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The Impact of Reimbursement for Non-face-to-face Chronic Care Management on Health Outcomes and Utilization among Patients with Type 2 Diabetes in Louisiana

Yixue Shao[1], Dongzhe Hong[1], Charles Stoecker[1], Beth Nauman[2], Alessandra N. Bazzano[1], Edmond K. Kabagambe[3], Gang Hu[4], Yilin Yoshida[5], Vivian Fonseca[5], Peter T. Katzmarzyk[4], Somesh C. Nigam[6], Thomas W. Carton[2], Jonathan Gugel[5], Lizheng Shi[1]

Affiliation:

1. Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, USA.
2. Louisiana Public Health Institute, New Orleans, LA,USA.
3. Ochsner Health, New Orleans, LA, USA.
4. The Pennington Biomedical Research Center, Baton Rouge, LA, USA.
5. Tulane University School of Medicine, New Orleans, LA, USA.
6. Blue Cross and Blue Shield of Louisiana, Baton Rouge, LA, USA.

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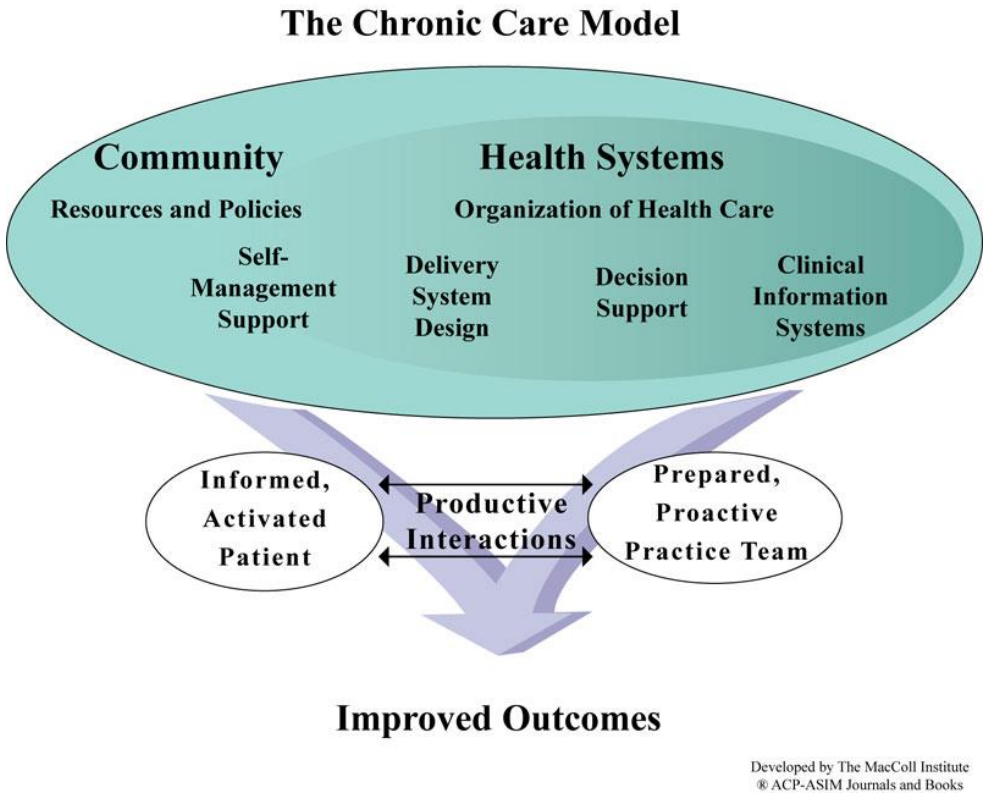
INTRODUCTION

- Diabetes--a major chronic disease and is one of the leading threats to public health.[1,2]
- Chronic Care Management (CCM)--a critical component of primary care to improve chronic patient care.[3,4]
- Wagner's Chronic Care Model[5]



Available from: http://www.improvingchroniccare.org/index.php?p=the_chronic_care_model&s=2

INTRODUCTION

- Non-face-to-face CCM (NFFCCM) service--the Centers for Medicare & Medicaid Services (CMS)

Original "non-complex" CCM (2015)

1. CPT 99490: >=20 minutes/month

Complex CCM (added in 2017)

1. CPT 99487: >=60 minutes/month
2. CPT 99489: each additional 30 minutes

RESEARCH OBJECTIVE

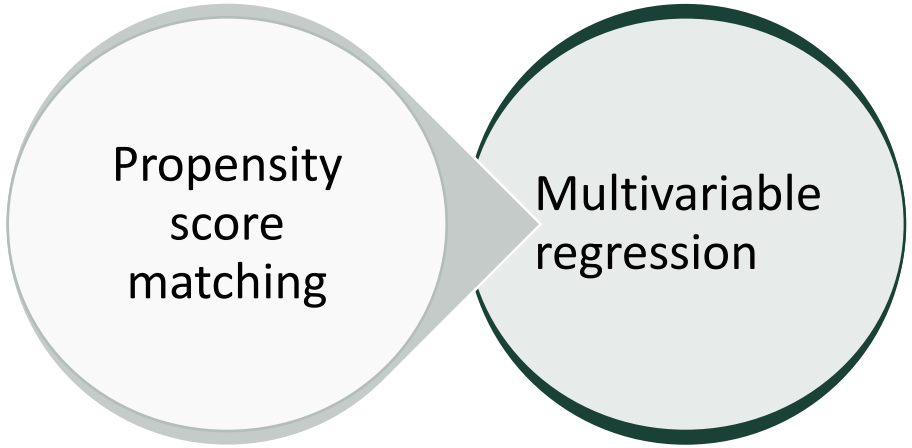
- To assess the impact of NFFCCM services on glycemic control and health utilization among Medicare beneficiaries with type 2 diabetes in Louisiana.

DATA

- **Source**
  - Electronic health records from Research Action for Health Network (REACHnet) database: 2013-March 2020
- **Inclusion**
  - Type 2 diabetes
  - Medicare.
- **Exclusion**
  - Type 1 diabetes
- **Outcomes:**
  - Hemoglobin A1c (HbA1c)
  - Health care utilization

METHODS

- **Comparative Effectiveness Analysis**
  - Any NFFCCM VS No NFFCCM
  - Covariates
  - Statistical analyses



RESULTS

- Well balanced baseline characteristics

Baseline characteristics before and after weighting

	Non-weighted			Weighted		
	Treatment	Control	SMD	Treatment	Control	SMD
Age at first CCM (years)	72.42	72.434	0.1%	72.42	72.436	0.2%
Female (%)	59.4	54.3	-10.3%	59.4	59.2	-0.4%
Black (%)	47.3	38.4	-18.0%	47.3	47.2	-0.1%
Hispanic (%)	1.7	2.6	6.3%	1.7	1.7	-0.1%
Stroke (%)	15.3	14.9	-1.2%	15.3	15.2	-0.3%
Hypertension (%)	96.0	95.6	-2.1%	96.0	96.1	0.6%
Alzheimer's (%)	1.7	1.4	-2.6%	1.7	1.7	-0.2%
Arthritis (%)	51.8	46.6	-10.5%	51.8	51.8	0.0%
Asthma (%)	14.5	11.2	-10.1%	14.5	14.5	-0.1%
Atrial Fibrillation (%)	14.3	13.8	-1.4%	14.3	14.3	0.2%
Cancer (%)	12.4	12.3	-0.3%	12.4	12.4	0.0%
Chronic Obstructive Pulmonary Disease (%)	25.1	22.2	-6.9%	25.1	25.0	-0.2%
Chronic Kidney Disease (%)	45.0	45.0	0.1%	45.0	44.9	-0.1%
Depression (%)	26.4	23.1	-7.6%	26.4	26.1	-0.5%
Heart Failure (%)	22.3	20.2	-5.1%	22.3	22.1	-0.4%
Hyperlipidemia (%)	90.3	89.6	-2.6%	90.3	90.3	0.0%
Coronary Heart Disease (%)	35.6	34.5	-2.4%	35.6	35.4	-0.5%
Osteoporosis (%)	13.5	11.6	-5.9%	13.5	13.5	0.0%
Outpatient visits per month	0.619	0.549	-13.2%	0.619	0.618	-0.2%
Emergency department visits per month	0.018	0.016	-4.9%	0.018	0.017	-0.2%
Have any inpatient visits (%)	24.2	22.3	-4.4%	24.2	24.1	-0.2%
Number of A1c tests	4.252	3.861	-21.3%	4.252	4.259	0.4%
Mean A1C>8% (%)	15.5	15.9	1.3%	15.5	15.3	-0.3%
BMI>=35 (kg/m^2) (%)	31.2	27.5	-8.2%	31.2	31.4	0.5%
LDL>=110 (mg/dL) (%)	19.3	22.7	8.2%	19.3	19.3	-0.1%
HDL<40 (mg/dL) (%)	53.9	53.6	-0.6%	53.9	53.8	-0.2%
eGFR>=30 (mL/min/1.73 m^2) (%)	95.9	95.0	-4.3%	95.9	95.9	-0.1%
Trajectory group 1 (%)	30.0	36.1	12.9%	30.0	30.0	0.0%
Trajectory group 2 (%)	55.8	53.9	-3.9%	55.8	55.9	0.2%
Trajectory group 3 (%)	14.2	10.0	-12.7%	14.2	14.1	-0.3%
N	1,501	17,524		1,501	17,524	

Health impacts

- **Better glycemic control**
  - The impact of NFFCCM on HbA1c.

	Full sample	Baseline HbA1c>=7.5%	Baseline HbA1c<7.5%
Mean HbA1c (%)[1]	-0.063***	-0.151***	-0.017
	(0.016)	(0.042)	(0.015)
Proportion of HbA1c less than 7%[2]	0.016**	0.016	0.007
	(0.006)	(0.011)	(0.007)
Proportion of HbA1c decline >=0.5%[3]	-0.011**	0.044***	-0.026***
	(0.006)	(0.015)	(0.005)
N treatment	1,501	358	1,143
N control	17,524	4,431	13,052
N total	19,025	4,789	14,195

Notes: 1. Mean HbA1c during the 24-month follow up period. 2. The percent of patients with mean HbA1c less than 7%. 3. The percent of patients whose HbA1c was declined by at least 0.5 % from baseline. SE in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Utilization impacts

- More outpatient visits, fewer hospitalizations and ED visits
  - The impact of NFFCCM on health care utilization.

	Full sample	Baseline HbA1c>=7.5%	Baseline HbA1c<7.5%
Outpatient visits/month	0.657***	0.747***	0.638***
	(0.016)	(0.032)	(0.018)
Inpatient admissions/month	-0.005***	0.004	-0.008***
	(0.001)	(0.003)	(0.001)
ED visits/month	-0.004***	-0.011***	-0.002
	(0.001)	(0.003)	(0.002)
N treatment	1,668	386	1,282
N control	20,574	5,050	15,540
N total	22,242	5,436	16,822

Notes: SE in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

DISCUSSIONS

- Consistent with other related studies[6,7]
    - More primary care visits, fewer ED visits and hospitalizations
- Strengthen the benefits of reimbursing NFFCCM
- Support the remote care for diabetes

LIMITATIONS

- Selection into treatment

- Generalizability

Conclusions

- Receiving NFFCCM was associated with:
  - better glycemic control
  - more outpatient visits
  - fewer inpatient admissions and ED visits

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Thank you!
Questions, comments…
Please email:
yshao3@tulane.edu

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