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Improving Campus Prescription Delivery Service Process at a Campus Health Center

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Title Page

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Abstract

Objective

The Doctor of Nursing Practice (DNP) project aimed to decrease barriers to accessing prescriptions using a free campus prescription delivery service (CPDS) through process improvement and interprofessional collaboration. The target population was the clinic population, focusing on college students residing on campus (SRoC).

Background

A utilization review and social influencers of health (SIoH) screenings revealed barriers to filling prescriptions among acutely ill students at a local university in a Midwestern rural college town.

Methods

A quality improvement project was implemented. An SIoH and a CPDS tool identified at-risk students who were then referred to a pharmacy delivery service. The Lean Healthcare Model was used to improve CPDS interventions.

Results

The intervention significantly increased the proportion of patients utilizing CPDS from 0% to 2.46% (p 0.0.4, 95% CI).

Conclusion

The project's time frame did not gauge long-term impact, necessitating further process evaluations. College Health Centers (CHCs) can tailor CPDS programs to improve healthcare accessibility and outcomes for student populations by addressing challenges and leveraging project insights.

Keywords: campus prescription delivery services; home delivery services; healthcare delivery systems; lean model; quality improvement; campus health center; medication therapy; adherence, non-adherence; barriers; college population; interprofessional collaboration; technology optimization

Improving Campus Prescription Delivery Service Process at a College Health Center

Background

Medication therapy is the primary intervention for various illnesses, particularly acute and infectious conditions. Ge et al[1] found a prevalence of medication non-adherence of 38.4% in young adults. Early intervention improves young adults' health, safety, and well-being[2]. Tran & Silvestri-Elmore[3] emphasized keeping college students healthy and reducing future health risks through early intervention. College students have unique patterns associated with healthcare-seeking behavior, and targeted efforts to address health needs and barriers to care for this population were deemed imperative. Previous research by Vathy et al[4] found that many young adults struggle with self-managing their medication, with freshmen students reporting lower adherence than higher-level students. Improving pharmacy access can help address adherence issues. The current organization has free prescription delivery services for chronic medication – patients with at least six prescriptions on file and free delivery services to the college students residing on campus (SRoC) with acceptable barriers. Clarification of the barriers to qualifying for the program was needed to promote standardization and ensure that the target population has access.

Problem

Considering Betty Neuman's Systems theory[6], which highlights the significance of prevention and intervention to uphold or reinstate an individual's stability or wellness, an analysis of clinical data and screening for SIoH at a Midwest university health center revealed delays in fulfilling prescriptions for acute visits. These delays impacted student patients' capacity to sustain their wellness. Transportation access was identified as a barrier. The finding confirmed an initial concern that the college student life leadership brought to the clinic's

attention and observed by the staff. The College Health Centers (CHC) partnered with a specific internal pharmacy in the urban town to offer a free campus prescription delivery service (CPDS) to patients, SRoC, with identified barriers. Clinic staff were found to lack knowledge and time, resulting in low usage of the free CPDS. The staff also voiced that the steps involved in completing the process were time-consuming and inconvenient. The clinic population includes students, faculty, and staff but mainly serves young adults in college housing.

Purpose

This project aimed to develop a standardized process to improve the utilization of the CPDS for acute treatment needs for patients with identified access risks using an offsite pharmacy partnered with the CHC. A literature review highlighted the positive impact of supported home delivery services in removing barriers and timeliness[7], the importance of considering patient-specific factors in designing delivery systems[8], and the impact of home delivery on improving medication adherence[5]. Medications-to-desk has been recommended as an option for patient-centered care[8]. The CPDS, medication-to-campus, reflects a similar system where medication is delivered to the patient on campus rather than ill patients going to the pharmacy to pick up the medication, thus promoting treatment and reducing contagion.

Methods - Quality Improvement

This was a quality improvement project with data collected for 2 months. The project used a 2-month pre-post design, with a convenience sample of total patients who received prescriptions during a clinic visit, to compare the rates of CPDS utilization 1 year prior, 2 months prior, and 2 months during implementation. CPDS data was also analyzed for provider utilization, patient type, “new vs. established,” and standard therapeutic drug classes ordered during project implementation only. The partner pharmacy provided a detailed report of all the

prescriptions and deliveries completed using CPDS. A framework to improve prescription capture was identified[8], guiding the project's implementation.

Setting

The Midwestern primary care clinic, near a rural college residential campus 15 miles from a large urban town, prioritizes students, faculty, and staff. Partnerships with the university and an offsite pharmacy facilitate healthcare services and delivery to qualifying students.

Intervention

The lean healthcare model provided a methodology framework throughout this process, focusing on creating value, eliminating non-contributing activities, and involving frontline staff in process improvement[9].

Following a framework to increase prescription capture at a clinic[10], a standardized process was developed from initial patient contact until receipt of the final prescription. The SIoH identified patients with transportation risk factors. This transportation finding would trigger and prompt a referral for CPDS. The process was streamlined and embedded into the daily workflow of the patient visit. The electronic health record (EHR) was optimized for prescription transmission and secure electronic faxing of demographic and insurance data, resulting in this seamless process.

Results

Data collection and analysis plans were outlined. The Fisher Exact test was used to analyze the rate of CPDS utilization pre- and post-intervention. There was an increase from 0% to 2.46% (p= 0.004%, 95% CI) 2 months pre/post-intervention. Usage increased from 1.91% to 2.46% (p= 0.798, no CI interval) 1-year pre/post-project implementation.

Descriptive data were summarized CPDS measures during the implementation period. Prescription data were extracted from the organization's EHR database and then categorized into medication classes, prescribing providers, and" new vs. established" patients utilizing CPDS during the intervention period.

Provider A, who worked more hours and was a project mentor, demonstrated higher utilization. The visiting providers and the other regular providers all used CPDS.

Among the 8 patients referred to CPDS, 3 were new, while 5 were established. According to pharmacy data, some patients utilized the service multiple times across several visits. Out of 21 total prescriptions sent using CPDS, 5 were anti-infectives, the most prescribed, followed by 4 steroids, 2 were combination therapy (like a steroid and bronchodilator). The remainder were other therapeutic drug classes, like central nervous system drugs, grouped into the "other" group, which were less frequently ordered individually through CPDS. In total, 3 therapeutic drug classes, with the 4th class being combination drugs, were included.

Ethical considerations

An IRB from the host organization determined this was a quality improvement project rather than research. Per protocols, all data was de-identified.

Funding:

No additional funding was required for the project. The process was a quality improvement project that leveraged the preexisting structure and services. The clinic practice leader and the pharmacy manager reported that a budget existed for the CPDS, which was accounted for in the pharmacy budget.

Discussion

The significant increase in CPDS utilization from 0% to 2.46% ($p = 0.004$, 95% CI) during the intervention indicates a notable shift in patient and staff behavior. From a clinical standpoint, this suggests that the intervention had a tangible impact on how students with identified barriers accessed prescription medications. The students experienced convenience and potentially improved adherence to prescribed treatments based on the delivery history.

While the increase in CPDS utilization compared to the 1 year before intervention did not reach statistical significance, it still represents a numerical increase in service uptake. Clinically, this suggests that the intervention may have contributed to sustained or improved utilization rates over time, even though the magnitude of this change was not statistically significant.

Usage should continue to grow as staff incorporate the system into their daily workflow. The sample size and seasonal factors like mild winter and infection mitigation culture may have influenced CPDS utilization rates.

Time constraints may have limited the full impact of the intervention. Integrated processes reduced staff anxiety and enhanced efficiency. Technology enhancements improved data management, reducing errors associated with manual processes like form completion and faxing and the risk of data breach. Implementing demographic verification enhanced communication and reduced redelivery expenses due to customers needing to answer the phone when the courier arrived. Insurance information remained a barrier, possibly caused by insurance enrollment changes and other external factors at the beginning of the year.

Stakeholder feedback highlighted the positive impact of the CPDS service on patients' lives. External factors like policy changes, such as decreased insurance reimbursement, limit CPDS utilization.

Better-defined roles and interprofessional collaboration through technology infrastructure enhanced teamwork and coordination.

Sustainability

CPDS champions have been appointed to advocate for and support evidence-based practice within the lean framework. A comprehensive CPDS policy and procedure binder has been developed to ensure standardized practices and efficient service delivery. Incorporating this information into the orientation process for new staff members will provide comprehensive training on the service. A secure communication channel between the pharmacy and clinic has also been established via Microsoft Teams, enabling real-time problem-solving. Discussions are underway to grant pharmacy staff view-only access to the organization's EHR system, streamlining communication and order fulfillment processes. Efforts to increase patient awareness include updating the clinic flyer with CPDS details. During new student orientation presentations hosted by the university, the clinic will incorporate information about CPDS to ensure that students are informed about the services available to them.

These initiatives aim to foster a culture of evidence-based practice and improve service delivery within the organization.

Limitations

The inability to accurately identify the precise number of potential candidates for CPDS may have resulted in negatively skewed results, as the total sample size encompassed all clinic patients who received prescriptions during both acute and chronic visits. This study employed a single-center design, which limits its generalizability to broader contexts. The absence of relevant literature prevented the comparison of findings with previous studies. The time frame needed to be longer to evaluate its long-term impact on CPDS accurately. As reported by the

pharmacy manager, the financial strain on the urban-partnered pharmacy operations due to low insurance reimbursement policies, which usually fall short of covering delivery costs, may have impacted the pool of eligible patients, leading to a low utilization rate of 2.46%. The turnover in staff may have affected the utilization rate of CPDS. Throughout the project implementation, the site welcomed a significant influx of new personnel, including 1 provider, 1 registered nurse, 2 medical assistants, and 2 non-clinical staff, constituting nearly half of the clinic's staff.

The extensive check-in paperwork, especially for new patients, may have resulted in incomplete SIoHs, resulting in low patient engagement with a 32% completion rate. The pharmacy team has limited EHR access. At the same time, courier delivery services were constrained to parking lots near college dorms only and specific designated locations on the college campus, limiting patient accessibility.

Conclusion

Screening for patients encountering obstacles and seamlessly integrating the procedure into daily operations via existing technological resources eliminated patient access hurdles and staff structural barriers, potentially promoting a positive outcome Introducing scripting and visual management cues led to a favorable increase in capturing at-risk SRoC, which may have improved prescription adherence. The engagement of interprofessional stakeholders generated support for the project and facilitated staff education regarding the CPDS.

Implications for Practice

Providing a tailored approach to student-centered care through CPDS aligns with nursing practice by promoting accessibility, continuity of care, health promotion, student wellness, and interdisciplinary collaboration, which aligns with BNS theory. Addressing challenges and

capitalizing on project insights will enable other organizations to customize CPDS programs to suit their contexts.

Next steps

Further analysis and ongoing monitoring may be necessary to fully understand the longer-term impact of the intervention on CPDS utilization.

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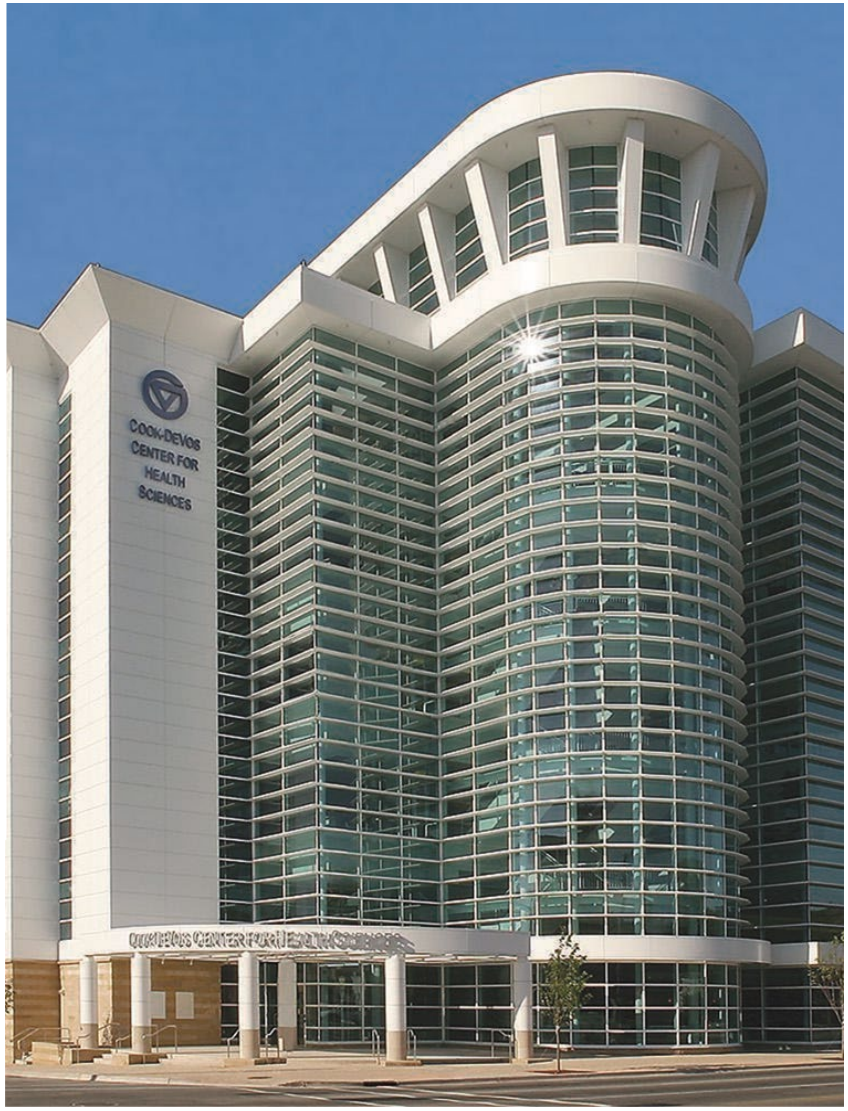
Improving Campus Prescription Delivery Service (CPDS) Process at a Campus Health Clinic (CHC)



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DNP Project Final Defense

April 22, 2024

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  - Karen Burritt, PhD, FNP-BC
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  - Carly Rinas, GVSU Biostatistics Graduate Assistant
  - Host Site Team

Objectives for this Presentation

- Discuss Clinical Problem
- Communicate Project Implementation and Results
- Defend Project to the Committee
- Discuss AACN DNP Essentials Reflection

Introduction

- Medication therapy is the primary intervention for most illnesses (Iuga & Mcguire,2014)
- Early intervention is key
- College students face various health risks (Tran & Silvestri-Elmore, 2021)
- Unique barriers for college students (Deasy et al., 2014; Kenney et al., 2013)
- Lack of awareness of pharmacy services leads to under-utilization (Tran & Silvestri-Elmore, 2021).

ORGANIZATIONAL ASSESSMENT (OA)

Setting

- CHC, 1 year old
- Midwestern rural residential campus
- Priority population served
  - Students, faculty and staff
- Record breaking freshman enrollment for 2024
- Goal to provide continuum of care

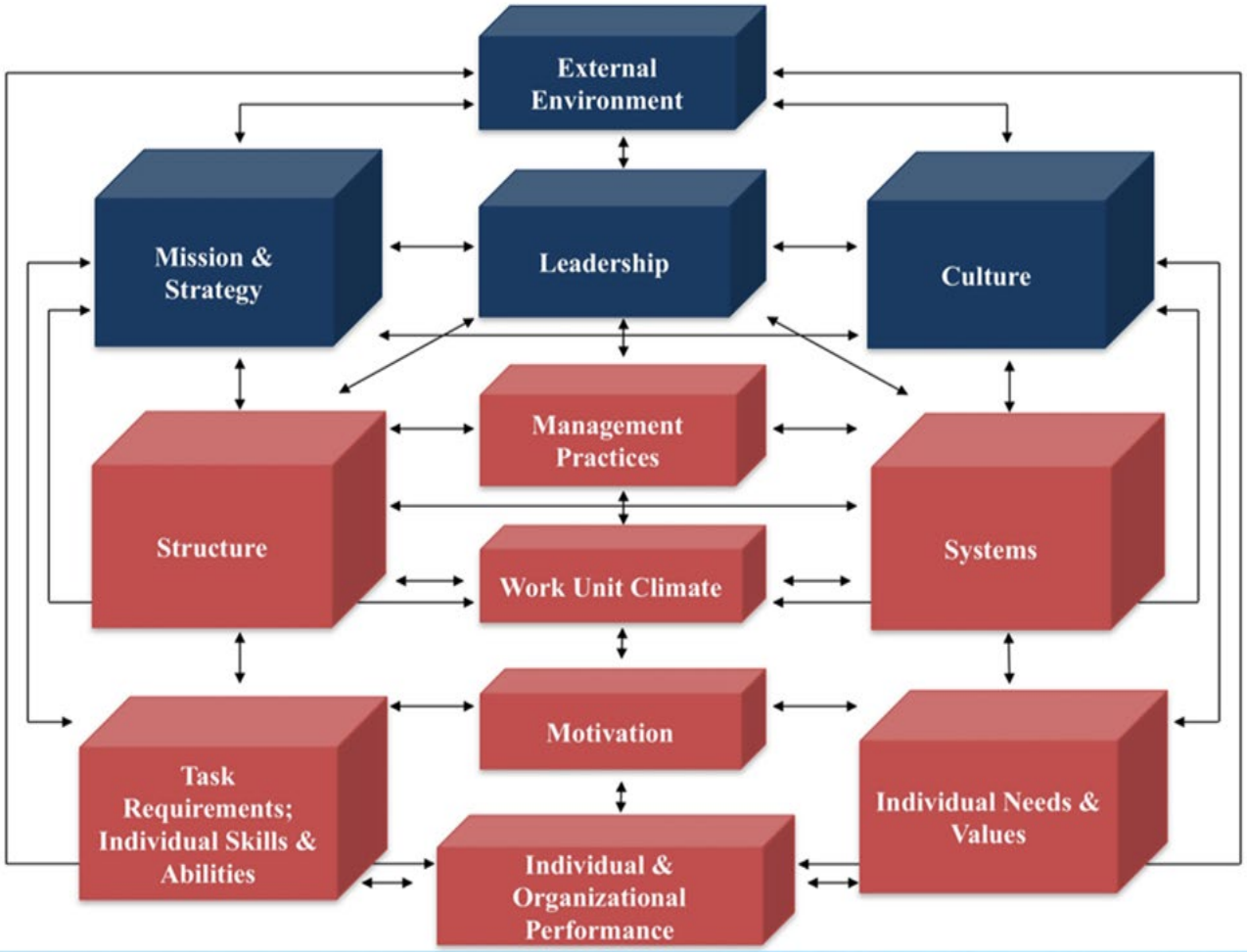
Background

- Underutilization of free prescription delivery service to the campus
  - Staff identified
  - 0/328 patients, pre-intervention
- Clinic population with identified barriers
- Survey transportation mode (college survey, 2020)
  - Bus system - 43%
  - Car - 42%
  - Walk - 12%
- The closest pharmacy (college website)

  4 miles away

  On the bus line

Burke & Litwin (B&L) – OA Framework



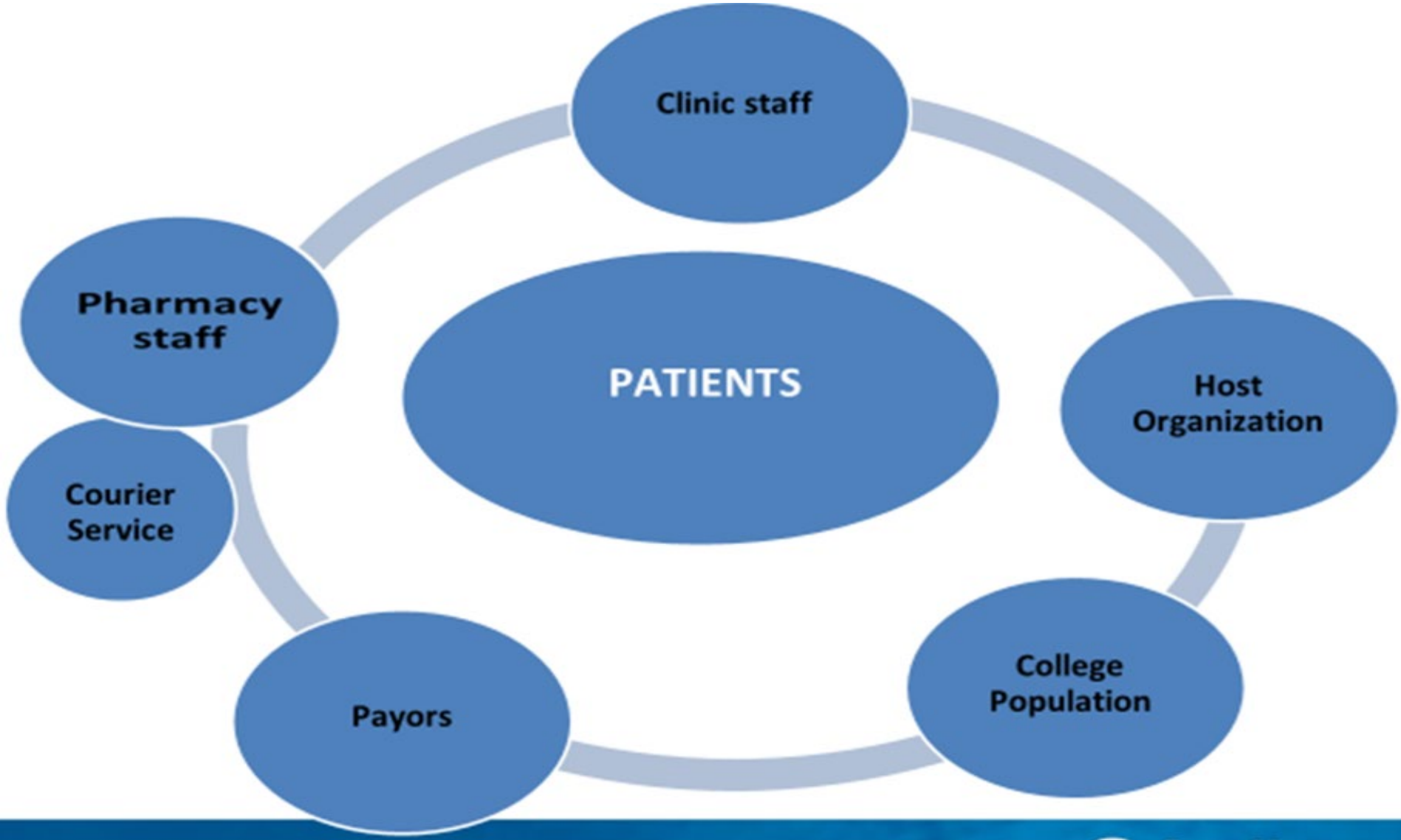
Mission and Strategy and Leadership: Strong core values of safety, poverty alleviation, community health, & people-centered care.

Structure and System: Clearly defined roles and reporting structure with policies and procedures. Strong IT support facilitated project implementation.

Management Practice: Managers demonstrated stewardship and approachability.

Strengths	Weaknesses
❖ Organizational support ❖ Experienced staff ❖ Existing infrastructure ❖ Access to patient data ❖ Social Influencers of Health (SIoH) ❖ National safety recognition ❖ Partnership with University ❖ Follows LEAN framework	❖ Staffing challenges ❖ Resource constraints ❖ Lack of technology integration ❖ Speed of implementation ❖ Hours of operation ❖ SIOH screen completion
Opportunities	**Threats**
❖ Increase patient adherence ❖ Technology adoption ❖ External collaboration ❖ College housing proximal ❖ Healthcare interoperability	❖ Insurance coverage ❖ Regulatory changes ❖ Competitive pressure ❖ Data breach risk ❖ Resource constraints

Key Stakeholders

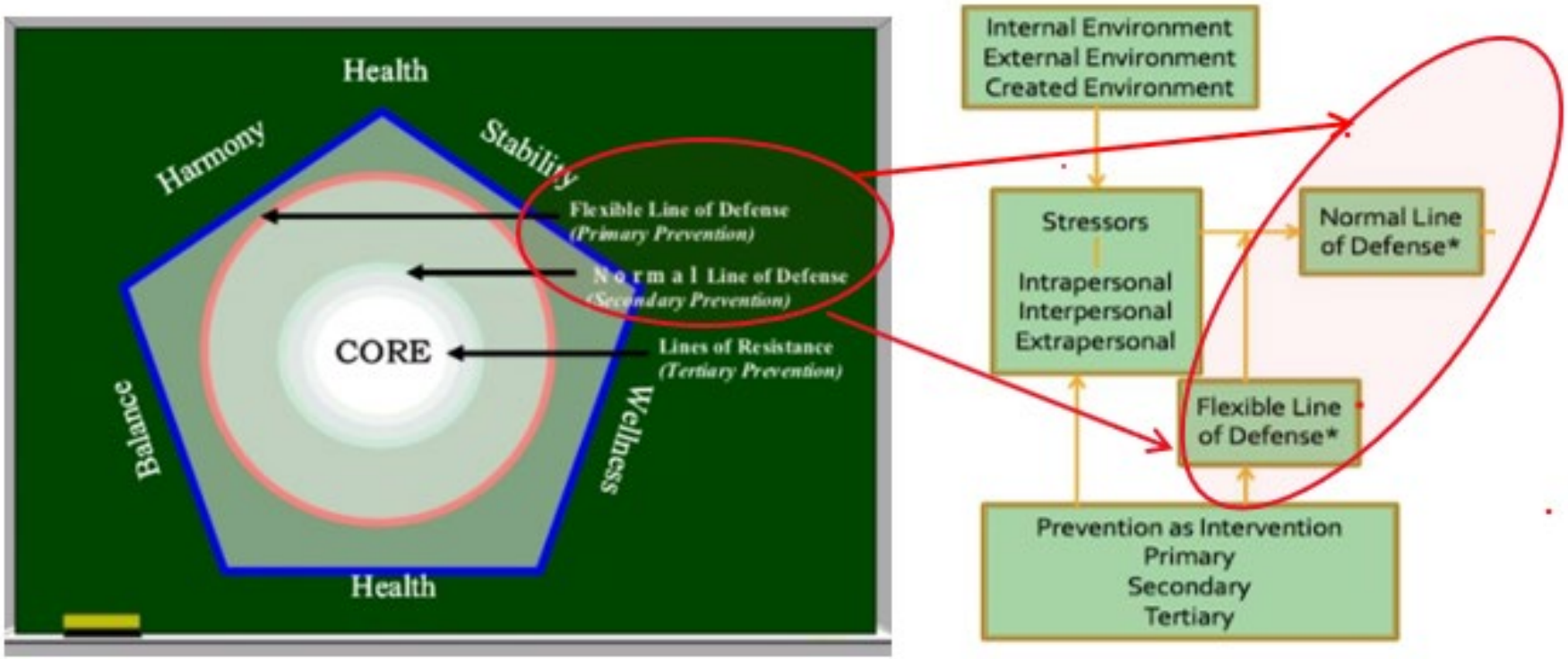


LITERATURE REVIEW

Synthesis of Results

- A rapid integrative review was completed
- Link between medication adherence and dispensing channel
  - Iyengar et al. (2016), Mash et al., 2021, Davis et al., (2022) Paterson and Holdford, (2019)
- Convenience in pharmacy services influences patient' choice
  - (Tran & Silvestri-Elmore, 2021, Vathy et al., 2021, Mash et al..2021,) Davis et al., Paterson and Holdford, 2019)
- Unique operation of college-affiliated pharmacies
  - Vathy et al., 2021, Wright et al, 2016,. Jirjees et al., 2022, Peláez Bejarano et al., 2021
- Limited data on CPDS and student health
  - Davis et al., 2022 Davis et al., 2020, Jirjees et al., 2022, Kavanagh et al., 2022, Patterson & Holdfold, 2019, Peláez Bejarano et al., 2021, Unni et al. 2021.

Conceptual Model of Phenomenon Betty Neuman's System (BNS)Theory



Stresses the dynamic and evolving nature of health continuum ranging from optimal wellness to severe illness. to get a holistic understanding of the CHC population.

DNP PROJECT IMPLEMENTATION

DNP Quality Improvement (QI) Project

- Quality improvement project
  - Pre/post intervention studies
  - Process improvement
- Interrupted time series analysis (Ramadani et al., 2024)
- QI Project per Institutional Review Board (IRB) determination
- 2001 Institute of Medicine (IOM) report "Crossing the Quality Chasm," healthcare quality should encompass six aims: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (Moran et al., 2011.) The project aimed to achieves each of these.

DNP Project Purpose

Project purpose:

To impact utilization of the campus prescription delivery service (CPDS) by at-risk population, students residing on campus (SRoC), accessing the campus health center (CHC) services, to improve access to prescribed medication for acute visits.

DNP Project Implementation Objectives

Objectives:

- Lean healthcare (LH) Model for implementation
- Following LH process
  - Collaborate with stakeholders
  - Implement changes
  - Evaluate and modify process
- Determine if desired outcomes were met
- Implement sustainability plan

Lean Healthcare Framework

- The Lean framework was preferred for its ability
  - to drive efficiency,
  - optimize resources,
  - promote sustainability,
  - engage employees, and
  - facilitate adaptability,

all of which were essential for enhancing the performance of the CPDS.

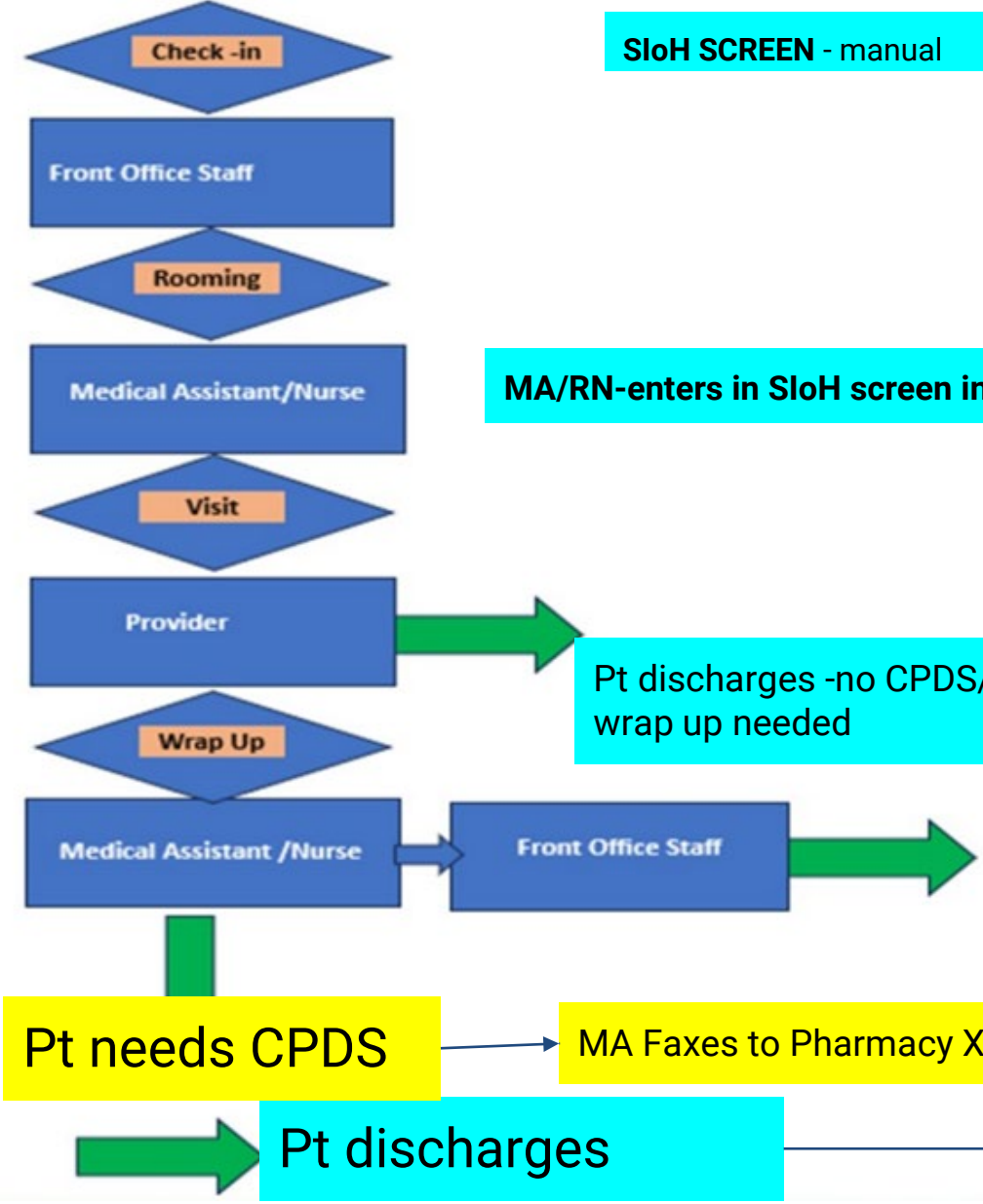
- Outpatient clinics and healthcare in general encounter the dual challenge of delivering high-quality service with limited resources, while also promoting sustainability (Frare Moraes et al., 2023).

Timeline

January 18, 2024	• Education on Process & Documentation
Jan 19 - Mar 18, 2024	• Project Implementation using LH
January 2024	• First Evaluation Based on Pull
February 2024	• Implemented Changes - Flow
March 18 -29 2024	• Concluded Intervention / Analyzed Data
April 22, 2024	• Project Findings Defense
Jul – Aug 2024	• Publish in Scholarworks
May 22, 2024	• Poster Presentation Host Organization
July – August , 2024	• Abstract to ACHA

1.LEAN Framework – VALUE

Customer	Value	Non-valuable
Patient	**Academic success**	**Failing**
	Time	Time barriers
	Reducing stressors	Stressors
	Optimal health	Sickness
Clinic Staff	**Providing patient-centered care**	**Inability to provide appropriate care**
	Optimal patient flow	Extra steps from routine flow
	Team work	
Pharmacy	**Communication with patient**	**Unable to contact customer**
	Reimbursement	Financial loss
	Access to demographic information	Calling clinic for demographic information
	Patient centered care	
All	**Public safety**	**Contagion agent**
	Avoiding Contagion	Being exposed to contagious agents
	Patient privacy	Violating HIPAA



Lean Healthcare Framework (2-3)

- Value Stream Mapping (VSM)
- Flow

Intervention

- Stakeholder engagement
  - Promoted staff buy-in
  - Provided education and training
- Modified screening barriers
  - SloH and CPDS tool for standardization
- Integrated process into daily workflow
  - Technology use enhancement
  - E-prescribe & e-fax using Electronic health record (EHR)
- Interprofessional collaboration
  - Information technology (IT), clinic and pharmacy staff
- Visual management
- Evaluated benefits with staff

SloH Screen

Social Influencers Questionnaire:
(circle your answer below each question)

Name:_____

1. Within the past 12 months we worried whether our food would run out before we got money to buy more.

NEVER TRUE	SOMETIMES TRUE	OFTEN TRUE	PATIENT REFUSED	NOT ASKED

2. Within the past 12 months the food we bought just didn't last and we didn't have money to get more.

NEVER TRUE	SOMETIMES TRUE	OFTEN TRUE	PATIENT REFUSED	NOT ASKED

3. How hard is it for you to pay for the very basics like food, housing, medical care, and air conditioning / heating?

VERY HARD	HARD	SOMEWHAT HARD	NOT VERY HARD	PATIENT REFUSED	NOT ASKED

4. Are you worried that in the next 2 months you may not have stable housing?

YES	NO	PATIENT REFUSED

5. Do you have access to a variety of food including fruits and vegetables?

YES	NO	PATIENT REFUSED

6. Within the last 3 months, how many times did you visit the emergency department for your medical care?

HOW MANY TIMES:

7. Has the lack of transportation kept you from meetings, work, or from getting things needed for daily living?

YES	NO	PATIENT REFUSED	NOT ASKED

8. Has the lack of transportation kept you from medical appointments or from getting medications?

YES	NO	PATIENT REFUSED	NOT ASKED

7. Has the lack of transportation kept you from meetings, work, or from getting things needed for daily living?

YES	NO	PATIENT REFUSED	NOT ASKED

8. Has the lack of transportation kept you from medical appointments or from getting medications?

YES	NO	PATIENT REFUSED	NOT ASKED

CPDS Screening Tool

CPDS SCREEN (Designed by the DNP student)

- *Is the patient a student residing on Campus (SRoC)?*
  - *No - Does not qualify*
  - ***Yes - Proceed***
- *Did the patient have an abnormal SIOH Screening?*
  - *No - Does not qualify*
  - ***Yes - Proceed***
- *A **"Yes"** to any of these questions requires provider follow-up.*
  - *Is transportation identified as a problem?*
  - *Is there a risk of contagion to the general public?*
  - *Have you identified any barriers that place the patient at risk of not acquiring their prescription?*
- **PROVIDER** - *would your patient benefit from using CPDS*
  - *No - Does not qualify*

Yes – Patient is at-risk, offer patient CPDS

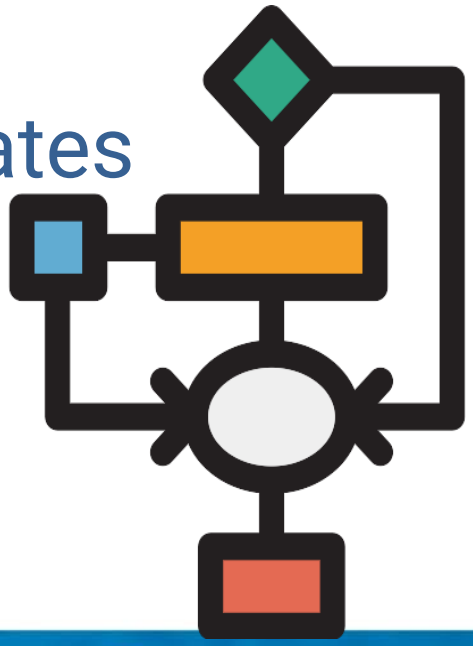
- *If the patient agrees:*

Using EHR

  - *Send E-SCRIPT to the designated pharmacy*
  - *Send electronic Referral for CPDS*
  - *Confirm the patient's Phone number,*
    - *The pharmacy will contact the patient,*
    - *Turnaround time - average 4 hours*

Perfection / Continuous Improvement

- CPDS poster visibility
- Staff communication - CPDS champions
- Staff monitoring during visits
- Visual tracking on staff board
- Dedicated area for project updates
  - Provider “scorecard”



Statistical Evaluation Measures

- Utilization of the CPDS
- Therapeutic drug classes utilization
- Patient type - “new patients vs established”
- CPDS provider utilization
- SloH screen completed?

Data Analysis (N= sample)

- Analytical statistics
  - Interrupted time series analysis
  - Fisher's test - pre vs.post intervention data
  - CPDS utilization
    - (n = clinic population (n = college students preferred)
- Descriptive statistics for CPDS data
  - Trends by patient type - new vs established
  - Trends by provider usage
  - Trends by drug class
- Anecdotal data - informal discussion
  - To support quantitative data and for QI
- REDCap used for secure data storage

Evaluation & Measures

	Concept	How measured	Who measured	Jan 19 to March 18, 2023	Nov 19 to Jan 18, 2024	Jan 19 -Match 18,2024
Patient outcomes	Utilization of CPDS delivery	EHR audit, pharmacy report	DNP Student			
	Drug class utilization	EHR audit	DNP Student			
	New or Established Patient utilization	EHR audit	DNP Student			
System Outcomes	CPDS Provider utilization	EHR audit	DNP Student			
	Process knowledge	Informal discussion	DNP Student			
	Ease of Use/Barriers to use	Informal discussion	DNP Student			
	CPDS Tool	Informal discussion	DNP Student			
	SIOH/CPDS TOOL utilizatiion	Informal discussion, EHR audit	DNP Student			
Policy Outcome	New or modified process	Recommendation report	DNP Student			

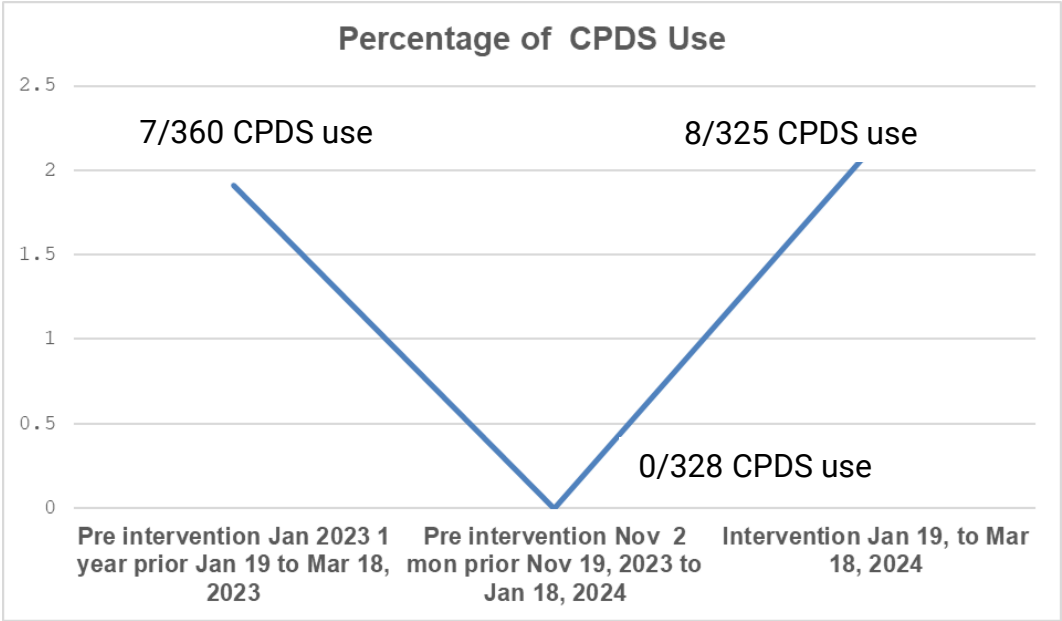
Results Summary

Summarized Evaluation Data			
Outcome Measure	**Jan 19 - Mar 18, 2023**	**Pre Project No.v 19 - Jan 18,**	**Jan 19 - Mar 18, 2024**
Patients with prescriptions at Clinic	367	328	325
Patients using the CPDS	7	0	8
New patients using CPDS			3
Established patients using CPDS			5
Patients screened for SIOH using CPDS			3
Patients screened for SIOH	35	80	106
Prescriptions to CPDS-LTC		0	20
Prescriptions ordered at Clinic	545	613	623

Results - Patient Outcomes

CPDS Utilization

- Statistically significant improvement of CPDS use pre/post intervention
- No statistic significant improvement of CPDS use pre/post intervention 1 year ago



Period	Pre intervention Jan 2023 1 year	Pre intervention Nov 2 mon prior Nov 19, 2023 to	Intervention Jan 19, to Mar 18, 2024
Percentage of CPDS Use	1.91	0	2.16
P-Value -Pre/post intervention 2 months	0.0162		0.0036
P-Value -Pre/post intervention Jan 2023 1 year prior			0.798

Results Patient Outcomes - Descriptive

CPDS USE by Provider during Intervention						
	PROVIDER					
	A	B	C			
HOURS WORKED/WEEK	28 hrs	5 hrs	8 hrs	Total		
FREQUENCY	5	1	2	8		

CPDS by Patient Type						
	Established	New	Total			
Total No of Patients	5	3	8			

CPDS PRESCRIPTIONS by Drug Class						
Pharmacy	Therapeutic Drug Class					
	ANTINFECTIVES	STEROIDS	ANALGESICS	OTHER	COMBINATION	Total
Pharmacy X	5	4	0	10	2	21

Results: Participant Characteristics

- Convenience sampling - clinic patients
- New vs established
- SIoH risk factor - transportation insecurity
- SRoC
- Diagnosis codes varied

Results - Patient Outcomes

Informal Feedback

Anecdotal Feedback

- "That is so helpful, I was dreading asking my roommate to give me a ride to the pharmacy"
- "That would be amazing"
- "I will not miss class!"
- "Wow, I was sitting here wondering how I am going to get the medicine"

Results - System outcomes

Success

- Structure streamlined
- Better delineated roles
- Uniform communication management
- Interprofessional collaboration
- Promotional material

Barriers

- Lack of interoperability
- Customer communication

Results - Policy outcomes

- No policy changes were made
- Advocating EHR access for pharmacy staff
- Recommend advocacy of return
- Importance of free delivery policy
- No policy for acute meds/chronic
- Coronavirus Aid, Relief, and Economic Security (CARES) Act period

((*PRB Provider Relief Fund General Information FAQ | HRSA*, n.d.)

Discussion

- Streamlining processes
- Technology enhancements
- Impact on delivery expenses
- Enhanced communication
- Safety concerns
- Subjectivity in qualification
- Communication challenges with client

Conclusions

CPDS utilization

- Significant increase pre/post intervention
  - 0 vs 2.46%
- No significant change 1 year ago apart
  - 2.46 vs1.91%
- Standardized process for sustainability
- Several limitations
- Alignment with BNS theory
  - Strived for system equilibrium
  - Wellness and health on the health Continuum

Implications for Practice

- Improved Patient Care
- Reduced Disparities
- Interprofessional Collaboration
- Continuous Improvement
- Adaptability
- Opportunities and Challenges

Limitations

- Staffing and time constraints
- Unfamiliarity with the local pharmacy
- Low acute treatment requirement
- Intake form overload
  - Length of SIoH screen
- Patient concerns
- Feedback collection
- Reimbursement challenges
- Exact college student population (NA)

Sustainability Plan

- Transport Insecurity diagnosis added
- Clinic Promotional material
- CPDS champions
- CPDS protocol binder
- New staff orientation
- Realtime secure communication line
- Recommended EHR access for Pharmacy

Dissemination

- Poster presentation at -scholarly activity symposium
- Project defense - April 22, 2024
- Staff meeting at clinical site
- Meeting with pharmacy team and clinic leaders March 29, 2024

Budget and Resources

Cost Mitigation for the Patient (Medicaid)	WITH CPDS	No CPDS
1 new pt visit reimbursement (15 min)	$185	$185.00
1 Rapid Strep Swab	$50	$50.00
Antibiotic (Augmentin) prescription cost	$15	$0
Delivery service	$21	$0
ER visit for strep complication – in New York (URI)	$0	$38,815
Total	$271	39,050.00
		$38, 779
Expenses for Implementation of the Project		
Project Manager $43/hour 125 hours (Gratis)		$5,375.00
Pharmacy team planning meeting hour - 3 hours ($60/hr)		$180.00
Practice manager time $25/hour - 3		$75.00
Clinic staff education 1 hour each month		$0.00
Site mentor meetings $91/hour 3hours		$273.00
Supplies and travel expenses		$200.00
Total Expenses Incurred by organization (estimated at)		**$6,103.00**

DNP 2006 AACN Essentials Reflection - AACN

Essential I: Scientific Underpinnings for Practice

- *Utilized LH framework and BNS theory*
- *Conducted literature review*

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

- *Team leader, staff involvement in process improvement*
- *Recommendations being implemented in practice*

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

- *Statistical analysis to evaluate project impact*

DNP Essentials Reflection - AACN

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

- *Streamlined workflow using EHR - optimizing usage, communication using MS Teams*

Essential V: Health Care Policy for Advocacy in Health Care

- *Value of advocacy for the underprivileged- reimbursement policies*

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

- *Partnered with pharmacy team, IT, statisticians*

DNP Essentials Reflection - AACN

Essential Vii: Clinical Prevention and Population Health for Improving the Nation's Health

- *Potential outbreak mitigation through project*

Essential Viii: Advanced Nursing Practice

- *Possible health outcomes through improved medication adherence*

Summary

- Desired outcome measures - Met
- College health centered care provided
- Holistic approach to healthcare in line with BNS.
- Handouts attached.

Thank you for your attention and interest!

Handouts

- References
- Social Influencers of Health Questionnaire
- Literature Review
- Reported Pharmacy Feedback
- Budget and Resources

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Social Influencers Questionnaire:

Name:_____

(circle your answer below each question)

1. Within the past 12 months we worried whether our food would run out before we got money to buy more.

NEVER TRUE	SOMETIMES TRUE	OFTEN TRUE	PATIENT REFUSED	NOT ASKED

2. Within the past 12 months the food we bought just didn't last and we didn't have money to get more.

NEVER TRUE	SOMETIMES TRUE	OFTEN TRUE	PATIENT REFUSED	NOT ASKED

3. How hard is it for you to pay for the very basics like food, housing, medical care, and air conditioning / heating?

VERY HARD	HARD	SOMEWHAT HARD	NOT VERY HARD	PATIENT REFUSED	NOT ASKED

4. Are you worried that in the next 2 months you may not have stable housing?

YES	NO	PATIENT REFUSED

5. Do you have access to a variety of food including fruits and vegetables?

YES	NO	PATIENT REFUSED

6. Within the last 3 months, how many times did you visit the emergency department for your medical care?

HOW MANY TIMES:

7. Has the lack of transportation kept you from meetings, work, or from getting things needed for daily living?

YES	NO	PATIENT REFUSED	NOT ASKED

8. Has the lack of transportation kept you from medical appointments or from getting medications?

YES	NO	PATIENT REFUSED	NOT ASKED

9. How often do you feel lonely or isolated from those around you?

NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS	PATIENT REFUSED

10. How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?

NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS	PATIENT REFUSED

11. Do you think completing more education or training, like finishing a GED, going to college, or learning a trade would be helpful?

YES	NO	PATIENT REFUSED	NOT ASKED

12. Do you need help finding or paying for care for you loved ones. For example, child care or elderly care for an older adult?

YES	NO	PATIENT REFUSED	NOT ASKED

13. Are you afraid that you might be hurt by violence in your neighborhood?

YES	NO	PATIENT REFUSED

14. Are you afraid that you might be hurt by violence in your apartment or home?

YES	NO	PATIENT REFUSED

15. If you checked YES to any boxes above, would you like to receive assistance with any of these needs?

YES	NO

16. Are any of your needs urgent? For example: I don't have food tonight, I don't have a place to sleep tonight.

YES	NO

Appendix B: Summary of Literature Review Findings from Each Study

Davis et al., 2022
Purpose: To better understand prescription patterns and behavior in a college-aged population,
Design: Cross-sectional study of prescriptions received by an on-campus pharmacy between September 1–December 31, 2017, and September 1–December 31, 2018.
Results: Approximately one in seven (14.6%) prescriptions went unclaimed at this on-campus pharmacy. Unclaimed prescriptions can range up to 22% in the USA.
Conclusion: Two-thirds of prescriptions received at an on-campus pharmacy were for anti-infective, hormonal, and central nervous system medications. Filling prescriptions upon receipt rather than upon patient demand did not impact the percentage of unclaimed prescriptions for antiemetics or oral steroids, but there was a decrease for anti-infectives.
Limitations: One site study. Location not generalizable

Davis et al., 2020
Purpose: Demographic and operational characteristics of on-campus pharmacies in the United States,
medication dispensing characteristics and clinical services provided by pharmacists.
Design: Cross-sectional online survey, 53/105 (51.5% response rate) Pharmacy directors
Inclusion Criteria: student health, community pharmacy
Results: Mostly dispensing prescriptions, with few reporting disease-state management services.
Conclusion: Campus pharmacies have unique operational characteristics and financial vulnerability. Pharmacists can help meet the needs of student populations. Need help to predict behavior.
Limitations: Sampling bias may not represent all community pharmacies in the United States, and self-reported data may not be entirely accurate.

Iyengar et al., 2016
Purpose: To examine the association between pharmacy dispensing channels (home delivery or retail) and medication adherence in Medicare patients with comorbid conditions.
Design: Retrospective claims analysis with 40,632 participants over two years.
Results: Home delivery of a 90-day supply was strongly associated with medication adherence in Medicare beneficiaries with comorbid conditions.
Conclusion: The dispensing channel is positively related to medication adherence in Medicare patients.
Limitations: The study is limited to prescription claim analysis, which may not fully represent medication-taking behavior. It is focused on Medicare beneficiaries and comorbid conditions and is limited to a two-year study period.

Jirjees et al., 2022
Purpose: To explore changes in community pharmacy processes in response to the COVID-19 pandemic in the United Arab Emirates.
Design: Cross-sectional study- a survey with 391 participants, conducted before, during, and after lockdown.

Results: Telepharmacy was found to reduce the burden on the healthcare system and enhance pharmaceutical services provided by community pharmacies.
Conclusion: Recommendations included developing an electronic prescription system and improving pharmacist accessibility to patient health data.
Limitations: Questionnaire-related issues, including difficulty in survey distribution and participant understanding. Potential for self-bias, self-evaluation, and multiple surveys conducted back-to-back, possibly leading to bias due to confusion or forgetting.

Kavanagh et al., 2022
Purpose: To assess the needs and behaviors of employees on a university health sciences center campus regarding pharmacy utilization.
Design: Online questionnaire sent via email, with a sample size of 38/531 (sample size unknown).
Results: Additional marketing and information dissemination were needed, and utilization patterns suggested opportunities for improvement.
Conclusion: There is a critical need for further research in this area.
Limitations: Unknown sample size for the quantitative portion of the study.
Data collected from internet pharmacies may only generalize to some pharmacy delivery services.

Mash et al., 2021
Purpose: To conduct a scoping review of medication delivery mechanisms in South Africa.
Design: Scoping review from 2010–2020, focusing on various aspects of medication delivery.
Results: Home delivery of medication gained prominence during the COVID-19 pandemic as a means of decongesting healthcare facilities.
Conclusion: Various medication delivery options can improve accessibility and adherence, but further research is needed to determine cost-effective approaches. The way forward is a hybrid system that offers a manageable range of options to eligible patients in a person-centered approach.
Limitations: The review was limited to a scoping review of literature from South Africa. It did not include databases like Scopus, potentially missing relevant articles.

O'Neal et al., 2022
Purpose: To gather input from employees on a university health sciences center campus regarding pharmacy needs and behaviors.
Design: Qualitative analysis based on focus group discussions with 44 participants.
Results: The study identified a need for additional marketing and information dissemination for the campus pharmacy. A meds-to-desk delivery concept was started, and the barrier to utilization was addressed.
Conclusion: Focus groups can provide valuable insights into attitudes and behaviors related to healthcare services.
Limitations: The investigators did not verify themes with focus group participants. Recorded nonverbal cues, potentially introducing observer bias.

Paterson et al., 2019

Purpose: This study describes associations between patient sociodemographic and health characteristics, pharmacy patronage, and service utilization.
Design: Cross-sectional survey Online survey with self-bias removed, consumer in the USA, Sample size N-741
Inclusion Criteria: Home delivery, service utilization, medication adherence, prescription
Results: The uptake of home delivery services and the impact of delivery fees among different patient populations at non-independent pharmacies are not yet widely known,
geographic factors and age were the primary predictors of pharmacy patronage.
Conclusion: More studies needed to study consumer use
Limitations: The statistical analysis model used was not optimal, self-selection bias was eliminated, and sociodemographic and health characteristics of the sample may not be representative of the general population - women, middle-aged adults, and residents of the Northeast were overrepresented

Peláez Bejarano et al., 2021
Purpose: To implement a novel home delivery service during the pandemic.
Design: Cross-sectional online study, Spain, community pharmacists and hospitals during pandemic
Results: tele pharmacy and home delivery were beneficial during quarantine
Conclusion: shape services to individual needs,
Limitations/Strength: The study was done between March 20- June 20th, 2020 in Spain, right after the COVID Quarantine order, not reflective of the current time.

Tran & Silvestri-Elmore, 2021
Purpose: To explore healthcare-seeking behaviors in college students and young adults.
Design: Extensive literature review combining qualitative and quantitative studies.
Results: The study identified themes related to healthcare-seeking behavior, health information utilization, and barriers to accessing care among college students.
Conclusion: Targeted efforts based on healthcare-seeking behavior can improve healthcare utilization among college students.
Limitations/ Strength: The only extensive literature search

Vathy et al., 2023
Purpose: To understand the characteristics of community pharmacies that appeal to college students.
Design: Cross-sectional online survey with 188 participants.
Results: Insurance coverage and convenience were influential factors in choosing a pharmacy.
Conclusion: Future studies should explore the characteristics of pharmacy that appeal to college students.
Limitations: Low response rate, limiting generalizability.
Lack of previous literature examining characteristics of community pharmacies appealing to college students.

Statistical Analysis - Fisher Exact

Pre /Post CPDS Intervention 2 MONTHS prior

Results			
	Yes	No	*Marginal Row Totals*
Intervention Jan 19 -Mar 18 2023	8	317	325
Pre intervention 2 mon Nov 19, 2023 - Jan 18,2024	0	328	328
Marginal Column Totals	8	645	653 (Grand Total)

The Fisher exact test statistic value is 0.0036. The result is significant at $p < .05$.

Pre /Post CPDS Intervention 1 YEAR prior

Results			
	Category 1	Category 2	*Marginal Row Totals*
Intervention Jan 19 -Mar 18 2023	8	317	325
pre intervention 1 year Jan 18 - Marc 19, 2023	7	360	367
Marginal Column Totals	15	677	692 (Grand Total)

The Fisher exact test statistic value is 0.7948. The result is *not* significant at $p < .05$.

Pre /Pre CPDS Intervention 1 YEAR prior vs 2 Months prior

Results			
	Yes	No	*Marginal Row Totals*
1 year pre intervention	7	360	367
2 mon pre intervention	0	328	328
Marginal Column Totals	7	688	695 (Grand Total)

The Fisher exact test statistic value is 0.0162. The result is significant at $p < .05$.

Reported pharmacy feedback

Before intervention

1. ORDERS WERE SENT ABOUT 20 MIN BEFORE FACE SHEET AND ADMISSION
2. WE WERE NOT ABLE TO BILL HER INSURANCE; WE TRIED CALLING BUT COULD NOT GET AHOLD OF ANYONE.
3. MEDS WERE RETURNED TO THE PHARMACY DUE TO NO ANSWER WHEN THE DRIVER WAS THERE
4. WE COULD NOT GET AHOLD OF THE STUDENT RIGHT AWAY TO GET ADDRESS AND DELIVERY TIME FRAME
5. DOB DID NOT MATCH INSURANCE INFO
6. NO ISSUES
7. NO ISSUES

After Intervention

1. HAD TO WAIT TO GET MORE INFO TO BILL INSURANCE
2. HAD TO WAIT TO GET INSURANCE INFO
3. HAD TO RE-DELIVER MEDS THE NEXT DAY BECAUSE HE DID NOT ANSWER WHEN THE DRIVER WAS THERE TO DROP OFF MEDS
4. NO ISSUES
5. NO INSURANCE INFO
6. NO ISSUES
7. NO INSURANCE INFO SENT
8. NO ISSUES