A Transitional Care Programme on self-care, hospital readmission and mortality among patients with chronic heart failure: Empirical effects and translational challenges

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Heart Failure (HF)

- Heart failure:
  - A syndrome representing failure of the myocardium to pump adequate blood to meet the metabolic need.

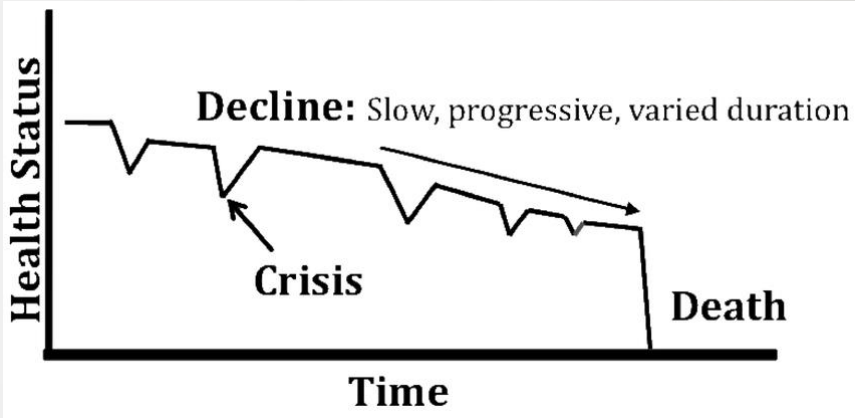
  - It is evolving as a growing epidemic in Asia.
    - Prevalence: 1.26 - 6.7%
    - Prevalence (age ≥ 75): 4.1% - 34.2%

Circulation Journal, 2013; 77. doi:10.1253/circj.CH-13-0971.

Trajectory of heart failure

- High burden on hospital service utilization
  - 19,077 hospitalizations/ year
  - 53 admission per day
  - 4-week readmission: 25%
  - 6-month readmission: 50%

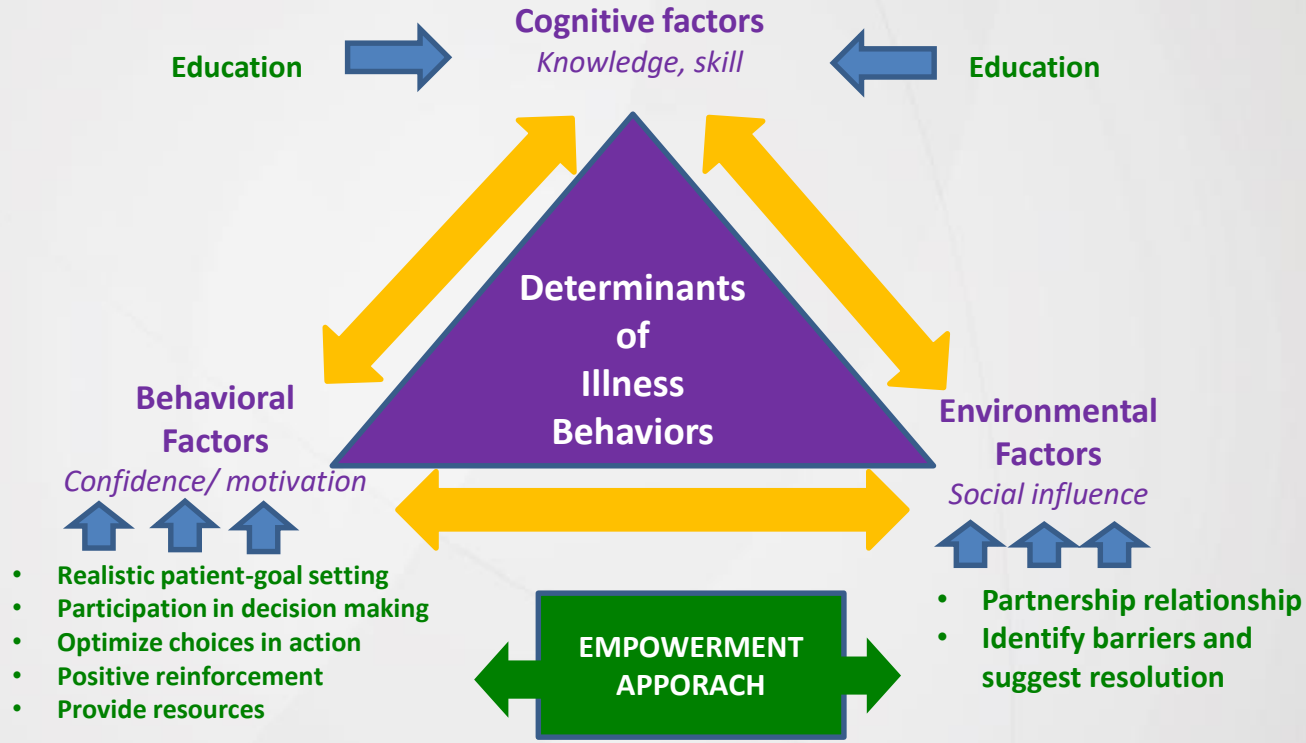
(HK Hospital Authority, 2013)



Reasons for avoidable hospital admission

CMAJ 2011, 28(doi: 10.1503/cmaj.101860)

Bandura's social cognitive theory



Study aim

- Developed & investigated the effects of empowerment-based transitional care on post-discharge outcomes of HF patients.
- Primary outcomes
  - Hospital readmission, mortality, event free survival
- Secondary outcomes
  - Self-care, self-care related factors, HRQL

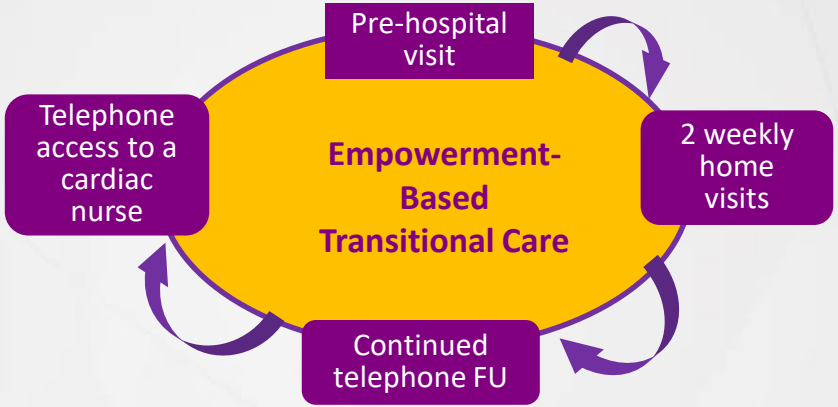
Methods

- Study design & Setting
  - Prospective, randomized controlled trial.
  - Cardiac unit of a university-affiliated hospital in HK.

- Sample
  - Selection criteria:
    - An index diagnose of heart failure in the clinical management system;
    - Not planned for cardiac surgery;
    - Intact cognitive function (Abbreviated Mental Test ≥ 6);
    - Community-dwelling;
    - With telephone access at home;
  - Power analysis for sample size estimation

Transitional care model

- Assess health status & explore reason for admission.
- Health interview to identify self-care needs.
- Identify post-discharge concern.



- Comprehensive assessment on health status & self-care
- Tailored education on disease management.
- Skill training
- Empowerment approach to improve self-care:
  - Partnership relationship
  - Identify self-care goal
  - Develop actions
  - Identification of barriers & challenges.
  - Kept a patient record to facilitate FU.
  - Community service mapping

- Monitor symptom severity
- Refer to PCP if indicated
- Empowerment approach to improve self-care:
  - Monitor the implementation of action plan and goal attainment.
  - Discussed the reasons for non-compliance to the action plan.
  - Provide health counseling & positive reinforcement.
  - Revise the action plan and goal accordingly

- Provide prompt advice to patients' enquiry.

Outcome evaluation

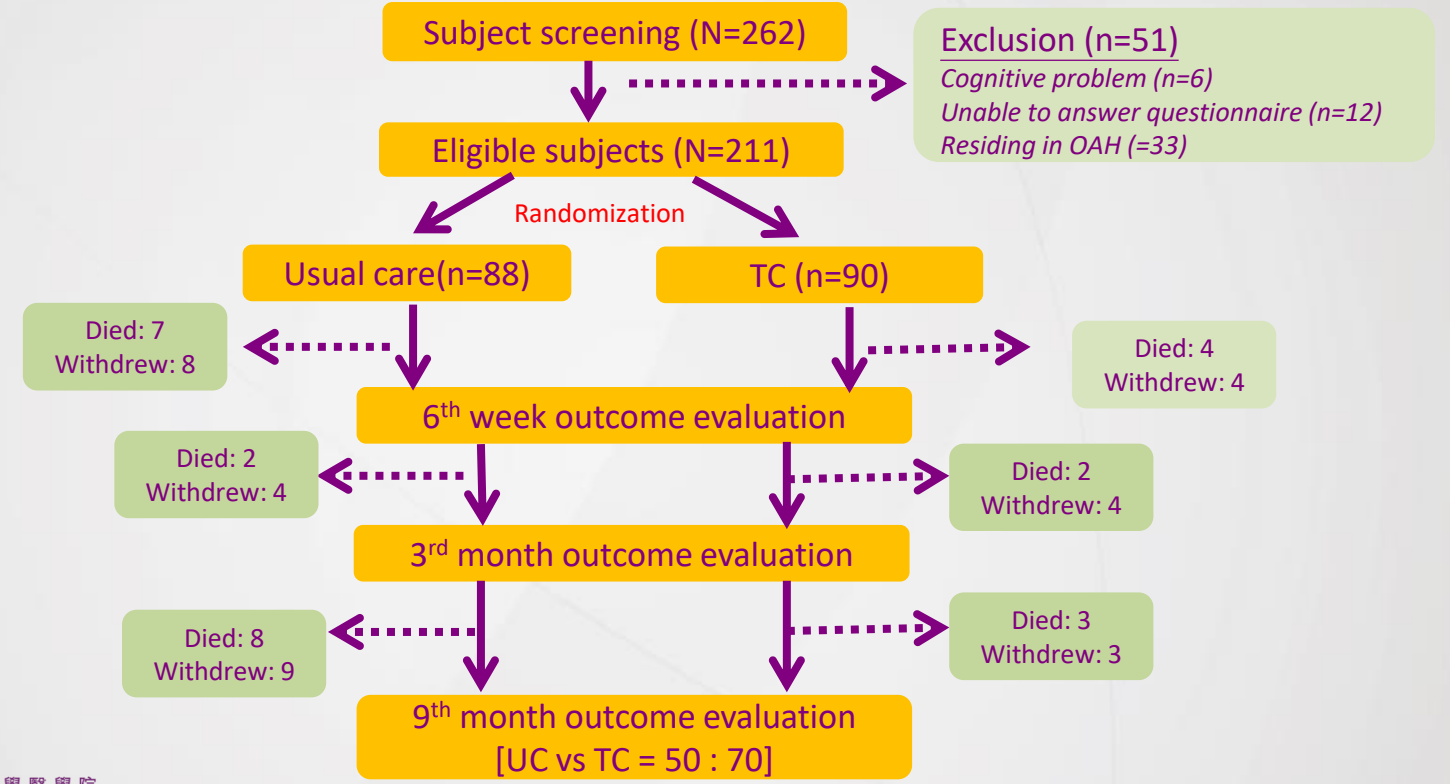
- Timeline
  - Baseline, 6th weeks, 3rd month, 9th month

- Primary outcomes
  - Event free survival
  - Number & days of hospital readmission
  - Mortality rate

Outcome evaluation

- Secondary outcomes
  - Self-care HF Index (SCHFI)
    - Self-care maintenance/ management/ confidence.
  - Dutch HF Knowledge Scale (DHFKS)
    - Knowledge on symptom recognition, lifestyle modifications, and medications.
  - Minnesota Living with HF Questionnaire (MLHFQ)

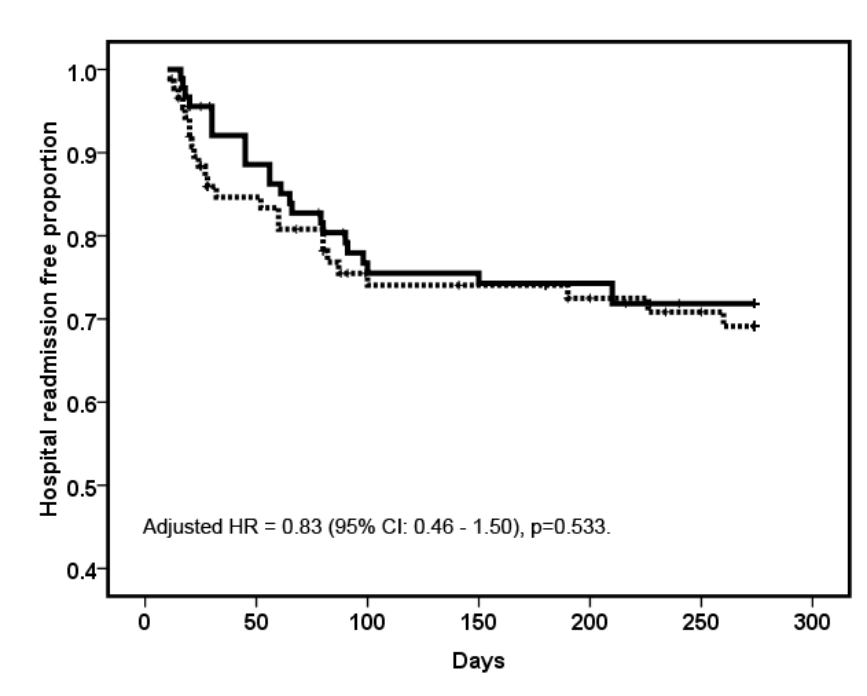
Consort Flow Chart



Results: Baseline characteristics

Characteristics	TC group (n=90)	UC Group (n=88)	P value
Age	78.6 (7.1)	78.7 (6.7)	0.894
Male gender	59 (53.3%)	32 (36.4%)	0.025*
Duration of CHF (months)	24 (13.1)	25.2 (9.3)	0.465
NYHA (II/ III/ IV)%	58.9/37.8/3.3	56.8/40.9/2.3	0.999
LVEF (%)	41.1 (16.1)	39.0 (16.3)	0.645
Age-adjusted Charlson comorbidity index	5.6 (1.5)	60. (1.7)	0.135
Use of medications			
Digoxin	15 (16.7)	10 (11.4)	0.389
Diuretics	80 (88.9)	74 (84.1)	0.390
ACE inhibitor	51 (56.7)	32 (36.4)	0.007**
Nitrates	29 (32.2)	37 (42.0)	0.215
Beta blocker	39 (43.3)	36 (40.9)	0.760

Results: Rate of hospital readmission



	Hospital readmission [HR (95% CI)]
ITT population	0.83 (0.46-1.50), p = 0.53
Pre-protocol population	0.69 (0.39 – 1.26), p = 0.55
Worst scenario	0.59 (0.37 – 0.94), p = 0.03*

Adjusted for demographic & clinical variables

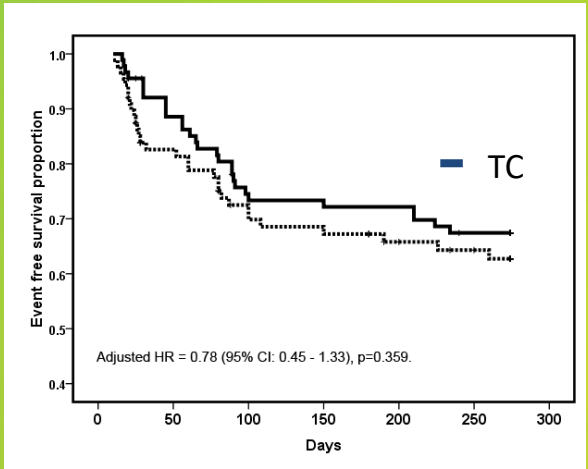
	TC	UC	Sig
6-week hospital readmission	8.1%	16.3%	0.048*

	TC Median/ IQR	UC Median/ IQR	Sig
Length of stay	6 (5-7)	9 (7-12)	0.006**

Adjusted for demographic & clinical variables

Results: Event free survival

- Proportion of subjects with event free survival across time

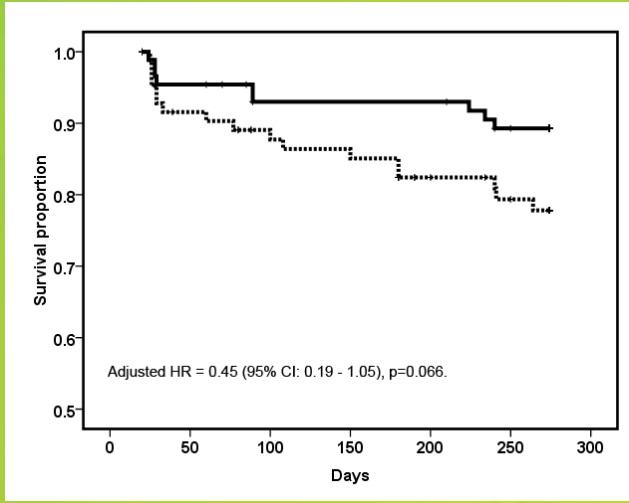


	Mortality or hospital admission [HR (95% CI)]
ITT population	0.78 (0.45-1.33), p = 0.359
Pre-protocol population	0.66 (0.39 – 1.13), p = 0.312
Worst scenario	0.59 (0.37 – 0.94), p = 0.03*

Adjusted for demographic & clinical variables

Results: Survival

- Survival proportion across time

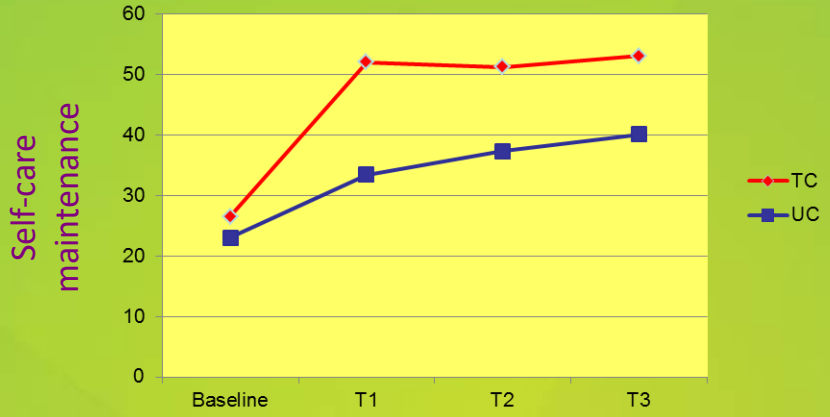


	Mortality HR (95% CI):
ITT population	0.45 (0.19-1.05), p = 0.07
Pre-protocol population	0.40 (0.17 – 0.93), p = 0.03*
Worst scenario	0.44 (0.25 – 0.77), p = 0.004**

Adjusted for demographic & clinical variables

	TC	UC	Sig
Mortality rate at 9 months	4.1%	13.8%	0.03

Results: Effects on self-care maintenance



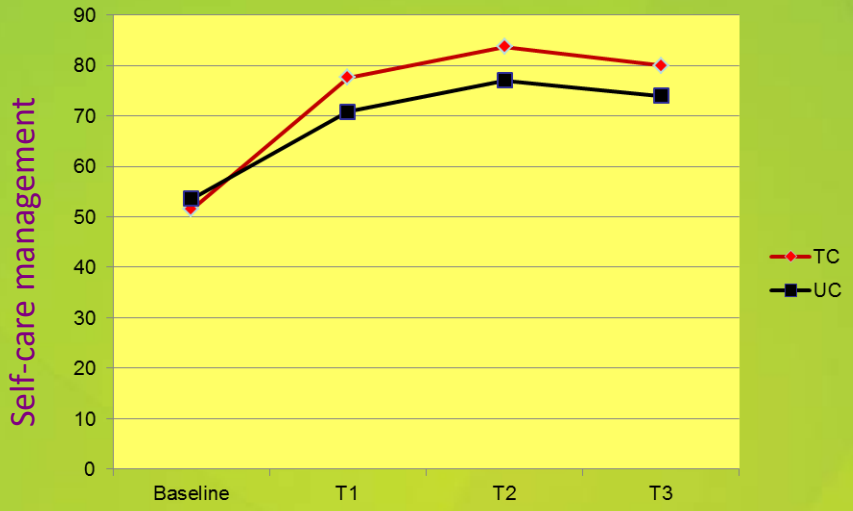
Results of Generlized Estimating Equation (GEE)

Group x T1: B(95%CI) = 13.95 (6.82, 21.07), p<0.001

Group x T2: B(95%CI) = 9.16(1.93, 16.39), p<0.05

Group x T3: B(95%CI) = 9.98 (1.78, 18.19), p<0.05

Results: Effects on self-care management



Results of Generlized Estimating Equation (GEE)

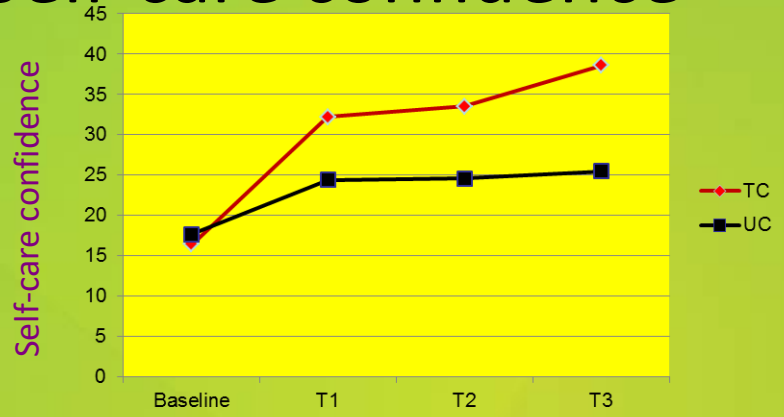
Group x T1: B(95%CI) = 8.19 (1.41, 14.97), p<0.05

Group x T2: B(95%CI) = 8.21(1.41, 15.01), p<0.05

Group x T3: B(95%CI) = 6.42 (-2.22, 15.06), NS

Results: Effects on self-care confidence

- Self-care confidence



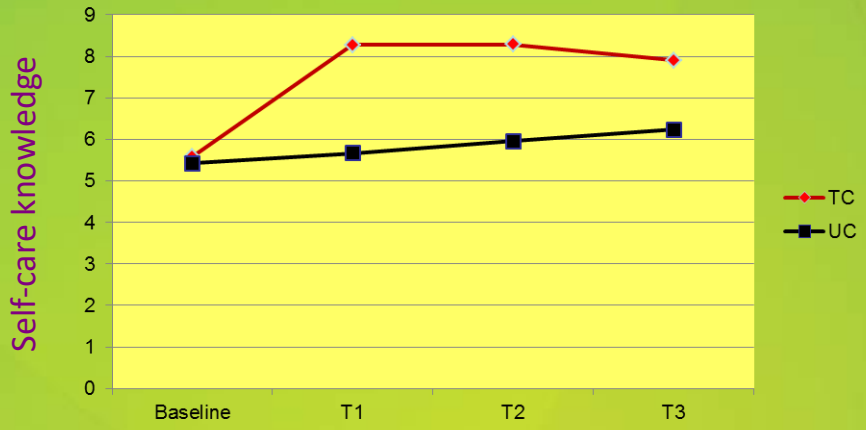
Results of Generalized Estimating Equation (GEE)

Group x T1: B(95%CI) = 8.97 (1.41, 14.97), p<0.01

Group x T2: B(95%CI) = 10.45(1.41, 15.01), p<0.001

Group x T3: B(95%CI) = 14.02 (-2.22, 15.06), p<0.001

Results: Effects on self-care knowledge



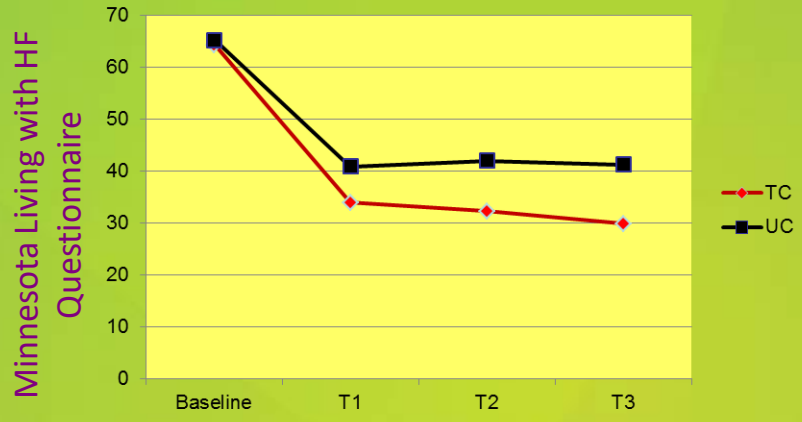
Results of Generalized Estimating Equation (GEE)

Group x T1: B(95%CI) = 2.41 (1.68, 3.15), p<0.001

Group x T2: B(95%CI) = 2.11(1.38, 2.83), p<0.001

Group x T3: B(95%CI) = 1.49(0.65, 2.34), p<0.001

Results: Effects on HRQoL



Results of Generalized Estimating Equation (GEE)

Group x T1: B(95%CI) = -6.31(-12.72, 0.10), ns

Group x T2: B(95%CI) = -8.92(-15.99, -1.85), p<0.05

Group x T3: B(95%CI) = -10.19(-17.53, -2.85), p<0.001

Key message

- This study demonstrated the high feasibility of a patient-centered empowerment-based transitional care to improve the HF health outcomes:
  - Vigorous disease monitoring in early discharge period;
  - Empowered self-care in accordance to patients' personal and cultural preferences;
  - Optimized support from community care resource;
  - Support decision-making for seeking medical care at PCP;

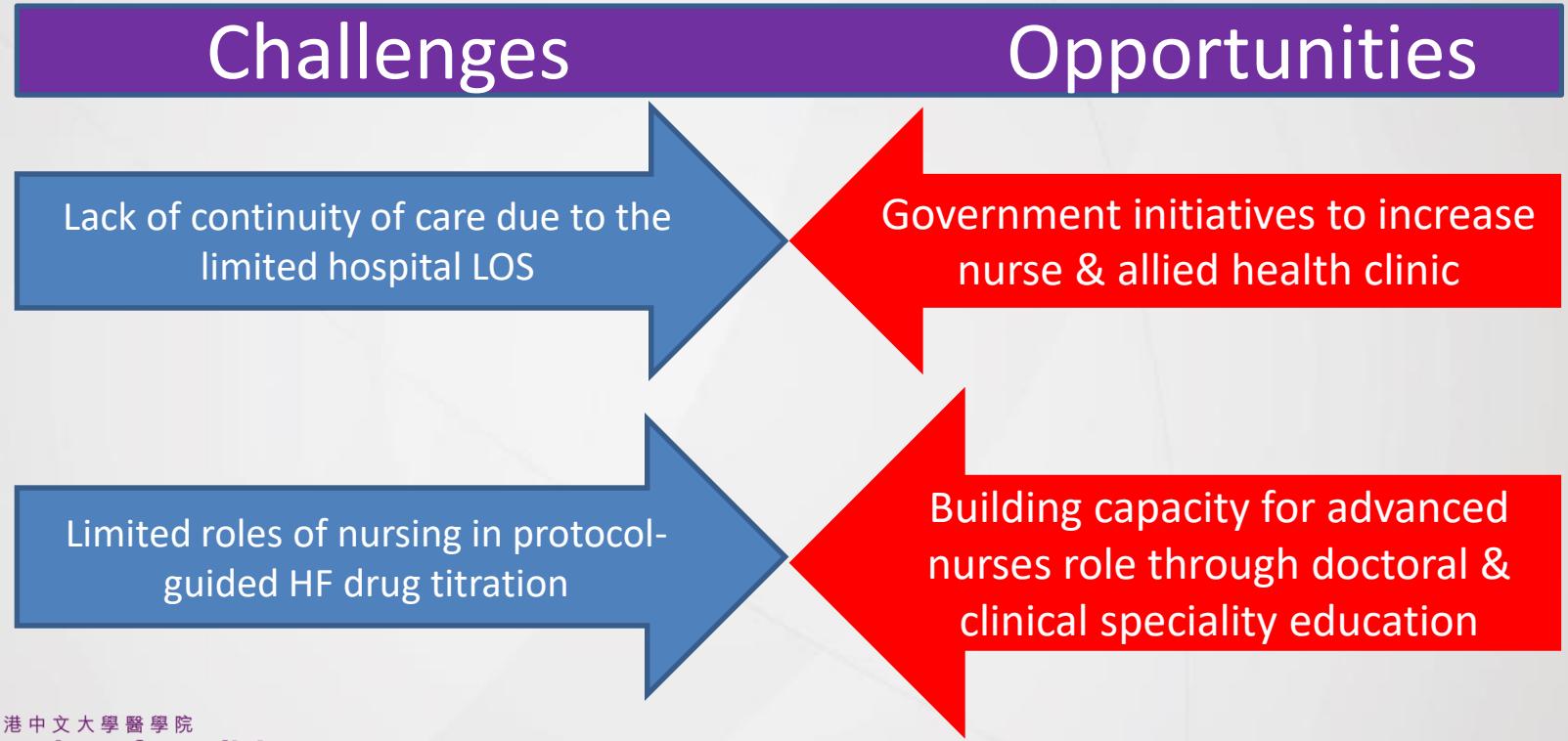
Key messages

- Although the TC did not have measurable effects on improving reducing hospital readmission or improving event-free survival, it has a noticeable impact on:
  - prolonging survival,
  - reducing 6-week hospital readmission rate
  - reducing the length of readmission days.

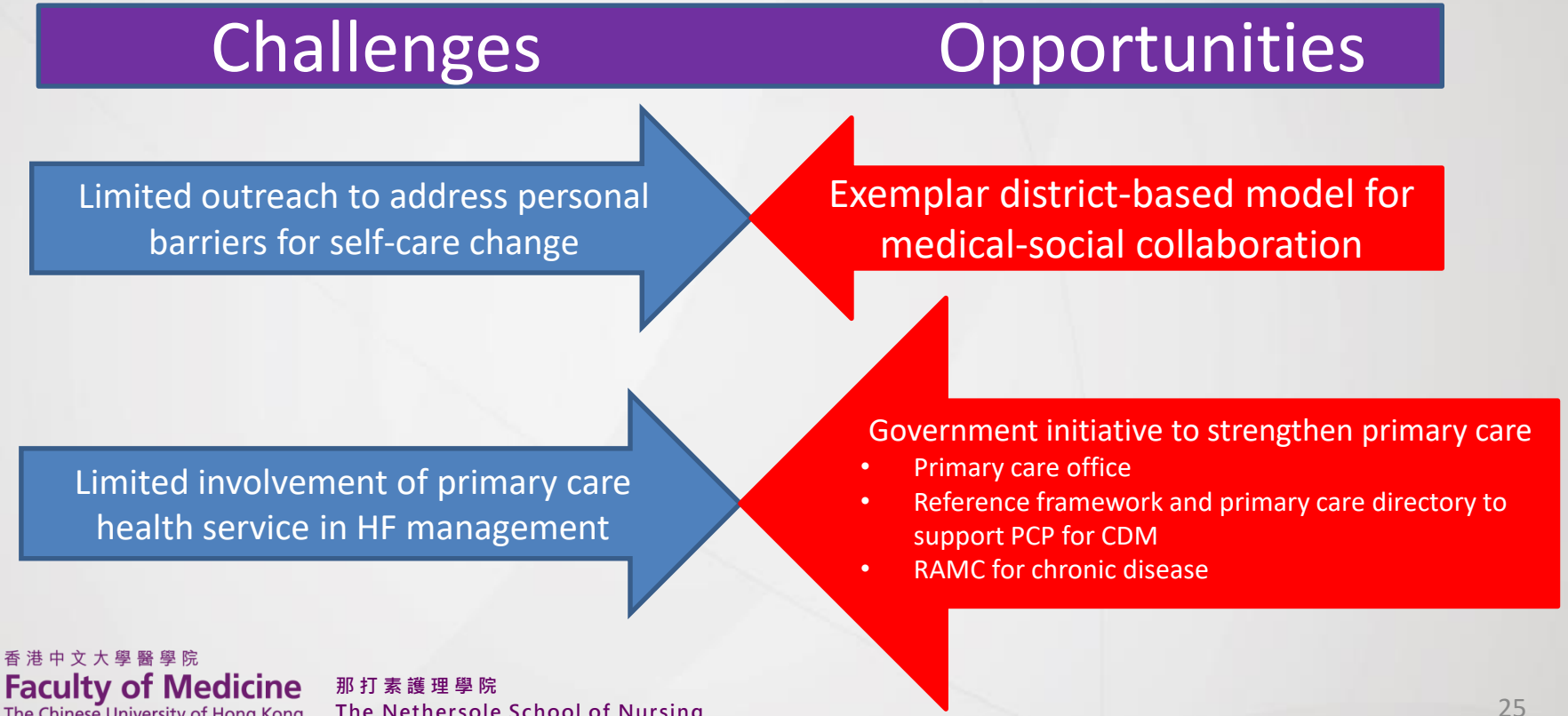
Key messages

- As compared with previous studies, the lack of longer-term effects on hospital readmission may be related to the lack of medical care components:
  - Protocol-guided drug titration
  - Enhanced communication of patients' progress to PCP
  - Direct referral to cardiologists for prompt out-patient management

Knowledge translation



Knowledge translation



Thank you

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