A Framework and Working Model for Integration of Care: Bridging gaps between tertiary, secondary and primary care settings

Global Health Leadership Forum

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Singapore

www.aic.sg
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- Introduction – the impetus for system change and transformation
- Healthcare Models & Frameworks
- Overseas Models of Care Integration
- Singapore’s Healthcare System
- Care Integration as a Solution
- Singapore’s Care Integration Efforts
- Challenges and Moving Forward
A Greying World

- Medical advancement and higher standard of living have led to an increase in average lifespan.
- The incidence of chronic disease increases in tandem.
Greying Population – a Worldwide Phenomenon

Decreasing Fertility Rate + Increasing Life Expectancy = Ageing Population
In Singapore, we are not spared...
Coping with a rapidly ageing population

With the population ageing rapidly, more people are remaining sick longer. Keeping them in acute care hospitals, which can cost around $900 a day, is becoming too expensive.

"...with the population ageing rapidly, more people are remaining sick longer. Keeping them in acute care hospitals, which can cost around $900 a day, is becoming too expensive."

Special Reports – Silver Crunch
Straits Times 13 Nov 2010
Ageing Population ➔ Increasing Healthcare Demand

Chart 1.1: Proportion of Resident Population\(^6\) Aged 65 & Over From 2000 – 2030

What does it mean when we say our population will be older? It means there will be more demand on healthcare because older people are sick more often… this also means it is a different pattern of healthcare.

PM Lee Hsien Loong, National Day Rally 2009

Source: Singapore Department of Statistics (DOS), 2005

Source: Ministry of Health
Increasing Reliance on Institutional Support

Increasing Aged Dependency Ratio due to smaller family sizes
Increasing Prevalence of Chronic Diseases

Top 10 Conditions of Hospitalization

- Intestinal Infectious Disease
- Infections of Skin and Subcutaneous Tissue
- Chronic Obstructive Lung Disease (2.2%)
- Cerebrovascular Disease (including stroke) (2.1%)
- Pneumonia (2.5%)
- Other Heart Diseases (2.3%)
- Obstetric Complications affecting Fetus or Newborn
- Ischaemic Heart Disease (3.5%)
- Cancer (5.4%)
- Accident, Poisoning & Violence

Source: MOH
Caring for the Elderly – A Complex Task

- Financial Issues
- Caregiver Issues
- Ageism
- Multiple providers
- Multiple Chronic Diseases
- Polypharmacy
- Handicaps/Disabilities
- Multiple Social Issues
Chronic Care Model (Wagner)
### Chronic Care Model (Wagner)

<table>
<thead>
<tr>
<th>MODEL COMPONENTS</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health System - Organization of Healthcare</td>
<td>Program planning that includes measurable goals for better care of chronic illness</td>
</tr>
<tr>
<td>Self-Management Support</td>
<td>Emphasis on the importance of the central role that patients have in managing their own care</td>
</tr>
<tr>
<td>Decision Support</td>
<td>Integration of evidence based guidelines into daily clinical practice</td>
</tr>
<tr>
<td>Delivery System Design</td>
<td>Focus on teamwork and an expanded scope of practice for team members to support chronic care</td>
</tr>
<tr>
<td>Clinical Information Systems</td>
<td>Developing information systems based on patient populations to provide relevant client data</td>
</tr>
<tr>
<td>Community Resources and Policies</td>
<td>Developing partnerships with community organizations that support and meet patients’ needs</td>
</tr>
</tbody>
</table>
Population Management
(adapted from Kaiser)

Prevention is part of every member’s care

LEVEL 3
Intensive or Case Management
Leverage available resources to optimize health status and coordination of care.

LEVEL 2
Assisted Care or Care Management
Enhanced self-care skills and abilities, provide clinical management using care paths and protocols.

LEVEL 1
Today’s discussion
Routine care delivered by APC team, as well as self-management education, support for coping needs, training in the use of Healthwise Handbook, etc.
How does Kaiser Permanente Achieve Integrated Care?

- Focuses on patient
- Team that synthesizes data to allow creation and implementation of care plans as well as ongoing evaluation
- Spread successful care models throughout network
- Extensive use of IT system to support information flow and coordinated care
Overseas Models for Care Integration
Geisinger Health System (Pennsylvania, US)

- Serves mainly rural population – poorer, older, sicker population (~2.6 million)
- Pay for performance vs fee for service
- 1995 – adopted and deployed system-wide electronic health records (EHR)
- Key innovations: LIFE Geisinger (PACE) and The Advanced Medical Home
US Medical Home

• The concept was first introduced in 1967 by the American Academy of Pediatrics (AAP).
• Further developed by the American College of Family Physicians (ACP) and American Academy of Family Physicians (AAFP) to an enhanced model referred to as “Advance Medical homes (AMH)”.

![Diagram of US Medical Home concept]

**SPECIALIST**

- Specialized care delivery
- Case Managers
- Allied care professionals
- Self-care education

**Personalized Care**

1 Family Physician

1 Patient
US Medical Home

1. Broad spectrum of coordinated patient care (acute to complex chronic conditions)
2. Provide accessible, continuous and integrated care
3. Fee-for-service payments and care coordination
4. Patient-centered care, guided by family personal physicians-patient relationships
5. A primary care physician plays a gate-keeping role and work with a team of allied healthcare professionals and case managers
6. If the patient requires specialized care, the family physician continues to work with the specialist in areas where necessary and design the best coordinated care treatment for the patient.
Other “Models” of Care Integration

- Sweden (eg Jonkoping)
- Denmark and Netherlands (main focus is on primary care)
- Italy and Canada and parts of the UK (focus on health + social care integration, with some aspects on mental health)
- HK SAR (HK Hospital Authority “cluster model”)
- Various small scale pilots in Latin America, Spain, New Zealand, Australia, US, Canada, Germany, France and Eastern Europe
Singapore’s Healthcare System
Healthcare delivery is provided by the *public, private and people* sectors.

**Primary care provision**
- 80% private GPs
- 20% Polyclinics in NHG and SingHealth

**Secondary/Tertiary care**
- 20% Private
- 80% Public

**Continuing care**
- approx 70% by people sector, 30% by private sector
- community hospitals, nursing homes, hospices, day care centres, renal dialysis centre

**Wellness Care**
- Mainly private sector
- Some public sector involvement e.g. HPB
Singapore’s Healthcare Financing Philosophy

- **Ensure affordability of basic healthcare**
  - Heavy subvention, universal coverage for basic services, with access to higher levels of services based on willingness to pay

- **Instill individual responsibility**
  - Patients expected to co-pay part of medical expenses
  - Risk-pool for catastrophic illnesses, without undermining the need for individual responsibility and patients’ desire for choice.
Healthcare Financing System

3M System + Subsidies

Medisave
- National Medical Savings Plan
- Compulsory contribution from employee and employer

Medishield
- Catastrophic Insurance
  - Low cost
  - Built in deductibles and co-payments
  - Risk pooling

Medifund
- Endowment Fund
  - Safety net for needy who cannot afford healthcare despite Medisave and Medishield

Subsidies
- 4 classes of wards with the same level of care but different level of creature comforts
- Government subsidies inverse to comfort level
- Means tested subsidies
Singapore’s Healthcare Structure

Designed to meet the acute episode healthcare needs of the population when Singapore was still a young nation

**Primary Care**
- Mainly Private
- Fee for service

**Acute Hospital Care**
- Mainly Government
- Per Episode Charging

**Intermediate Long Term Care**
- Mainly Voluntary Welfare Organisations
- Per Diem Charging
A Need to Transform the Current Episodic Patient Journey…

Primary Care

- Limited community services keeps patients in residential care services

Failure to Control chronic disease resulting in emergency department (ED) admissions

Intermediate/Long Term Care

- Poorly coordinated discharge planning resulting in ED readmission

Acute Care

- Lack of Incentive for patients to be managed by primary care
- Lack of Confidence and Incentive to move to Intermediate and Long Term Care (ILTC) Services
- Lack of Capabilities of ILTC providers

Patient

- Failure to Control chronic disease resulting in emergency department (ED) admissions
… Into a Well Integrated Patient Journey

Primary Care

- Primary Care well supported by allied health
- Disease Management preventing exacerbation/complications of chronic disease
- Integrated Care Pathways & Care Coordination enable patients to return home safely

Acute Care

- National Care Assessment tool to right-site patients to ILTC Providers

Intermediate/Long Term Care

- Strong Home Care Services
- Upgraded ILTC providers providing care in the community
How Care Integration could be the Solution....
Concept of Integrated Care

What is integrated care?

- **Patient centred**
  - More personal and responsive care

- **Better health outcomes**
  - Delivers improved health outcomes including quality and patient experience

- **Joint provision**
  - Partnership of providers

- **Across boundaries**
  - Primary, community, secondary, mental health, social care, local government, NHS, third and private sectors

- **Systems not structures**
  - Partnerships, systems and models, not only organisations
Many Definitions of Integrated Care

- “...a coherent set of methods and models on the funding, administrative, organizational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the cure and care sectors...[to]...enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex problems cutting across multiple services, providers and settings.” (Kodner & Spreeuwenberg, 2002)

- “...a concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion...[as]...a means to improve the services in relation to access, quality, user satisfaction and efficiency.” (Gröne & Garcia-Barbero, 2001)
Many Definitions of Integrated Care

- “…the search to connect the healthcare system (acute, primary medical, and skilled) with other human service systems (e.g., long-term care, education, and vocational and housing services) to improve clinical outcomes (clinical, satisfaction, and efficiency).” (Leutz, 1999)

- “…the methods and type of organisation which will provide the most cost-effective preventative and caring services to those with the greatest health needs and which will ensure continuity of care and co-ordination between different services.” (Ovretveit, 1998)
9 Laws of Integration
(Leutz W, 1999 and 2005)

1. You can integrate some of the services for all of the people or all of the services for some of the people, but you can't integrate all the services for all the people.

2. Integration costs before it pays.

3. Your integration is my fragmentation.

4. You can't integrate a square peg and a round hole.

5. The one who integrates calls the tune.

6. All integration is local.

7. Keep it simple, stupid.

8. Don't try to integrate everything.

9. Integration isn't built in a day.
Key Elements of Successful Integration

Stakeholder Collaboration
- Shared Vision
- Leadership
- Shared Incentives

Engaging Patients
- Transparent system
- Patient Education
- Patient Responsibility

Improving Healthcare Delivery
- IT Connectivity and Support
- Continuous Improvement
- Common Guidelines
- Case Management
- Provider Networks

Aligning Finance
- Payment promotes cost effectiveness
- Performance Incentives

Motivated, Prepared Providers

Empowered Patients

Supportive Financing

Transformed, Integrated Healthcare

Improved Health Outcomes & Reduced Costs

Adapted from 2006 MacColl Institute for Healthcare Innovation
Evidence Showing Integrated Care Works

- Improved cost effectiveness shown in various integrated care studies (Hammar et. al., 2009; Olsson et. al., 2009; McRae et. Al., 2008)

- Reduced cost per patient visit to Community Health Care trusts (Hurst et. al., 2002)

- Reduced average length of hospital stay (Nickel et. al., 2010; Casale et. al., 2007; Gabow et. al., 2003)

- Reduced readmission rates (Peikes et. al., 2009)

- Decrease emergency presentations and admission in COPD and CHF patients (Bird et. al., 2010)

- Improved clinical indicators and cumulative death rates of COPD patients in China (Zhou et. al., 2010)
Singapore’s Care Integration Efforts...
Vision: Integrated Community Living - Aging in Place

Provide “Home Help” & wrapped-around services with some care supervision

Mental Health Care
Dementia Care
Active Ageing

HDB Home
School
Neighbourhood Link with Social Day Centre
FSC with Community Wellness Centre
Nursing Home/ Rehab Centre/ Halfway House/ Dementia Hostel
Chronic Disease Centre/ Polyclinic
Dementia with Rehab Day Care Centre
NPP
Shops/ GP Clinic
RH

1 FSC: Family Service Centre
2 NPP: Neighbourhood Police Post
Singapore’s Proposed Solution

Care Integration through the Regional Health System (RHS) – A patient-centric healthcare ecosystem comprising of partners from the primary, acute and step down care sectors working together to deliver integrated healthcare services to improve patient outcomes.
Healthcare Reform to Achieve Integrated Care

Source: Ministry of Health, Singapore

VISION: A NETWORK OF INTEGRATED REGIONAL HEALTH SYSTEMS

"This transformation in healthcare delivery to create a hassle-free healthcare system at the regional level, is a major strategy that we are pushing. It will make healthcare more convenient, safer, better and at the lowest possible cost...." Minister for Health (Aug 2004 – May 2011)
"Singapore is now developing an electronic health records system accessible to authorised medical practitioners at our hospitals and polyclinics, and eventually extending to the community care sector. It will allow for more effective treatment of patients who may receive a spectrum of healthcare services from different providers."

– Budget Speech 2009
Enabling Integration: National Care Assessment Framework

Subsidised Patients  Non-Subsidised Patients

Gatekeeping for subsidised services

Agency for Integrated Care

Standardised Care Needs Assessment and Referral System: Identifying eligible patients for ILTC settings

Allocating resources
Quality indicators
Improving quality
Reimbursement policy

MOH Policymakers

Improve patient care

Seamless flow of patients

Accreditation and audit of care assessments

Gatekeeping for subsidised services

Subsidised Patients

Non-Subsidised Patients

Community Hospital

Nursing Home

Rehab & support services

Home Care

Palliative Care

Improve right-siting of patients

Agency for Integrated Care

Accreditation and audit of care assessments
Integrated Care Pathways for Chronic Disease Management Today

5 Integrated Care Pathways:

- Stroke
- Diabetes
- Acute Heart Syndrome
- Hip Fracture
- Chronic Obstructive Lung Disease

Source: Ministry of Health, Singapore
Integration Efforts in Primary Care
The Current Primary Care Sector

- 80% private GPs, predominantly solo practices – heterogeneous, distanced from policies
- Limited interactions with tertiary healthcare services – distrusting yet over-engaged
- Lack of support services, viable business
  - Low uptake of chronic disease management
- Increasing burden on polyclinics to manage high influx of patients with chronic disease
A holistic approach to delivering care for chronic diseases

The Nation-wide CDMP in Singapore

- **Chronic Disease Management Programme (CDMP)**
  - Coverage & Organisation
  - Holistic care through treatment protocols
  - Improving access through innovative financing

- **Health Promotion & Disease Prevention (for NCD)**

- **Clinical quality improvement efforts in CDMP**

- **Continuum of care (Integrating care)**
  - Screening for chronic diseases
  - Right-siting care
Making Chronic Care Affordable

**Medisave Use for Outpatient Care**

- Since Oct 2006, MOH allows the use of Medisave for payment of outpatient care of 10 common chronic diseases:
  - Diabetes / Hypertension / Dyslipidaemia / Stroke
  - Asthma / COPD
  - Depression / Schizophrenia/Dementia/Bipolar Disorders

- Patients who participate in CDM programme can use Medisave to help pay medical bills at outpatient level
  - Deductible
  - Copayment
  - Annual Withdrawal Limit
  - Patient Registration and Certification
  - Use at GPs, SOCs and polyclinics
Integrated Care Path for Chronic Conditions

Acknowledgement: NHGP

Proposed Framework for ICP

Preventive care
- Screening and risk factor identifications
- Management of at-risk population

Primary Care
- Primary Care Diagnosis Flowchart
- Treatment Flowchart
- Patient self-management
- Care needs assessment & training
- Continuing Care Risk factor management
- Management and prevention Of Complications
- Continuation of rehabilitation

Acute Care
- Management of acute event
- Rehabilitation plan
- Multidisciplinary team assessment
- Discharge planning

Palliative Care
- Needs assessment
- Management of emergencies and symptoms (including psychological)
- Review medical care
- Manage terminal phase

Community Hospital

NATIONAL STANDARDS of CARE
Resource Management and Measurements
Team Care: Utilising non-doctor Clinicians

1 Singaporean to 1 Family Physician Led Team

Case complexity

Simple Chronic

Complex Chronic

Family Physician Clinic

Advanced Practice Nurse Clinic

Care Manager Clinic

Care Coordinator Clinic

General Clinic

Second Tier Clinic

Panel Clinic

Care Coordinator Clinic

Care Manager Clinic

Advanced Practice Nurse Clinic

Family Physician Clinic

Family Physician

Doctor

Advanced Practice Nurse

Care Manager

Clinical Pharmacist

Care Coordinator

Good control

Nurses > Drs

Poor control

Drs > Nurses

Acknowledgement: NHGP
Transforming Primary Care for Improved Integration
Primary Care Landscape

Transforming Primary Care sector:

- Strengthen the GP capability in chronic disease management
- Increase access option to co-ordinated care
- Right site patients in primary care
- Achieve better coordination of care for patients with chronic diseases
New Care Models for Team Based Care

**Family Medicine Clinic (FMC)**

- Multi-doctors practice (4 to 6 GPs)
- Team-based services e.g. nurse counselling, diabetic eye screening
- Support services e.g. pharmacy, basic laboratory services

*Physical Co-Location of GPs & Support Services*

Improving **Access** · Ensuring **Affordability** · Enhancing **Quality**
New Care Models for Team Based Care

Community Health Centre (CHC)

- Team-based services e.g. nurse counselling, diabetic eye screening
- Support services e.g. pharmacy, basic laboratory services, administrative

Physical Location / Virtual Network

Improving Access ∙ Ensuring Affordability ∙ Enhancing Quality
Transforming Primary Care
How it relates to the RHS

Regional Hospital
- Inpatient Care
- Specialty Centres
- Selected Outpatient Care

Medical Centre
- Revised model for chronic care
- Day Surgery + Selected Specialist Care

Family Medicine Clinics
- Revised model for acute care
- Revised model for chronic care
- Shared X-ray and Lab service
- Team-based care model
- Urgent Care Services*

Cluster of GPs supported by CHC
- CDMP GPs: Chronic and mental health
- PCPS GPs: Chronic and mental health
- PCPS GPs: Portable subsidies
- DRP DFS, AHP
- CHC

Polyclinics
- Revised model for acute care
- Revised model for chronic care
- X-Ray Laboratories
- Doctor-centric care model

Cluster of GPs supported by CHC
- CDMP GPs: Medisave IT Linkages
- PCPS GPs: Portable subsidies

Care model in polyclinics will progressively transform to that of FMCs

Acknowledgement: Ministry of Health, Singapore
Integrating Acute Care with the Intermediate and Long Term Care (ILTC) Sector
Building Blocks of Integration

**ACUTE CARE**
- Aged Care Assessment Services to triage vulnerable patients and develop discharge plan
- Anchoring Regional Hospital

**INTERMEDIATE CARE**
- Right-site rehab and subacute care in Community Hospitals
- Transitional Post-Acute Home Care to reduce stay in RH and enable early discharge to home

**LONG-TERM CARE**
- Up-skilling Nursing Homes
- Day rehab & care services
- Community nursing services
- Caregiver training
- Fall prevention

**PRIMARY CARE**
- Primary Care Networks and Disease Management Units
- Tiered Primary Care

**Community Allied Health Support**
- Integrated Screening and Prevention Programme
- Information and Referral

**Home**
- Integrated Clinical Pathways
- National Electronic Health Records

Adapted From MOH
Transition of care from acute hospital to intermediate and long term care facilities

**Restructured Hospital (RH)**
7 RHs providing acute and specialised clinical care

**Nursing Homes**
44 subsidised providers providing long term nursing care
Up to 75%

**Community Hospitals (CH)**
5 CHs providing inpatient rehabilitative, sub-acute, convalescent care to discharged RH patients
Up to 75%
Up to $250/day & $5,000/yr

**Hospice Care**
4 subsidised inpatient hospices providing palliative care for terminally-ill patients
Up to 75%
Up to $160/day

**Eldercare Centres**
providing specialised care for patients & elderly in the day

**Home Care**
allowing home-bound elderly the comfort of being cared for at home by healthcare professionals
Up to 80%

**Respite Care**
providing temporary care services

**Day Rehabilitation Centres**
32 subsidised centres providing physiotherapy & occupational therapy for regain of functional abilities
Up to 80%
Up to $25/day & $1,500/yr

**Hospice Day Care Centres**
9 subsidised centres helping dementia patients improve/maintain cognitive & physical functions, Up to 80%

**Dementia Day Care Centres**
9 subsidised centres helping dementia patients improve/maintain cognitive & physical functions, Up to 80%

**Home Medical**
6 subsidised providers providing medical care, eg. consultation by docs, medication reconciliation etc.
Up to 80%

**Home Nursing**
9 subsidised providers providing nursing care, eg. wound dressing, injections etc.
Up to 80%

**Home Therapy**
providing physiotherapy & occupational therapy, including home environment assessment, home care equipment training & caregiver training etc.

**Home Palliative Care**
5 subsidised providers providing end-of-life medical & nursing care.
Up to 80%
Up to $1,500/patient

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**Legends**
- Government Subsidies
- Medisave
- Available from 3Q2012 at MOH-funded providers

**Footnotes**
- At selected VWOs or centres

**Explanatory Notes**
1. Medifund is available at selected CHs, NHs & inpatient hospices, and will be extended to cover non-residential services in April 2012.
2. The Interim Disability Assistance Programme for the Elderly (IDAPE) will provide higher cash payouts and benefit more patients by 3Q2012. The cash can be used for all long term care facilities/services. For more info on eligibility criteria, please refer to MOH website at www.moh.gov.sg.
3. Eldershield provides monthly cash payouts to insured Singaporeans to help them defray out-of-pocket expenses for all approved long term care facilities/services, subject to a disability assessment.
About Transitional Care

- Transitional care can be defined as care that is required to facilitate a shift from one disease stage and/or place of care to another.

- Transitional care is based on a comprehensive plan of care and the availability of health care practitioners who are well-trained in chronic care and have current information about the patient's goals, preferences, and clinical status. It includes logistical arrangements, education of the patient and family, and coordination among the health professionals involved in the transition. Transitional care, which encompasses both the sending and the receiving aspects of the transfer, is essential for persons with complex care needs.

Transitional Care Programmes

<table>
<thead>
<tr>
<th>Care Concept</th>
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<tbody>
<tr>
<td>• Improving disease recovery to a ‘more stable, dischargeable’ state and expedite discharge from acute care facilities</td>
</tr>
<tr>
<td>• Reduce/Avoid AE attendance and hospital/acute care admission/re-admission</td>
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<tr>
<td>• Hand-off patients to both home/community-based care providers</td>
</tr>
</tbody>
</table>
## Transitional Care Programmes

<table>
<thead>
<tr>
<th>Care Lead</th>
<th>• Medical/Nursing leads, with multi-disciplinary capabilities</th>
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</thead>
<tbody>
<tr>
<td>Care Focus</td>
<td>• Direct active intervention / care provision</td>
</tr>
<tr>
<td></td>
<td>• Significantly diverse and complex scope: medical / nursing / social / functional / physical / rehabilitation / mental needs</td>
</tr>
<tr>
<td></td>
<td>• Less co-ordination of care services/providers across care continuum and more on active medical/nursing care needs</td>
</tr>
<tr>
<td>Care Settings</td>
<td>• Acute care facility(Inpatient) to Home/Community</td>
</tr>
<tr>
<td>Care Levels</td>
<td>• Higher level of acuity</td>
</tr>
<tr>
<td></td>
<td>• Various disease states, including acute exacerbations, which may be difficult to stabilise</td>
</tr>
<tr>
<td></td>
<td>• Complex medical needs requiring interventions</td>
</tr>
<tr>
<td>Care Duration</td>
<td>• Average 3 months</td>
</tr>
</tbody>
</table>
ACTION TEAMS:
At work in the hospitals

High-risk hospital inpatients

Residential Facility e.g. community hospital
Home with supporting services
- Day rehabilitation services
- Home Medical & Home nursing services
- Social support services

Admission
Discharge
About 1-month post discharge

Hospital
- Screening high-risk patients
- Assessment of needs
- Referral and placement in ILTC services

Community
- Develop and implement care plan
- Goal setting and evaluation of care plans

ACTION Team
Care Coordinators
- Nurses,
Social workers, Allied health professionals

Phone check-up and support
- Telephone follow up, home visit and assessment
- Optimize a patient's self-care capabilities at home
- Monitoring of high risk clients
- Hand-off to other services
Aged Care Transition (ACTION) Teams

- Assess the needs of elderly patients and facilitate their transition into appropriate care upon hospital discharge
- 65 care coordinators in 5 RHs, 1 Tertiary Centre & 3 Community Hospitals
- More than 10,000 patients recruited since 2008
- Average length of stay (bed days) reduced by 43% and 82% of cases were able to discharge

Helping older patients make the transition to home care
The Need for ACTION Teams – Why?

Repeated hospital admissions due to lack for appropriate care.

Disorganised medications and from multiple sources, often leading to double dosing

Living environment in disarray, compounding to health conditions
# Evaluation - Baseline Characteristics of ACTION patients

<table>
<thead>
<tr>
<th>Variable [Mean ± SD unless stated]</th>
<th>Number of patients (%) N=4132 (ACTION); N=4132 (Control)</th>
<th>Propensity score weighted†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before propensity score weighting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACTION</td>
<td>Non-ACTION</td>
</tr>
<tr>
<td>Age, years</td>
<td>79.2 ± 7.7</td>
<td>79.1 ± 7.7</td>
</tr>
<tr>
<td>Female (%)</td>
<td>56.2</td>
<td>56.2</td>
</tr>
<tr>
<td>Charlson Index</td>
<td>1.7 ± 1.9</td>
<td>1.4 ± 1.7</td>
</tr>
<tr>
<td>Length of stay, days</td>
<td>14.6 ± 16.2</td>
<td>7.4 ± 10.0</td>
</tr>
<tr>
<td>No. of hospitalizations within 180 days before index hospitalization</td>
<td>0.74 ± 1.3</td>
<td>0.89 ± 1.5</td>
</tr>
<tr>
<td>% with &gt; 1 hospitalizations Change to Hospitalization within 180 days before index hospitalization (%)</td>
<td>16.5</td>
<td>20.1</td>
</tr>
<tr>
<td>No. of ED visits within 180 days before index hospitalization</td>
<td>1.9 ± 2.3</td>
<td>1.7 ± 2.1</td>
</tr>
<tr>
<td>% with &gt; 1 ED visits Change to ED visit within 180 days before index hospitalization (%)</td>
<td>44.6</td>
<td>39.9</td>
</tr>
</tbody>
</table>

(a)2 sample t-test / chi-squared test

(b)weighted regression / logistic regression of each covariate on discharge disposition; Wald test p-value of coefficient for discharge disposition
## Evaluation - ACTION reduced hospital utilisation

<table>
<thead>
<tr>
<th>Propensity adjusted utilization outcomes</th>
<th>ACTION</th>
<th>Non-ACTION</th>
<th>P-value*</th>
<th>Odds ratio (95% CI)</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehospitalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of rehospitalizations within 15 days</td>
<td>578</td>
<td>868</td>
<td>&lt;0.001</td>
<td>0.60 (0.53, 0.68)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rehospitalized within 15 days, %</td>
<td>12.6</td>
<td>19.3</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of rehospitalizations within 30 days</td>
<td>950</td>
<td>1281</td>
<td>&lt;0.001</td>
<td>0.69 (0.62, 0.77)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rehospitalized within 30 days, %</td>
<td>19.5</td>
<td>25.9</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of rehospitalizations within 180 days</td>
<td>3347</td>
<td>4132</td>
<td>&lt;0.001</td>
<td>0.80 (0.73, 0.88)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rehospitalized within 180 days, %</td>
<td>44.6</td>
<td>50.2</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ED visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of ED visits within 30 days</td>
<td>992</td>
<td>1240</td>
<td>0.002</td>
<td>0.81 (0.72, 0.90)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ED visit within 30 days, %</td>
<td>19.3</td>
<td>23.0</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of ED visits within 180 days</td>
<td>3801</td>
<td>4545</td>
<td>0.052</td>
<td>0.90 (0.82, 0.99)</td>
<td>0.027</td>
</tr>
<tr>
<td>ED visit within 180 days, %</td>
<td>46.3</td>
<td>48.9</td>
<td>&lt;0.027</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*weighted regression/logistic regression of each covariate on discharge disposition; Wald test p-value of coefficient for discharge disposition
Evaluation - Estimated Cost Savings

- Cost savings from public health system’s perspective could be estimated from the difference in reduced hospital days and incremental program costs.
- Additional cost for ACTION program over six months (Apr to Sep 2010) was S$1.94m (>95% the care coordinators’ salary).
- Estimated cost savings from 8714 reduced hospitals days = S$7.3m.
- Additional ACTION program cost to keep a care recipient out of hospital was $1.94m/8714 or S$223 per day. Estimate of Overall cost savings = S$5.4m over 6 months.
- Assumes no net additional healthcare cost by ACTION care recipients compared to the control group**.
Evaluation - Perception in Health-Related QoL (EQ-5D)

- Analysed for surveys completed by same person (n=296)
- Higher proportion reported having ‘no problems’ at 4-6 weeks for all 5 dimensions (P<0.05)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Interview 1</th>
<th>Interview 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility*</td>
<td>29.7%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Self-Care*</td>
<td>40.2%</td>
<td>49.7%</td>
</tr>
<tr>
<td>Usual Activity*</td>
<td>39.2%</td>
<td>48.6%</td>
</tr>
<tr>
<td>Pain/Discomfort*</td>
<td>42.2%</td>
<td>57.8%</td>
</tr>
<tr>
<td>Anxiety/Depression*</td>
<td>57.4%</td>
<td>65.2%</td>
</tr>
</tbody>
</table>

Source: RHIME-IMH Survey
Program of All Inclusive Care for the Elderly (PACE) in the US

Started in the 70s in San Francisco, USA

Objectives of PACE are to:
- Delay institutionalisation and reduce utilisation of acute healthcare services
- Enables frail elderly to receive the care that they need in the community that they are accustomed to

Delivering all needed medical and supportive services, (via capitated funding model) the program is able to provide the entire continuum of care and services to seniors with chronic care needs, while maintaining their independence in the community for as long as possible.

Interdisciplinary team based approach to caring for the participant

Clearly shown that in a debilitated, frail, elderly population, with whom health care costs are expected to be high, a combination of team care, managed health care and care coordination can lead to better outcomes and reduced cost over time (Hirth et al, 2009)
Singapore Programme for Integrated Care for the Elderly (SPICE)

- Officially launched in 26 Oct 2010
- Salvation Army - Bedok Multi-Service Centre
- Offers an alternative to nursing home for patients discharged from acute hospitals
- Fulfills care needs of frail elderly in the community
- BASED ON THE PROGRAM OF ALL INCLUSIVE CARE FOR THE ELDERLY (PACE) IN THE US
*MSW & Doctor: Not under staffing from SPICE
Innovative Pilot Projects between Acute Hospitals and Community Partners
Innovative Use of IT In Care Delivery for Care - Khoo Teck Puat Hospital

- Regional Nursing Home Hub through Telemedicine
- Geriatricians from the hospital conduct consults using webcams with various nursing home partners to review patients

Courtesy of Khoo Teck Puat Hospital
Changi General Hospital: Health Management Unit (Diabetes)

1. Identify
   - ICD9 Codes

2. Stratify
   - HbA1c
     - 4-7=Well
     - ≥7.91=Sub-optimal
     - ≥8.1=Poor
   - Mental health cases and high morbidity, bed-bound

3. Programme Modules
   - Topics:
     - HbA1c, diabetic meds
     - Bld glucose monitoring
     - Hypertension, meds
     - Early identification of red alerts
     - Hyperlipidaemia, meds
     - Lifestyle (dietary, exercise)
     - Extra: fasting & diabetes
     - Sick day rules
     - Tele-education
     - Tele-monitoring
     - Tele-case mngt
     - Tele-referral
     - Tele support
     - Patient safety prog
     - Carer’s support
     - Social support referral

4. Evaluation
   - E-mortality rounds
   - E-morbidity rounds

5. Passive Monitor
   - HbA1c, Lipids, Cholesterol
   - Clinical Indicators: BP, BMI
   - Readmission
   - A&E Visits
   - Default annual checks

Courtesy of Changi General Hospital
Challenges & Moving Forward
Challenges in Care Integration

- The different fragments in the healthcare industry, including the different departments in an organisation, are usually working in silos.

- An uphill task to convince the different fragmented bodies to change their old working style to work together in an integrated eco-system.

- Many are still more concerned over the short-term benefits such as their bottomline, than the long-term benefits which care integration heralds, especially when more effort and monetary investments are required from them.

- Change fatigue - The change from an healthcare system targeted at acute episodic care to one that is integrated for long-term care is not a simple task. This fatigue limits the pace of change.
Key Lessons Learnt

- It starts with political “buy-in” and leadership (from policy development to implementation and evaluation).
- The need to invest first before you “see the returns”.
- New skills needed amongst professionals and managers:
  - Collaboration
  - Working in teams across different settings
  - Creating “win-win” solutions and approaches
  - Exercising “sensitivity”
  - Removing “silos”
- Robust IT systems help a great deal
- Start with specific patient populations and demonstrate “quick wins”
- Be disciplined
- Adapt where possible
- Evaluate
Key Challenges Ahead

- Integration of care, in itself, not a “technical” challenge
  - Leadership / management orientation and focus
  - Changing mindsets
  - Shifts in “professional power”
- How to create seamless integrated care in the face of “fee-for-service” financing models?
- Collaboration (across care settings) as a necessary skill
- Care coordination
- Performance and outcome measurement
  - Patient
  - Provider
  - System
Thank you

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2nd Asian Integrated Care Conference
8 & 9 November 2013
www.aic.sg
List of Bibliography (1)

- World Economics and Social Survey 2007; Development in an ageing world, UN, NYC 2007


Glen D Steele et al (2010); How Geisinger’s Advanced Medical Home Model Argues the Case for Rapid-Cycle Innovation. Health Aff November 2010 vol. 29 no. 11 2047-2053

Useful websites

- Agency for Integrated Care  
  www.aic.sg
- Singapore Silver Pages  
  www.aic.sg/silverpages/
- Ministry of Health, Singapore  
  www.moh.gov.sg
- Community Health Assist Scheme (CHAS)  
  www.chas.sg
- Eric Coleman’s Care Transitions Programme  
  www.caretransitions.org
- Mary Naylor’s Transitional Care Model  
  www-transitionalcare.info