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From Prison to the Community: Opportunities for Pharmacists to Support Inmate Medication Adherence


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Abstract

The United States correctional system is a vital treatment source for chronic illnesses. Whether treating a chronic mental or physical illness, correctional healthcare requires effective resource utilization. Limited research exists on pharmacists' ability to directly address inmate medication adherence. Thus, this study explores inmate perception of medication adherence and management as part of their treatment plan. Semi-structured interviews were conducted with inmates throughout Connecticut. Diseases of interest were divided into a physical illness group (hypertension, diabetes mellitus, HIV/AIDS) and a mental illness group (depression, bipolar disorder, schizophrenia, substance abuse). A content analysis was conducted on four questions: 1) Do you take your medications as prescribed, and why? 2) How do you feel about taking medication for your illness? 3) Are you experiencing any problems or side effects due to your medications and how do you handle this? and 4) Have there been any changes to your medications and how was this process handled?

Interviews were conducted between January and December 2015 with 23 male inmates (n= 7 in prison; n=16 in halfway houses). A total of 6 inmates reported non-adherence, 17 reported adherence, 7 had a physical illness, and 16 had a mental illness. A total of 16 themes were identified through the four questions.

Overall, the pharmacist's medication knowledge and availability allow for medication management and support of inmate medication adherence. Inpatient, pharmacists are suited to perform comprehensive medication therapy management for the psychiatric population and other chronic illnesses. Outpatient, the community pharmacist is poised to supply medication information and guidance to transitioning inmates.

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Keywords

Medication adherence, pharmacist, chronic disease, antipsychotics, medication management

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Adherence

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Introduction

The purpose of this study is to investigate the way pharmacists can serve incarcerated and newly released prison populations by addressing medication adherence and managing medication therapy. Interviews were conducted to gauge inmates' opinions of their medication regimen, experience with the health care system, and ultimately identify factors most important for effective medication therapy management. Feedback gained from these interviews will help define how the pharmacist, whose clinical responsibilities have expanded, can better support medication adherence among incarcerated individuals. The data for this paper comes from a cross-sectional parent study entitled "Interviews with Inmates on Self Care Needs", also known as "Inmate Self Care". This study examines a subset of interview data from the parent study answering the question: How do correctional patients perceive medication adherence and medication management as a part of their treatment plan?

Background

Health care in the United States (US) is moving towards a value-based care model where health resources are being strategically used to achieve the "Triple Aim" of lower health care costs, improving population health, and improved patient experience¹. Major goals of this movement include care coordination and addressing both the tangible and intangible aspects of health care¹. Highly important to this movement is patient medication adherence, defined here as the

extent that patients take medications as prescribed by their health care providers². When put into practice, medication adherence has the potential to drive significant savings for health systems by controlling chronic conditions, preventing hospital readmissions, and decreasing morbidity³. The system-wide cost of drug-related problems such as non-adherence was shown in a 2008 study conducted by the New England Healthcare Institute to be over \$290 billion- a total that has likely increased due to inflation⁴. Recent data shows about 49% of Americans take at least one medication and between 35-50% are non-adherent⁵. If prescribed medications are neglected, patients generally do not achieve targeted health outcomes and may see a worsening of their condition. As well, non-adherence can put patients at higher risk for mortality and the associated costs of intensive inpatient services when admitted to the hospital, with over 10% of hospitalizations attributed to lack of medication adherence^{3,6}. With that, addressing medication adherence can bring about a multitude of benefits and fits into health care's new culture of improved patient outcomes through increased care quality.

The US prison population represents a diverse body of individuals with a wide array of chronic illnesses. As of 2014, over 2.2 million individuals are currently sentenced in a Federal prison, State prison, or local jail at a rate of 900 incarcerations per 100,000 US residents- one of the highest rates in the world⁷. Among the correctional population, there is a high incidence of mental health

illness, with a Department of Justice study estimating that 45% of Federal, 56% of state, and 64% of local jail inmates suffered from at least one mental illness⁸.

These conditions include bipolar disorder, schizophrenia, depression, and others that often go undiagnosed during the inmates' life. The same report showed that 74% of state and 76% of federal prisoners with mental illness, respectively, were also likely to exhibit substance abuse⁸. Aside from those with a mental illness, the incarcerated population exhibits diseases comparable to the free world such as hypertension, diabetes, and HIV⁹. A recent study estimated that 40% of inmates have a chronic illness of a physical nature, irrespective of mental illness¹⁰. In practice, correctional health care occurs in a highly coordinated and regimented environment when compared to the free world. Although inmates are regulated and under intense scrutiny, non-adherence continues to exist because, like in the free world, inmates can choose to neglect their treatment or refuse prescribed medication regimens.

Progressing through the correctional system, inmates in need of treatment, often referred to as inmate-patients, face a diverse set of health care-related obstacles. Periods of transition are especially challenging for maintaining adherence as inmate-patients face relocation, insurance change, and complete reestablishment of their medical care team. With over 600,000 prisoners released to the community in the US on an annual basis, the challenge is widespread and readily apparent¹¹. On release, inmate-patients must relearn the community-based

system they once participated in, while adapting to changes that have been made since the Affordable Care Act (ACA) in 2010. When transitioning at the end of a sentence, inmates will be directly released to the community, while others, released under transitional supervision, will exit prison in a stepwise-approach and spend time in a halfway house¹². On departure from correctional health care, to either the community or a halfway house, an inmate must assume full responsibility for their health care and will often depart with a short supply of medication¹³, or voucher. In either case, those on chronic medication therapy will eventually need to refill their medications and it is then that the inmate will encounter an important community health care provider; the pharmacist.

For inmates and the community as a whole, the pharmacist presents as a viable resource for promoting medication adherence and managing medication therapy. When considering access to health care, the pharmacist is viewed as the most accessible health care professional and consistently ranks in the top most trustworthy professionals^{14,15}. With over 110,000 total pharmacists employed by chain retailers and independent pharmacies in the US, the public can't go far without encountering a pharmacist¹⁶. The services of the pharmacist are unique in that there are few other instances in the US health care system where an appointment is not required to receive free professional input. A pharmacist's education includes extensive training on side effect monitoring, preventing drug interactions, and optimizing both the safety and efficacy of medication regimens;

making them well-equipped to resolve adherence discrepancies¹⁷. In addition to pharmacotherapy management, pharmacists receive communication training to better elicit information from patients and motivate change in those that want to alter their habits in a positive way¹⁷. Recognition of pharmacists' capabilities is becoming apparent as professional organizations increasingly call for their involvement in addressing unmet public health needs, drawing the profession further into patient care.

At the national level, professional organizations such as APhA are lobbying for attainment of pharmacist provider status in rural and underserved areas¹⁸. Pharmacists already receive compensation from the federal government through Medicare Part D for Medication Therapy Management (MTM), a comprehensive medication review aimed at increasing safety and efficacy of medication regimens, but federal provider status recognition would allow for expanded clinical scope¹⁹. The components of MTM have been standardized through input from several professional organizations and have been formally compiled as a resource called the "Patient Care Process"²⁰. Here the pharmacist conducts MTM with the patient's preferences and outcomes at the center of their service. Aside from the federal movement, Collaborative Drug Therapy Agreements (CDTA) at the state level give pharmacists prescriptive responsibility for specific disease-states or specific populations of patients²¹. Here, pharmacists play a greater role in therapy management as an extension of the traditional physician-patient

relationship. Recently, the American Society of Health-System Pharmacists (ASHP) released the first guidelines on pharmacists' role in correctional health facilities, advocating that facilities obtain the services of pharmacists to ensure safe and effective care; a sign of pharmacists' evolving role and ability to impact care in diverse settings²².

Availability, knowledge, and expanding services make the pharmacist ideal for medication therapy management and promotion of medication adherence for all participants in the health care system. Inmate-patients, who represent a vulnerable population with limited resources and a high comorbidity burden, may benefit from pharmacists' services and ultimately experience improved health outcomes. Thus, this study seeks to explore factors affecting inmate medication adherence that may be influenced by pharmacist intervention. Justification for the present study stems from the structural care processes and patient needs that are inherent to the correctional health setting. By conducting exploratory interviews with inmate-patients, opportunities for pharmacist intervention will be defined and additional hypotheses concerning medication adherence will be generated. These opportunities will ideally target the root cause of non-adherence and guide future work to support adherence to obtain positive health outcomes. With the efforts brought on by the ACA to facilitate inmate participation in healthcare and support from many professional organizations, the progressing role of the pharmacist can be further refined to address inmate-patients' health needs.

Methods

Parent Study

The data for this analysis comes from an ongoing parent study called the “Inmate Self Care” study that began in 2014. The purpose of “Inmate Self Care” is to explore the factors affecting inmate-patients’ ability to perform self-care in a correctional setting. The study’s ultimate goal is to develop a solution, in the form of a patient-centered tool or policy recommendation, to improve inmate-patients’ self-care habits and allow them to receive the greatest benefits from care. “Inmate Self Care” also served as an internship opportunity for pharmacy students to participate in data collection and data analysis for an interprofessional research project.

Contractual authorization for the study was obtained from the Connecticut Department of Corrections (CDOC) and a Certificate of Confidentiality (# MH-14-63A) was obtained from the National Institutes of Health (NIH). Study participants were recruited from two Connecticut Correctional Institutes and eight work-release or inpatient halfway houses.

Planned enrollment for the parent study was 140 participants with the following characteristics: male, female, adherent, non-adherent, diabetes mellitus, HIV/AIDS, hypertension, depression, bipolar disorder, schizophrenia, and substance abuse. The planned enrollment is further outlined in Appendix- Table 1.

Semi-structured interviews were utilized to explore inmate- patients' perspectives on adherence to medication and medication management in a correctional setting. Thirty questions were developed as an exploratory core for the parent study based on previously identified psychosocial and pharmacologic factors affecting treatment adherence²³⁻²⁵. Efforts were made to probe interview participants in order to provide further insight into interview questions. Demographic information was collected including date of birth, gender, ethnicity, education level, work history, family support, and current chronic medical conditions. Completion of all interview questions was expected to take 30-45 minutes based on applicability to each participant and depth of response.

Adherence status would be assigned after review of the participant's medication administration record (MAR) for the previous three months. If the patient took 80% or more of their prescribed doses, they were considered adherent; non-adherent if they did not meet this threshold^{26,27}. If the MAR could not be obtained, adherence would be assigned based on participant self-reporting.

Sub - study Design

Following the same projected enrollment as the parent study, this study sought to answer the following question: How do correctional patients perceive medication adherence and medication management as a part of their treatment plan?

Assessing this question has important implications for pharmacy practice because it offers insight into inmate-patients' day-to-day health care experience

throughout the correctional process. Such insight will help define opportunities for pharmacist intervention, allowing for optimal use of resources and attainment of beneficial health outcomes.

To address this, four questions were selected for primary analysis from the 30 parent study questions:

Question 1 (Q1)- Do you take your medications as prescribed, and why?

Question 2 (Q2)- How do you feel about taking medication for your illness?

Question 3 (Q3)- Are you experiencing any problems or side effects due to your medications and how do you handle this?

Question 4 (Q4)- Have there been any changes to your medications and how was this process handled?

These questions were selected specifically for their focus on medication adherence and management. The former is addressed by both Q1 and Q2, which serve to elicit more information about the inmate's overall adherence and perception of medication. The latter, addressed by Q3 and Q4, targets inmates' experience with medication changes and their interactions with providers through the management process.

Sample

For inclusion in the study, participants were required to be over the age of 18, currently prescribed a treatment for a chronic illness, English speaking, and have an incarceration history of at least 6 months. Chronic illnesses of interest

included: depression, bipolar disorder, schizophrenia, substance abuse, hypertension, diabetes mellitus, and HIV/AIDS. The participant's primary diagnosis with active treatment determined categorization into either a physical illness group consisting of hypertension, diabetes mellitus, and HIV/AIDS; or a mental illness group consisting of depression, bipolar disorder, schizophrenia, and substance abuse. These diseases were chosen because they are frequently occurring in the general population, can be maintained with appropriate medication regimens, and generate significant costs when the diseases are uncontrolled. Adherence status was determined based on inmates' self-reported medication adherence for the previous 3 months.

Study Recruitment

Participants for the sub - study were recruited from one Connecticut Correctional Institute and four work-release or inpatient halfway houses. Recruitment procedures included use of posted fliers advertising the study which were hung in each facility through coordination with CDOC personnel. Each flier noted criteria for study enrollment with instructions to place a note in the sick call box if interested. Recruitment periods covered two weeks, at the end of which a date was coordinated with the CDOC staff to interview all interested inmates. The purpose, procedures, minimal risk, and potential lack of direct benefits of participating in the study were discussed on first meeting participants. Informed consent was then obtained, with participants acknowledging that they had the

right to refuse audio recording, could refuse disclosing their medication administration record, could abstain from answering any question, and could leave the interview at any time with the interview materials being subsequently destroyed. Signed informed consent forms were retained and stored separately from subsequent interview documentation to maintain de-identification.

Interview Procedures

On the determined interview date, researchers met with inmates in the general visitation room or private consultation rooms. At the start of the interview, inmates were provided full details of the study, informed of the NIH Certificate of Confidentiality, and written informed consent was obtained. Interviews followed a semi-structured format, were audio recorded, and handwritten notes were taken. In addition to the interview questions, demographic information was obtained from each participant including their medical conditions and current medication regimen. Each interview was de-identified through the replacement of the inmate's name with a number starting with 01. Audio recordings were later stored on an encrypted computer to maintain security. Individual interview notes were stored in a double-lock system, e.g. in a locked cabinet within a locked room at the University of Connecticut.

Analysis

Each interview was transcribed by a member of the research team and was subsequently reviewed by a different team member. During transcription, a

concerted effort was made to highlight the inmate's phrasing of certain answers, points of emphasis, and any other verbal cues that could elude their emotional stance on the topic. To ensure accuracy, 20% of interviews were validated through performing a second transcription by another team member and were cross-checked with all supporting notes. The interview transcripts, procedures, and analysis were reviewed by a veteran nursing professor to further ensure accuracy.

Content analysis began with a focused review of all transcripts by the research team with all analysis performed using NVivo 11 Pro (version 11, QSR International). The analysis was guided by previously identified psychosocial and pharmacologic factors affecting medication adherence²³⁻²⁵. After an initial review of all interview transcripts, responses to each question were interpreted and their underlying context served as themes. These themes were coded as nodes in NVivo and a node hierarchy was continually refined throughout the analysis. After coding all transcripts, each node was reviewed to determine if saturation was reached. After saturation was reached, themes were finalized for each question, and representative quotes were identified.

Results

Sub - study Sample

All sub - study interviews were conducted between January and December 2015, each averaging 30 minutes in length. The sub - study sample included 23 male

inmates located in one prison and four halfway-houses throughout Connecticut (Appendix- Table 2).

Content Analysis

In total, 6 inmates were non-adherent, 17 were adherent, 7 had a physical illness, and 16 had a mental illness. For the physical illness group, 1 was non-adherent and 6 were adherent. Among the mental illness group, 5 were non-adherent and 11 were adherent. All inmate-patients that consented to participating in the study fully-completed their interviews and there were no study dropouts. The 4 selected questions, out of 30 original study question, were coded with NVivo 11 Pro and their respective themes are presented on a question-by-question basis. Quotes are provided from the respective study participants. Overall 16 different themes were identified and reached saturation (Appendix- Figure 1). These themes could then be further classified as promoting adherence, non-adherence, or impacting medication management (Appendix- Table 3).

Q1. Do you take your medication as prescribed, and why?

In gauging patient's perceptions of medications, it was first necessary to determine whether or not patients were taking their medications and why. Themes identified for Q1 included: Momentary Disruptions, Timeliness, Lack of Need, Personal Beliefs, and Patient Education.

Momentary Disruptions

Most of the instances of non-adherence could be considered temporary in nature and resulted from momentary disruptions to an inmate's normal habits. As expected, it was rare that inmates reported simply forgetting as a reason for non-adherence. Several of the reasons for non-adherence related to procedures associated with medication administration. One inmate described not taking his medications because the nurse was not using gloves, making the medications unsanitary:

“I don’t like the way some nurses here give out medication. Like the other day, I was going to refuse my meds...The nurse started dumping my pills...A couple of the pills fell out onto the counter and she did not have any gloves and she felt it was alright to scoop up the pills with her bare hands back into the cup and hand me the cup. This got me mad because you are not going to go to a restaurant and let a waitress or waiter grab your food or play with your food with their bare hands. This is something that is going into my mouth and my body.” (02)

In one case the prison’s evening medication call conflicted with the television show *American Idol*, and thus his medications went untaken:

“P:...I missed it because they called us out at around 8:30 to get our meds and I was watching *American Idol* and did not want to miss it.
I: Was that for all the medications?
P: Yeah for all of them. I am pretty sure.” (02)

Timeliness

The amount of time required to obtain their medication was also a factor driving non-adherence. In dealing with the medication line, it was stated that the nurses take too long, causing the inmate to become frustrated with waiting and then exit the medication line before receiving their dose:

“Um, the nurse that we have is just too slow. And I’m not part of standing in line and waiting forever. I said you know what, I told the CO, mark me as a refusal. I refuse everything.” (01)

In acute instances where over-the-counter (OTC) medications were needed, such as joint pain or relief from a common cold, inmates could obtain necessary medication from the commissary. Here, OTC products could be purchased through an inmate’s bank account, providing expedited relief compared to the health system at a comparable price:

“Patient (P): ...they (the nurse) would find out our symptoms and write them down in our file to be referred to a doctor.

Interviewer (I): Would they ever turn you away and say go to commissary?

P: Umm they always just tell us to go if you got money on the books ‘cause it costs you 3 dollars anyway. To see the doctor is another 2-3 weeks.

I: Did you find yourself buying a lot of OTC products off the commissary?

P: I did everything. Antihistamines, Tylenol.” (19)

Lack of Need

Inmates often expressed periods where they were sufficiently maintained on therapy and had a perceived lack of need for their medications. An instance of this occurred during a “reality check”, where the patient wanted to check the status of their condition without medication:

“I just wanted to feel again, I just wanted to see how good I was really doing. And it was just like a reality check.” (09)

Here, another inmate described “highs” that caused him to see no need for medications. After stockpiling skipped doses, their mental condition would decline and they would eventually overdose on the accumulated medication:

“Yeah it’s just I’m just in one of my moods, you know, I’m on one of my highs you know where I’ve been doing really good for a while and I’m like “you know what today I don’t need it, tomorrow I’ll take it. I’ll do the cheat method where I just put it underneath my cheek or underneath my...I’ll stack them in my cell like I took them for a couple of days and then because I haven’t been on them for a while my depression comes back and now I get depressed, now I have thoughts of hurting myself, so I immediately get attention. I’ll be like “Oh yeah you want to do that? Well watch this, see these pills?” And the guy will call the court and I’m getting all the attention. Then I’m on the meds, I’m doing what I’m supposed to be doing. And then I’m like I’m doing so well I don’t need the meds anymore, and then I slide back down and crash for a while and then I get back on them. (01)

Personal Beliefs

At times, inmates presented with a strong belief, most often unfounded, that influenced their adherence. Here a patient reported not taking his medication over fear of drug tests resulting in a false positive:

“I’m trying not to take a lot of it because I was told it could make a false positive...that’s why I stopped taking everything cuz I want to make sure that my tests are clean.” (11)

One inmate with a mental illness mentioned a general embarrassment from taking psychiatric medications, but noted the benefits gained from treatment. In this way, the negative impact of public opinion was present and acknowledged, but the inmate continued to actively participate in treatment:

“I am more embarrassed by it. Ashamed I guess you could say. I am not a control freak but I like to be in control of myself, which I am sure everyone does. We are adults not children. I do not like the fact I have to use chemicals to stay in control of myself, but I guess that is something personal I have to get over.” (02)

Patient Education

The beneficial effects of patient education were seen through adherence, as one inmate described how his doctor helped establish a regimen that best suited his needs:

“...if it’s one thing I will say, and I’ll only give credit to doctor I had when I first came in, she was very patient with me, and understanding that I didn’t want to be all doped up on meds...but the lithium itself, that’s really done wonders. It really just stopped the suicidal thoughts from happening, like just cold turkey...so I really give the credit to the medication and taking them as prescribed.” (03)

Q2. How do you feel about taking medication for your illness?

After determining adherence, the inmate’s perception of medication’s role in therapy was subsequently analyzed. Whether medications were valued or not, along with the perceived benefits or risks, and the reasons supporting their answers were elicited through this question. Themes identified for Q2 included: Tangible Benefits, Potential Risks, Acute Relief, Counseling, Loss of Faith.

Tangible Benefits

For those finding value in medications for their condition, the most readily apparent theme identified was tangible benefits. Whether a mental or physical

illness, those supporting medications gave clear examples of the benefits they received:

“Effexor is a miracle drug. I’m happier now... even in the world I had problems, suicide and stuff like that, and you know, suicidal thinking, and then umm when they put me on Effexor, it just you know kind of evened everything else.” (08)

“Well listen, when I’m over 20 years for HIV and I’m never get better but never got full blown AIDS, the medication is doing something.” (12)

Potential Risks

Many others were motivated by the potential risks of an uncontrolled illness such as diabetes, an underlying heart condition, or feeling the negative physical effects in the absence of medication:

“Since I have been in I take everything. I am not risking going blind just because I do not want to take some pill.” (21)

“I have an issue in that area so imma be on my meds, you know because high blood pressure do that to your ticker. And I always had a little heart problem, since ’91 they told me I had a little black spot on the back of my heart.” (22)

“I’m taking the water pills, I know I can’t breathe- you know? And I know that pill is doing me good- you know? If I have any problems I make sure I take that water pill- you know?” (23)

Acute Relief

In some cases, the acute benefits mattered most to the patient such as during an anxiety attack:

“...it's like sometimes like every time it pop I need to take ‘em. I don’t want to have that, because I see people dying from anxiety, you know?”

And I don't want that to happen. Like, last week it was bad. I was like, I can't breathe I can't breathe, can you take me to the Doc?" (15)

Counseling

Another common theme was the benefits of group therapy and the different forms of expression it provided patients:

"And the treatment helps give me outlets, different outlets to take- you know? My major outlet was violence, and drinking and drugging. And the therapy and the treatment helps me, like there is different avenues- you know? Like I said I never wrote poetry in my life, I'm like that's for saps. And I'm like one of the toughest poets now. I sit there and I'm like ughhh and then by the time I finish I'm like oh my god, I wrote over two pages!" (17)

One inmate acknowledged both the benefits of new medications and counseling programs on release from solitary confinement. Here he stated that a change in environment and access to groups led to all-encompassing benefits:

"Um it's hard for me to tell because I was in solitary confinement for 16 months in the super max, and again how I got there was because I was on medications that weren't working ... I'm not sure if it's because I have a lot more freedom because I'm not locked in a cell 23 hours a day with minimal human contact. So, there's a lot more freedom for me to do programs like NA and AA, there was also a dual recovery program for people who have mental health problems and addiction. Um, really just services, and then we have creative writing and theatre classes. Plus, I'm able to have rec twice a day. Soooo- I don't know if it's that or the medication I'm taking or a combination of both." (07)

Lack of Faith

Instances where inmates saw little value in their medications were rare, occurring in only 4 interviews. In a broader sense, inmates' non-adherence derived from a

greater loss of faith in the health care system and the treatment they received. One inmate placed no value in his medication regimen because of being through the process so many times and feeling like a “guinea pig”:

“Yeah um I’m kinda skeptical about medications. Because I’ve been doing this for so long I kind of feel almost like a guinea pig. Like there’s no fix it pill. Ya know what I mean? Um, I’ve like I said taken so many medications over the years.” (07)

Disinterest in medications arose from lapsing refills, where an inmate located in the halfway house ran out of their current supply without a follow-up prescription:

“P: ...just recently I ran out of high blood pressure pills. When does the doctor anywhere, unless he knows your blood pressure is safe, take you off pills and say there is no refills? I’ve been taking these things for like 10-15 years.

I: Oh, so you didn’t have any refills?

P: There's just no refills. What are you out of your friggin mind? Now I'm running around here with no pills and high blood pressure and sure enough I got pissed at someone the other day and yelled at them and got written up.” (18)

Q3. Are you experiencing any problems or side effects due to your medications? How do you handle this?

Side effects often play a major role in medication adherence; thus, it was necessary to explore inmates’ experience with medication side effects. In this way, their medication management and resulting adherence could be better understood. Themes identified for Q3 included: Cognitive Side Effects, Therapy-limiting Side Effects, Physical Side Effects, and Patient Education. Side effects reported were seen with antipsychotics or mood-stabilizing medications causing

significant mood changes, drowsiness, weight gain, or extra-pyramidal side effects (EPS), or reported by patients with a mental illness. This often-fostered disinterest and non-adherence in the medication regimen.

Cognitive Side Effects

As mentioned, changes in mood often had an adverse impact on the patient and required therapy change:

“I was on Abilify and I stopped taking that. There was a big issue here surrounding me being taken off that medication because it made me feel almost frantic. I do not know why or what caused it. I don’t know if it was the pills or dosage, but it gave me this feeling that if I did not get something done right away that something bad would happen.” (02)

Drowsiness is a common side effect for antipsychotics and can be another source of medication discontinuation. Here the side effect was viewed in both a favorable and unfavorable light:

“P: Sleepiness, drowsiness. Trilafon puts me asleep. Not too much, but makes me a little drowsy. (pause). Other medications I don’t think there are any side effects that really bother me.

I: Are you annoyed by the drowsiness?

P: Not really, I don’t have nothing else to do but sleep.” (02)

“What they want is a therapeutic level and you know usually the therapeutic level got me where I’m drowsy...you know I feel like I’m not myself and you know I don’t like that feeling.” (01)

Therapy-limiting Side Effects

The presence of EPS, facial twitching and other involuntary movements, is a constant concern with antipsychotic medications and is often a treatment limiting

factor. Here a patient exhibited signs of EPS which led to a change in their therapy:

“I: Do you have any problems or side effects that you think you can attribute to your medications?

P: yeah - well - tremor in hand...my lip was like moving, involuntarily too - but umm, they switched my medication up and the pros and the cons outweighed the pros or whatever it's called.” (08)

Physical Side Effects

An example that appeared several times was significant weight gain from lithium.

Patients noted the benefits of lithium but stated that the additional weight was impacting their lives. The additional weight gain presented as a common factor for patients wanting to change their medications:

“...I'm trying to get off my lithium because it is bloating me. It's like, making me overweight I think. I've gained a lot of weight on the lithium. More than I've ever had in my life...it was actually dramatic...I ended up gaining like 40 pounds in like 4 months.” (05)

Patient Education

Inmate-patients demonstrated an understanding that doses are titrated for optimum effects but complained of negative side effects on dose increases; especially with psychiatric medications. These changes were mitigated by care providers explaining what was happening and assuring the inmates that this experience was only temporary. In this case, the nurse was supportive of the patient going through a dose increase:

“Every time I go through the increase, for a couple days I get real bad headaches, my hands start shaking real bad and um, I just don't like the

feeling. So, she kinda worked with me she said ‘okay well what we will do is we will keep you at where you are at...if you start acting out again, we’re just going to increase your meds and you can refuse them then we’ll go from the next step from there but as of right now, you know, you can stay at it’.” (01)

Q4. Have there been any changes to your medications? How was this process handled?

Inmate-patient’s medication regimens undergo change for a variety of reasons and the processes surrounding these changes vary. The goal with this question was to elicit information about the management of inmates’ medication regimens to identify practices that influenced adherence. Themes identified for Q4 included: Patient Education, Unmatched Expectations, Limited Provider Access, and Data Use.

Patient Education

When changes were necessary, clinicians took time to explain the therapeutic alterations. Inmates reported that they were consistently informed why a medication was added or discontinued, or why a dose was changed. In many cases the education received from the care provider had a large impact on the patient’s participation in treatment:

“I was really lucky when I first came into the county system, the doctor I had, she was, uh very, very nice, very educated, very professional, but more than understanding, so from the very start, she addressed my main concern which was medication. I didn’t want to take medication, not that I didn’t believe in it, but first hand I saw what medication um, does to some of the patients that I worked with, when they had been medicated, and I didn’t want to get diabetes, anger issues, violent

tempers.” (03)

“Dr. G spent time with you and showed you how important it is to take the medication, and if you don’t take it this could happen... if you don’t take them correctly or if you don’t mix them up correctly they don’t work. Dr. G always used to explain correctly. He cared more for us...he explained everything correctly and prescribed me the right medicine and so I believe that with him is the reason I’m still here because I lasted so long and taught me more about my disease that I have. Dr. G taught me that if I skip a day or two the virus can figure out the medication and the medication won’t work for me so I always try to take it but in the world it’s hard for me.” (20)

Unmatched Expectations

At times medication changes were not always welcome, and opinions of alteration to the medication regimen were different between patient and provider. One inmate reported his provider wanted to change his medication dose, but he resisted due to comfort at the current dose. In this case, a change to the inmate-patient’s regimen may have caused a moment of instability:

“I don't really like when people mess with my medication. Cause I’m doing well, even though - since I am doing well they say we need to start cutting back on your medication. I mean come on, I’m doing well, why mess with my medication- you know?” (08)

Limited Provider Access

Access to care, limited by physical and administrative barriers, played a large role in the degree to which medication changes could be made. One inmate, who had just arrived in the halfway house, sought to resolve his lithium side effects but was unsure how to do so:

“I: Have you talked to your doctor about that?”

P: No, I've gotta talk to them, I don't know how. I've gotta figure out how to go about doing that because you go back into the jail to do that so..." (05)

Data Use

Medication changes were also the result of blood level monitoring, as in this case where an inmate's prolactin levels called for a change to their medication regimen:

"...there was a point in time where they were trying to decrease the medication and then I started to get agitated and my mood started to change...they stopped giving me Risperdal cause of my prolactin levels...and I started getting a sensitive chest...they put me on Zyprexa instead of Risperdal." (08)

While monitoring blood levels for certain medications can lead to appropriate therapy selection, one inmate presented what occurs when labs such as viral load are neglected:

"P: ...he was the one that took me off my meds back in 2005...I lost my weight, I went from 235 down to 167 pounds
 I: Okay what was it he took you off, do you remember, or what it was for?
 P: My HIV
 I: Did he replace it with anything?
 P: No
 I: So how long do you think you were without treatment for your HIV?
 P: At least a few months
 I: And then he started back up again?
 P: Yeah when he saw my numbers but I was telling him all along I had problems, so they took my gallbladder..." (22)

Discussion

Thematic Overview

The 23 inmates interviewed provided perspectives on their experience receiving treatment for a chronic illness in the correctional health system to better understand the role pharmacists may play in their care. Through the four questions, information was successfully obtained about inmates' perception of medication adherence and medication management for their respective illness. Most of the study population self-reported adherence to their medication regimen (17/23, 73.9%) and the majority interviewed were located in halfway houses (16/23, 69.6%). No clear difference was seen in the reported adherence between the physical and mental illness groups.

Responses to all questions from halfway house and prison participants were consistent in nature, likely because halfway house residents experienced the same care processes in the recent past. When medication changes were reported, they almost always occurred with the goal of reducing side effects to make treatment bearable for the patient. As well, when changes were warranted, there was no dissatisfaction with the therapeutic alternative expressed among interviewed inmates.

The 16 total themes could be more broadly grouped into those relating to adherence, non-adherence, or management (Appendix- Table 3). The theme Patient Education was the only theme identified across multiple questions;

appearing in Q1, Q3, and Q4. Education most commonly comes in the form of providing information about the specific medication, the patient's disease, medication or intervention adherence, and chronic disease to support therapy effectiveness²⁸. Whether it be doctors, nurses, or other health care workers providing support to inmates- knowledge is passed from provider to patient and ultimately translates into adherence. This is important in that it provides evidence of the role clinicians play in supporting medication adherence as well as facilitating the management of an inmate-patients' medication regimen.

Patient education can be a tool for combating identified recurring causes of non-adherence such as Lack of Need, Lack of Faith, Personal Beliefs, and Unmatched Expectations. In any of these cases, the provider becomes instrumental in communicating the purpose of therapy to the patient while also dispelling any misinformation. The variety of ways to apply patient education stresses how provider intervention is essential to medication management and adherence of the inmate-patient.

Medication requests, in response to side effects or simply patient desire, and subsequent medication therapy management warrant additional discussion due to the impact on inmate-patient care. To start, changes to medication regimens in correctional health facilities mirror that of the free world. For example, a physician may increase a dose if a medication's effects are not apparent, decrease the dose, switch to a therapeutic alternative, or the patient may request a change if

they are not experiencing the outcomes they desire. At times, inmate-patients would request a medication to help with sleep or anxiety, but often these medications are highly controlled or off limits in the prison and could not be prescribed. The majority of participants reported at least one self-requested alteration to their medication regimen, most commonly in response to side effects, which was almost always accommodated by the clinician. Antipsychotics were the medication class for which participants most frequently requested alterations, with justifications supported primarily by Q3. Side effects such as weight gain, extra-pyramidal symptoms (EPS), and dizziness contributed frequently as barriers to adherence. With a metabolic role, the weight gain, and potential for irreversibility, the EPS, close therapeutic monitoring is required by providers. Higher incidence of type 2 diabetes mellitus, cardiovascular disease, and life-long tardive dyskinesia (a subset of EPS) coinciding with antipsychotic therapy warrants transition to therapeutic alternatives to prevent patient morbidity^{29,30}. Thus, it is expected that patients requiring antipsychotics will receive a greater degree of medication management during their time in prison. Aside from the antipsychotic medications, participants expressed minimal complaints about current side effects. Overall, inmate-patients on antipsychotic therapy in prison represent a high-risk population that require specialized attention from correctional health care providers.

Of additional importance was the expression of Lack of Provider Access among interviewed inmate-patients. For those located in prison, a medication change could be obtained through writing a sick note or reporting their symptoms to a member of the health staff. This process could take substantial time, often two to four weeks, for the inmate's request to be triaged appropriately and for a session with a physician to become available. For medications requiring frequent side effect and efficacy monitoring, such as the antipsychotics, delays in seeing a care provider could negatively impact care. Thus, in both the prison and extended supervision populations, this theme was ultimately viewed as a barrier to medication adherence and routine care.

Previously, for an inmate-patient in the halfway house, changing their regimen proved difficult as it required they receive all medical care back at the prison they originally came from. New regulations brought on by the Affordable Care Act (ACA) work to reduce this barrier to care by allowing halfway house residents to purchase private insurance or qualify for Medicaid and Medicare on release^{31,32}. Inmate-patients can now utilize this insurance during their time in extended surveillance to improve their access to care in the community. Allowing inmates to access community-based health services directly while in the halfway house helps to establish the halfway house residents' care team at an early stage, allowing them to adapt to their new settings, and potentially reduce provider burden in the correctional health care system. Involving insurance and other

regulatory bodies at an earlier stage in transition, may effectively address the expressed barrier of Limited Provider Access. Putting inmate-patients in a position to easily and regularly make use of their care team, with access to the educational support of their clinicians, will likely promote optimal adherence and allow for realization of the greatest benefits from therapy.

Previous research into inmate-patient perspectives on barriers or facilitators of adherence primarily focuses on the experiences of specific disease-states in the correctional setting. The majority of adherence research relates to inmate-patients with HIV/AIDS or psychiatric illnesses, with data lacking for chronic conditions such as hypertension and asthma. Interviews conducted with incarcerated women suffering from HIV identified factors such as increased knowledge of their disease, improving CD4 levels, privacy associated with “keep on person” medications, and the routine of prison life as factors enhancing medication adherence among others. Conversely, this same study found the stigma of receiving antiretroviral therapy for HIV and participating in the medication line as barriers to adherence³³.

Another study, analyzing factors associated with former inmate HIV patients' use of health care on release, found that major factors related to interpersonal relationships, professional relationships, coping strategies and resources, and individual attitudes affected health care utilization³⁴. This study is similar to the current findings in the sense that "professional relationships" and "coping

strategies and resources" coincide with the receipt of Patient Education from correctional health care providers. For those receiving psychotropic medications, a review by Shelton et al. found that factors influencing medication adherence could be generally grouped into the following categories: prisoner demographic characteristics, prior use of psychotropic medication, prisoner insight into mental health treatment needs, prison environment, and medication side effects³⁵. In a randomized controlled trial among female inmate-patients with bipolar disorder, authors found that inmate-patients skipping the greatest number of doses had the lowest levels of baseline adherence and most severe symptoms³⁶. Conversely, they found that as adherence increases over time, each inmate reported symptoms decreased, considered a sign of therapy effectiveness. In this same study, mood stabilizers, such as lithium, were the most commonly skipped medication followed by antipsychotics³⁶. In the current study, findings provide justification for skipping these medications as participants complained of Cognitive Side Effects, Therapy-limiting Side Effects, and Physical Side Effects when referring to lithium and antipsychotics. Since mood-stabilizers and antipsychotics are the main form of treatment for a variety of mood disorders, such as bipolar disorder and schizophrenia, addressing side effects and other associated barriers to adherence becomes increasingly important for the achievement of therapeutic goals. This study builds upon the themes identified previously in the literature and presents a diversity of other factors affecting inmate adherence.

Pharmacist Role

A pharmacist has the capacity to serve in many roles due to their broad knowledge base and in-depth familiarity with medication use and distribution. Previous studies have proven the pharmacist's ability to directly monitor therapeutic levels, prevent and address side effects, provide education, and reduce costs in a variety of settings while striving to achieve optimal therapy goals^{14,28,37-41}. In general, pharmacists are currently employed by community pharmacies, hospitals, ambulatory care clinics, and a variety of outpatient settings. Pharmacists are also found in the correctional health system and have responsibilities ranging from verifying medications for administration to collaborative drug therapy agreements (CDTA) where they carry out comprehensive medication management for specific populations. Commonly managed disease-states include HIV, hepatitis, diabetes, and patients receiving anticoagulation⁴²⁻⁴⁴.

Opportunities for specialization in correctional health care exist for pharmacy school graduates in the form of a pharmacy residency. Examples of programs currently offered in correctional health care include UConn Health's Correctional Managed Health Care (CMHC) residency and University of Texas Medical Branch's (UTMB) managed care pharmacy^{45,46}. At the Federal level, the Bureau of Prisons (BOP) residency exists and offers training in mental health, ambulatory care, and diabetes management among other specialties^{43,47}. With the

aforementioned opportunities in mind, the recent ASHP guidelines for pharmacists in correctional settings further cement the clinical benefits offered by the pharmacist²². The results of this study offer insight into how the pharmacist can further serve the correctional population while continuing to advance their role as a provider by delivering safe and efficacious care. Applications of the pharmacist's skillset have been developed to achieve this end and are suggested in the following paragraphs.

The two main functional areas identified for pharmacist intervention are the outpatient and inpatient segments of the care continuum, with the most substantial improvement possible in the inpatient setting. From an inpatient perspective, care delivered specifically within the prison medical department, it is clear that populations with chronic illnesses require continual medication management and the current availability of providers is limited. As previously mentioned, the side effect profile of antipsychotics requires close monitoring and frequently necessitates therapeutic alterations. Pharmacists are well equipped to address this medication monitoring need after receiving the Board Certified Psychiatric Pharmacist (BCPP) credential that exists through the Board of Pharmacy Specialties (BPS)⁴⁸. For this certification, pharmacists are required to have practiced for from two to four years, based on residency experience, with a percentage of their time devoted to psychiatric pharmacy activities and must objectively demonstrate their knowledge by sitting for a board examination⁴⁸.

CDTA's for the psychiatric population exist in certain care settings, and should be further implemented to allow pharmacists to practice at the top of their license.

The BPS also offers the Board Certified Pharmacotherapy Specialist (BCPS) credential⁴⁹. With this, the pharmacist has demonstrated an in-depth knowledge of medications and can effectively provide comprehensive medication therapy management (MTM) for many different disease-states⁴⁹.

Under the care of a BCPS or BCPP certified pharmacist, each patient's medication regimen could be optimized to reduce drug interactions, limit side effects, and titrated to achieve therapeutic goals. Employing pharmacists with either the BCPP or BCPS credential works to combat the provider shortage in prisons, resolving issues specific to this psychiatric population and other disease state, ultimately allowing the primary care physicians to focus their limited time on other aspects of patient care. In this way, another care provider would be made available to the correctional health system, impacting medication adherence through optimum medication management. As well, the pharmacist can help address inmate-patients that may be resistant to therapy through motivational interviewing. Combined with pharmacist's empathy, applying motivational interviewing to the incarcerated population could foster change that could improve adherence and extend to other aspects of the patient's life.

From an outpatient standpoint, the pharmacist has the potential to increase their functionality to released inmates by working within the existing health

infrastructure. For released inmates, there is often misinformation about how to reengage in health care on return to the community. Without this information, the inmate is at risk of failing to reestablish their care team which could contribute to non-adherence. Other factors affecting adherence for any patient in the community include costly medications, lack of care coordination, and personal factors such as patient health literacy and support networks⁴. Since inmates become responsible for all health care on release, it can be inferred that an extra form of support would help them with this transition. As stated earlier, the abundance of community pharmacies in the United States gives inmates an easy source of health information on release from prison. Pharmacists serve a broad population of patients in the community pharmacy, but may not be privy to the experience of those released from prison. Without knowledge of the transitions of care that occur between prison and the community, or extended surveillance and community, the pharmacist cannot serve inmate-patient's post-incarceration to the best of their ability. Community support programs exist to help patients navigate during the high-risk transitional period, but no relationship between these programs and community pharmacies currently exists. A synergistic solution would be for community pharmacies to establish contact with community health programs to facilitate post-incarcerated patients' integration into the health system. As a regular member of interdisciplinary care teams, pharmacists have significant experience with interprofessional communication and exposure to a

diversity of care settings; allowing for effective communication to and from community health programs.

Additionally, if the pharmacist were to have greater knowledge of the patient's needs post-incarceration, they could direct patients to appropriate health services or, with knowledge of their transitional health coverage, suggest cheaper payment methods. An example of the former would consist of a post-incarcerated patient coming to the pharmacy without an established primary care physician, requesting more information. The latter could occur when the patient's insurance coverage has not been instated on release from prison and needs medication. In this case, the pharmacist can utilize a prescription discount card, which are common in the community pharmacy, or offer recommendations for low cost over-the-counter (OTC) medications to help the patient save money. Through the community pharmacy, the pharmacist would be addressing transitional adherence, a critical step in the inmate-patient's care process, in addition to the normal day-to-day needs of released inmates.

To better prepare pharmacists, there should be a coordinated effort between the prison facility, government at local and state levels, community health programs, and community pharmacies as a whole. A potential solution would be the implementation of a certification program, recurring academic seminar, or Continuing Education credit that provides pharmacists with knowledge they need to manage this vulnerable population. While the pharmacist already services this

population in several ways, pharmacists have the potential to do much more from the inpatient and outpatient standpoints. Whether providing education and guidance to promote adherence in the community pharmacy, or directly managing medications in the correctional health setting, there are strides to be made for pharmacists in the realm of correctional health.

Limitations

While every effort was made to ensure the rigor of this study, several limitations were present that prevent complete realization of the true scope of inmate-patient perspectives on health care. The most significant limitation was the inability to obtain inmate-patients' Medication Administration Records (MAR) due to scheduling, travel, and administrative barriers. Using the MAR would have provided an objective source for evaluating the patient's overall adherence and could have served as a cross-reference to their self-reported answer. Using patients' self-reported adherence served as a less accurate marker but was ultimately the only available resource. While there is no perfect measure of adherence, the standard used is often proportion of days covered (PDC). For instance, the Pharmacy Quality Alliance (PQA) uses PDC as their standard measure of adherence when developing medication-use measures for medication safety and adherence^{26,27}. The PDC is calculated by the total days of medication supply during a time interval divided by the total length of time in the interval period; yielding the percentage of days with medication available⁵⁰ This

calculation is often made through evaluation of pharmacy claims data, by comparing the fill dates of the patient's medication²⁷. A patient is often considered adherent when their PDC is 80% or more for a given period of time, and non-adherent below this threshold⁵¹. To go along with the missing MAR data, this study did not use other objective forms of data collection such as surveys, scales, or questionnaires. Employing these methods would have allowed for greater data standardization, comparison among participants, and potentially the use of statistical analysis.

Second, the open-ended questions could be deemed ambiguous and open to interpretation by each interviewee. Additional probing may have elicited different responses from participants that may have varied between different interviews. Recruiting also presented as a major limitation for this study. By passively posting fliers in the prisons and halfway houses, inmates could have easily overlooked or forgotten to self-enroll in the study. The final cohort of 23 participants yielded interesting themes, but further evidence could have been generated from a larger and more diverse group of participants. Among the patient population, there was an imbalance between adherent and non-adherent with the majority of participants reporting adherent. This imbalance may be explained by the recruiting method, as it could be inferred that the non-adherent population did not care enough to participate in the study since they already do not actively participate in their treatment. A more active approach, such as

planned informational sessions regarding the study and face-to-face enrollment, may have yielded a more balanced study population. As well, the interviewed population did not include female inmate-patients, so the study is restricted to purely the male's perspective of the correctional health setting. In terms of stratification of the interviewed population, the analysis primarily focused on the main diagnosis of the patient and was not segregated based on the type of medication. Again, the absence of MAR data prevented further stratification of the study participants.

Future Research

As stated, inmate medication adherence is understudied and is primarily focused in select disease-states such as HIV/AIDS and mental illnesses. However, even these disease states, are understudied and current research does not fully capture inmate-patient perspectives on medication adherence and experience with medication management. Thus, additional studies in a diversity of disease states using objective measures of adherence must be conducted to further evaluate factors affecting adherence in the correctional health setting. This study has identified themes surrounding inmate-patient perspectives on medication adherence and management. Building upon this, strategies for integrating pharmacists in the inpatient and outpatient settings may provide a means of addressing deficits in adherence at key junctures in the correctional care process

while efficaciously employing pharmacists' unique skillset for optimum medication therapy management.

While the proposed roles for the pharmacist make theoretical sense, additional studies are necessary to gauge the value of direct pharmacist intervention on the adherence and subsequent health outcomes of inmate-patients. A potential study would be to compare inmate-patients supplied with intensive pharmacist medication management in the inpatient setting to a cohort with the facility's current standard of care. Assessing measures such as adherence, well-being, cost of care, and quality of life would prove a means of evaluating pharmacists' impact in this role. In the outpatient setting, development of resources to educate community practitioners about the path of inmate-patients on reintegration to the community will serve as the next best step forward. Future studies should also capture inmate-patient perspectives specifically on the pharmacist and their roles in both the correctional setting and in the community. Utilization of the pharmacist's services in these settings was not captured in the present study, but may offer additional clues in regards to how inmate-patients access care.

Additional studies are suggested to examine pharmacist involvement with the patient, but also with other providers in the correctional health setting. The theme Limited Provider Access demonstrated the frustration inmate-patients experienced when trying to utilize the health service in pursuit of medication inquiries or routine care. An expanded role for pharmacists should be explored, supported by

data regarding current provider time burden, illuminating value added supplied by the pharmacist. The prevalence of Patient Education throughout this study also calls for a greater assessment of the type of education most commonly provided to inmate-patients and the content most commonly requested. From an alternate perspective, the quality of the patient-provider relationship can be assessed in order to understand those essential factors that facilitate communication of medication education. At the end of the day, the patient is first and foremost in any health care setting. Studies to identify key factors of importance throughout inmate-patients' experience with correctional health care will provide evidence to better facilitate the implementation of patient-centered care in the correctional health setting.

Conclusion

Themes identified suggest the benefit of patient education in both the inpatient correctional health setting and outpatient on inmates' transition to the community. From the inpatient setting, pharmacists are well suited to perform comprehensive medication therapy management for the psychiatric population and other chronic illnesses. In an outpatient setting, the community pharmacist is poised to supply medication and additional health information to inmates in transition. Interviews conducted during this study provided valuable new details regarding inmate-patient perceptions of medication adherence and medication therapy management as a part of their treatment regimen. Overall, the pharmacist's adept medication

knowledge and availability allow for in-depth medication management and support of inmates' medication adherence. Further incorporation of the pharmacist into correctional health care will allow for increased patient-centered care and will likely bring about improvements in this population's health.

Appendices

Table 1. Projected Parent Study Enrollment

Patient Groups	Adherent		Non-adherent	
Diabetes	Male - 5	Female - 5	Male - 5	Female - 5
Hypertension	Male - 5	Female - 5	Male - 5	Female - 5
HIV/AIDS	Male - 5	Female - 5	Male - 5	Female - 5
Schizophrenia	Male - 5	Female - 5	Male - 5	Female - 5
Bipolar	Male - 5	Female - 5	Male - 5	Female - 5
Depression	Male - 5	Female - 5	Male - 5	Female - 5
Substance Abuse	Male - 5	Female - 5	Male - 5	Female - 5

Table 1 Description: The projected enrollment for the “Inmate Self Care” study was 140 participants to ensure saturation among each of the specified groups of interest. Adherence or non-adherence was assigned based on review of the inmate-patients’ medication administration record (MAR) or, if MAR was unavailable, based on the patient's self-reported response based on their overall sense of adherence for the previous 3 months.

Table 2. Sub- study Sample Demographics

Demographics:	Adherent n=17 %	Non-adherent n=6 %	Total N=23 %
Gender:			
Male	17	6	23
Location:			
Prison	5	2	7
Halfway House	12	4	16
Primary Dx:			
Hypertension	1	0	1
Diabetes Mellitus	2	1	3
HIV/AIDS	3	0	3
Depression	4	3	7
Bipolar Disorder	2	1	3
Schizophrenia	2	1	3
Substance Abuse	3	0	3
Ethnicity:			
Black	8	1	9
Hispanic	5	0	5
White/Caucasian	2	3	5
Other	2	2	4
Education:			
College Degree	3	1	4
High School/GED/Technical	5	5	10
Some High School	7	0	7
Other	2	0	2
Family Support:			
Yes	13	3	16
No	4	3	7

Table 2 Description: The mental illness group contained primary diagnoses of depression, bipolar disorder, schizophrenia, and substance abuse. The physical illness group contained the diagnoses of hypertension, diabetes mellitus, and HIV/AIDS. Adherence status was based on patient self-report based for the previous 3 months. Halfway house or prison location was based on place when interviewed. For Education, college degree includes bachelors or associates; ‘Other’ classification includes some college (1) or unassigned (1). For Ethnicity, the ‘Other’ classification represents unknown (1) and mixed race (3).
Abbreviations: Dx=Diagnosis

Figure 1. Theme Web

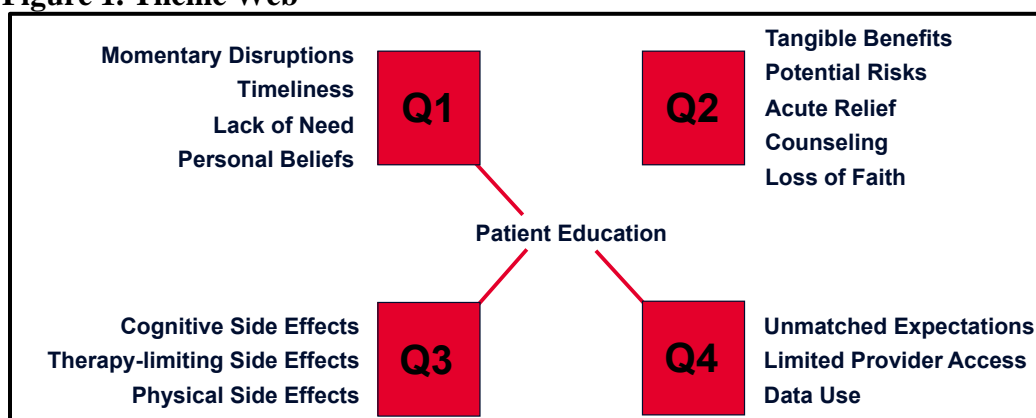


Figure 1 Description: The web shows the themes identified when each question was asked. The red lines extending from each box signify the presence of the theme Patient Education among questions 1, 3, and 4.

Table 3. Adherence, Non-adherence, Management Theme Classifications

Adherence	Non-adherence	Management
Acute Relief	Cognitive Side Effects	Cognitive Side Effects
Counseling	Lack of Need	Data Use
Potential Risks	Lack of Provider Access	Lack of Provider Access
Patient Education	Loss of Faith	Physical Side Effects
Tangible Benefits	Momentary Disruptions	Patient Education
	Personal Beliefs	Therapy-limiting Side Effects
	Physical Side Effects	Unmatched Expectations
	Therapy-limiting Side Effects	
	Timeliness	
	Unmatched Expectations	

Table 3 Description: Thematic classification from Q1, Q2, Q3, Q4 could be separated based on the impact they had on either adherence or medication management. Themes were separated based on the context they were presented from the interview participant. The adherence designation suggests the theme promotes proper medication adherence, and non-adherence suggests the theme detracts from proper medication adherence. Management is a compilation of themes that are important for optimum medication therapy management.

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