Singapore General Hospital
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Integrated General Medicine in SGH – Explaining What Works, for Whom and Why

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Presentation Outline

- Introduction about the SGH-IGM program
- Program evaluation: Understanding what Works, for Whom and Why?
- Interim results
- Discussion and Q&A

Integrated General Medicine (IGM)

Collaboration between

Singapore General Hospital
SingHealth

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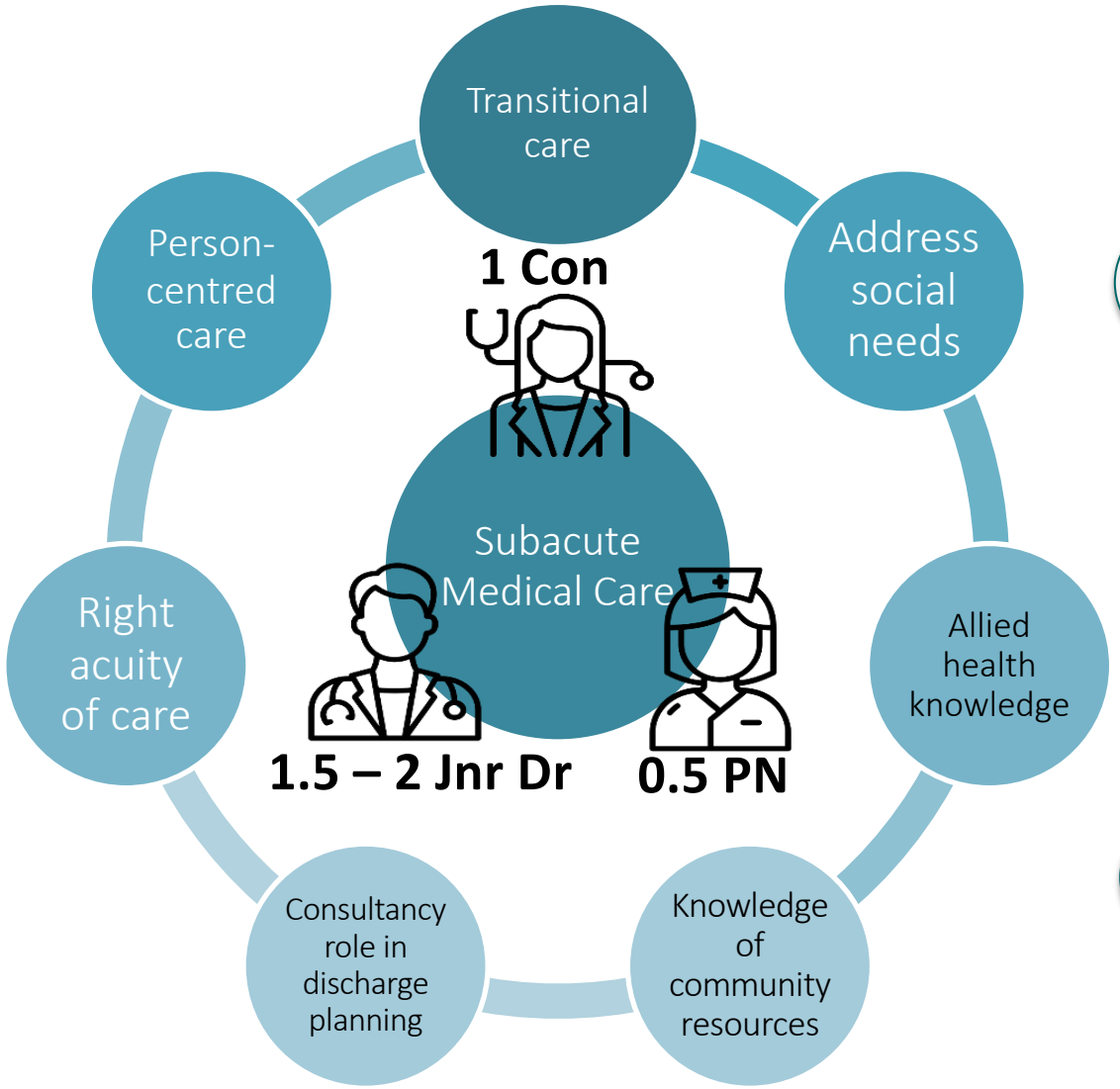
IGM Interventions



Provision of Subacute Care

- Co-manage selected acute DIM GT **patients who are beginning to transition to subacute care**
- Co-/fully manage **IGM patients who turn ill & require acute care**
- **Early review clinics** and **Advance Care Planning**, if needed

Resource Optimisation

- Establishing relationships with providers at the next level of care and optimize the use of existing resources in SGH
  - *Inpatient Nursing, Patient Navigators, Allied Health and MSS teams*
  - *SGH PHICO programs – SGH@Home, H2H, CMN*
  - *AIC resources: CRT team, NHRT team*
  - *Relationship with SCH and non-SingHealth CHs*
  - *PHICO community engagement with community partners*
- "Green lane" transfer protocols with Outram CH

Accelerate Discharge Planning

- Compressing a longitudinal discharge planning process into a 'cross-sectional' assessment over a few days (2-3 days)
- **Multi-disciplinary, person-centred approach** in patient care

SGH-IGM Program

Hypothesis: FM-IM led generalist model can deliver more productive and coordinated hospital care to patients, compared to usual care

- Generalist-led
- Acuity transition
- Direct transfer of patient from SGH to OCH

SGH Internal Medicine patients with multi-morbidity

Usual care

Intervention
Internal Medicine patients with multi-morbidity (Ward 64)

Control
Internal Medicine patients with multi-morbidity (Other wards)

Primary Outcome:

- Improved overall AH-CH length of stay

Secondary Outcomes:

- Improved overall hospitalisation cost
- Non-inferior and/or improved U-turn rates within 72-hours
- Non-inferior ED re-attendances within 30 days (attributable to index hospitalization)
- Non-inferior inpatient readmissions within 30 days (attributable to index hospitalization)
- Non-inferior inpatient and 30-day mortality rate
- Improved patient satisfaction and activation

SGH-IGM evaluation

RE-AIM

Implementation outcomes: who, what, where, how, when

Individual-level domains
- Reach
- Effectiveness
- Maintenance

Setting-level domains
- Adoption
- Implementation
- Maintenance

Does SGH-IGM really work? For Whom? and Why?

Consolidated Framework for Implementation Research (CFIR)

Implementation conditions, barriers, facilitators (why?)

Conditions
- Intervention characteristics
- Outer setting
- Inner setting
- Characteristics of individuals
- Process

Understand what promote or inhibit adoption, implementation and maintenance

To explain "why" implementation was successful or not

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Evaluation Framework

RE-AIM Dimension	Indicator	Description of Indicator	Mode of Data Collection [Period/Comparator]
Reach	Patient segmentation & characterising suitability of patient for IGM	**Process:** Proportion of patients eligible for the intervention	Program data [Baseline]
Effectiveness	Length of stay	**Outcome:** Reduction in LOS	Hospital database [Control & Intervention]
	30-days readmission rates	**Outcome:** Reduction in 30-days readmission rates	Hospital database [Control & Intervention]
	Waiting time for SGH-OCH transfers	**Outcome:** Reduction in waiting time for transfers	Hospital database and IDIs/surveys [Control & Intervention]
	Physician outcome	**Outcome:** Proportion of physicians who reported: • reduction in time spent on patients in subacute care • Increased ability to provide holistic care to patients	IDIs [End-term]

Evaluation Framework

RE-AIM Dimension	Indicator	Description of Indicator	Mode of Data Collection [Period/Comparator]
Effectiveness (Cont'd)	Patient outcome/QoL	**Outcome:** Proportion of patients who reported good outcomes (satisfaction with care transition, discharge planning and transfers)	QoL survey and IDIs [Baseline & End-term]
Adoption	Participation number	**Process:** Number of IM physicians who participated actively in the IGM program as per protocol	IDIs & surveys [Mid-term & End-term]
	Participation settings	**Process:** Number of IM wards who expressed interest for IGM	IDIs & surveys [Mid-term & End-term]

Evaluation Framework

RE-AIM Dimension	Indicator	Description of Indicator	Mode of Data Collection [Period]
Implementation	Fidelity of implementation onsite	**Process:** Overall implementation fidelity based on compliance to intervention (adherence to details of study protocol, coverage and duration etc.)	IDIs with care team and audit [Mid-term]
	Patient experience	**Process:** Proportion of patients who reported having exposed to important intervention indicators	IDIs and surveys [Mid-term & End-term]
	Healthcare staff experience	**Process:** Proportion of staffs who reported having exposed to important intervention indicators	IDIs and surveys [Mid-term & End-term]
	Quality – satisfaction and reaction towards IGM	**Process:** Proportion of patients or staff rated satisfied with IGM model	IDIs with care team and patients [End-term]

Evaluation Framework

RE-AIM Dimension	Indicator	Description of Indicator	Mode of Data Collection [Period]
Maintenance	Project level: Sustained smooth acuity transition and evaluate relationship between FM/IM team 6 months post intervention Organisational level: IGM model integrated into 50% of DIM wards post-intervention	**Outcome:** Project level – Effectiveness indicators to be sustained at ≥ 50% each post intervention Organisational level – Presence of continuity and sustainability plans for IGM	IDIs and follow-up surveys with care team, relevant organisational stakeholders and patients [Post-intervention]

Analysis

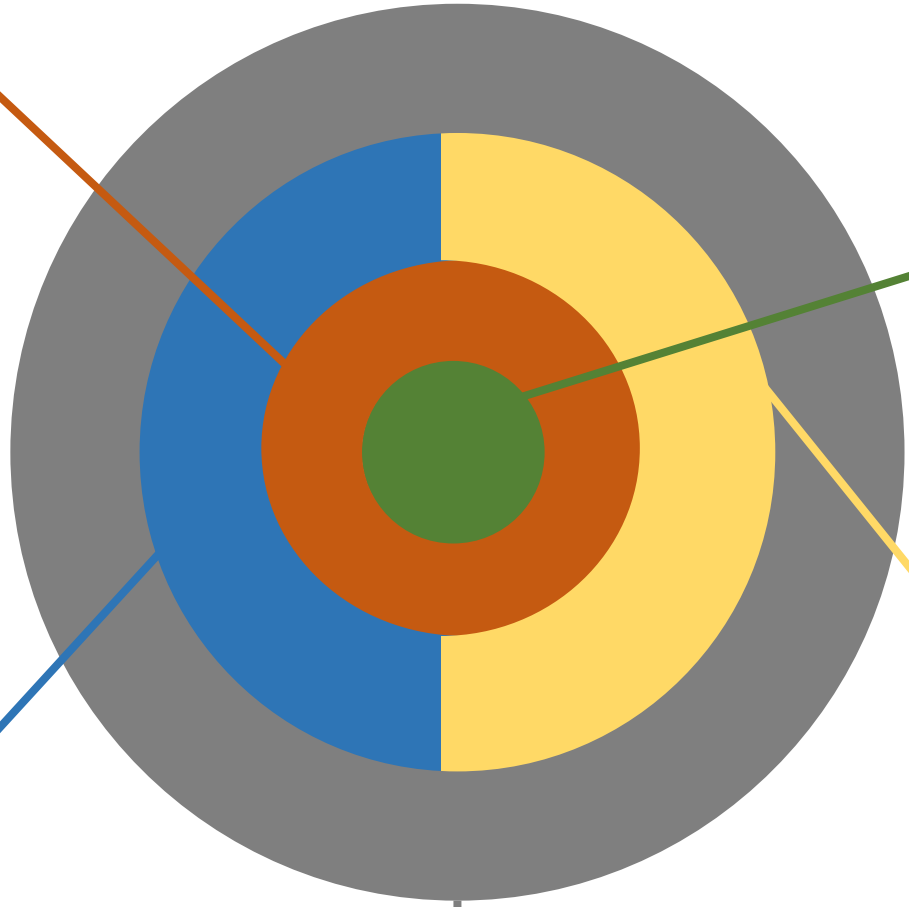
CFIR Framework Analysis

Inner Setting

1. Structural Characteristics
2. Networks & Communications
3. Culture
4. Implementation Climate
    1. Tension for Change
    2. Compatibility
    3. Relative Priority
    4. Organisational Incentives and Rewards
    5. Goals and Feedback
    6. Learning Climate
5. Readiness for Implementation
    1. Leadership Engagement
    2. Available Resources
    3. Access to Knowledge & Information

Process

1. Planning
2. Engaging
    1. Champions
    2. External Change Agents
3. Executing
4. Reflecting & Evaluating



Outer Setting

1. Patient Needs & Resources
2. Cosmopolitanism
3. External Policy & Incentives

Intervention Characteristics

1. Intervention Source
2. Evidence Strength & Quality
3. Relative Advantage
4. Trialability
5. Complexity
6. Design Quality & Packaging
7. Cost
8. Scalability

Characteristics of Individuals

1. Knowledge & Beliefs about the Intervention
2. Self-efficacy
3. Individual Stage of Change
4. Individual Identification with Organisation
5. Other Personal Attributes
6. Personal Belief

Interim Results [Jan 2021 – Sept 2021]

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Is SGH-IGM effective?

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Analysis (1 Jan 2021 – 16 Sep 2021)

Patient Demographic

	Intervention	Control	
	IGM GT (n = 1091)	Non-IGM GT (n = 2538)	P-value
Gender (%)			<0.05
Male	90.74	35.66	
Female	9.26	64.34	
Race (%)			0.127
Chinese	73.24	71.67	
Malay	8.80	8.39	
Indian	12.74	14.03	
Others	5.22	5.83	
Unknown	NA	0.08	
Age (%)			0.294
< 40 years old	6.05	7.05	
40 – 49 years old	6.14	5.83	
50 – 59 years old	14.30	10.01	
> 60 years old	73.51	77.11	

Analysis (1 Jan 2021 – 16 Sep 2021)

Discharge Planning Status

	Intervention	Control	
	IGM GT (n = 1091)	Non-IGM GT (n = 2538)	P-value
Existing patient of a NH (%)			0.709
Yes	3.21	5.83	
No	95.33	92.32	
Missing Data	1.47	1.85	
External Hospital Group (%)			0.051
Community Hospital	8.16	6.15	
Home	85.79	86.13	
Hospice	0.27	0.28	
Nursing Home	3.48	6.26	

Analysis (1 Jan 2021 – 16 Sep 2021)

Self-care Status

	Intervention	Control	
	IGM GT (n = 1091)	Non-IGM GT (n = 2538)	P-value
Mobility level (%)			0.453
Completely immobile	2.20	3.03	
Very limited	8.34	10.28	
Slightly limited	69.39	69.62	
No limitations	19.80	16.94	
Missing Data	0.27	0.12	
Charlson Co-morbidity Index (CCI) Score			0.818
Mean [95% CI]	1.864 [1.742, 1.987]	1.848 [1.773, 1.922]	
Is patient capable of carrying out all these 6 basic self-care (Bathing, Dressing, Eating, Transferring, Toileting, Ambulation) premorbid? (%)			0.134
Yes	42.35	43.54	
Missing Data	1.56	1.81	

Analysis (1 Jan 2021 – 16 Sep 2021)

Caregiver Status

	Intervention	Control	
	IGM GT (n = 1091)	**Non-IGM GT (n = 2538)**	**P-value**
Does the patient require caregiver? (%)			0.227
Yes	4.12	5.63	
Missing Data	46.93	51.69	
Does the patient have a willing and able caregiver? (%)			0.131
Yes	15.58	26.56	
Missing Data	24.47	22.58	
Patient/Caregiver issue (e.g. unable to cope with patient's functional/nursing) (%)			0.785
Yes	2.38	2.32	
Missing Data	4.40	4.65	

Analysis (1 Jan 2021 – 16 Sep 2021)

Average Length of Stay (ALOS)

	Intervention	Control	P-value
Overall Discharge	**IGM GT (n = 1091)**	**Non-IGM GT (n = 2538)**	
Length of Stay Mean [95% CI]	7.803 [7.307, 8.299]	10.379 [9.806, 10.952]	< 0.001
Discharge to Community Hospital	**IGM GT (n = 89)**	**Non-IGM GT (n = 156)**	
Length of Stay Mean [95% CI]	18.4382 [16.023, 20.853]	26.462 [23.346, 29.577]	< 0.001
Discharge to Nursing Homes	**IGM GT (n = 38)**	**Non-IGM GT (n = 159)**	
Length of Stay Mean [95% CI]	9.184 [6.224, 12.145]	17.528 [13.522, 21.535]	0.001

Analysis (1 Jan 2021 – 16 Sep 2021)

U-turn Rates

	Intervention	Control	P-value
	IGM GT (n = 1091)	**Non-IGM GT (n = 2538)**	
Rate of Re-admission Post 30 Days (no. of re-admissions/patient)	0.232	0.278	0.0283

Understanding the implementation of IGM through RE-AIM Framework

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Analysis

RE-AIM

Reach

16.4%

Proportion of patients eligible for the intervention

Insight:

- Refers to the patients taken over by FM
- FM continues to consult patients in the ward that are not taken over by them
- A majority of patients can discharge home after their acute conditions improve
- Limitations in FM manpower and resources to taking over more patients

Analysis

RE-AIM

Adoption

~97.8%

Proportion of patients who remained in the intervention

Insight:

- There were no segregated data for consented patients as patients admitted into ward 64 will all be in SGH-IGM pilot
- Small proportion of “dropped out” patients refer to patients that had to be u-turned back to IM due to deteriorating conditions

Analysis

RE-AIM

Implementation

Limited Deviation

Some mentioned changes to inclusion criteria e.g. nursing home patient

Most reported

Exposed to important intervention indicators (e.g. early discharge knowledge)

Most reported

Satisfaction with IGM model reported by IM physicians

Insight:

- Patient experience were not collected
- Maintenance indicators cannot be performed yet

Understanding the implementation of IGM through CFIR constructs

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Qualitative Methods

Total No. of Interviewees	23
Gender • Male • Female	 4 19
Type of interview • FGDs – working level • IDIs – working level • IDIs – management/HOD level	 4 4 3
Duration in SGH-IGM (as of date of interview) • Less than 3 months • 3 months or more	 10 13
Type of professionals • Doctors • Nurses • Physiotherapists • MSWs	 14 5 2 2

A	Intervention characteristics (8 constructs)	• Features of the intervention that might influence implementation
B	Inner Setting (5 constructs)	• Features of the implementing organisation that might influence implementation
C	Characteristics of individuals (6 constructs)	• Individuals who are involved in the implementation and might influence implementation
D	Process (4 constructs)	• Strategies or tactics that might influence implementation
E	Outer setting (3 constructs)	• Features of the external context or environment that might influence implementation

Conclusion

- IGM has ***improved outcomes*** for complex multimorbidity patients within a hospital setting and is ***likely to be cost-effective*** (analysis in progress), but not without its barriers and ***scalability concerns***

- Critical to pre-plan and evaluate the implementation process of such a complex intervention

- Theory of Change, logic models, UK Medical Research Council and Implementation Science frameworks are important to guide robust program evaluation of complex interventions

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Thank You

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