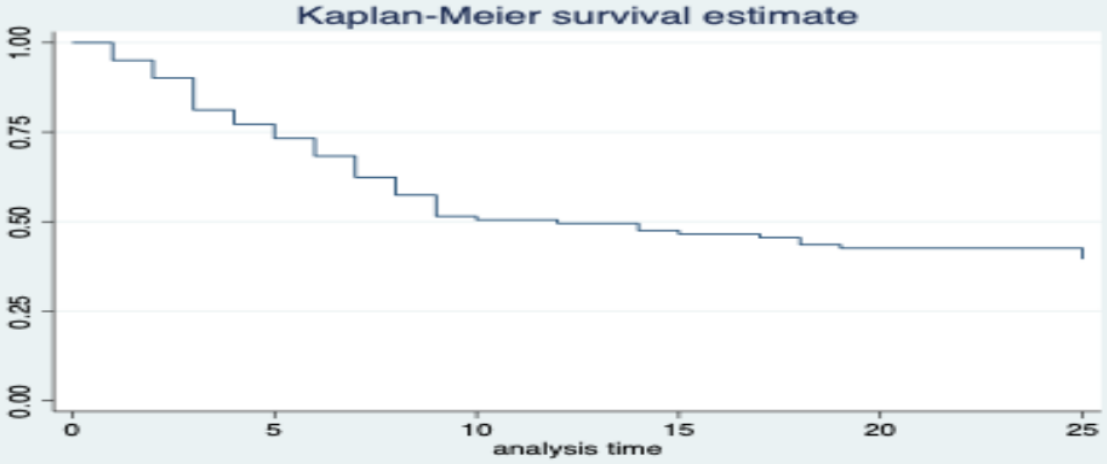
Manuscript under review

High Microvessel Density Expression Predicts Two-Year Event-Free Survival in Classical Hodgkin Lymphoma Treated with ABVD Chemotherapy

Devi A.R. Amelia; Anna M.Lubis: Agnes S. Harahap; Sukamto Koesnoe

Aim: To evaluate the impact of microvessel density (MVD), as measured by CD31 immunohistochemical staining, on 2-year event-free survival in adult patients with classical Hodgkin lymphoma (cHL) treated with first-line ABVD chemotherapy.





- This retrospective cohort study analyzed adult cHL patients treated with ABVD between 2019–2022
- MVD, assessed using **CD31 IHC**, was evaluated for its association with **2-year event-free survival (EFS)**.
- The majority were **young adult females**, with **advanced-stage** and **nodular sclerosis** subtype.
- **mEFS was 12 mo, with The 2-year EFS was 41.6% (much lower than prior studies, that surpass 70%)**
- Patients with **MVD ≥16.5 had a significantly lower EFS: HR 2.42**
- **High MVD** may reflect a **pro-tumor angiogenic environment**, suggesting more aggressive disease biology and tumor progression
- These findings suggest **MVD could enhance risk stratification** beyond standard clinical staging
- This is among the **first studies in Indonesia** exploring MVD in cHL.
- Calls for **external validation** and integration into a **comprehensive prognostic model**.

Manuscript under review

Quality of life in older survivors of non-Hodgkin's lymphoma who received chemotherapy and related factors

Dina.A. Ariestine, Nina K. Sari, Ikhwan Rinaldi, Murdani Abdullan

Cross-sectional study at 3 public hospital, pts > 6) yo, diagnosed as NHL and received at least 4 cycle of Chemoimmunotherapy, exploring factors related QoL in older pts with NHL>

Variable	$n = 62$
Quality of life	
SF-36, mean (SD)	61.85 (SD 14.09)
EORTC QLQ-C30, median (range)	66.67 (16.67–100)

Variable	Good QoL	Reduced QoL
	n (%)	*n* (%)
SF-36		
Physical component summary (PCS)	52 (83.9)	10 (16.1)
Mental component summary (MCS)	53 (85.5)	9 (14.5)
EORTC QLQ-C30		
Functional scales	58 (93.5)	4 (6.5)
Symptoms scales	62 (100)	0 (0)
Global health status	41 (66.1)	21 (33.9)

Key Findings:

- **High QoL Scores Overall**:
  Majority of patients reported good QoL — **SF-36 MCS (85.5%)**, PCS (83.9%), and **EORTC QLQ-C30 functional scale (93.5%)**.
- **Depression Strongly Associated with Poor QoL**:
  Depression significantly impacted both SF-36 (MCS PR 12.086) and EORTC functional scale (PR 9.333).
- **Frailty Reduces QoL**:
  Frail patients had significantly lower QoL, especially in SF-36 PCS (PR 5.622) and EORTC domains.
- **Performance Status is a Key Predictor**:
  Poor ECOG/Karnofsky scores were strongly associated with lower QoL; ECOG had a high PR of **171** in EORTC functional scale.
- **Minimal Symptoms Reported**:
  EORTC symptom scale scores were near zero for most symptoms, except fatigue (avg 22.2).

Ariestine D.A, et ak. J Geriatr Oncol.2021

Lymphoma Ongoing Research

A Translational Genomic Approach to Diffuse Large B-Cell Lymphoma (DLBCL) for the Identification of Subtype and Relapse Biomarkers

Tumor Microenvironment Prognostic Value on Relapsed/Refractoriness in Diffuse Large B-Cell Lymphoma Patients Treated with R-CHOP

Therapeutic Evaluation of Non-Hodgkin's Lymphoma Patients : Comparing CT/PET-Scan and ctDNA

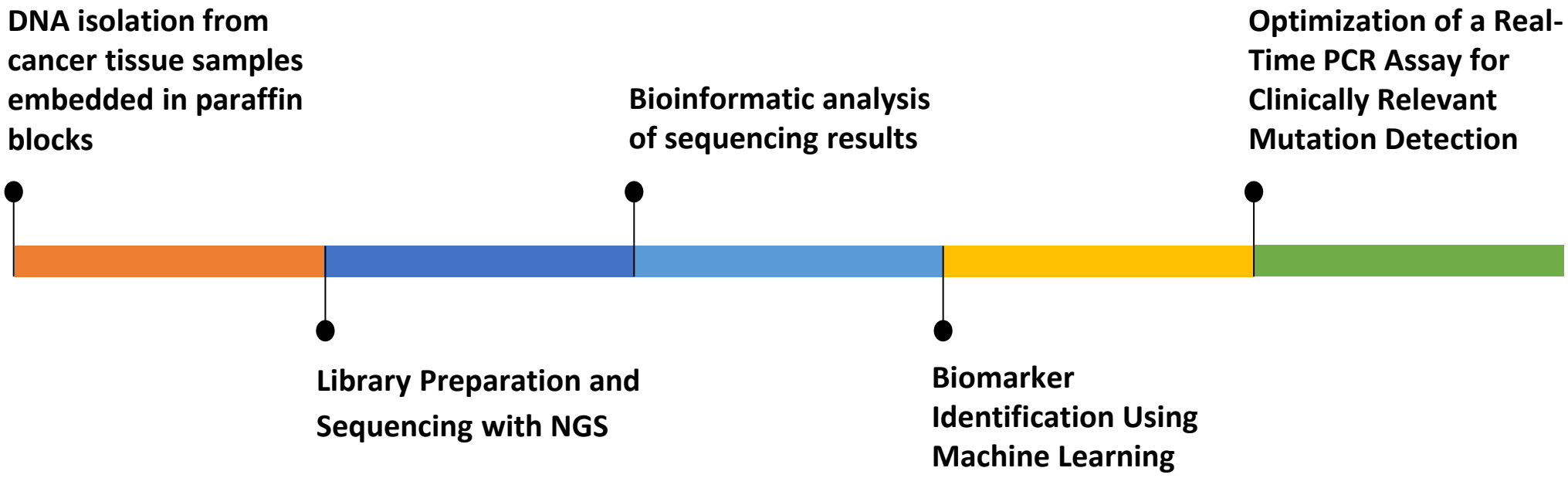
The Relationship Between Epstein-Barr Virus Infection and 2-Year Event-Free Survival in Patients with Diffuse Large B-Cell Lymphoma Receiving R-CHOP Therapy

The Role of TME in patients with DLBCL receiving R-CHOP : focus on CD47, SIRPA, C-MYC, HIF-1, PD-1, PDL-1, CD68, CD163 and VEGF expression

A Translational Genomic Approach to Diffuse Large B-Cell Lymphoma (DLBCL) for the Identification of Subtype and Relapse Biomarkers

Rafika I Paramita; Ikhwan Rinaldi; Noorwati Sutandyo; Grace Shalmon; Maria F. Ham; Agnes S. Harahap

Aim: This study aims to establish a **qPCR-based** detection method for DLBCL subtypes and relapse using population-specific gene mutation biomarkers identified through NGS.



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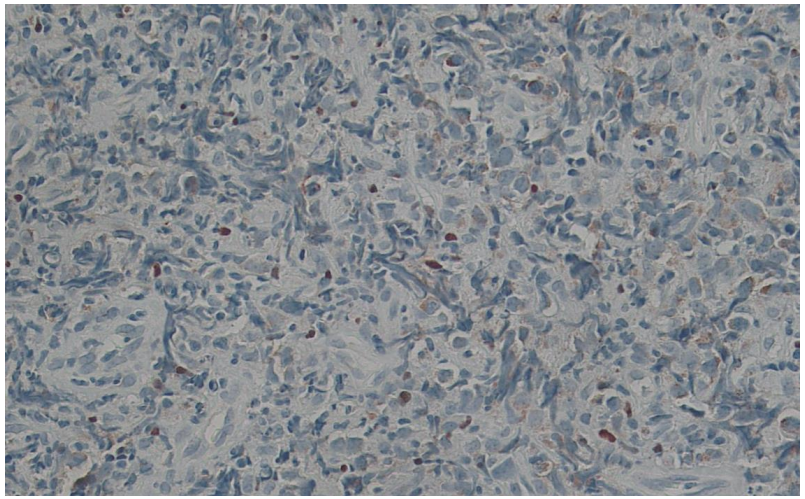
The Relationship Between Epstein-Barr Virus Positivity with Relapsed/Refractory Status and 2-Year Event-Free Survival in Diffuse Large B-Cell Lymphoma Patients Receiving R-CHOP Therapy

Anna M. Lubis; Agnes S. Harahap; Muhammad O. Baskoro

Aim: This study aims to determine the relationship between EBV positivity with Relapsed/Refractory and 2-year EFS in patients with Diffuse Large B-Cell Lymphoma (DLBCL) receiving R-CHOP therapy CMH



Variable	N (%)
Sex	
Male	47 (52.8)
Female	42 (47.2)
Age (mean 53.15, SD ±13.62)	
≤ 60	62 (69.7)
>60	27 (30.3)
Hans Algorithm	
GCB	26 (29.2)
Non-GCB	63 (70.8)
2-Year Event, median months (Q1-Q3)	13 (11-16)
Yes	48 (53.9)
No	41 (46.1)
Refractory/Relapsed	
Yes	15 (16.9)
No	74 (83.1)
EBER	
Positive	13 (85.4)
Negative	76 (14.6)

Temporary Result

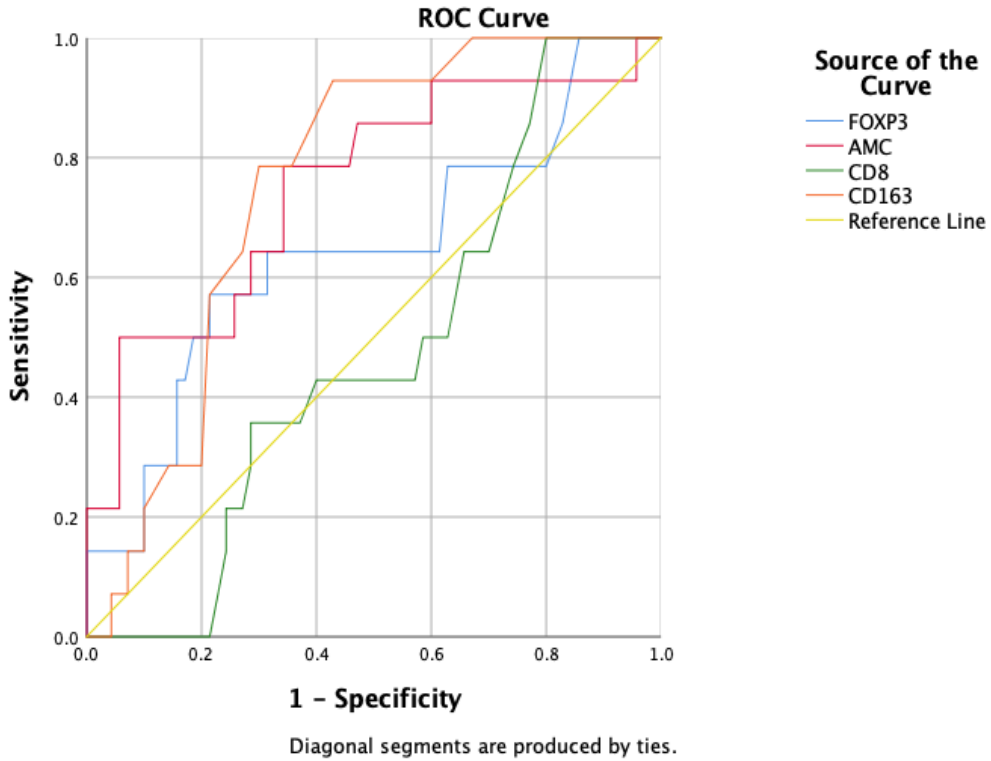
	Early relapsed/ primary refractory		p	2-year Event		p
	Yes	No		Yes	No	
EBER						
Positive	4 (30.8%)	9 (69.2%)	0.175	6 (46.2%)	7 (53.8%)	0.543
Negative	11 (14.5%)	65 (85.5%)		42 (55.3%)	34 (44.7%)	
IPI						
≤2	12 (80%)	55 (74.3%)	0.754	29 (60.4%)	38 (92.7%)	0.001
>2	3 (20%)	19 (25.7%)		19 (39.6%)	3 (7.3%)	
Sex						
Male	9 (60%)	38 (51.4%)	0.539	28 (58.3%)	19 (46.3%)	0.258
Female	6 (40)	36 (48.6%)		20 (41.7%)	22 (53.7%)	
Age						
<60	12 (80)	50 (67.6%)	0.539	28 (58.3%)	34 (82.9%)	0.01
≥60	3 (20%)	24 (32.4%)		20 (41.7%)	7 (17.1%)	

- This analyzed 89 DLBCL patient samples to evaluate the relationship between EBV i with Relapsed/Refractory and 2-year EFS.
- Out of 89 samples, 13 (**14.6%**) were EBER-positive, **30.8% of which experienced refractory/relapsed**, compared to 14.5% in EBER-negative samples.
- 2 year events between EBER-positive and EBER-negative is relatively similar **(46.2% vs 55.3%)**

Tumor Microenvironment Prognostic Value on Early Relapse/ Primary Refractory in Diffuse Large B-Cell Lymphoma Patients Treated with R-CHOP

Anna M. Lubis; Agnes S. Harahap; Muhammad O. Baskoro

Temporary Result



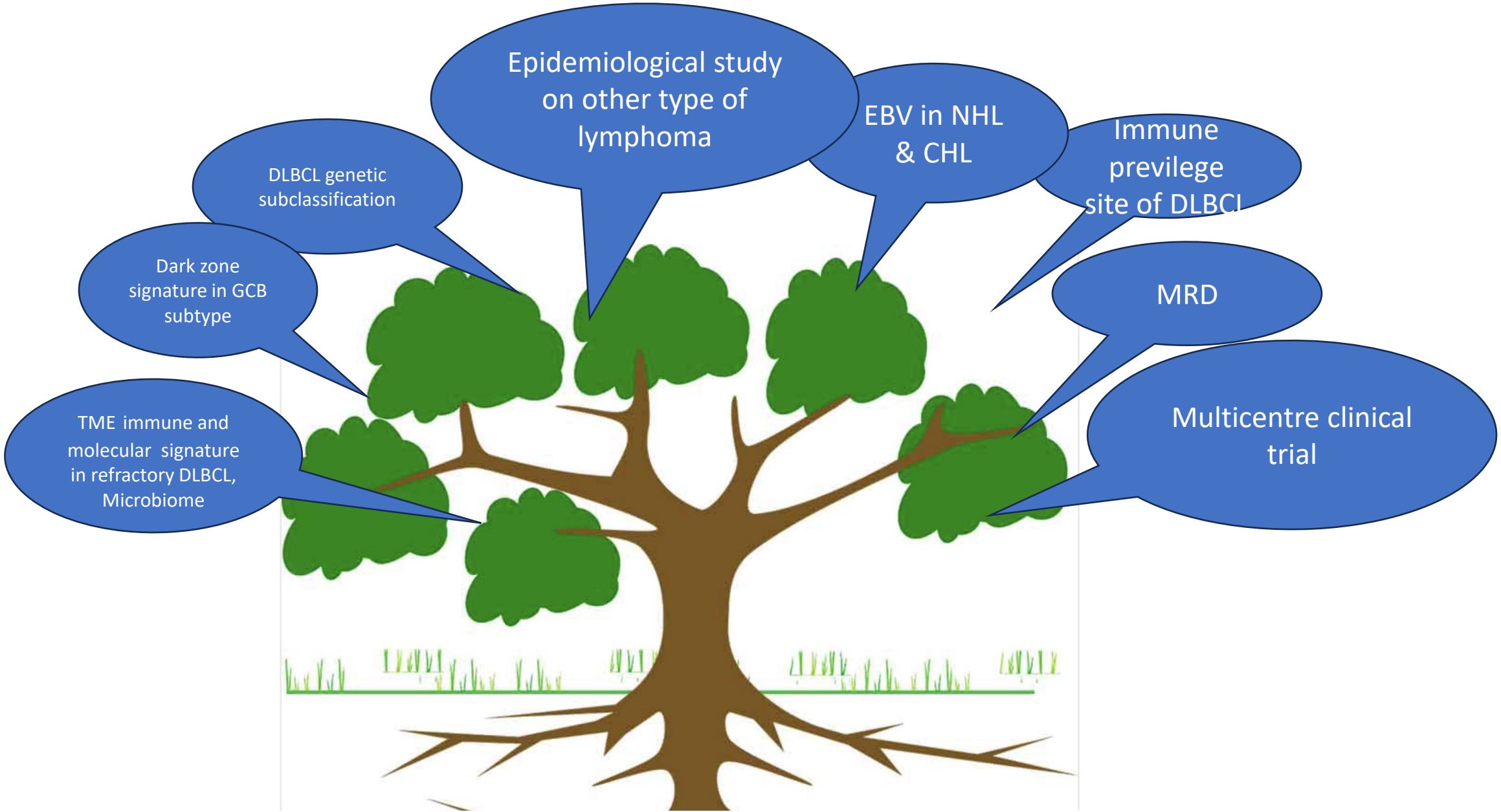
	Early relapsed/ primary refractory		p
	Yes	No	
FOXP3			
>19.1	9 (32.1%)	19 (67.9%)	0.014
≤19.1	6 (9.8%)	55 (90.2%)	
AMC			
>690.6	12 (33.3%)	24 (66.7%)	0.001
≤690.6	3 (5.7%)	50 (94.3%)	
CD8			
>11.5	15 (20%)	60 (80%)	0.115
≤11.5	0 (0%)	14 (100%)	
CD163			
>23.5	12 (33.3%)	24 (66.7%)	0.001
≤23.5	3 (5.7%)	50 (94.3%)	

- Tumor microenvironment may served as predictor for early relapsed/ primary refractory in DLBCL patients
- Higher density of FOXP3, AMC, and CD163 was associated with higher cases of early relapsed/ primary refractory in DLBCL patients receiving R-CHOP therapy

Key Findings Among Studies

Findings	Indonesian Studies	Comparison with other Countries/Studies
DLBCL	Predominance of non-GCB over GCB (65,8%-70,8% of Non-GCB)	Similar findings with Asian population (60-72%), and higher than European (40-50%) [Shiozawa et al]
	Refractory/early relapsed case of DLBCL receiving R-CHOP treatment: 16,9% - 22.4% of cases	Slightly higher than Asian studies (10-15%) [Suzuki et al] and Western studies (14.8%) [Harryson et al]
NHL	Extranodal involvement occurred in 53.3% of cases	Higher than previous studies among europeans (30%) [Weber et al] but similar to Asians population (78.3%) [Das et al]
Hodgkin Lymphoma	2 year event free survival: 41.6% of cases	Lower than both western (91.2%) [Kredátusová et al] and Asian studies (71.1%) [Boo et al]

FUTURE RESEARCH



However,

Indonesia still lacks in Lymphoma Clinical Trials

Despite,

Competitive Costs

Indonesia offers cost-effective clinical trials with competitive treatment, investigator, site, and CRO fees.

Highly Populated Nation

With 279+ million people, Indonesia has a large, diverse, and treatment-naive population ideal for clinical trials.

Prompt Start-Up Procedures

Regulatory improvements enable faster trial starts with parallel Ethics Committee and BPOM submissions, averaging 3-4 months approval.

0% Value-Added Tax (VAT)

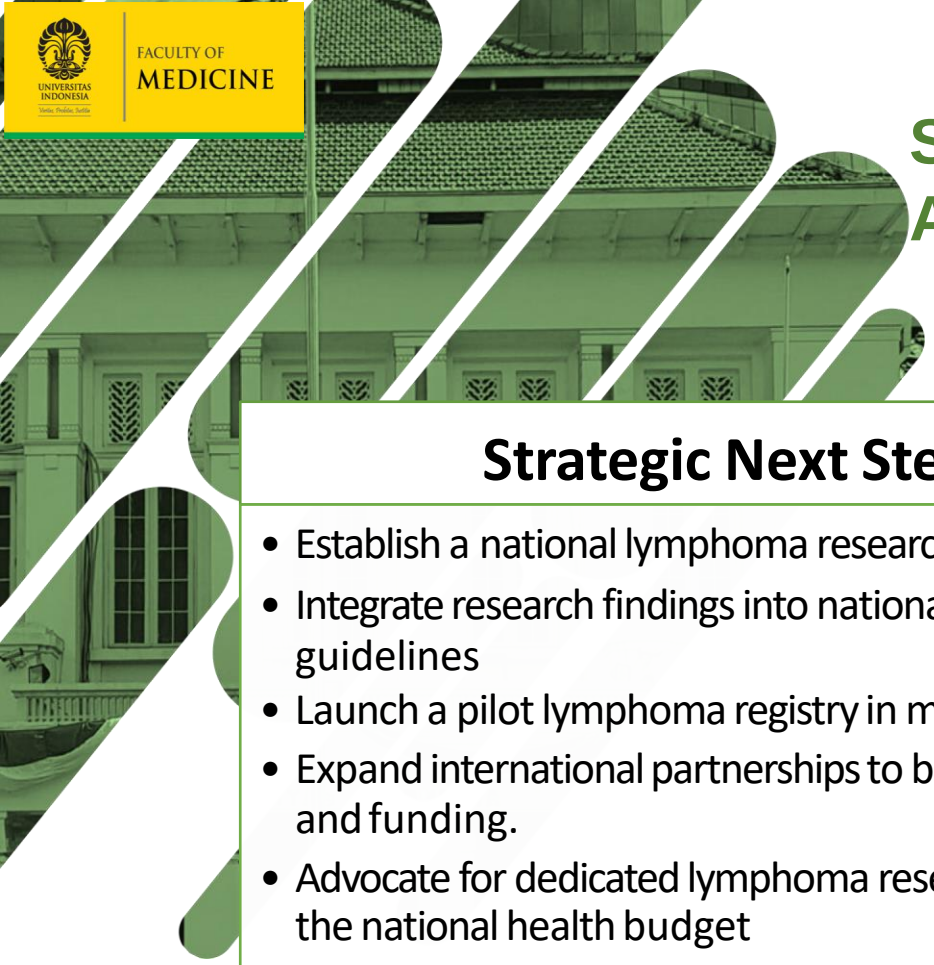
Indonesia provides a 0% VAT rate if the studied product won't be marketed locally, boosting cost savings.

Potential Pharmaceutical Market Revenue

By 2025, Indonesia's clinical trial market is projected to reach USD 3.79 billion—the largest in Southeast Asia.

Lymphoma Research in Indonesia

Strengths	Weaknesses
• Growing pool of oncology and hematology specialists • Active academic centers (e.g., RS Kanker Dharmais, RSCM). • Initial infrastructure for molecular diagnostics and clinical trials. • Government recognition of cancer as a priority. • Large, diverse patient population ideal for real-world studies	• Limited funding focused specifically on lymphoma research. • Diagnostic tools unevenly distributed; concentrated in urban centers. • Fragmented data and absence of a national lymphoma registry. • Few translational research projects • Regulatory processes can slow project initiation.



Strengthening Lymphoma Research and Care: A Call for Global Collaboration in Indonesia

Strategic Next Steps

- Establish a national lymphoma research network.
- Integrate research findings into national treatment guidelines
- Launch a pilot lymphoma registry in major hospitals.
- Expand international partnerships to bring in expertise and funding.
- Advocate for dedicated lymphoma research funding in the national health budget
- Develop collaborative multicenter studies on local lymphoma subtypes
- Design context-appropriate, affordable diagnostic panels.
- Create training and mentorship programs to retain talent

Call for Action

- We invite fellow local clinicians and researchers to **collaborate in establishing a robust National Lymphoma Research Network**.
- We invite fellow global clinicians and researchers **advancing genomic and clinical research through shared data and innovative methodologies**
- We call upon global research institutions and CROs to **initiate multicenter clinical trials in Indonesia**
- We encourage government and foreign investment in **enhancing diagnostic infrastructure and access to lymphoma therapies** in Indonesia.

To Ponder…

Research is not just academic — it is a tool to transform patient care, reduce inequality, and build a healthier future for all Indonesians with lymphoma.

Indonesian Society of Hematology and Medical-Oncology