Team-based innovations in primary care delivery in Canada and timely outpatient physician follow-up after hospital discharge

Bruno D. Riverin[1,2], Patricia Li[1,2], Sylvie Provost[3], Mamadou Diop[1,3], Ashley I. Naimi[4] and Erin Strumpf[1,5]

[1]Department of Epidemiology, Biostatistics & Occupational Health, McGill University; [2]Department of Pediatrics, McGill University; [3]Direction régionale de santé publique du Centre intégré universitaire de santé et de services sociaux du Centre-Sud-de-l'Île-de-Montréal; [4]Department of Epidemiology, University of Pittsburgh Graduate School of Public Health; [5]Department of Economics, McGill University

Background

Timely outpatient follow-up

- Essential for effective care transition strategies and has been associated with lower risk of death, unplanned readmission and ED visit
- Clinical guidelines recommended that follow-up after discharge should occur within:
  - ≤ **30 days** for patient hospitalized for **heart failure (HF)** or **acute myocardial infraction (AMI)**
  - ≤ **14 days** for patient hospitalized for **chronic obstructive pulmonary disease (COPD)**

New team-based PCP in Quebec, Canada

Family Medicine Groups (FMGs)

- 6-12 full-time equivalent (FTE) physicians, working in close collaboration with nurses and other health professionals
- 1,000-2,000 registered patients per FTE physician
- FMG develops ties with local community centers and specialists to ensure access to social and specialty services
- Physicians maintain the same remuneration policy (i.e., fee-for-service); additional payment for registering patients

Objective

To describe how rates of timely post-discharge follow-up vary by whether elderly or chronically ill patients are enrolled in new multidisciplinary team-based PC practices or in usual PC practices

Study Design

- Population-based claims database from the Régie de l'Assurance Maladie du Québec (RAMQ)
- Elderly (≥ 70+) or chronically ill patients registered by a primary care physician
- 620,656 index hospital discharges (312,377 patients) for any cause (excluding mental health and child birth) between 2002-2009
- Control variables: patient covariates, enrolling primary care physician covariates, year and hospital fixed-effects and relevant two-way interactions and time-dependent effects

Models

Exposure models (propensity score models):

- Logistic regression (with splines to model continuous covariates)

Outcome models (MSM estimated by IPW):

- Flexible parametric survival model for competing risks (Hincliff and Lambert, 2013)
- Cumulative incidence function

Measures

Outcome: Time (days) to the first outpatient physician post-discharge follow-up
1. Primary care physician follow-up
2. Medical specialist follow-up
3. Any physician

Censoring: After 30 days following hospital discharge

Competing risk: Death, readmission, ED visits

Exposure: Enrolled in a team-based PC or not

Heterogeneity:
1. Type of admission (all causes or AMI-,HF- or COPD-related)
2. Patient morbidity level

Results

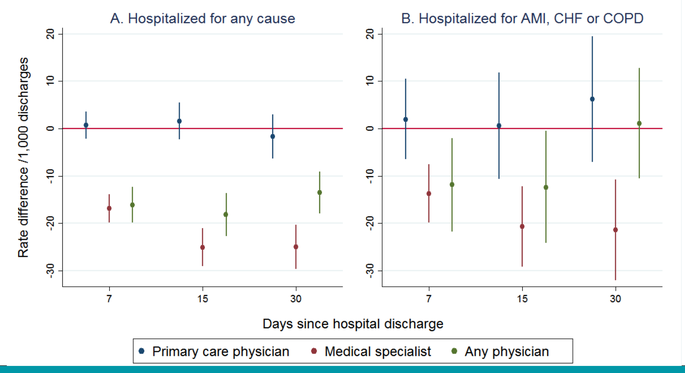
Table 1. Patient characteristics at index admission

N = 620,656 discharges	Unweighted		Weighted	
	Team-based PC	Usual PC	Team-based PC	Usual PC
Female, %	52.7	52.7	52.1	52.7
Age (years), mean	73.3	73.8	73.3	73.7
Morbidity level, %	17.8	16.9	17.2	17.1
Moderate	28.6	27.9	28.1	28.0
High	53.6	55.2	54.8	54.9
Very high	53.6	55.2	54.8	54.9
Length of stay (days), mean	7.2	7.5	7.5	7.5
Years since enrolled w/ PCP, mean	2.5	2.2	2.2	2.2
Material deprivation quintile, %				
Q1 (low)	10.4	14.0	13.4	13.4
Q2	16.0	16.2	16.1	16.2
Q3	20.7	19.4	19.1	19.6
Q4	23.5	21.0	21.5	21.4
Q5 (high)	21.8	22.7	23.4	22.6
Geographical region, %				
Urban/academic	22.8	36.0	32.9	33.7
Suburban	42.3	38.5	39.4	39.1
Intermediate	28.2	19.6	21.3	21.1
Rural	6.5	5.5	6.2	5.8

Table 2. Unadjusted rate of outpatient follow-up, by specified time interval and by type of provider

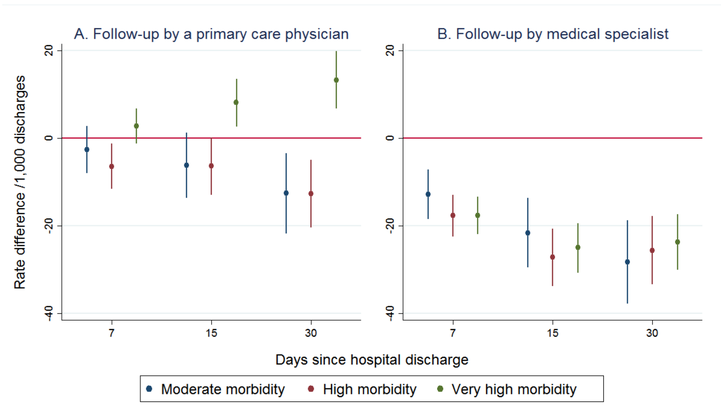
Type of follow-up Days since discharge	Rate (per 1,000 discharges)
Primary care physician	
≤ 7	115.7
≤ 14	217.7
≤ 21	295.1
≤ 30	371.9
Medical specialist	
≤ 7	135.9
≤ 14	248.6
≤ 21	326.0
≤ 30	411.5
Any phyisican	
≤ 7	237.3
≤ 14	418.3
≤ 21	527.6
≤ 30	626.3

Figure 1. Adjusted difference in rates of outpatient follow-up by PC model at specified time intervals, by type of physician



Results (cont'd)

Figure 2. Adjusted difference in rates of outpatient follow-up at specified time intervals, by type and by morbidity level



Role of primary care nurses

In the post-discharge period

- Nurses in Quebec do not bill for services they provide, i.e., no data
- Roles and tasks of nurses in the FMG policy include patient follow-up and case management
- Desirable reallocation of human resources: nurses may account for a share of fewer follow-up visits to medical specialists

Conclusions

- **Rates of outpatient follow-up with a PCP** similar across PC models, except for very complex patients for whom team-based PC models do better
- **Rates of outpatient follow-up with a medical specialist** lower in team-based PC practices
- **Future research** is needed to assess whether other health professionals in PC practices, such as nurses, have **provided** a portion of the care otherwise provided by specialists for very high morbidity patients

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