Identifying & Addressing Social Drivers in a Clinical-Community Integration Model: Analyzing the Effectiveness of the PRAPARE Tool

Bootheel Perinatal Network | Saint Francis Healthcare | Consilience Group, LLC

Background

BACKGROUND

Bootheel Perinatal Network (BPN) is an initiative of Saint Francis Medical Center. BPN is an integrated clinical-community model that provides care coordination to high-risk pregnancies, wrapping around and proactively addressing family needs by connecting them to resources or "blessings" throughout the region. As such, BPN has a variety of – and continues to build – longstanding partnerships across health, social, public, and nonprofit sectors and beyond. BPN is also one of the lead agencies, alongside Bootheel Babies and Families, for the Bootheel Referral Network (BoRN), a community information exchange and shared referral platform.

BPN uses the PRAPARE tool to assess social drivers of health (SDoH) for their families. The PRAPARE tool has long been considered the industry standard for this type of assessment in a clinical setting. However, as the nation moves toward adopting and reimbursing for SDoH Z-Codes, BPN seeks to understand to what extent the PRAPARE tool adequately captures the complexity of the lived experience of families facing high-risk pregnancies. This analysis also explores what opportunities might lie in improving processes to ensure equitable, high-quality SDoH assessments for improved health outcomes for families.

LITERATURE REVIEW

Social drivers of health (SDoH) encompass "the conditions in which people are born, grow, work, live, and age," and "the wider set of forces and systems shaping the conditions of daily life" (WHO). Several states have begun to incentivize health care systems to find cost-effective solutions that improve population health in their communities and move toward value-based care instead of fee-for-service care provision (Hirsch, et al). CMS recently established the 2023 IPPS Final Rule, requiring hospitals to report the "big five" SDoH by 2024 (CMS). The "big five" are food insecurity, unstable housing, utilities insecurity (often understood as economic insecurity), transportation and interpersonal safety (Centers for Medicare & Medicaid Services (CMS), Department of Health and Human Services (HHS). There are several Electronic Health Record (EHR)-based SDoH data collection tools which have been implemented to capture billable ICD-10 Z-codes. Among these is the PRAPARE tool, developed in 2013 by the National Association of Community Health Tools, to generate data that could help CHCs demonstrate the value they bring to patients, communities, and payers (LaForge, et al). One study which examined the PRAPARE tool's ability to predict chronic health conditions found that it had high internal validity and reliability (Wan, et al).

Clinician notes, though more challenging to access and analyze, have emerged as a potentially crucial source of SDoH information, yet remain underexplored (Hirsch, et al). One retrospective cohort study examined the capture rate of SDoH data using an EHR and found complex SDoH domains had particularly low rates of data capture for social connection/isolation, housing issues, and income/financial resource strain (Hatef, et al). Another study found screening tools such as PRAPARE and Z-code mapping techniques were inaccurate when compared to survey instruments that had published psychometric properties, and that both methods were "at the minimal, or below, threshold for being diagnostically useful approaches to identifying patients' social risk factors," but might be improved by combining data sources or using novel approaches (Vest, et al).

TIMELINE

1 — September 1, 2019
BPN established as part of the first cohort of the Rural Maternity and Obstetrics Management Strategies (RMOMS) Program

2 — January 2021
BPN begins using the PRAPARE tool to identify social drivers of health (SDoH)

3 — June 27, 2022
BPN partners with Bootheel Babies and Families to establish the Bootheel Resource Network (BoRN) centralized referral platform to support SDoH needs in the region

4 — January 1, 2023
IPPS Final Rule: CMS mandates hospitals report "big five" SDoH – voluntary in 2023, required in 2024

5 — October 1, 2023
BPN begins expansion with Office of Minority Health (OMH) Healthy Families Community-Based Perinatal Health Initiative (COPHI) funding

Analysis

METHODS

PRAPARE assessments are completed at intake for all BPN families; additional notes are included in the assessment and outlined in case notes. Importantly, families do not fill out the questionnaire on their own, BPN staff engage in conversations to learn answers to the various questions and note categorical and qualitative responses on the paper form.

All PRAPARE assessments were digitized in a secure database, including all qualitative notes.

BPN conducted an initial review and analysis of the PRAPARE assessments (n=94) for families with birth outcomes.

Researchers established a codebook for qualitative analysis, including all Z-codes and other prevalent themes; the codebook continues to evolve as the analyses continue.

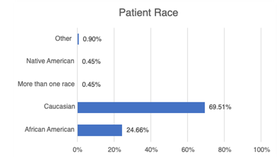
Qualitative data from the PRAPARE assessments and case notes were systematically coded, analyzed, and synthesized with other available data.

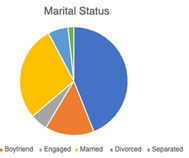
DEMOGRAPHICS & DESCRIPTIVES

Our System Care Coordinator contacted and interviewed 223 unique patients and conducted 184 PRAPARE tool assessments.

223 Unique Patients | **184 PRAPARE Tools**

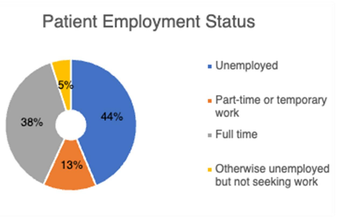
The patients' ages ranged from 13 to 43 years old, with 10.8% of patients being 22 years old, 9.4% being 24, 8.1% being 23, and 7.6% being 20 years old. 70% of patients identified their race as Caucasian, and 24.6% as African American. 92.3% of patients identified their ethnicity as non-Hispanic, and 3.6% identified as Hispanic – all of whom listed English as their preferred language. The number of weeks of gestation at first contact ranged from 6 to 38 weeks, and one patient had already delivered at the time of first contact. 16.6% of patients were in their first pregnancy, 26.9% had given birth to at least one live child, 30.5% identified as single, and 14.8% identified as married.

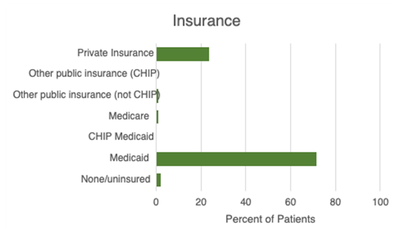




Current PRAPARE Outputs (n=183):

- Family size ranged from 1-10 with **25%** of patients reporting a household size of two, **30%** of patients reporting a household size of three and **24%** of patients reporting a household size of four.
- **86%** of patients reported having at least a high school diploma or GED.
- **44%** of patients reported being unemployed and 38% reported working full-time.
- **72%** of patients reported Medicaid as their primary insurance, followed by **24%** with private insurance.





Findings & Recommendations

FINDINGS

Indicator	Quantitative data from PRAPARE Tool	Qualitative data from SCC notes on PRAPARE Tool	Qualitative data from SCC case notes
n=	*184*		*222*
Unstable Housing (Z59.9, Z59.0)*	**9%**	**18.92%**	**11.21%**
Unreliable Transportation (Z75.3, Z75.4)	20.11%	12.97%	17.04%
Food Insecurity (Z79.41)	22.83%	12.43%	22.42%
Economic Insecurity (Z59.6, Z59.86, Z59.87)	40.22%	12.09%	27.80%
Exposure to Violence/ Unhealthy Relationships (Z63.0)*	**5.43%**	**6.04%**	**7.62%**
Has Stress (F43.9, Z73.3)*	**35.33%**	**24.73%**	**41.70%**
Pregnancy/Baby Stress	N/A	13.74%	17.94%
Work Stress	N/A	10.44%	5.38%
Recent Changes	N/A	9.89%	8.52%
Legal Challenges (Z65.2, Z65.3)*	**2.72%**	**2.75%**	**3.14%**
Insufficient Social Support (Z60.8)*	**4.89%**	**7.69%**	**7.17%**

Our analysis compared quantitative data gathered in the PRAPARE tool to qualitative data from system care coordinator notes. Data for the "Big 5" social determinant categories: unstable housing, unreliable transportation, food insecurity, economic insecurity, and exposure to violence/unhealthy relationships were compared, as well as stress indicators such as mental health challenges, work stress, pregnancy/baby concerns, and parenting challenges. We aimed to investigate whether using the PRAPARE tool alone leads to omission of critical data, and if complementing it with simultaneous qualitative interviews can provide useful contextual information.

According to the z-test for two proportions, the observed difference between the proportion of patients who were identified for SDoH risk factors using the PRAPARE tool and the proportion of patients identified for SDoH risk factors using qualitative coding from narrative notes from health records was significantly different (significance level = 0.05).*

Categories underreported by the PRAPARE tool included housing instability, exposure to violence, high levels of stress, legal challenges, and inadequate social support. Of these, high levels of stress was the category with the greatest disparity between patients identified through the PRAPARE tool (35.33%) and patients identified through System Care Coordinator notes (41.70%). Transportation inadequacy, food security and economic insecurity were captured in higher proportions in the PRAPARE tool than in System Care Coordinator notes, which implies that the PRAPARE tool is adequate for capturing those measures.

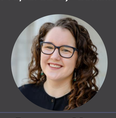
RECOMMENDATIONS

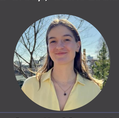
- Test different tools, such as the Arizona Self Sufficiency Index, American Academy of Family Physicians Social Needs Assessment, and others to determine increased effectiveness in capturing more relevant information re: social needs and pregnant/postpartum persons.
- Determine types and status of referrals made based on the SDoH assessment.
- Systematically document and record social services/support eligibility and enrollment.
- Examine the timeline of when the PRAPARE Tool is administered; consider administering at client's enrollment and specific follow-up intervals (e.g. 3 months, 6 months) to determine changes in client's circumstances over time.

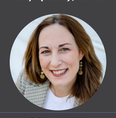
FURTHER RESEARCH

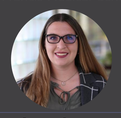
Possible avenues through which this research may be continued include a consideration of the effectiveness of different assessment tools in working with different populations. For example, is the PRAPARE, Arizona, etc. more or less effective for certain racial/ethnic groups? One could also consider if there is a close related response between number of SDoH and pregnancy/postpartum outcomes such as birth, mortality, and severe maternal morbidities (SMM). Finally, it would be beneficial to understand which SDoH interventions, as well as the number of interventions have an impact on pregnancy/postpartum outcomes – birth, mortality, and SMM.

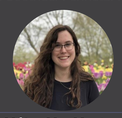
Prepared by Consilience Group, Saint Louis University (SLU), and Saint Francis Medical Center's Bootheel Perinatal Network (BPN)

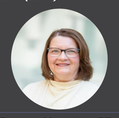

Jenessa Mae Spears, MA
Consilience Group
Portfolio Manager

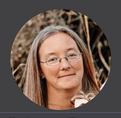

Amalie Vacanti
Consilience Group
Project Manager


Meredith Hennessy, MUP
Consilience Group
Principal


Avery Lyons, MPH(c)
SLU Project
Researcher


Máire MacMaster, MPH(c)
SLU Project
Researcher


Susan Kendig, JD, WHNP-BC,FAANP
SSM Health
Consultant


Rebecca Burger, RN, BSN, CLC, CHW
BPN System Care
Coordinator Lead


Barb Gleason RN, MSN, CHW
BPN Project Director
HRSA

We'd love to hear from YOU!!

tinyurl.com/BPNPoster

References

Centers for Medicare & Medicaid Services (CMS), Department of Health and Human Services (HHS). (2022). *FY 2023 IPPS Final Rule Home Page*. https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/fy-2023-ipps-final-rule-home-page

Hirsch, A., Durden, T. E., & Silva, J. (2022). Linking Electronic Health Records and In-Depth Interviews to Inform Efforts to Integrate Social Determinants of Health Into Health Care Delivery: Protocol for a Qualitative Research Study. JMIR research protocols, 11(3), e36201. https://doi.org/10.2196/36201

Hatef, E., Rouhizadeh, M., Tia, I., Lasser, E., Hill-Briggs, F., Marsteller, J., & Kharrazi, H. (2019). Assessing the Availability of Data on Social and Behavioral Determinants in Structured and Unstructured Electronic Health Records: A Retrospective Analysis of a Multilevel Health Care System. JMIR medical informatics, 7(3), e13802. https://doi.org/10.2196/13802

LaForge, K., Gold, R., Cottrell, E., Bunce, A. E., Proser, M., Hollombe, C., Dambrun, K., Cohen, D. J., & Clark, K. D. (2018). How 6 Organizations Developed Tools and Processes for Social Determinants of Health Screening in Primary Care: An Overview. *The Journal of ambulatory care management*, *41*(1), 2–14. https://doi.org/10.1097/JAC.0000000000000221

Wan, W., Li, V., Chin, M. H., Faldmo, D. N., Hoefling, E., Proser, M., & Weir, R. C. (2022). Development of PRAPARE Social Determinants of Health Clusters and Correlation with Diabetes and Hypertension Outcomes. The Journal of the American Board of Family Medicine, 35(4), 668-679. https://doi.org/10.3122/jabfm.2022.04.200462

Peahl, A. F., Rubin-Miller, L., Paterson, V., Jahnke, H. R., Plough, A., Henrich, N., Moss, C., & Shah, N. (2023). Understanding social needs in pregnancy: Prospective validation of a digital short-form screening tool and patient survey. AJOG global reports, 3(1), 100158. https://doi.org/10.1016/j.xagr.2022.100158

Vest, J. R., Wu, W., & Mendonca, E. A. (2021). Sensitivity and Specificity of Real-World Social Factor Screening Approaches. *Journal of medical systems*, *45*(12), 111. https://doi.org/10.1007/s10916-021-01788-7

World Health Organization. 2014. [2019-02-22]. WHO eBook on Integrating a Social Determinants of Health Approach Into Health Workforce Education and Training