SingHealth DukeNUS ACADEMIC MEDICAL CENTRE
FAMILY MEDICINE

FM ACP RESEARCH GRAND ROUND

Community Nursing programme evaluation

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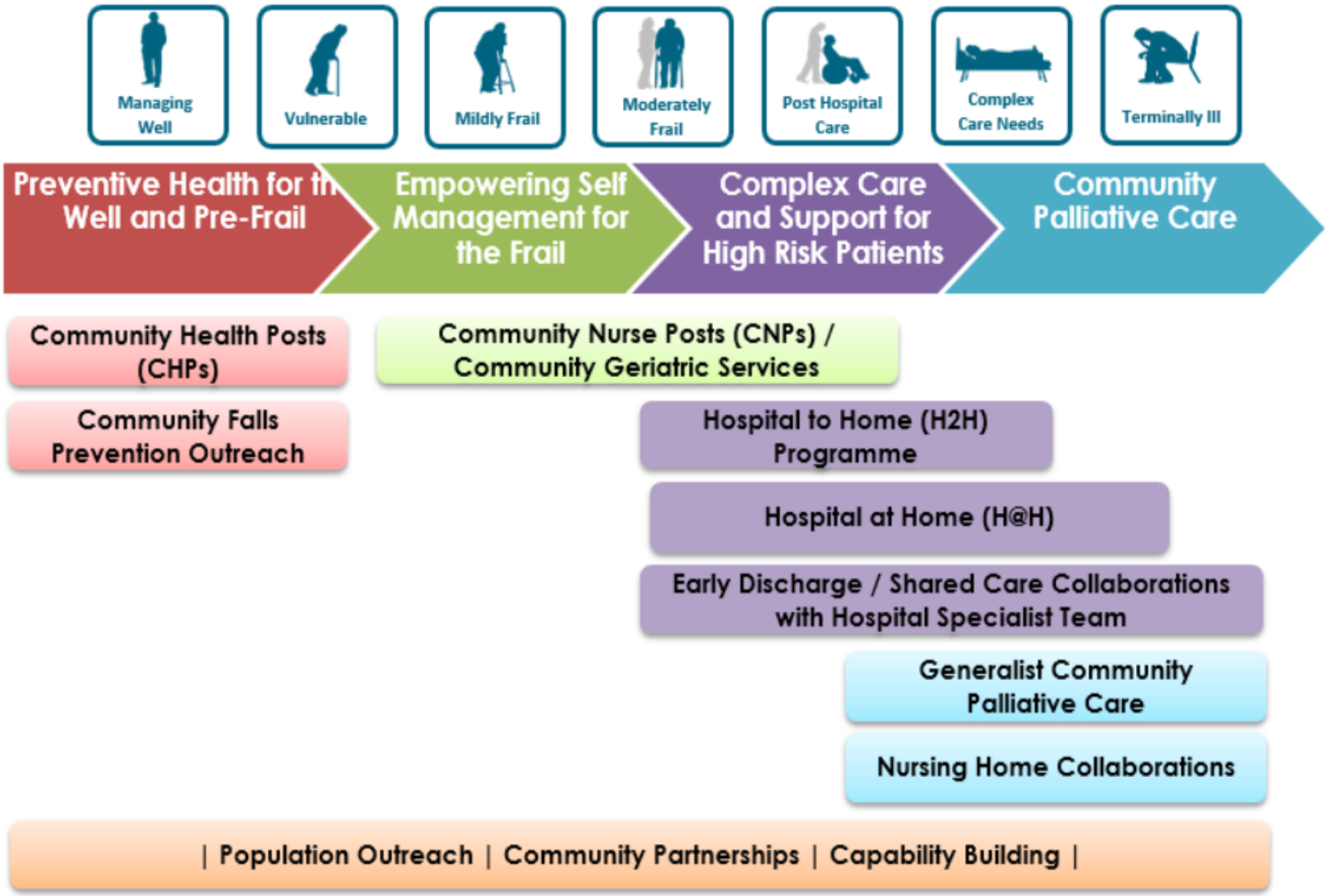
Overview of SingHealth Community Nursing

Person-Centered Care

Objectives	Building Healthy & Empowered Community	Continuing Quality Care in Community & Ageing in Place	Right Siting & Integration of Care	
Roles	**Prevent**	**Empower**	**Re-enable**	**Palliate**
	Preventive Health for Seniors	Empowerment of Self-Management of Chronic Conditions	Transitional Care & Post Acute Care for High Risk Clients	Palliative Care for Clients with Non-Malignant Conditions
Approach	<u>Collaborate</u> & <u>Leverage</u> Assets Available in Community			Develop Shared Care

Population-Based Practice of Community Nursing



Geographical Team-Based Approach

- Deeper understanding of the **population needs in the respective zones**
- **Skill-mix** to cater to different levels of needs & care
- **Ease of collaboration** & building capability for health & social care personnel
- **Greater accessibility**
- **Increase efficiency** in resource allocation

Commencement of Community Nursing Services

MOH approved 2 tranches of funding for **SingHealth RHS-led Community Nursing Services.**

- $29M from FY2017 to 2019 for East & Southeast regions
- $23M from FY2020 to 2021 for East, Southeast & Northeast regions

Nov 2017 — **Dec 2017** — **Feb 2018** — **Jul 2020**

Service Commencement

East | **Southeast** | **Northeast**

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Community Nurse Posts (CNPs)

74

East: 31 Southeast: 35 Northeast: 8

CNPs all co-located within community partners' premises have been set up.

(As of 31 January 2022)

- Health & Geriatric Assessment
- Health Coaching for Disease Prevention
- Chronic Disease Monitoring & Self-Management Education
- Medication Self-Management Support & Education
- Care Referral & Coordination

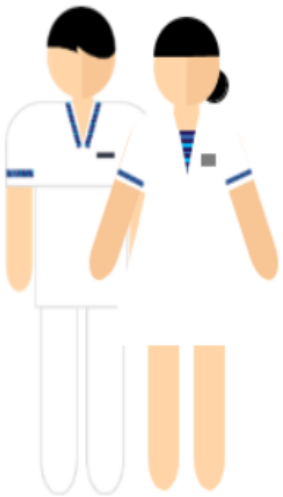
Service Modes	Referrals to CNPs
• 1-1 Nurse Consult in CNP • Home Visits • Phone/Video Consult • Group Sessions (Virtual/Face-to-Face)	• Care Partners (Healthcare institutions & community partners) • Self Walk-n

Operating Hours

- Daily to Weekly

(depending on needs & availability of venue in community)

Community Nursing Manpower (as at Dec 2021)



	Community Nurses	Lay Extenders (involved in direct patient care)
RHS Community Nursing	**71.6** East: 31.6 Northeast: 6 Southeast: 34	**20** *East: 15 Northeast: 1 Southeast: 4
Hospital to Home	**55** East: 11 Northeast: 2 Southeast: 42	**42** *East: 37 Northeast: 1 Southeast: 4

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SingHealth Community Nursing Programme Evaluation

Scale of Programme

- Demographic Profile
- Clinical Profile

Evaluation Period:
1 Apr 2019 to 31 Mar 2020

Needs of Residents

- Needs Assessed
- CNP Utilization

Analysis of the **scale of Community Nursing Post (CNP) Programme & Residents' Needs**

Key Findings

- "Reached Out" to Residents Unknown to SingHealth
- Clinical Outcomes
- Healthcare Utilisations

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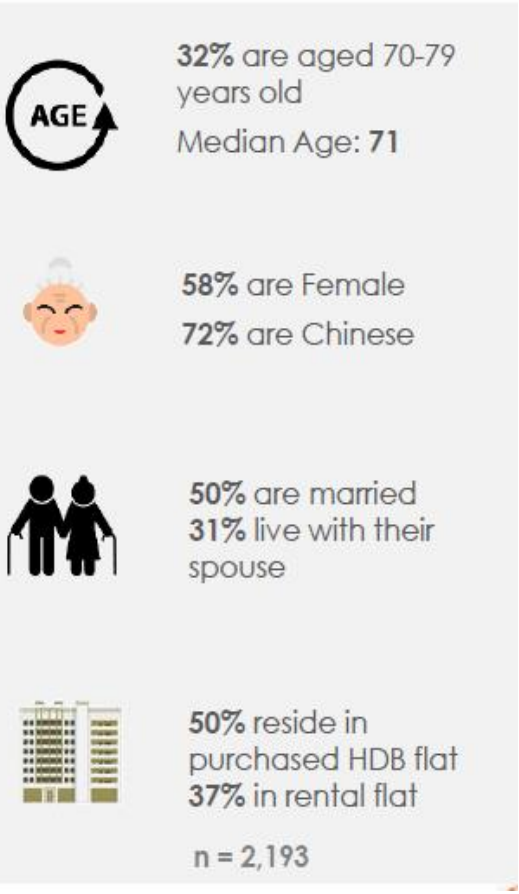
CNP Demographic



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Comparison of CNP clients with SG population

Compared to the wider SG population of the same age, CNP clients tend to have:

- **Malay** ethnicity
- **Lower socioeconomic status**
- **Weaker social networks**
- *Possibly* **fewer chronic disease problems**

Characteristic	CNP clients (n=2,193)*	SingStat (n=860,508)†	SIGNS I (n=4,549)‡
Demographic			
Malay ethnicity	18.0%	9.9%	9.5%
Private housing	2.4%	16.8%	8.8%
Not married	47.2%	31.3%	33.1%
Living alone	27.6%	-	7.0%
Clinical			
≥1 chronic disease problem	65.7%§	-	82.2%‖

*Proportions are adjusted for missing data. †Department of Statistics, Ministry of Trade & Industry, Republic of Singapore, 2019. ‡Chan et al. *SIGNS I*. 2018. §Refers to those with ≥1 problem associated with chronic disease. ‖Refers to those with those with ≥1 chronic disease diagnosis.

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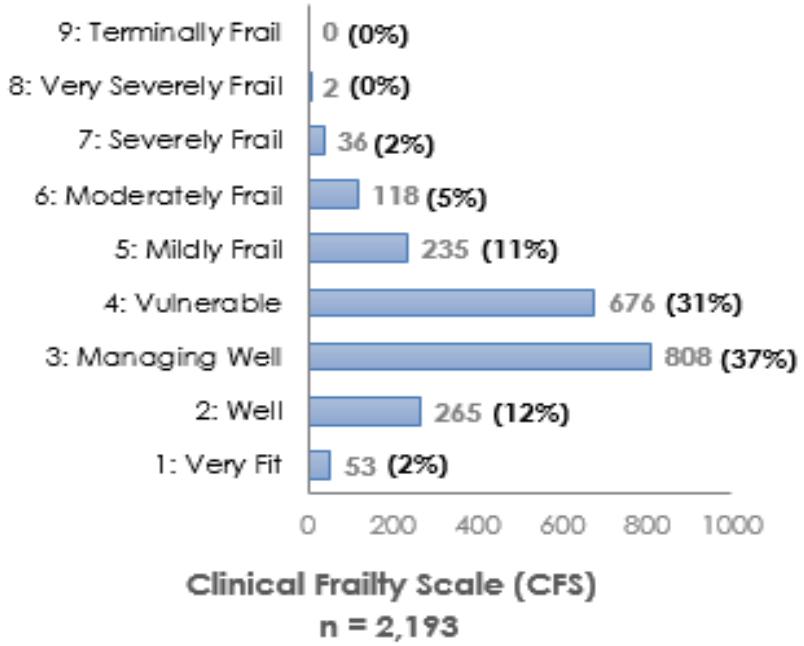
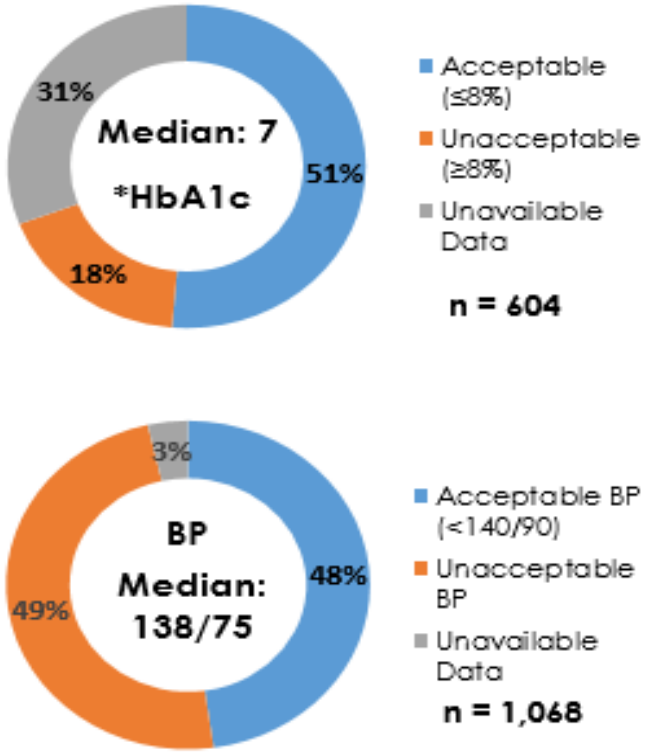
Clinical Profile

>49% are vulnerable & frail
18% have unacceptable HbA1c range
49% have BP reading of >140/90 mmHg





Acceptable range according to MOH CDMP. Formula for proportion: (No of DM residents with HbA1c <8% in their last readings)/(Total no. of DM residents with at least one HbA1c reading in 1-year period prior to or on their first CNP visit)

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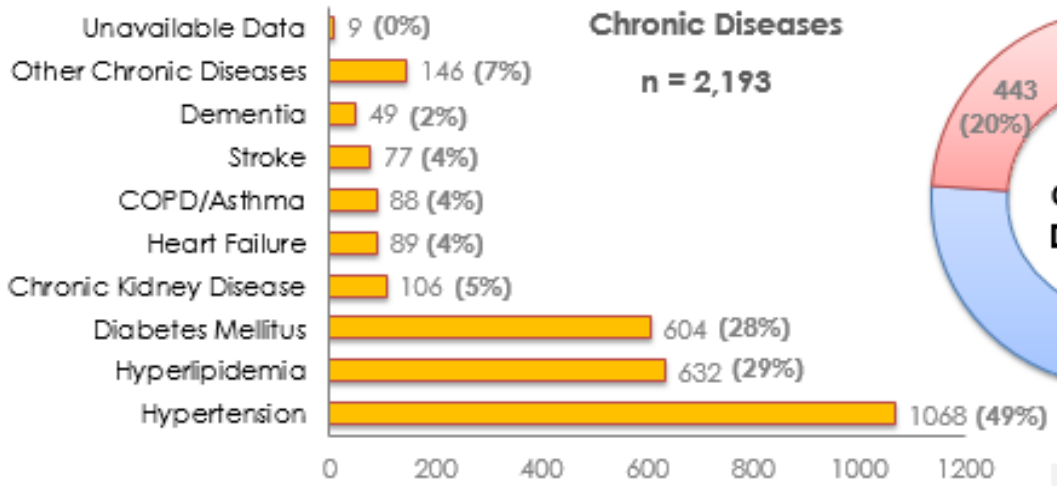
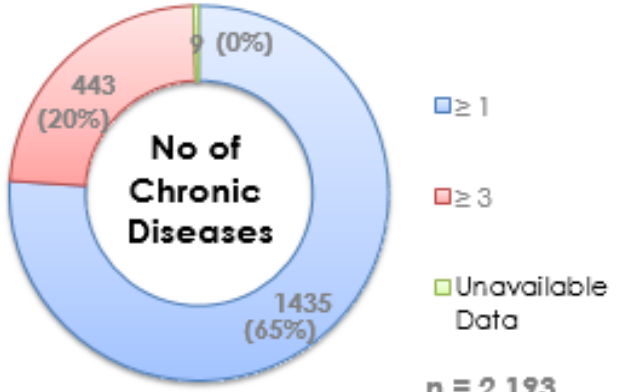
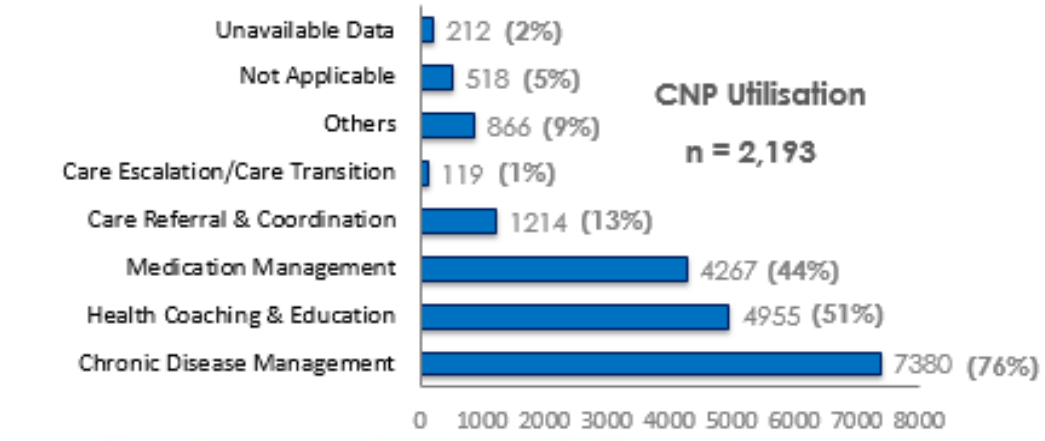
Needs of Residents







- **84%** of problems recorded are related to Physiological, which includes chronic disease management
- Top 3 medical conditions: HDL
- **65%** of residents have 1 to 2 chronic diseases
- **76%** of CNP visits were related to chronic disease management

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Key Findings

Reached Out to Residents Who Were "Previously Unknown to System"

46% No SHP chronic disease diagnosis record within the last 1 year prior to 1st CNP Visit

2-6% Were referred for new chronic disease diagnosis

5% Increased in SOC Visits 6 months after 1st CNP Visit

Improved Clinical Outcomes

49.3% to **63.9%** Proportion of clients with improved BP range ($p > 0.001$)

69.2% to **71.2%** Proportion of clients with acceptable HbA1C range (<8%)

HbA1C

($p > 0.378$ – unable to correlate due to short study period)

Reduction of Healthcare Utilisations

19% Inpatient Admissions

23% ED Visits

8% Length of Stay (LOS)

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Strengths and limitation

Strengths

- Large sample size: low probability of type II error
- Accounted for potential sources of bias and confounding

Limitations

- A one group pre/post design does not control for confounding by time-associated variables (e.g. history, maturation)
- COVID-19 is intractably confounded with time: accounting for COVID-19 necessarily removes a portion of the data, reducing representativeness of results
- Only SingHealth healthcare utilization data available
- Only SingHealth mortality data available

Other Factors affecting data completeness

- Clients' health seeking behaviour
- Default appointments, not keen for subsequent follow up
- Lack of social support/family members to supervise & manage chronic diseases, suboptimal home environment

- No centralised source of info via a common IT system (e.g. GPs, community partners), CMNs are unclear who are caring for residents or services that they are already receiving
- Missing HbA1c data

- the data template was not standardised previously, missing data and inconsistencies in the categorisation of information

MOH Community Nursing Programme Evaluation

2019 Profile*		SHS (n=9,268)
Gender	Male	3,130 (34%)
	Female	4,606 (50%)
Race	Chinese	5,514 (59%)
	Indian	463 (5%)
	Malay	1,096 (12%)
	Others	658 (7%)
Age group	<50	157 (2%)
	50-59	541 (6%)
	60-69	2,429 (26%)
	70-79	2,531 (27%)
	≥80	2,073 (22%)
SES	1-2rm flat	2,524 (27%)
	3rm	1,807 (19%)
	4rm	1,896 (20%)
	5rm and above	1,459 (16%)
Dis. complexity	Mean CCI score	4.8
Status in programme	Dropped out/discharged	1 (0%)
	Died*	225 (2%)

MOH Programme Evaluation on RHS-Led Community Nursing Pilot

Outcomes			DID of Intervention vs Control Groups		
			[redacted]	[redacted]	SHS
Hospital utilisation		Inpatient admissions	-0.12*	-0.05	-0.20*
		ED visits	-0.15*	-0.06	-0.17*
Clinical indicators	Proportion of poorly-controlled patients	HbA1c>9	0.04	0.03	-0.01
		LDL≥2.6	-0.19*	-0.10*	-0.02
		BP≥140/90	0.00	0.12*	-0.06*

*p<0.05

- Greater reduction in inpatient admissions and ED visits were seen across the clusters
  - [redacted] and SHS saw significant reduction in both
- Better improvement in poorly-controlled LDL was seen across the clusters
  - [redacted] and [redacted] saw significant reduction
- SHS saw slight reduction in poorly-controlled HbA1c and significant reduction in poorly-controlled BP

MINISTRY OF HEALTH SINGAPORE

Extracted from MOH/AIC Sharing of RHS-Led Community Nursing Pilot Evaluation on 14 Sep 21

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Data challenges limited the evaluation scope

- Evaluation was done using previous unstandardized template for retrospective data collection
  - Inconsistent data collection methods across clusters led to incomplete data capture and missing data, resulting in a limited analysis scope and potentially inaccurate interpretation
- New data template has been finalised and used for data collection starting from FY2020 Q2
- Clusters are currently looking into devising a system to collect process and outcomes data comprehensively and consistently across all 3 clusters for data-driven decision-making
- Follow-up period in this analysis was relatively short, given that the intervention addresses longer-term outcomes
  - Unable to analyse mortality rate, as death data is only available up to 2019
- Refresh analysis with longer follow-up period and when newer data are available
  - To include death as an outcome and a cost effectiveness analysis

Extracted from MOH/AIC Sharing of RHS-Led Community Nursing Pilot Evaluation on 14 Sep 21