

Building networks and consortiums in Oncology

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Why are Consortiums and Networks important?

- Era of cooperation and large numbers in research
- Singapore is small
- o Rare disease
- Regional and global leadership and impact

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Strong Racial Difference in US Data (SEER 1998-2002)

- 1. African American (10.6/100,000)
- 2. Caucasian (& Hispanic) (5.2/100,000)
- 3. American Indian/ Alaska native (4/100,000)
- 4. Pacific Islander (3~4/100,000)
- 5. Asian American (1~2/100,000)









4.5 billion population (60% of World's Population)

3 of Top 4 most populated countries (China, India and Indonesia) Highly varied:

- Geography
- Politics
- Economics
- Health System
- Drug Access

Country or + territory	GDP nominal millions of USD *	GDP nominal per capita USD	GOP PPP millions of USD *	GDP PPP per capita USD	Location e
- Qatar	192,077	78,829	324,167	133,039	West Asia
Singapore	293,959	53,224	468,909	84,900	Southeast Asia
Brunei	11,634	27,759	32,986	78,475	Southeast Asia
Kuwalt	123,228	29,982	288,763	70,258	West Asia
CUnited Arab Emirates	339,085	35,392	641,880	66,996	West Asia
Saudi Arabia	632,073	20,138	1,681,176	53,564	West Asia
Bahrain	30,079	22,798	66,851	50,667	West Asia
Taiwan	518,816	22,082	1,113,792	47,407	East Asia
Oman	60,179	15,672	171,745	44,727	West Asia
• Japan	4,116,242	32,480	4,842,395	38,210	East Asia
te: South Korea	1,392,952	27,512	1,849,398	36,528	East Asia
Israel	298,866	35,702	281,757	33,658	West Asia
Malaysia	313,479	10,073	813,517	26,141	Southeast Asia
Kazakhstan	195,005	11,028	430,496	24,345	Central Asia
Lebanon	54,395	11,945	63,862	17,986	West Asia
iran	396,915	5,047	1,381,672	17,571	West Asia
Azerbaijan	35,141	3,701	165,988	17,486	West Asia
Thailand	373,536	5,426	1,107,000	16,081	Southeast Ask
Turkmenistan	44,362	7,534	90,293	15,334	Central Asia
Ireq	165,057	4,694	531,393	15,112	West Asia
China (PRC)	11,384,763	8,280	19,509,983	14,189	East Asia
Maldives	3,031	8,713	4,732	13,604	South Asia
Mongolia	12,409	4,179	36,429	12,268	East Asia
C Jordan	38,210	5,599	62,991	12,162	West Asia
Indonesia	936,955	3,620	3,010,746	11,633	Southeast Asia
Sri Lanka	79,524	3,767	234,708	11,192	South Asia
Armenia	10,774	3,602	26,053	8,712	West Asia
Bhutan	2,209	2,836	6,384	8,196	South Asia
Philippines	299,314	2,951	742,251	7,318	Southeast Asia
India	2,182,577	1,688	8,027,031	6,209	South Asia
Vietnam	198,805	2,170	551,256	6,019	Southeast Asi
Uzbekistan	65,953	2,129	185,820	5,999	Central Asia
 Laos 	12,548	1,785	37,499	5,334	Southeast Asi
👥 Myanmar	65,775	1,268	267,736	5,164	Southeast Asi
Timor-Leste	2.100	1,768	6.051	5,097	Southeast Asi
C Pakistan	270,961	1,427	930,759	4,902	South Asia
Bangladesh	226,760	1,466	628,376	3,940	South Asia
Cambodia	17,714	1,139	54,174	3,485	Southeast Asi
Kyrgyzstan	7,158	1,197	19,805	3,314	Central Asia
Tajikistan	8,045	949	23,301	2,748	Central Asia
Yemen	34,929	1,437	75,519	2,670	West Asia
Nepal	21,356	751	70,076	2,464	South Asia
Alghanistan	17,275	528	64,198	1,961	South Asia
North Korea	N/A	N/A	N/A	N/A	East Asia
Svria	N/A	N/A	N/A	N/A	West Asia

Regional Collaboration – Asian Myeloma Network

• Tackle MM in Asia



- Epidemiology of MM (Am J Hem 2015)
- Clinical Trials





Clinical profiles of multiple myeloma in Asia—An Asian Myeloma Network study

Kihyun Kim,¹ Jae Hoon Lee,^{2*} Jin Seok Kim,³ Chang Ki Min,⁴ Sung Soo Yoon,⁵ Kazuyuki Shimizu,⁶ Takaaki Chou,⁷ Hiroshi Kosugi,⁸ Kenshi Suzuki,⁹ Wenming Chen,¹⁰ Jian Hou,¹¹ Jin Lu,¹² Xiao-Jun Huang,¹² Shang-Yi Huang,¹³ Wee Joo Chng,¹⁴ Daryl Tan,^{15,16} Gerrard Teoh,¹⁷ Chor Sang Chim,¹⁸ Weerasak Nawarawong,¹⁹ Noppadol Siritanaratkul,²⁰ and Brian G. Durie^{21*}

In summary, there are no unique clinical characteristics of MM that are peculiar to Asian patients. Although some country-specific characteristics were observed, these need to be further verified in future studies. Notwithstanding the selection bias and the limitation of the study population in representing true Asian MM characteristics, this project highlights that by availing proper MM care to Asian MM patients, a reasonable clinical outcome can be achieved and this will provide a platform for the design of future studies and clinical trials involving Asian MM patients.



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Heterogeneity in Practice

- Drug access Approvals
- Reimbursement and pricing
- Access to investigations (FISH, cytogenetics, MRD)
- Set-up (Inpatient vs. outpatient vs. home)
- Low rates of BMT in China

APAC Registry



	CASES (% of total)
SINGAPORE	34 (19%)
Your Hospital	19 (56%)
No. of patients transferred to your hospital	1
No. of patients transferred from your hospital	0
Other Singaporean Hospitals	15 (44%)
KOREA	149 (81%)
TOTAL APAC MRDR COHORT	183 (100%)

First-line Chemotherapy Regimens by country

Frequency of first-line chemotherapy in all contributing countries (includes your hospital's data).



Korea: N = 62; Singapore (including your hospital): N = 31

Management of multiple myeloma in Asia: resource-stratified guidelines



Daryl Tan, Wee Joo Chng, Takaaki Chou, Weerasak Nawarawong, Shang-Yi Hwang, Chor Sang Chim, Wenming Chen, Brian G M Durie, Jae Hoon Lee

	Basic	Limited	Enhanced	Maximum	Lancet Oncol 201
Initial assessment	History and physical examination Complete blood counts and differential white cell counts Peripheral blood smear for rouleaux formation and circulating plasma cells Chemistry screen including calcium, blood urea nitrogen, creatinine, and albumin 24 h urine total protein and creatinine clearance Skeletal survey	 β-2 microglobulin CT or MRI scan if indicated 	MUGA or echocardiography scan if anthracycline to be used ³¹ F-FDG PET scan		
Tests to establish diagnosis	Serum and urine protein electrophoresis Bone marrow aspiration and trephine biopsy	Immunofixation Immunophenotyping by flow cytometry or immunohistochemistry	Serum-free light chains assay		
Staging and risk stratification	International Staging System	Metaphase karyotyping	 Interphase FISH for t(4;14), t(14;16), 17p13 deletion, and 1q21 gain 	 Gene expression profiling 	
Response measurement and disease monitoring	Serum and urine protein electrophoresis Bone marrow aspiration and trephine biopsy	MRI or CT scans for plasmacytoma or extramedullary disease	• Serum-free light chains assay • ¹⁴ F-FDG PET scan	Multiparameter flow cytometry PCR	
Treatment for transplant eligible	Dexamethasone Thalidomide/dexamethasone Cyclophosphamide/dexamethasone Cyclophosphamide/prednisolone	Cyclophosphamide/thalidomide/ dexamethasone DVd Mobilisation: G-CSF with or without prior cyclophosphamide chemotherapy	Bortezomib/dexamethasone Bortezomib/cyclophosphamide/ dexamethasone Bortezomib/doxorubicin/dexamethasone Bortezomib/lenalidomide/dexamethasone Bortezomib/thalidomide/dexamethasone Rd Mobilisation: Plerixafor can be considered in mobilisation failures	Clinical trials	
Treatment for transplant ineligible	• MPT • Dexamethasone • Thalidomide/dexamethasone • Melphalan and prednisone • Cyclophosphamide/dexamethasone • Cyclophosphamide/prednisolone	DVd Cyclophosphamide/thalidomide/ dexamethasone	VMP VMPT-VT Bortezomib/dexamethasone Bortezomib/cyclophosphamide/ dexamethasone Bortezomib/thalidomide/dexamethasone Bortezomib/lenalidomide/dexamethasone Bortezomib/lenalidomide/dexamethasone Rd MPR-R	Clinical trials	
Treatment for RRMM	Thalidomide/dexamethasone	DT-PACE Bortezomib/liposomal doxorubicin Bortezomib/cyclophosphamide/ dexamethasone Bortezomib/thalidomide/dexamethasone Bortezomib/doxorubicin/dexamethasone Lenalidomide/high-dose dexamethasone Bortezomib/lenalidomide/dexamethasone	• Carfilzomib • Pomalidomide/dexamethasone	Clinical trials	

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Natural History of Multiple Myeloma





Survival following relapse after PI and Imids



Kumar S, et al. Leukemia



Emerging Therapies

1. New Generation Proteasome Inhibitor

- a. Carfilzomib (Onyx)
- b. Ixazomib (Millenium)

2. New Generation Imids

a. Pomalidomide (Celgene)

3. Histone Deacetylase Inhibitor

a. Panobinostat (Novartis)

4. Monoclonal Antibodies

- a. Daratumumab (Anti-CD38)
- b. Elotuzumab (Anti-CS1)



Access to Next Generation Novel Agents through Clinical Trials is important prognostic feature

N=252



Soekojo CY and Chng WJ. ASH 2016

Restricted, Non-Sensitive



Red arrow signify flow of funds. Funding for PI initiated studies with AMN will be disbursed from pharmaceutical partners through the IMF (which acts as a sponsor for these studies) using an account that is specifically for the activities with AMN. The money is disbursed to each country based on per patients recruited basis (on a generally agreed upon quantum). Blue arrow signify bidirection flow between AMN sites and Singapore which will act as coordinating center. In time we will establish SOPs and Audit program within the participating countries and established mechanisms and standards for adding sites.

Objective

- Early access to good treatment
- Establish Asian Data
- Study combinations that are relevant to Asia
- Establish Asia as a partner for Industry in Cooperative group trials
- Elevate standing of Asia in myeloma research



Current and Future Trials

Code	Regimen	New / Relapse	Numbers	Remarks
AMN001	P(C)D	Relapse	126	Published
AMN002	KTD	Relapse (1-3)	41	ALLG Collab, Completed
AMN003	PCD vs PD	Relapse (up to 6)	121 / 120 (60 each arm)	Completed
AMN004	Dara-TD	Relapse (more than 1)	71 / 70	Completed
AMN006	Dara-VD	New NTE	27 / 30	Completed
AMN007	Venetoclax-VD	Relapse t(11;14) +/- Plasmacytoma	25	Withdrawn
AMN008	Isa-RD	Newly Diagnosed NTEMM		Concept



Future Development (Phase 2)

- Expand member countries
- Expand members from participating countries
- Trials looking at specific risk groups, unmet needs
- Trials looking at treatment strategies based on response
- Platform trials
- New capabilities: Virtual cell bank, data repository, MRD





A Nationally Coordinated Consortium to Synergise Cancer Research Capabilities Across Singapore

Supported by



NATIONAL RESEARCH FOUNDATION PRIME MINISTER'S OFFICE SINGAPORI



STCC Partners





Singapore

SingHealth



STCC: Mission & Vision

MISSION

Chng Wee Joo Executive Director

STCC brings together the best **basic**, **clinical and translational** talent in Singapore to create globally significant peaks of excellence in selected cancers, and provides these teams with an enabling research and innovation environment.

Peaks of excellence & thought-leadership

- Build leading Research & Translational **programmes** in selected Asian cancers

- Become a reference centre for clinical trials in Asia
- Grow critical mass of local key opinion leaders





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VISION Lim Soon Thye co-Director

The STCC envisions for Singapore to become a **global leader** for selected Asian cancers in **research translation** and its application to **health** and/or **economic value creation**.

Economic Impact

- Anchor **critical mass** of industry research, innovation and **enterprise partnerships**

Healthcare impact

- Conduct **world-class cancer research** with high-impact applications that improve health & healthcare
- Develop **new ways of delivering** cancer prevention, screening, treatment and care for Singapore

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STCC: Driving Innovation & Synergy in Cancer R&D



Cancer Clinical Trials & Investigational Medicine Units



Streamlined clinical trial start-up framework that facilitates PI/KOL engagement and a single agreement contract process



Cancer Databases & Tissue Banks

SingHealth



Robust, secure and harmonised central catalogue portal for Asian-centric cancer samples & associated clinical research data



diagnostics and assays



Seck Yee Kwang A*STAR/ BMS IPO

Business Intelligence & Development



A dedicated team that facilitates partnerships and leads engagements between industries & STCC

STCC – A "ONE-STOP SHOP" FOR INDUSTRY PARTNERS



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Thank you.

