Concentrated Poverty, Race, and Death Amenable to Health Care: Geographic Variation in Minnesota by Census Tract from 2011 to 2015

Nathan M. Hierlmaier,* MPA

Background

The low statewide rate of preventable deaths in Minnesota belies the large variation in rates of death within the state due to health disparities for certain subpopulations.

This study investigated differences in rates and causes of early death across areas in Minnesota with pronounced poverty, racial and ethnic diversity of the population, and the combination of these factors.

Methods

Data sources: The study analyzed death records from the Minnesota Mortality Registry and population data from the American Community Survey.

Study population: We identified amenable mortality records under age 75 occurring from 2011-2015 from the Minnesota Mortality Registry (14,027 of 76,907 observed deaths) and studied patterns at the census tract level (n = 1,339) by geocoding addresses of the decedent. Tracts where more than one in five residents were living at or below the federal poverty guidelines were high poverty. In addition, diverse areas were areas where the majority of residents do not self-identify as non-Hispanic white.

Outcome of interest: Mortality from chronic heart disease, treatable cancer, stroke, and other underlying causes of death that are likely preventable with access to timely and effective health care.

Data analysis: Age and gender adjustment as well as incident rate ratio contrast were estimated using Poisson regression in SAS version 9.4 (Cary, NC).

Results

Health care amenable mortality rates were **1.83 times higher (95% CI: 1.71, 1.97; p<.001)** in areas with high poverty and **2.17 times higher (95% CI: 1.96, 2.40; p<.001)** in areas with high poverty and diversity in Minnesota.

Even after controlling for diversity, areas with high poverty still had amenable mortality rates that were **1.57 times higher (95% CI: 1.45, 1.71; p<.001)**.

Premature death led to additional lost future earnings of **$114.8 million per year** in all high poverty areas combined and **$73.2 million per year** in diverse, high poverty areas.

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Areas of Minnesota with both **high diversity and poverty had twice the risk** of health care amenable death.

Chronic heart disease was the leading cause of death in all high poverty areas, followed by treatable cancer and stroke.

High-poverty communities in Minnesota suffered additional **productivity losses of over $114 million per year**.

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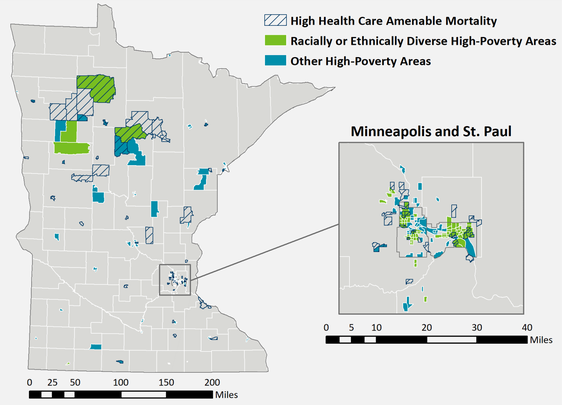
High Health Care Amenable Mortality and Poverty in Minnesota



Note: Rates of mortality amenable to health care (premature death) were adjusted by age and sex. Census tracts with a higher number of actual deaths amenable to health care than the expected number based on the population are considered high mortality. Expected numbers are derived from the statewide rate of mortality amenable to health care. **Source**: MDH, Health Economics Program analysis of the Minnesota Mortality Registry and the US Census Bureau's American Community Survey 2011-2015

Policy Implications

This study adds to other evidence linking social determinants of health to life expectancy in a state that does comparably well in terms of residents living long and healthy lives.

Quantifying the economic burden of these disparities for high-risk communities points to an urgency beyond the loss of emotional support, family integrity, and community history.

Identifying areas with possible barriers to timely and effective health care allows citizens, policymakers, public health officials, and health care providers to further explore community needs.

Limitations

This observational study does not show a causal relationship between poverty, race, and premature death—only a suggestive contribution to premature death.

Productivity loss can be unpredictable and decedents could have died of other causes or achieved different income levels. Therefore, a discount rate of 3% was applied per year of life lost.

Care should be taken when identifying mortality rates in specific census tracts to account for random variability in infrequent events, and rates with less than 20 events or a relative standard error of 23% or more are suppressed.

Acknowledgements: This research was funded by the Minnesota Department of Health. Stefan Gildemeister, Alisha Simon and Diane Rydrych helped frame the project and provided ongoing support.

Comparing Diabetes Care Quality at Health Care Homes and Non-Health Care Home Clinics in Minnesota

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Background

Diabetes prevalence, health care costs, and complications are increasing.[1,2] High-quality routine care plays an important role in limiting complications and costs. This study compares clinic-level performance on Minnesota's standardized measure of optimal diabetes care in 2017 based on whether clinics were certified as Health Care Homes (HCHs). HCH certification is a voluntary program administered by the MN Dept of Health. HCHs have a patient-centered medical home (PCMH) model with team-based care delivery systems and an emphasis on patient engagement, care coordination, and tracking outcomes.

Methods

DATA: Minnesota physician clinic registry (2017), HCHs program clinic certification status (2017), clinic-level Optimal Diabetes Care measure data (2017), Rural-Urban Commuting Area (RUCA) codes (2010).[3]

STUDY POPULATION: Patients ages 18-75 with a diagnosis of type 1 or type 2 diabetes who had at least one established patient office visit performed or supervised by a provider specializing in family medicine, internal medicine, geriatric medicine, or endocrinology at a Minnesota physician clinic in 2017.

OUTCOMES: Minnesota's standardized measure of optimal diabetes care, which assesses whether a patient met five clinical goals: hbA1c less than 8.0 mg/dL; blood pressure less than 140/90; taking statins if recommended; taking daily aspirin if recommended, and not using tobacco.

ANALYSIS: We compared the mean ranks of HCHs and non-HCH clinics statewide, within urban and rural areas of the state as determined by the RUCA Code of the clinic's ZIP Code, and within four payer type categories (Commercial; Medical Assistance; Medicare; and self-pay/uninsured) using Mann-Whitney U tests in SPSS 22. We adjusted clinic results with direct standardization to account for payer mix.

1. The Burden of Diabetes in Minnesota (2017), American Diabetes Association, http://main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/minnesota.pdf
2. Treated Chronic Disease Costs in Minnesota – A Look Back and a Look Forward (2017), Minnesota Department of Health, https://www.health.state.mn.us/data/apcd/docs/chronicdisease.pdf
3. 2010 Rural-Urban Commuting Area (RUCA) codes retrieved from https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx

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Clinics certified as Health Care Homes (HCHs) provided high-quality diabetes care to more patients than non-HCH clinics in Minnesota.

More HCHs diabetes patients **took recommended statins** and fewer HCHs patients **used tobacco** compared to patients at non-HCH clinics.

More information:

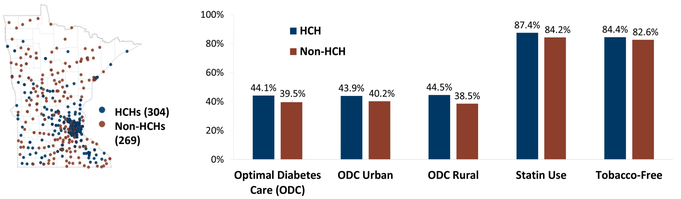
Minnesota Statewide Quality Reporting and Measurement System
www.health.state.mn.us/data/hcquality

Minnesota Health Care Homes Program
www.health.state.mn.us/facilities/hchomes

Contact: Rachel.Cahoon@state.mn.us

Results

Certified HCHs (n=304) had **significantly higher optimal diabetes care rates** (U=31,503, p=.000, r=.20) compared to non-HCHs (n=269). HCHs had **significantly higher rates of recommended statin** use (U=33,235, p=.000, r=.16) and **significantly higher rates of tobacco-free patients** (U=33,994, p=.000, r=.15). HCHs had **higher optimal diabetes care rates in rural and small town areas of Minnesota** (U=2,366, p=.011, r=.19) (HCHs n=53, non-HCHs n=118) and in **urban and micropolitan areas** (U=14,785.5, p=.000, r=.18) (HCHs n=251, non-HCHs n=151). HCHs also had **significantly higher optimal diabetes care rates for Medicare** patients (U=32,329, p=.000, r=.17) and **Medical Assistance** patients (U=30,698, p=.000, r=.20).



	ODC Overall	ODC Urban	ODC Rural	Statin Use	Tobacco Free	Medicare Patients	Medical Asst Patients
HCHs Mean Rank	317.9	218.1	100.4	312.2	309.7	311.2	315.9
Non-HCHs Mean Rank	252.1	173.9	79.6	258.6	261.4	255	248.9

Implications

Diabetes management is challenging for patients and providers. Although differences between HCHs and non-HCH clinics were modest overall, they were consistent across the state. These results demonstrate that use of the HCH model is associated with more high-quality care for diabetic patients at Minnesota clinics.

Through their emphasis on partnership and patient engagement, HCHs may be particularly well-suited to improving aspects of care that are moderated by patient-provider relationships and communication, such as statin use and tobacco avoidance. Future research should continue to investigate the relationship between PCMH-model clinics, patient engagement, and chronic condition management.

Limitations

This study does not demonstrate a causal relationship between HCH status and Optimal Diabetes Care rates. Other clinic or patient factors may influence diabetes care quality and HCH certification. This study is based on one year of HCH certification and Optimal Diabetes Care data.

Acknowledgements: This research was funded by the Minnesota Department of Health. Special thanks to HEP and the HCHs program for their support of this project.

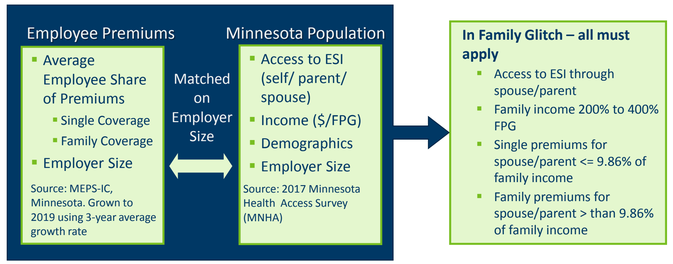
Almost 200,000 Minnesotans are in the glitch – but only 6,100 purchase unsubsidized coverage in the individual market.

Table 1: Number of Minnesotans in the Family Glitch by Health Insurance Coverage, 2019

Current Health Insurance Coverage	Population Estimate
Individual Market Coverage	6,100
ESI Coverage	170,000
Uninsured	10,000
TOTAL	**186,100**

Source: Minnesota Department of Health analysis of the 2017 Minnesota Health Access Survey (MNHA)

Methods and Data



Definitions

ESI: Employer Sponsored Health Insurance – health insurance coverage offered to employees (and in some cases their families) by employers. Employers pay, on average, 75% of premiums for single coverage; employees are responsible for the remaining premium and all cost sharing.
FPG: Federal Poverty Guidelines – annual income guidelines created by the United States Department of Health and Human Services; used to determine poverty status and access to government programs.
APTC: Advanced Premium Tax Credits – federal tax credits offered by the federal government to make individual market health insurance more affordable. The credits are based on income, and reduce a benchmark premium to a certain percentage of income; the percentage varies based on the FPG.

We Are In "The Family Glitch"

The Price Tag of Limiting Individual Market Benchmark Premiums to 9.86% of Income in Minnesota in 2019:

Current Individual Market Coverage: $16.5 million
Currently Uninsured: $5.6 million
Current ESI Coverage: $132.3 million

Unintended Consequences

- The Patient Protection and Affordable Care Act (ACA) provides tax credits to Americans with low and moderate incomes to purchase health insurance coverage on the individual market.
- To ensure employers do not drop coverage (in addition to the employer mandate), **tax credits are not available to people who have access to affordable employer coverage**.

What is Affordable ESI?

- **Employer coverage is considered affordable if the employee share of single premiums is less than 9.86% of the employee's income.**
  - This does not consider family income, because an employer can't determine family income.
  - Family premiums are generally 4 to 5 times as expensive as singe premiums, and the employee share is generally a higher percentage of the total premiums.
  - Smaller employers, in particular, may choose to not subsidize family premiums, even if they do subsidize single premiums, due to the expense.
- If an employee has access to affordable single coverage through an employer that also offers family coverage, **his or her spouse and children are also considered to have access to affordable ESI under the ACA**, even if the *family* premium is over 9.86% of income.

Access to affordable ESI is split evenly between parents and spouses for individual market enrollees and uninsured Minnesotans.

Source: Minnesota Department of Health analysis of the 2017 Minnesota Health Access Survey (MNHA)

4 in 5 young adults (18 to 25) in the family glitch without ESI are eligible through their parents

Access to ESI for Minnesotans purchasing individual market coverage or who are uninsured, by age and family member with affordable ESI

Note: Totals to 100% Source: Minnesota Department of Health analysis of the 2017 Minnesota Health Access Survey (MNHA)

Estimating the Size and Cost of the Family Glitch

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Are Inpatient Prices Linked Across Medicaid Managed Care and Commercial Markets? Evidence from the Minnesota All Payer Claims Database

Chris Frenier, Pamela Mink, PhD, Stefan Gildemeister

Background

A large body of research exists on variation in the prices negotiated between health plans and hospitals. In Minnesota, about 84% of the state's Minnesota Health Care Program (MHCP) enrollees are covered through private managed care plans that negotiate prices with hospitals and other providers. In this study we document variation in vaginal delivery prices in Minnesota's public insurance programs and examine the relationship between delivery prices in Medicaid Managed Care (MMC) and the commercial insurance market

Objective

1. Document the variation in MHCP vaginal delivery prices and compare the degree of variation to deliveries in the commercial insurance system

2. Estimate the correlation between MHCP prices and commercial prices at the hospital and hospital-insurer level

Methods

Sample

Medicaid Managed Care and commercial admissions for vaginal delivery between 2012-2015

The distribution of admissions was truncated at the 5th and 95th percentiles of price, and 99th percentile of length of stay

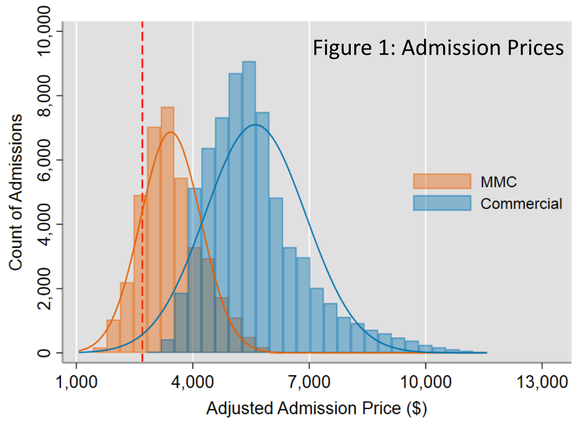
Price Measures

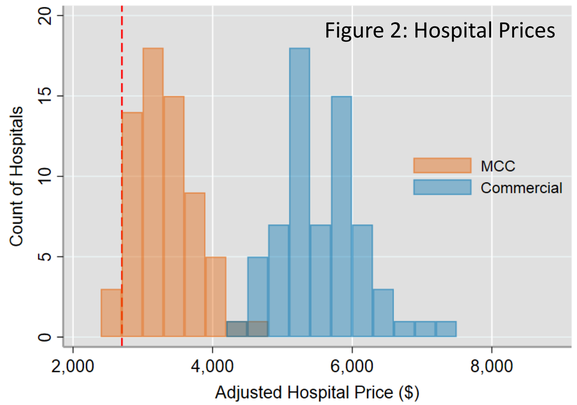
Adjusted Admission Price - plan paid amount plus cost-sharing (for commercial admissions) adjusted for patient & clinical factors

Hospital Price – Regression adjusted hospital price across all insurers

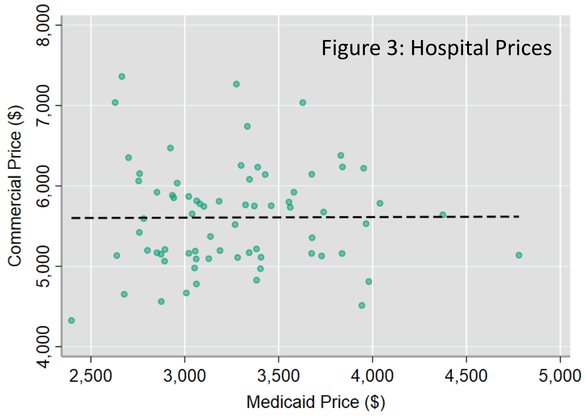
Hospital-insurer price index – Regression adjusted price paid by an insurer at a hospital

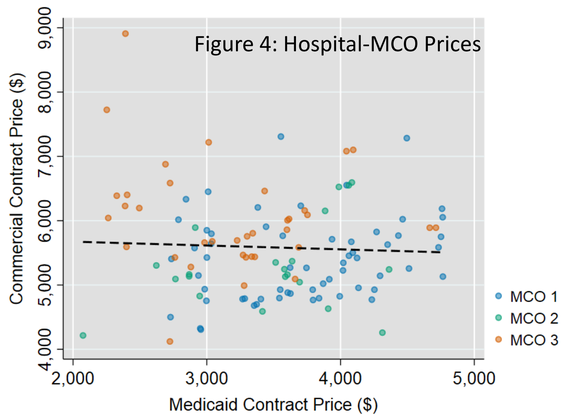
Medicaid Price Variation





Price Correlations Between Medicaid and Commercial Insurance





Key Findings

Figure 1

- Medicaid Managed Care admissions exhibited similar price variation to commercial admissions. Both distributions have a coefficient of variation (standard deviation/mean) of 0.23
- The two distributions have a substantial region of overlap where MMC admissions were more expensive than commercial admissions

Figure 2

- Hospital prices show less variation – the coefficient of variation for MMC prices is 0.13
- Nearly all hospitals receive higher prices from MMC than traditional Medicaid (the red dashed line)

Figures 3 and 4

- There is no significant correlation between commercial and Medicaid delivery prices at hospitals
- This suggests that "cost shifting" explanations for high commercial prices are unlikely – lower public reimbursement is not associated with higher private prices
- There is a negative but non-significant relationship between the price an insurer pays to a hospital for MMC deliveries and commercial deliveries. The slope of the line is -0.5

Discussion

Health plan negotiated provider prices appear to vary substantially in Minnesota's Medicaid Managed Care program. Understanding the role of bargaining and market power between insurers and hospitals may be important for states that deliver Medicaid benefits through private insurers.

More research to examine the ways in which Medicaid Managed Care and commercial prices are linked will be valuable toward better understanding the dynamics between insurers and hospitals that participate in both markets.

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MNAPCD

Potentially Preventable Readmissions in the Minnesota All Payer Claims Database, 2012-2015

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Research Objective

Readmissions have been used as a quality measure in various settings including in Medicare's Hospital Readmission Reduction Program (HRRP), but studies are usually limited to subsets of the population. Our goal is to describe potentially preventable readmissions (PPR) across payers (Medicare, MN State Programs including Medicaid and MinnesotaCare , Commercial) in Minnesota over time.

Background

Readmissions within 30 days of discharge are common. There are planned readmissions (for follow-up procedures) and unplanned readmissions. A proportion of the unplanned readmissions might be preventable with improvements in care coordination, communication across the delivery system, and discharge planning.

Reducing readmissions has been a goal of hospitals and payers following the introduction of penalties under Medicare's Hospital Readmission Reduction Program (HRRP).

In Minnesota the Reducing Avoidable Readmissions Effectively (RARE) Campaign developed and implemented a wide range of strategies to reduce readmissions. The campaign estimates that approximately 7,900 readmissions were prevented from 2011 to 2013.

A variety of tools exist to evaluate readmissions, including CMS' all cause readmission measure looking at observed to expected readmissions for specific medical conditions.

Methods

Data source: Minnesota All Payer Claims Database (MN APCD).

Study population: All inpatient discharges for insured Minnesota residents in the MN APCD for federal fiscal years (October-September) 2012, 2013, 2014, and 2015 (11 months plus 1 month runout).

Outcome of interest: PPR after hospitalization identified using the PPR Grouper (3M Health Information Systems).

Data analysis: We used the PPR Grouper (3M™ Health Information Systems) to identify PPR within 30 days after an initial hospitalization. Rates of observed to expected PPR were calculated for each payer. Expected counts were adjusted for each DRG and severity of illness combination (indirect standardization) using FY 2011 data.

Table 1: Potentially Preventable Readmissions – by Payer, 2012-2015

Payer	Year	# Only Admission	# Index Admission	Total Index Adm. & Only Adm.	# PPR	Risk adjusted PPR rate	Actual to Expected PPR
Commercial	2012	117,526	6,122	123,648	7,433	7.9%	0.96
Commercial	2013	112,581	5,842	118,423	6,919	7.6%	0.95
Commercial	2014	99,869	4,765	104,634	5,719	7.0%	0.88
Commercial	2015	97,441	4,560	102,001	5,421	6.7%	0.86
Dual	2012	28,329	7,261	35,590	9,899	13.4%	1.62
Dual	2013	27,741	6,725	34,466	9,122	12.4%	1.55
Dual	2014	25,854	6,320	32,174	8,601	12.4%	1.56
Dual	2015	26,441	5,742	32,183	7,951	10.9%	1.41
Medicare	2012	95,898	8,919	104,817	10,512	8.3%	1.01
Medicare	2013	97,217	8,567	105,784	10,106	7.7%	0.96
Medicare	2014	93,676	8,278	101,954	9,788	7.6%	0.96
Medicare	2015	98,026	8,584	106,610	10,219	7.4%	0.95
MN State Programs	2012	62,891	5,241	68,132	7,157	8.4%	1.01
MN State Programs	2013	61,822	4,961	66,783	6,770	7.8%	0.98
MN State Programs	2014	66,617	5,389	72,006	7,355	7.9%	0.99
MN State Programs	2015	71,688	5,690	77,378	7,675	7.5%	0.97

Source: MDH analysis of MN APCD data

Table 2: Top 10 DRGs for PPR Chains, 2015

Rank	DRG	Count	%
1	Septicemia & Disseminated Infections	1,374	5.59
2	Major Depressive Disorders & Other/Unspecified Psychoses	1,049	4.27
3	Heart Failure	979	3.98
4	Pneumonia	733	2.98
5	Bipolar Disorders	643	2.62
6	Chronic Obstructive Pulmonary Disease	642	2.61
7	Schizophrenia	609	2.48
8	Alcohol Abuse & Dependence	510	2.08
9	Cardiac Arrhythmia & Conduction Disorders	499	2.03
10	Pulmonary Edema & Respiratory Failure	445	1.81

Source: MDH analysis of MN APCD data

Results

PPR rates varied by payer (Table 1). Commercial payers had the lowest risk adjusted PPR rate, followed by Medicare and MN state programs. Admissions for dual eligible beneficiaries had the highest PPR rate. PPR rates declined over time for all payers.

Chronic conditions (septicemia, heart failure, pneumonia, COPD, cardiac arrhythmia) feature prominently in the top 10 DRGs for PPR chains (Table 2). However, a number of mental health and substance abuse diagnoses are also present.

In 2015, 83.2% of PPR chains consisted of 2 admissions (index admission plus one PPR), 11.9% of 3, 3.1% of 4, and 1.7% of 5 or more.

Conclusions

Conclusions:

The results mirror findings for other readmission measures, namely the decline of all-cause readmissions in Medicare's HRRP. Declining rates of PPR across all payers indicate that quality improvement initiatives at the federal, state, and hospital level have been successful at lowering PPR.

Further efforts need to be monitored for unintended consequences in light of evidence that lower readmission rates might come at the expense of higher mortality rates and increasing numbers of observation stays and ED visits.

Implications for Policy or Practice:

Quality improvement efforts at various levels have been successful in lowering PPR, but we have to ascertain that improvement in these process measures results in care improvements that benefit patients.

Past efforts to reduce readmissions have focused on medical conditions. Next steps for Minnesota might focus on the four mental health and substance use disorders in the top ten DRGs associated with PPR. For quality improvement efforts at all levels (hospital, state, national) it will be important to show that lower readmission rates are not due to inappropriate substitution of services (observation stays, extended ED stays) and do not result in deleterious health outcomes (mortality). Analysis of state APCDs may contribute to answering the substitution question.

Limitations:

- Claims data only show diagnosed and treated conditions. Only services paid for by insurance are submitted to the MN APCD.
- MN APCD covers claims for approximately 89% of Minnesotans with coverage. Not included are the uninsured and certain other populations (IHS, Tricare, VA, Workers' Comp, insurers with a small footprint in Minnesota).
- No socioeconomic data available, therefore, could not evaluate the impact of socioeconomics on readmissions.

Acknowledgments: We thank 3M™ Health Information Systems for technical support.

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Assessing the Impact of Direct to Consumer Telemedicine on Quality, Utilization, and Spending

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MN APCD All Payer Claims Database

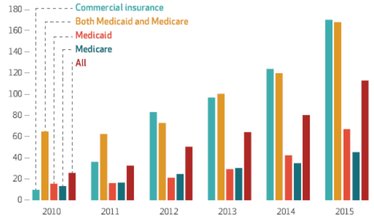
University of Minnesota Driven to Discover® Crookston Duluth Morris Rochester Twin Cities

Department of Health

Introduction

Telemedicine: the use of telecommunications technology to remotely diagnose and treat patients

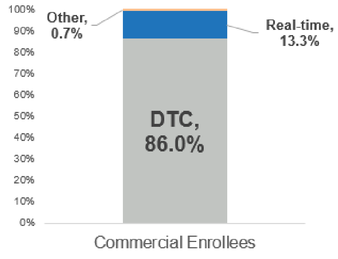
Fig. 1. Numbers of telemedicine users per 10,000 enrollees in Minnesota, by coverage



Yu et al., Health Affairs 2018. Data from the MN APCD.

Direct to Consumer (DTC) Telemedicine:
- Type of telemedicine visit
- Also known as an online clinic visit or an e-visit
- Patient-initiated medical evaluation

Fig. 2. Telemedicine Types for Commercial Enrollees, 2010-2015



Preliminary analysis of MN APCD data.

Research Questions

1. How do DTC telemedicine initiated episodes of care differ in **episode-level quality** outcomes relative to in-person services?
   - Focus on Urinary Tract Infections (UTIs)
   - Any antibiotics, guideline concordant, HEDIS Antibiotics of Concern

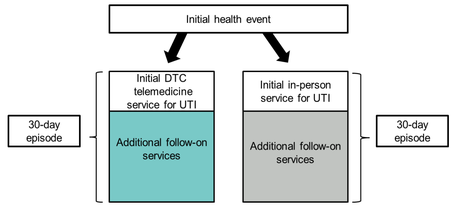
Research Questions Continued

2. How do DTC telemedicine initiated episodes of care for UTI differ on **episode-level utilization and spending** outcomes?
   - Tests, evaluation and management, outpatient, inpatient or emergency department (ED) visits
   - Standardized medical plan paid amounts
3. Did DTC telemedicine visits replace in-person visits for UTI and/or expand **overall population-level utilization**?
   - Total number of UTI visits per 100 enrollees

Study Design

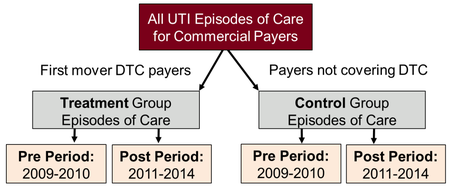
- Data: 2009-2014 health care claims from the Minnesota All Payer Claims Database (MN APCD)[1]
  - State repository of de-identified health care claims data, containing integrated medical, pharmacy claims, plan enrollment data from public and commercial payers
- Limited to commercially insured population
- Identified 30-day episodes of care initiated by a DTC telemedicine visit or an in-person visit

Fig. 3. Defining an Episode of Care



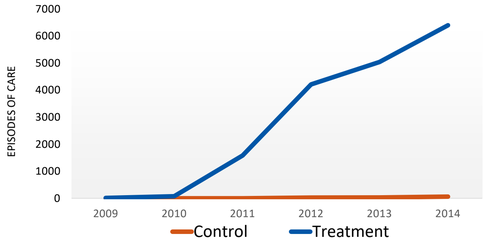
- Empirical approach: Difference-in-differences (DID) instrumental variables model
- Instrument: expanded coverage of DTC telemedicine services in Minnesota among a subset of insurers starting from 2010 4th quarter
- Treatment: Episodes of care for enrollee population of payers expanding coverage of DTC services (first mover DTC payers)
- Control: Episodes for enrollees of payers that did not expand coverage

Fig. 4. Episodes of Care by Treatment Status



Results

Fig. 5 Volume of DTC Telemedicine Initiated UTI Episodes of Care by Treatment Status



Preliminary analysis of MN APCD data.

Table 1. Selected Summary Statistics in the Pre Period (2009-2010)

Variable	Treatment	Control
Age, (mean)	40.68	39.00
Probability of High User, (mean)	9.49	8.34
Number of chronic conditions, (mean)	1.62	1.26
Lives in a metropolitan area, (%)	59.07	64.19
Chronic conditions, (%)		
Bipolar disorder	0.93	0.91
Congestive heart failure	1.56	1.42
COPD	0.40	0.43
Depression	30.82	26.63
Diabetes	5.69	5.42
Hypertension	19.12	16.60
Ischemic heart disease	0.63	0.69
Persistent asthma	13.43	11.04
Low back pain	18.23	15.65
N	37,223	9,171

Preliminary analysis of MN APCD data.

Table 2. Impact of Coverage and Entry of Telemedicine Providers on DTC Telemedicine Use

First Stage Results	Estimate
DTC Telemedicine-Initiated Episode	0.170**

* denotes significance at the 5% level, ** denotes significance at the 1% level, and *** denotes significance at the 0.1% level.
Preliminary analysis of MN APCD data.

Table 3. Instrumental Variable Results for Quality

Instrumental Variable Results	Estimate
Number of antibiotics filled, total episode	-0.065
Number of guideline concordant antibiotics filled, total episode	0.194
Number of antibiotics of concern filled, total episode	-0.240*
N	148,163

* denotes significance at the 5% level, ** denotes significance at the 1% level, and *** denotes significance at the 0.1% level.
Preliminary analysis of MN APCD data.

Table 4. Instrumental Variable Results for Utilization

Instrumental Variable Results	Estimate
Number of all services, total episode	-0.742***
Number of procedures, follow-up care	0.001
Number of outpatient visits, follow-up care	-0.473***
Number of new office visits, follow-up care	0.008
Number of established office visits, follow-up care	-0.249***
Number of urinalysis tests, follow-up care	-0.253***
Number of bacterial culture tests, follow-up care	-0.116
Any ED visits, follow-up care	-0.095*
Any inpatient visits, follow-up care	-0.003
N	148,163

* denotes significance at the 5% level, ** denotes significance at the 1% level, and *** denotes significance at the 0.1% level.
Preliminary analysis of MN APCD data.

Table 5. Instrumental Variable Results for Spending

Instrumental Variable Results	Estimate
Standardized paid amounts, total episode	-169.002***
Standardized paid amounts for the first visit	-76.019***
Standardized paid amounts for follow-up care	-92.983***
N	148,163

* denotes significance at the 5% level, ** denotes significance at the 1% level, and *** denotes significance at the 0.1% level.
Preliminary analysis of MN APCD data.

Table 6. Substitution Analysis

Instrumental Variable Results	Estimate
Number of DTC Telemedicine Visits for UTI	0.189*
Number of In-person Visits for UTI	-0.195
Total Visits for UTI	-0.0056
N	312

* denotes significance at the 5% level, ** denotes significance at the 1% level, and *** denotes significance at the 0.1% level.
Preliminary analysis of MN APCD data.

Conclusions

- Quality outcomes suggest DTC telemedicine services for UTI provide a comparable or better quality of care relative to in person services
  - May apply to other conditions where clinical guidelines for treatment are clearly outlined[2]
- DTC telemedicine services may result in lower utilization and spending for UTIs
- DTC telemedicine visits replaced in-person visits for UTIs but did not lead to an overall increase in population-level utilization, suggesting that overall access to care was not expanded

Relevance to Policy

- These results are relevant for health plan benefit decisions that alter DTC telemedicine coverage
- This study suggest that for primary care conditions such as UTIs where clear clinical guidelines exist, increased levels of DTC telemedicine coverage may be beneficial to patients
- Policymakers may consider potential of DTC telemedicine services to expand access to care for non-commercially insured populations that face coverage restrictions, barriers to transportation and long wait times[3]
- Expansion of DTC coverage may also have positive spillover effects on uninsured patients or those facing high deductibles, if they can access these services at lower out-of-pocket cost than in-person care

References:
1. Minnesota Department of Health. Minnesota All Payer Claims Database 2019.
2. Mehrotra A. The convenience revolution for treatment of low-acuity conditions. JAMA. 2013;310(1):35-6. PubMed PMID: 23821082.
3. Nationwide Adult Medicaid CAHPS. Health Care Experiences of Adults with Disabilities Enrolled in Medicaid Only: Findings from a 2014-2015 Nationwide Survey of Medicaid Beneficiaries. Nationwide Adult Medicaid CAHPS, Nov. 2017.