Drivers of preventable high health care utilization: a qualitative study of patient, physician and health system leader perspectives

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Abstract

Objectives: A small percentage of patients account for the bulk of population health care utilization and costs in many countries including the United States (US). In the US, 5% of the population has high health care utilization accounting for nearly 50% of health care costs. A subset of this utilization is deemed preventable, and thus potentially cost saving to patients as well as to the health care system. This study sought to identify drivers of preventable utilization from the perspectives of three stakeholder groups in the US: health-system leaders; high-need, high-cost (HNHC) patients or their primary caregivers; and physicians.

Methods: We performed a qualitative study using interviews of health-system leaders and focus groups of HNHC patients, caregivers and physicians. We used a mixed inductive deductive approach to analyse transcripts and identify themes.

Results: We identified three key drivers of preventable high health care utilization: (1) unmet behavioural health needs, (2) socio-economic determinants of health and (3) challenges associated with accessing health care delivery systems.

Conclusions: To be potentially more effective, interventions to reduce preventable high health care utilization should incorporate the perspectives of patients, health-system leaders and physicians. Particularly important to stakeholders is increased access to mental-health resources, support for patients with low socio-economic resources and systemic changes that reduce wait times for primary care visits and allow providers more time during patient visits.

Keywords

high-need/high-cost patients, prevention, United States
Introduction

Studies from health systems globally have shown that high health care utilization and spending are concentrated in a small segment of the population. In the United States (US), 5% of patients account for nearly 50% of the nation’s health care spending. In Taiwan, the top 10% of health care users account for nearly 55% of the total National Health Insurance system’s expenditures. Similarly, 10% of patients covered by Germany’s statutory health insurance system contribute to 80% of health care expenditures. A subset of these patients – referred to as high-need, high-cost (HNHC) – often has multiple chronic conditions, complex socio-medical needs and functional limitations that contribute considerably to this high utilization.

Recent US estimates show that HNHC adults are twice as likely as non-HNHC adults to use the emergency department (ED) and have inpatient hospitalizations. This high utilization can lead to financial and emotional burdens for the individual patient, as well as financial burdens for the health care system. In recent years, average annual spending on HNHC adults was US$73,087 compared to US$27,573 spent on non-HNHC adults. While a lot of this utilization may be unavoidable, some visits – especially for ones related to ambulatory-care sensitive conditions (such as asthma, congestive heart failure, etc.) – could be prevented if patients had better access to high-quality outpatient care. Efforts to better understand drivers of this subset of preventable high health care utilization has been a national priority in the US.

Integrated health care delivery systems such as accountable care organizations and patient-centred medical homes are actively piloting several strategies to address the issue of preventable utilization including intensive care management, patient education programmes, and cost sharing. However, studies evaluating their effectiveness have found mixed success.

One potential explanation for the variable success is that health system leaders have primarily partnered with front-line physicians to design interventions with limited input from patients. To be more successful in reducing preventable high health care utilization and improving health outcomes, incorporating the perspectives of HNHC patients, along with those of other stakeholders, may be critical.

The patient perspective on drivers of preventable utilization is relatively underexplored and under-reported, with most studies conducted at a single medical centre. For example, Capp et al. reported socioeconomic and disease burden-related drivers of frequent ED use among Medicaid enrollees at one New Haven teaching hospital, but those may not impact preventable utilization and have limited generalizability. Additionally, few studies utilize a qualitative methodology, which is ideal in this context for exploring issues in depth and generating testable hypotheses. We aimed to address these gaps by using a qualitative methodology to better understand the key drivers of preventable high health care utilization. We compared the perspectives of three stakeholder groups (HNHC patients, front-line physicians, and health-system leaders) from five health systems in the US and reported the common themes. We also reported nuances of drivers specifically noted by patients.

Methods

Theoretical framework

We used a four-level model of the health care system as the conceptual framework to guide this investigation. The model consists of four players (levels) that interact in a nested manner. At the core is the individual patient whose health needs are the defining factors of a patient-centred health care system. The second level comprises the care team (e.g. health care providers, family members) whose collective efforts result in the delivery of care for the individual patients. The third level is the organization (e.g., hospital, clinic) that provides infrastructure and resources to support the work of the care team. The final level is the political and economic environment (e.g., regulatory, financial, payment regimens) that impacts the structure and performance of health care organizations and, through them, the other players in the system.

We designed interview and focus group questions using the model as our backbone and ensured that all four ‘levels’ were addressed by participants in identifying drivers of preventable high health care utilization.

Setting

Researchers at three Clinical Data Research Networks (CDRNs) developed the study as part of a Patient-Centered Outcomes Research Institute (PCORI) grant to better understand the drivers of preventable high health care utilization among HNHC patients. A CDRN collects electronic health record data from multiple health systems into a single electronic network with a comprehensive, interoperable and longitudinal data infrastructure. The three CDRNs were New York City-CDRN (NYC-CDRN), OneFlorida, and The Chicago Area Patient Outcomes Research Network (CAPriCORN). Institutional Review Board approval was obtained at each site.
Interviews

We gathered information about the drivers of preventable high health care utilization through semi-structured interviews of health system leaders at five health systems in three cities across the US (Chicago, Illinois; Gainesville, Florida; and New York City (NYC), New York). We also conducted focus groups of front-line clinicians and HNHC patients or their primary caregivers (if patients were too ill to attend) in two health systems in two cities (Gainesville and NYC).

We used a mixed inductive deductive approach to analyse our transcripts. Specifically, we used a conceptual model (a four-level systems approach to health care delivery, described below) to guide our initial coding schema deductively, but also allowed concepts to emerge inductively from the data. We report study methods and findings using the Consolidated Criteria for Reporting Qualitative Research.

Sample

Each CDRN engaged stakeholders in accordance with PCORI’s Methodology Standard 2, Standards associated with patient-centeredness, and the PCORI engagement principles (which include reciprocal relationships, co-learning, partnerships, and transparency, honesty and trust). The five health systems representing three CDRNs were chosen based on stakeholder availability.

CDRN leadership identified health-system leaders based on the following criteria: (a) holding a senior leadership position within a healthcare organization; and/or (b) leading strategic initiatives that target high utilization within their respective organizations. Health-system leaders from NYC-CDRN and CAPriCORN represented two health care systems each in NYC and the Chicago area respectively. Health-system leaders from one health care system in Gainesville represented OneFlorida.

Physician champions identified by NYC-CDRN and OneFlorida leadership further identified eligible front-line physicians for focus groups. Physicians had to be actively providing care for adult HNHC patients. Physician participants represented one health system in NYC and Gainesville respectively.

Finally, clinical care coordinators who managed HNHC patients identified eligible patients for focus groups. To be eligible, within six months of the start of the study, patient participants had to have at least (1) one chronic condition and (2) either three or more ED visits or two or more inpatient admissions. Since there is no standard cut-off for metrics constituting ‘high’ utilization, inclusion criteria were determined after performing a scoping literature review. In cases where patients were too ill to participate, their primary caregivers served as proxies if they could describe the health care challenges that their care recipients were facing. Patient participants represented one health system in NYC and Gainesville, respectively.

We recruited health-system leaders and front-line clinicians via email and patients via telephone until analysis of interview/focus group transcripts indicated thematic saturation.

Research team

The core team consisted of three health-service researchers with expertise in qualitative methods (two of whom were also practicing clinicians), two graduate students and a research assistant. This team was responsible for developing guides (Supplement 1, available online) and carrying out all semi-structured interviews and focus groups at the NYC sites. In Florida and Illinois, two local health-service researchers (faculty members) with expertise in qualitative methods performed data collection. They were trained in study objectives by the NYC-based team and were intentionally picked to be able to provide context for any geographically specific factors during interviews and focus groups. They were also involved in developing interview guides, data analysis and manuscript writing to ensure that ideas from their respective sites were adequately integrated. The same interview and focus group guides were used at all locations.

Data collection

Data were collected between 2016 and 2017. We conducted 11 health system leader interviews with questions focused on identifying drivers of preventable high utilization. Four were from the NYC-CDRN, three from OneFlorida and four from CAPriCORN. Interviews were audio recorded and transcribed and lasted an average of 30 minutes.

Physician and patient (or caregiver) perspectives were gathered separately via in-person focus groups and were similarly audio recorded and transcribed. They were asked to describe factors that they believed drove preventable high health care utilization.

Twenty-one physicians (10 from NYC-CDRN and 11 from OneFlorida) participated in a total of six focus groups (three at each site). Each focus group included three to five physicians and lasted an average of 50 minutes. All participants had board certifications in family, emergency or internal medicine and cared for patients with both public and commercial insurance.

Finally, 21 patients and three caregivers participated in four focus groups that lasted, on average, 45 minutes. Two were conducted in NYC and two in
Gainesville, ranging from 3 to 12 participants per focus group. Participants ranged in age from 23 to 80 years (median 59 years) and were racially and ethnically diverse. In the prior 12 months, participants had visited their primary care doctors an average of 6 times, had inpatient hospitalizations an average of 5 times, and had been to the ED an average of 16 times.

At the beginning of each session, a short questionnaire was administered to collect demographic information and, for patients, pertinent medical information. Oral consent was obtained for all health system leaders and written consent for all patients and physicians. At the end of each session, patients and providers were given $25 gift cards as incentives. No incentives were given to health system leaders.

Data analysis

Transcripts of interviews and focus groups were imported into NVivo 11 (QSR International Pty Ltd, 2017). The study team read and discussed the transcripts in groups of three, with frequent team discussions. Data were analysed in an iterative manner using thematic analysis methodology by leveraging a mixed inductive deductive approach. We leveraged the model for our initial, deductive coding schema but subsequently allowed additional themes and sub-themes to emerge inductively. After coding a subset of the data, an initial set of patterns and themes emerged. We reviewed and coded the remaining data to verify the emergent patterns and themes and to ensure that we had reached thematic saturation. We grouped codes by themes and identified their underlying relationships.

Findings

Three key themes emerged in the interviews: (1) unmet behavioural health needs, (2) impact of socio-economic determinants of health and (3) challenges associated with accessing health care delivery systems. These three themes spanned the four levels of health care outlined in the conceptual model—patient, care team, organization, and environment. Illustrative quotes from interviewees are given in Table 1.

Unmet behavioural health needs

All stakeholders identified poorly managed serious mental illness among HNHC patients as a significant driver of preventable high health care utilization. Patients often had inadequate access to mental-health and substance-abuse resources. This was because outpatient programmes did not exist, were inconveniently located or were not financially feasible to attend. This left patients without any options other than the ED for care. Additionally, several patients acknowledged that feeling depressed negatively impacted their care routines and contributed to missing provider appointments which, over time, compounded the severity of their diseases. Importantly, patients also pointed out that the stigma surrounding mental illness was detrimental to their desire to seek out treatment even if it were available.

Some patients also felt that policies such as the Florida Mental Health Act (known as the Baker Act) and its equivalent in New York State (known as Kendra’s Law), which allow for involuntary institutionalization and examination of an individual with possible mental illness for up to 72 hours, did not adequately address or help mitigate the root causes of substance abuse and mental-health disorders. This increased preventable ED and/or hospital utilization for psychiatric needs.

Socio-economic determinants of health

Social determinants of health. All stakeholders emphasized the importance of inadequate health literacy, unstable housing conditions, and lack of adequate social support in driving preventable high health care utilization. Low health literacy made it difficult for many HNHC patients to manage complex medical conditions on their own, adversely impacting their ability to follow through with day-to-day self-care regimens. They also felt that for some HNHC patients with unstable housing conditions, being in the ED or an inpatient care setting was desirable, as it was the only avenue, as one HNHC patient put it, to ‘get a meal... have a television... stay overnight’. Finally, health system leaders as well as most physicians felt that the interplay between lack of social support and poor disease control was often a reason for presenting to the ED.

Economic determinants of health care. Patients identified insurance-related factors and financial burden of upfront costs (such as co-payments) as reasons for frequent ED visits and hospitalizations. For example, several patients on Medicaid reported knowing that many physicians in their community did not accept their insurance. To avoid losing time by contacting multiple primary care offices, they would go to the ED directly. Also, for underinsured and uninsured patients, the ED was the only health care setting where they could receive health care without having to deal with implications of their insurance status or co-pays right away. Many patients also reported the negative impact of financial burden on their medication adherence as a driver of frequently presenting to the ED. They felt that some of these visits can be prevented if medications and essential medical devices were not so expensive.
Table 1. Drivers of high preventable health utilization, with illustrative quotes from stakeholder interviews.

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| Unmet behavioural health needs             | Serious mental illness           | **Health-system leader:** ‘Mental health is obviously huge, and the average primary care or specialist physician has very poor access for their patients to any kind of mental-health services in any kind of timely way’.  
**Patient:** ‘Seventy-two hours [was] not... enough because it was like a revolving door. [We] go home today and tomorrow [we’d] be back’.  
**Patient:** ‘Learn more about your condition. Get the proper medications, get the proper things that you need to be able to take care of yourself at home’.  
**Physician:** ‘Health literacy and overall education level is probably the biggest impact on the ability to self-manage these conditions’.
| Socio-economic determinants of health      | Inadequate health literacy       | **Patient:** ‘They put you in a bed. They take care of you, take your blood... your vitals laying on the bed with a nice warm pillow and blanket. They even offer you food’.  
**Physician:** ‘Eventually, [many] of them become homeless or [have] poor living conditions and those patients... arrive because of weather conditions or for other reasons to the ED to seek shelter and respite’.  
**Physician:** ‘I see patients whose... social support structures are so poor that nobody can adequately provide for them in the community’.
| Unstable housing conditions                |                                  | **Patient:** ‘They put you in a bed. They take care of you, take your blood... your vitals laying on the bed with a nice warm pillow and blanket. They even offer you food’.  
**Physician:** ‘Eventually, [many] of them become homeless or [have] poor living conditions and those patients... arrive because of weather conditions or for other reasons to the ED to seek shelter and respite’.  
**Physician:** ‘I see patients whose... social support structures are so poor that nobody can adequately provide for them in the community’.
| Limited social support                     |                                  | **Health system leader:** ‘[Workable solutions] probably have to do with... social support and reduction of isolation and helping them negotiate the complexities’.  
**Physician:** ‘I see patients whose... social support structures are so poor that nobody can adequately provide for them in the community’.
| Insurance challenges                       |                                  | **Patient:** ‘One of the main reasons people go in and out of the [ED] is because it’s the only place they can go to get help because they don’t have the proper insurance to go get the proper help they need’.  
**Patient:** ‘I have Medicaid and some of the doctors don’t take [it], and so you say to yourself, well, even if I get an appointment, are they going to take me? So just go to the emergency room and let them handle it from there’.  
**Patient:** ‘A lot of times [we’re] on a fixed income and you need to see a specialist... You may have a co-pay with your specialist. It could add up if you go excessively. It’s easier to go to the [ED] and get what you need’.  
**Patient:** ‘I didn’t have no machine... in my house, and I used to run to... the emergency room constantly’.  
**Physician:** ‘I often hear patients voice that they can only come to the ED because that was when they got a ride... by ambulance [and] that’s the only way they can get a ride’.  
**Patient:** ‘When I go to the emergency room, they [say], “When you get out of here go see your GI doctor”. But, that’s not the way it works... Last time I called to get in the next day, they told me he had 17 patients, and couldn’t see me. In three months, you don’t know what could happen. So, the next thing is [back to] the ED’.  
**Patient:** ‘Being able to get access to primary care has helped me sometimes when I can call and be seen in an after-hours clinic or get an appointment the following morning’.  
**Physician:** ‘When your hospital is basically saying... ‘Here is 15 minutes for a repeat visit for another patient’, I mean how are you gonna be able to actually provide the kind of care they need?’  
**Physician:** ‘Need more primary care physicians who can manage outpatient things... And so you end up not being able to fill the need, and then we see them in the emergency department’.

Challenges associated with accessing health care delivery systems

Transportation barriers. Some patients reported that primary care offices were inconveniently located and difficult to access due to transportation barriers. A few even suggested that sometimes it felt easier to take an ambulance to the ED and access different services at the same place and time rather than arrange transportation for multiple visits including primary care, specialists, bloodwork, etc. For patients who could utilize
private or public transportation to get to a primary care clinic, the distance often made the trip extremely time-consuming as well as costly. Preventability of ED use appeared contingent upon logistic ease of access to services.

**Long wait times.** All stakeholders identified scheduling challenges at primary care clinics as an important driver. Many patients reported that they were unable to schedule first-time or follow-up appointments quickly (same-day, next day or even in upcoming weeks) and instead had to wait several months. Furthermore, if a disease exacerbation occurred after regular clinic hours or overnight, patients felt that they had no other options but to seek care in the ED.

**Administrative pressures in health care delivery systems.** Physicians and health system leaders felt existing payment structures and administrative pressures (such as the impetus to maximize the number of patients seen while minimizing visit time) negatively impacted the way they could interact with patients. Many agreed that when such a limited time frame is allotted for each patient, it barely gives providers time to think, resulting in the delivery of 'bad care'. This also affected the way physicians communicate with their patients in key situations including discussions of illness, treatment options and care plans.

Finally, stakeholders felt that the current care delivery model significantly dis-incentivized physicians from going into primary care, leading to a primary care physician shortage. The underlying sentiment was that if there are fewer primary care doctors overall, then HNHC patients will be at a greater disadvantage to have continuity of care at a primary care site, their diseases will not be well-controlled, leading to more ED visits and inpatient admissions.

**Discussion**

We identified three key reasons that drove preventable high health care utilization among US-based HNHC patients: (1) unmet behavioural health needs, (2) socio-economic determinants of health and (3) challenges associated with accessing health care delivery systems.

Unaddressed mental-health needs are commonly reported drivers of high health care utilization – specifically frequent ED use and hospital admissions – in the US as well as in other countries. For example, data aggregated from several hospital EDs in a Southern state in the US showed that patients with unmet substance abuse needs were 81% more likely to have an inpatient hospitalization and 46% more likely to visit the ED. Their utilization pattern accounted for an estimated US$777.2 million in extra hospital charges for the state. As another example, a study based in Ontario, Canada, found that untreated mental illness contributed to higher rates of psychiatric hospitalization and nearly C$8000 more in average health care costs per patient. Serious psychological distress (SPD), in addition to serious mental illness, also impacts health care utilization metrics and associated costs. A National Health Interview Survey in the US showed that adults with SPD are three times more likely to visit a doctor 10 or more times in a given year than adults without SPD. While not all utilization is preventable, a subset of these visits may be avoided with better access to affordable mental health care. Incorporating mental-health providers within the primary care setting could be one way of comprehensively addressing HNHC patients’ physical and mental-health needs. While ease of access does not guarantee patient engagement, it may at least allow patients to consider them as viable treatment options.

Socio-economic determinants of health played an equally important role in driving high utilization in our study, consistent with previous research findings. For example, studies in the US have shown that ED use and rates of hospitalization among homeless persons are three and four times higher respectively than the general population. As another example, analysis of the US-based Medical Expenditure Panel Survey found an inverse association between health literacy and health care utilization/expenditure. To prevent some of the utilization stemming from housing instability, more affordable housing options and/or community shelters can serve as a first step to addressing patients’ structural needs. Additionally, efforts to tailor-make health education programs to improve health literacy and numeracy may be warranted for patients to effectively self-manage some of their care needs.

Within the US multi-payer health care system, other policy changes may be key to addressing economic drivers of preventable utilization. For example, modifications to payment structures in primary care offices may offset some of the financial burden of upfront costs (such as co-pays) that lead patients to rely on the ED for primary care. Additionally, in light of Medicaid’s expansion in several US states, reimbursement models should be revisited to incentivize more primary care providers to accept Medicaid so that patients can access timely, good-quality outpatient care. Finally, regulatory changes are needed to make devices and medications more affordable in the US. A 2017 study showed that some high-income countries with single-payer systems such as New Zealand,
Sweden and Australia had the lowest per capita spending for prescription drug coverage. Reasons included cost-effectiveness considerations, internal and external reference pricing, voluntary price discounts and patient access schemes.\(^{27}\) Piloting some of these policies in the US health care ecosystem could be worthwhile next steps to trial.

Access-related challenges also emerged in this study as significant drivers of high utilization, a result consistent with published literature. A 2014 survey of adults in 11 high-income countries found that the US ranked last on measures of financial access to care as well as of availability of care on nights and weekends.\(^{28}\) Our stakeholders, especially patients, echoed the survey’s findings as reflective of their own health care experience – thereby having no choice but to rely on the ED for routine care after-hours. Establishing conveniently located primary care clinics with accessibility beyond regular business hours may help improve health and utilization outcomes.

Finally, existing administrative pressures on physicians to reduce visit time and increase the number of patients seen have known implications for health care utilization metrics. A 2007 study based in Californian health systems found that in shorter family medicine/internist visits (<20minutes), fewer health care issues were addressed, psychosocial determinants went unaddressed and the depth of patient’s understanding was diminished. These consequences translated to decreased patient satisfaction, excess ED usage and non-adherence to treatment plans.\(^{29}\) These outcomes warrant payers as well as health system administrators to re-evaluate billability rubrics determining visit lengths. Additionally, a study of Canadian family physicians’ reimbursement models showed that a fixed compensation model (such as being salaried) was associated with greater physician engagement in patient’s preventive care and overall resource efficiency (such as fewer procedures and tests) compared to fee-for-service.\(^{30}\) While there are limitations to fixed compensation, it could be worthwhile to pilot mixed reimbursement models for primary care physicians versus specialists (adjusted for geography and patient-demand) and study its effects on health outcomes and utilization patterns in the US.

We drew on the perspectives of three key stakeholder groups to identify drivers of preventable high health care utilization. While there was considerable consensus among stakeholder groups in the drivers that were identified, patients brought up nuances related to accessing mental-health services, mental-health laws and economic disincentives impacting their self-care regimens that health system leaders and physicians did not. Capturing these patient challenges qualitatively, in addition to ones by providers, sheds greater light on drivers of preventable health care utilization, which may ultimately lead to more concerted efforts for designing interventions.

Our study has several limitations. First, although five health care systems were utilized for health system leader interviews, only two health care systems were utilized for physician and patient focus groups. Therefore, there is less diversity in the physician and patient perspectives. Second, a majority of our health system leaders and physician participants were male, thereby limiting valuable and unique perspectives from female stakeholders. Third, all participants in our study reside in urban or sub-urban areas. Their perspectives may differ from patients and providers in rural settings, who may identify different drivers to high utilization. Fourth, three caregivers served as proxies for HNHC patients. There could have been discontinuity in viewpoints between patients and their caregivers. Fifth, some of these findings may not be generalizable outside of the US and to countries that have universal health care. Finally, focus group design may have induced social pressures, groupthink and social desirability bias, skewing responses.

**Conclusion**

High cost concentration among a small group of patients is observed across health systems globally. We have reported several psychological, socioeconomic and systemic drivers of preventable high health care utilization by incorporating varied perspectives of HNHC patients, physicians and health-system leaders in the US. It is evident that many of the drivers have dependencies on multiple factors delineated by our conceptual model – patient, care team, organization and environment – and that effective solutions will require a holistic approach. Given the urgent need to contain health care costs in the US – as well as other in countries – while improving health outcomes, our work can prove an integral step to better inform health care decision makers of the various drivers and complexities underlying preventable high health care utilization.

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