A Cost-Benefit Analysis of a Social Determinants of Health Program within a Clinical Integrated Network of Community Pharmacies

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INTRODUCTION

- Community pharmacies are increasingly integrating SDoH screening and referral programs to address both clinical and social needs of patients, contributing to whole-person care.
- These programs bridge clinical care with community-based social services, offering a sustainable model to improve patient outcomes while addressing health-related social needs (HRSN).

OBJECTIVES

- To develop a cost-benefit analysis (CBA) within an ongoing SDoH screening and referral program in a clinically integrated community pharmacy network.

METHODS

Study Design:

- Model: Cost-benefit analysis (CBA) using the Proctor framework.
- Costing Method: Time-driven activity-based costing (TDABC) for determining intervention costs.
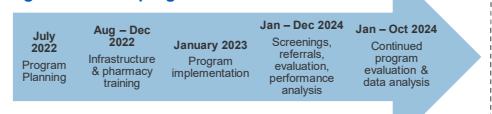
Figure 1. HRSN program timeline

| July 2022 Program Planning | Aug – Dec 2022 Infrastructure & pharmacy training | January 2023 Program implementation | Jan – Dec 2024 Screenings, referrals, evaluation, performance analysis | Jan – Oct 2024 Continued program evaluation & data analysis |

Table 1. Costs and benefits breakdown

Categories	Types	Sources	Description
Cost			
Fixed Costs	Pre-implementation	UB research team / CPESN NY leadership / pharmacies	Costs incurred before program start
	Personnel Training		Training pharmacy personnel for SDoH screening and referrals
	Fixed Training		Non-recurring training cost
	Leadership team		Ongoing program costs
	Healthy Alliance Initial Payment	Healthy Alliance	Initial platform integration fee for referral system
Variable Costs	Intervention	15 CPESN pharmacies	Screening and referral costs during implementation
	Healthy Alliance Monthly	Healthy Alliance	Recurring platform costs
Benefit			
Referral/ Resolution rate	46.61%/11.94%	Program Data	% of screenings resulting in a referral; % of referrals successfully resolved
Benefit per Screening	$23.33 (Medicaid), $30 (Grant), $50 (VBP)	IPRO grant, Medicaid[1], VBP[2]	Benefit per screening varies depending on reimbursement source
Benefit per Resolution	$5,373.50	Literature[3]	Benefit calculated based on resolved referrals as per literature

RESULTS

- A total of 1,122 screenings were completed over the study period, resulting in 523 referrals, and 134 resolutions to date. The average intervention time was 36.67 minutes. **Cost:** Total program cost was $102,685.30 consisting of pre-implementation ($16,789.87), ongoing activities ($31,644.60), training ($29,429.32), intervention ($16,369.86), and operational ($8,451.65) costs. **Benefit:** Total benefit was calculated as $720,048.47, based on savings for specific services reported in literatures. **Overall finding:** The program generated a net benefit of $617,363.17, achieving a Benefit to Cost Ratio (BCR) of 7.01 and a Return on Investment (ROI) of 601%.

Figure 2. Program reach across New York State based on urban & rural status.
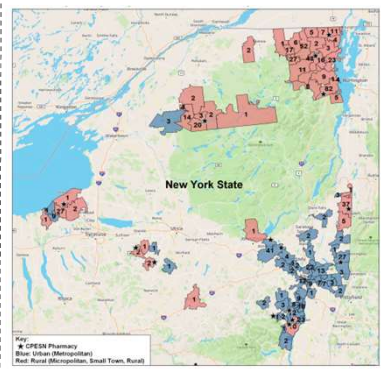

Figure 3. Breakeven analysis showing screenings needed to cover costs at different reimbursement rates.

Break-even point for $30 grant (6500 screenings, $195000)
Break-even point for $50 VBP (2500 screenings, $125000)
Break-even point for $23.33 NYS Medicaid (14,500 screenings, $338285)

Figure 4.Sensitivity analysis of ROI across 27 scenarios including variation based on referral/resolution rates, cost and savings calculation methods.

Scenario
- Baseline (Referral: 46.61%, Resolution: 11.94%)
- Best Case (Referral: 58.27%, Resolution: 14.93%)
- Worst Case (Referral: 34.96%, Resolution: 8.96%)

Total Costs = Fixed Costs + Variable Costs
▲ 77,013.98
● 102,685.3
■ 128,356.625

X-Axis (Upper)
- Scenarios based on baseline, best case (+25%), and worst case (-25%) referral & resolutions rates
- **Actual**: Based on study's estimated savings
- **Weighted Average**: Estimated savings based on equal weight for all services.
- **Adjusted**: Estimated winsorized savings with 5% and 95% caps to limit extreme values.

X-Axis (Lower)
- Cost variation including the original costs, +25% costs and -25% costs.

DISCUSSION

- This grant-funded clinically integrated network screening and referral program achieved solvency and delivered a positive ROI from both network and societal perspectives.
- The substantial BCR and ROI highlighted the economic feasibility and positive impact of SDoH screening in community pharmacies.
- The break-even analysis demonstrates how the program reaches financial sustainability at various reimbursement rates based on different sources.
- A sensitivity analysis on ROI across baseline, best-case, and worst-case scenarios examined the impact of varying referral and resolution rates, as well as cost and savings methods, with observed ROI ranging from 3.58 to 18.47.
- **Limitation:** Literature-based estimates were used to calculate the benefits due to the lack of access to patient utilization data. This may introduce some uncertainty into the accuracy of the calculated benefits. To improve accuracy, we applied our study-specific ratio to better reflect actual benefits.

CONCLUSION

- SDoH screening and referral programs implemented in community pharmacies show positive economic outcomes, highlighting the potential for integrating social determinants of health into clinical pharmacy services.

ACKNOWLEDGEMENT

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