

Non-Hodgkin Lymphoma landscape in Asia-Pacific

2021



Contents

1. EPIDEMIOLOGY OVERVIEW AND CLINICAL ACTIVITY	3
2. STANDARD OF CARE	6
3. KEY OPINION LEADERS IN NON-HODGKIN LYMPHOMA	7
4. NOVOTECH OVERVIEW.....	8

1. Epidemiology overview and Clinical activity

Lymphoma, including Hodgkin's lymphoma (HL) and non-Hodgkin's lymphoma (NHL), is one of the most common cancers worldwide. The most usual form of lymphoma is non-Hodgkin lymphoma. In 2016, the incident cases and death number were 73,000 and 28,700 due to HL globally, and 461,000 and 239,600 due to NHL, respectively. According to the statistics of GLOBOCAN 2018, lymphoma accounted for 3% of the 18 million new cancer cases (0.4% due to HL and 3% due to NHL) and 3% of the 9.6 million cancer deaths worldwide in 2018 (0.3% due to HL and 3% due to NHL). Compared with the statistics of GLOBOCAN 2012, both new cases and deaths associated with lymphoma increased in 2018. [1]

NHL is more common in men, the male to female ratio is 1.6 in Asia compared to 1.2 and 1.1 in North America and Europe, respectively. The age-adjusted incidence rates for NHL in men and women in India are 3/100,000 and 2/100,000, respectively. In 2012, the burden of NHL in India was estimated to have an incidence rate of 2/100,000 (23,801 new cases) and a mortality rate of 2/100,000 (16,597 deaths). According to the GLOBOCAN 2012 data, the ratio of mortality to incidence in India is 70%. [2]

As per the National Central Cancer Registry of China, it was estimated that lymphoma and myeloma accounted for 2% (88,200 new cases) of all new cancer cases and 2% (52,100 deaths) of all cancer deaths in 2015. It was estimated that there were nearly 7000 new cases of HL and 68,500 of NHL in China in 2016. [3]

In 2013, there were over 5,500 new cases of non-Hodgkin lymphoma in Australia (3,151 new cases in men and 2,438 new cases in women). In 2013, the age standardised incidence rate was 22 cases per 100,000 persons. The incidence of NHL has increased steadily from 1982 (1,918 cases) to 2013 (5,589 cases). Incidence of NHL increases with age, with the average age at diagnosis from males at 64 and females 67. Up to 85 years, males have a greater risk of developing NHL (1 in 34) compared to females (1 in 50). [4]

Non-Hodgkin's lymphoma (NHL) is also one of the most common cancers in both men and women in Singapore, and its incidence has more than doubled in the last three decades. The age-adjusted incidence rates for males and females (per 100,000) for NHL in Singapore have increased from 3 and 2 in 1968–72 to 8 and 5 in 1998–2002, respectively. [5]

In Malaysia, NHL is the third most common cancer (7%) in male.[6] The estimated age-standardized incidence rate of NHL in Thailand in male and female were 5 and 3 per 100,000 respectively. The most common histologic subtype was diffuse large B cell lymphoma and the 4-year overall survival rate of NHL from multicentre study in Thailand was 40%. [7]

References-

1. *Epidemiologic overview of malignant lymphoma*
2. *Epidemiology of Non-Hodgkin's Lymphoma in India*
3. *Burden of lymphoma in China, 2006–2016: an analysis of the Global Burden of Disease Study 2016*
4. *Cancer Australia*
5. *Occupation and risk of non-Hodgkin's lymphoma in Singapore*
6. *Fundamentals of the Management of Non-Hodgkin Lymphoma*
7. *Clinical Features and Treatment Outcome of Patients with non-Hodgkin Lymphoma in Sawanpracharak Hospital*

Incidence, mortality and 5-year prevalence of NHL (2020) across a selection of locations

Country	New Cases		Deaths		5-year Prevalence	
	Number	ASR*	Number	ASR	Number	Proportions**
Australia	6,050	13.1	1,732	2.8	20,037	78.6
Greater China	92,834	4.3	54,351	2.4	260,550	18.0
India	35,828	2.6	20,390	1.5	88,272	6.4
Malaysia	1,940	5.8	1,104	3.3	5,933	18.3
New Zealand	851	9.7	329	3.0	2,777	57.6
Philippines	4,140	4.3	2,415	2.6	11,065	10.1
Singapore	1,099	11.3	361	3.3	3,775	64.5
South Korea	5,431	6.4	2,320	2.1	13,212	25.8
Thailand	7,087	6.4	4,125	3.4	19,892	28.5
United States	73,652	12.1	20,858	2.7	240,299	72.6

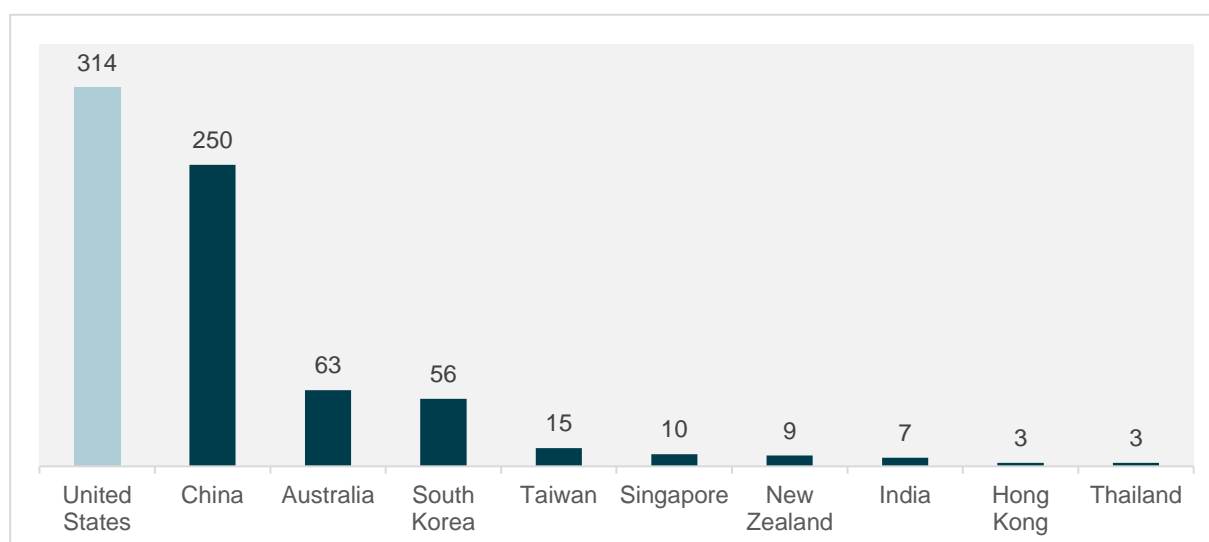
*Age standardized rate per 100,000

**Proportions per 100,000

Source - Cancer Today by WHO

Biopharma companies initiated over 800 trials in non-Hodgkin lymphoma since 2018, over 40% of which involved the Asia-Pacific region. China, Australia and South Korea were the most frequently involved locations with fewer competing trials compared to the US.

Top locations in Asia-Pacific in relation to the number of NHL studies initiated by Biopharma companies between 2018-2020.

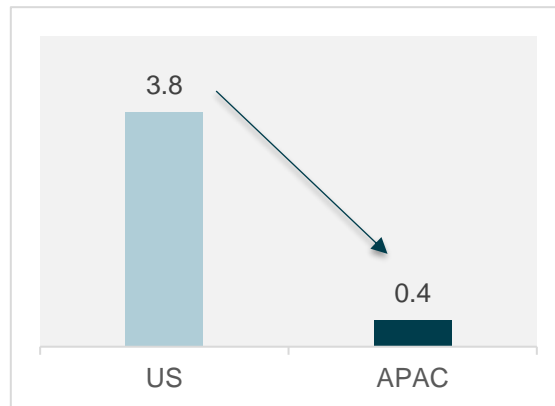


█ Locations which Novotech directly operates

Source – GlobalData [Accessed 7th January 2021]

Lower Trial density (US vs. APAC)

Number of recruiting sites for industry-initiated non-Hodgkin lymphoma trials per million of urban population in selected Asia-Pacific countries, 2020-2021.



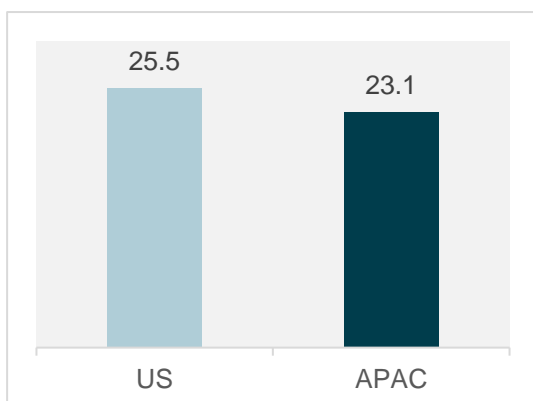
Source – ClinicalTrials.gov [Accessed 7th January 2021]

Recruitment Analysis

Asia-Pacific region shows faster enrolment periods and competing recruitment rates when compared to the US.

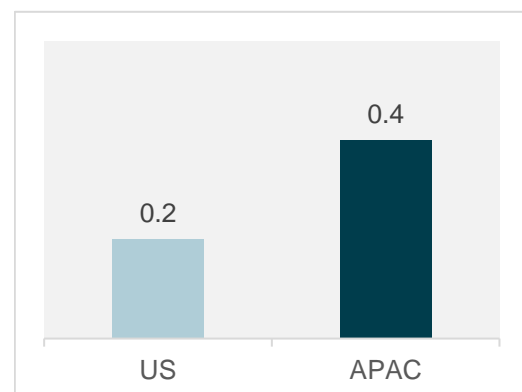
Faster Trial Enrolment

Enrolment duration (in months) for industry sponsored NHL trials in the Asia-Pacific and the US, initiated between 2016-2020.



Competing Recruitment Rate

Recruitment rate (subject/site/month) for industry sponsored NHL trials in the Asia-Pacific and the US, initiated between 2016-2020.



Source – GlobalData [Accessed 7th January 2021]

2. Standard of Care

Standard treatment for NHL includes:

Treatment Option	Types
Radiation	<ul style="list-style-type: none"> Stage I and II NHL respond well to radiation therapy (external beam radiation) and for more advanced lymphomas, radiation is used along with chemotherapy
Targeted therapy	<ul style="list-style-type: none"> Proteasome inhibitors – Bortezomib Histone deacetylase (HDAC) inhibitors – Romidepsin, Belinostat Bruton's tyrosine kinase (BTK) inhibitors – Ibrutinib, Acalabrutinib, zanubrutinib Phosphatidylinositol 3-kinases (PI3Ks) inhibitors – Idelalisib, Copanlisib, Duvelisib EZH2 inhibitor – Tazemetostat Nuclear export inhibitor – Selinexor
Immunotherapy	<ul style="list-style-type: none"> Monoclonal antibodies <ul style="list-style-type: none"> Antibodies that target CD20 – Rituximab, Obinutuzumab, Ofatumumab, Ibritumomab tiuxetan Antibodies that target CD19 – Tafasitamab Antibodies that target CD52 – Alemtuzumab Antibodies that target CD30 – Brentuximab vedotin Antibodies that target CD79b – Polatuzumab vedotin Immune checkpoint inhibitors – pembrolizumab Immunomodulating drugs – thalidomide, lenalidomide CAR-T cell therapy – Axicabtagene ciloleucel, Tisagenlecleucel, Brexucabtagene autoleucel
Chemotherapy	<ul style="list-style-type: none"> Alkylating Agents – Cyclophosphamide, Chlorambucil, Bendamustine, Ifosfamide Corticosteroids – Prednisone, Dexamethasone Platinum drugs – Cisplatin, Carboplatin, Oxaliplatin Purine analogues – Fludarabine, Pentostatin, Cladribine Anti-metabolites – Cytarabine, Gemcitabine, Methotrexate, Pralatrexate Anthracyclines – Doxorubicin, Liposomal doxorubicin

Source – Treating Non-Hodgkin Lymphoma (Cancer.org)

3. Key Opinion Leaders in Non-Hodgkin Lymphoma

Dr. MICHAEL DICKINSON

Peter MacCallum Cancer Institute - AUSTRALIA

Dr. Dickinson is a Haematologist, and the Disease Group Lead of Aggressive Lymphoma at Peter MacCallum Cancer Centre. He runs a programme of early phase clinical trials, with a special focus on B and T-cell lymphoma, and new targeted therapies. He is a member of the Australasian Leukaemia and Lymphoma Group (ALLG) and the Australasian Lymphoma Alliance (ALA). He has published extensively in international journals like *Blood*, *Expert Rev Haematol*, *Br J Haematol*, *Clin Cancer Res*.



Prof. PETER BROWETT

University of Auckland – NEW ZEALAND

Prof. Browett is a Consultant Haematologist at the Auckland City Hospital, and Professor of Pathology at the University of Auckland. He is co-director of the Leukaemia and Blood Cancer Research Unit, with interest in blood cancer genomics, biomarkers in leukaemia, and the monitoring of measurable residual disease. Peter is also the clinical director of the Auckland Regional Tissue Bank, and Grafton Clinical Genomics. He has co-authored over 100 publications in journals including *Clin Cancer Res*, *Br J Haematol*, *Eur J Haematol*.

Dr. MICHELLE POON

National University Cancer Institute Singapore (NCIS NUH) – SINGAPORE

Dr. Poon is a senior consultant at the Dept. of Haematology-Oncology at NCIS NUH. Her research interests include use of novel clinical therapies to manage acute lymphoblastic leukemia and lymphoma and hematopoietic stem cell transplantation in adults with haematological diseases. She has co-authored over 40 publications in journals such as *New England Journal of Medicine* and *International Journal of Haematology*.



Prof. SUNG-SOO YOON

Seoul National University – SOUTH KOREA

Prof. Sung-Soo Yoon is a Professor and Director of the Centre for Hematologic Malignancies at the Seoul National University. He is a key member of the International Cancer Genome Consortium (ICGC), formed to reveal 50 cancer genomes. He has the experience of working on over 40 haematology clinical trials.

Prof. XIAO JUN HUANG

Peking University People's Hospital – CHINA

Prof Xiao Jun Huang is a Professor at the Peking University Institute of Haematology. He was the 1st President of the Asia Pacific Haematology Consortium. He focuses on the clinical and experimental fields of haematology and hematopoietic stem cell transplantation (HSCT). He has co-authored over 100 publications and engaged in 80 early phase haematological cancer trials.



4. Novotech Overview

Novotech is internationally recognized as a leading regional full-service contract research organization (CRO) in Asia-Pacific. Novotech has been instrumental in the success of over a thousand Phase I - IV clinical trials for biotechnology companies.

Novotech provides clinical development services across all clinical trial phases and therapeutic areas including: feasibility assessments; ethics committee and regulatory submissions, data management, statistical analysis, medical monitoring, safety services, central lab services, report write-up to ICH requirements, project and vendor management. Novotech obtained the ISO 27001 certification which is the best-known standard in the ISO family providing requirements for an Information Security Management System. Together with the ISO 9001 Quality Management system, Novotech aims at the highest IT security and quality standards for patients and biotechnology companies

<https://novotech-cro.com/>

