

Examining Unmet Basic Needs and Healthcare Gaps Among Medicaid Beneficiaries With Type 2 Diabetes

PURPOSE OF THE STUDY

This pilot study will allow us to demonstrate our ability to identify type 2 diabetics from clinical data within a Medicaid managed care population, reach them by phone, and engage them in research. Further, data collected in this pilot study will allow us to better describe the unmet basic needs and healthcare gaps in this population and interest in navigation that will inform the final design and expected effect sizes of the future trial.

STUDY AIMS

Aim 1: Demonstrate familiarity with the data. Identify and characterize the type II diabetes “profile” for all adults (age 18-75) in a state Medicaid insurance plan using clinical data (i.e., claims, authorization, assessment) accessed through data agreements with the Centene Center.

- ▶ Research Question 1: What socio-demographic and medical factors describe the adults on Medicaid with type 2 diabetes? What percentage is not adherent to each diabetes-related HEDIS measures (e.g., HbA1c testing, HbA1c <9.0, retinal screening, and screening for kidney damage)? What percentage had costly healthcare utilization (i.e., an ED visit or hospitalization) in the past 12 months?
- ▶ Research Question 2: What factors from the clinical data (e.g., gender, age, months in health plan, have a regular physician) or health risk assessment data (lifestyle behaviors) are associated with the percentage and pattern of adherence to diabetes-related HEDIS measures and healthcare utilization (e.g., ED visits)?

Aim 2: Demonstrate feasibility. Survey a random sample of 100 Medicaid adults with type 2 diabetes to identify and characterize their unmet basic needs, knowledge of diabetes and treatment, diabetes self-management, and interest in receiving navigation for diabetes and/or basic needs.

- ▶ Research Question 1: For our sample, what percentage have each unmet basic need? What percentage has one, two, three or more unmet needs? Do certain needs tend to cluster together?
- ▶ Research Question 2: How are individual and cumulative unmet basic needs associated with sociodemographics, diabetes knowledge, self-care, interest in navigation, and barriers?

Aim 3: Estimate effect and sample sizes for a future trial. Examine associations between unmet basic needs and measures of the diabetes “profile,” knowledge, self-care, and interest in receiving navigation.

- ▶ Research Question 1: Are unmet basic needs positively associated with non-adherence to HEDIS measures, ED visits, and hospitalizations? Are some types of unmet basic needs more influential?
- ▶ Research Question 2: Does diabetes knowledge and self-management behaviors mediate the effect of unmet basic needs on diabetes-related HEDIS gaps, especially HbA1c?

BRIEF DESCRIPTION

We will survey a random sample of 100 Medicaid adults age 18-75 in Louisiana with type 2 diabetes to identify and characterize their unmet basic needs, such as food, shelter, utilities, transportation, physical safety, and social connectedness; their knowledge of diabetes and treatment; diabetes self-management; and interest in receiving navigation services to assist with their diabetes, health concerns and/or

unmet basic needs. For all identified patients, we will link personal identifiers with other clinical data sources to characterize the population and describe the unmet basic needs and healthcare gaps in this population.

BACKGROUND

Diabetes is a significant public health problem involving increasing healthcare costs.[1] Over 29 million people have diabetes in the U.S. and 90-95 percent are type 2, and the prevalence continues to rise (over 300 percent since 1988).[6] Complications from diabetes including heart disease, stroke, and kidney disease are the seventh leading cause of death. Healthcare costs for patients with diabetes are estimated at 2.3 times higher than age- and sex-matched individuals without diabetes, and account for 20 percent of all healthcare costs.[7] Suboptimal adherence to diabetes treatment and control creates significant healthcare gaps.

People with diabetes have suboptimal adherence to recommended levels of HbA1c (57 percent), blood pressure (45 percent), and lipids (47 percent LDL <100), and only 12.2 percent are adherent to all three.[2] The Healthcare Effectiveness Data and Information Set (HEDIS) is a tool used by health plans to measure performance on important dimensions of healthcare and service. Health plans can use HEDIS measures to identify areas for improvement and to compare against other plans. We will use diabetes-related HEDIS measures to document individual and population adherence among diabetics in one state Medicaid insurance plan to recommended annual screenings including HbA1c testing (HbA1c <9.0), retinal or dilated eye exam by an eye care professional (or a negative retinal exam in the prior year), and screening for kidney damage.

Diabetic patients with unmet basic needs are at a greater disadvantage. Increasing attention is paid to the social determinants of health, which include education, health literacy, neighborhood safety, social support, and ability to meet basic needs.[8-10] Transportation, distance from care, neighborhood environment, employment, and food insecurity are basic needs that have been associated with diabetes-specific behaviors and health outcomes.[11-17] Most research has focused on food insecurity, which is related to greater cost-related medication non-adherence, worse self-reported health,[18] poor glycemic control,[19,20] less fruit and vegetable intake, and lower diabetes self-efficacy.[20] Unmet basic needs thwart abilities to address disease prevention and health promotion.

Having unmet basic needs interferes with making behavior changes like managing glucose control. When needs like food, shelter, safety, and money for necessities are unmet, fulfilling them supersedes addressing other life challenges, including modifying unhealthy behaviors.[21] This is not simply a matter of prioritization, but also because scarcity diminishes one's cognitive capacity to focus on other goals.[22] This can lead to short-term thinking; poor decision making; and reduced awareness of, attention to or persistence in pursuing resources to resolve the problem.[22-26] Low-income individuals also have less access to resources like money, credit, knowledge, power, social support, and broad social networks. Those with greater resources have more opportunity to learn about health risks and treatments and take action to reduce risk and minimize the consequences of disease.[27,28] Having unmet basic needs is linked to psychological stress, sleep disturbances, physical and mental health problems, and mortality,[29-35] and reduces the likelihood of engaging in health-promoting behaviors, keeping healthcare appointments, and using medication as prescribed.[36-38] Novel intervention solutions are needed to improve diabetes control and reduce health disparities. Trials incorporating two or more standard interventions, such as clinician education and disease management, may produce a median improvement in HbA1c of 0.48 percent [39] Such effects wane over time and are not utilized equally by all diabetic patients.

Effective and sustainable intervention approaches are needed for low-income populations, like building partnerships with systems that already serve them and addressing their priority problems.[40,41] For example, in our research with low income callers to United Way 2-1-1 for assistance with unmet basic needs, only 8 percent of calls were directly related to health concerns or healthcare gaps; 77 percent were for help paying bills, 42 percent were for home and family needs, 9 percent were for employment, and 6 percent were for housing.[5] However, those who resolved the problem they called about were more likely to contact a health referral for recommended prevention services like a mammogram or quitting smoking.[42] Patient navigation programs have been implemented to improve navigation through health systems, continuity of care, timely treatment, knowledge and self-efficacy for complex self-management behaviors, and social support.[3-5] Our own research has documented the value of navigator interventions for improving health behaviors among low-income populations.[5,43,44] Further, interventions that address basic needs like housing and food have shown beneficial effects on health behaviors, psychological distress, and mental health outcomes.[45-50] Although there have been no randomized trials to date, a growing number of studies support the benefits of addressing basic needs to impact health outcomes and utilization.[41,51]

STUDY METHODS

Clinical data. For each identified patient with type 2 diabetes, we will document their diabetes-related healthcare in the prior 12 months (e.g., HEDIS measures, ED utilization, hospitalization) from claims, authorization and/or assessment data. We anticipate that self-reported data from health risk assessments (HRAs) such as demographics, diet, exercise, sleep, and smoking status will be available for a subset of the sample. Characterizing the presence of comorbidity in this population is important for understanding the complex burden patients face and comparing with other published studies of patients with type 2 diabetes.

Survey Design and Procedures. Potential participants will be contacted by telephone to invite their participation, confirm eligibility, obtain verbal informed consent, administer the cross-sectional survey (or reschedule for a more convenient time), and obtain contact information for mailing a \$25 check or gift card incentive. To address participant burden, the final survey design will not take more than 30 minutes to complete.

Survey Measures. Key Variables: We have experience assessing unmet basic needs, including seven items that assess the likelihood that the respondent's personal safety, housing, food, and financial needs will be met in the next month.[5,44] Additional items will cover reliable transportation, child/elder care (if applicable), and social isolation,[54-56] and how long they have had the unmet need. Diabetes knowledge will be assessed with a short validated scale (e.g., 57-61) and the diabetes self-care activities scale (11 items)[62] will assess the frequency of specific behaviors in the last seven days (e.g., follow healthy diet, exercise, blood glucose testing, foot care). Using items we develop for this study, we will assess their 1) prior experience with navigators broadly defined: any prior relationship with individuals who assisted with their diabetes care, including case managers, social workers, educators, nutritionists, and diabetes-specific counselors (specialists or lay individuals); 2) interest in having a navigator to assist with their diabetes and health concerns and/or unmet basic needs.

REFERENCES

1. Agency for Health Care Research and Quality. Diabetes disparities among racial and ethnic minorities. Fact Sheet. Pub. No. 02-P007. Available online at <https://archive.ahrq.gov/research/findings/factsheets/diabetes/diabdisp/diabdisp.pdf>. 2001.
2. Milliman Inc. The cost and quality gap in diabetes care: An actuarial analysis. Available online at <http://us.milliman.com/uploadedFiles/insight/health-published/cost-quality-gap-diabetes.pdf>. 2012.
3. Battaglia TA, Darnell JS, Ko N, et al. The impact of patient navigation on the delivery of diagnostic breast cancer care in the National patient Navigation Research Program: a prospective meta-analysis. *Breast Cancer Research and Treatment*. 2016;158(3):523-534.
4. Ali-Faisal SF, Colella TJ, Medina-Jaudes N, Benz SL. The effectiveness of patient navigation to improve healthcare utilization outcomes: A meta-analysis of randomized controlled trials. *Patient Education & Counseling*. In press.
5. Kreuter MW, Eddens KS, Alcaraz KI, et al. Use of cancer control referrals by 2-1-1 callers: A randomized trial. *American Journal of Preventive Medicine*. 2012;43(6S5):S425-S434.
6. Centers for Disease Control and Prevention. Working to reverse the US epidemic. At a Glance Fact Sheets: Diabetes. Accessed online October 2016 at <http://www.cdc.gov/chronicdisease/resources/publications/aag/diabetes.htm>. 2016.
7. American Diabetes Association. Statistics about diabetes. Overall numbers, diabetes and prediabetes. Accessed online at <http://www.diabetes.org/diabetes-basics/statistics/>. 2012.
8. Barnard LS, Wexler DJ, DeWalt D, Berkowitz SA. Material need support interventions for diabetes prevention and control: a systematic review. *Current Diabetes Reports*. 2015;15(2):1-8.
9. Marmot M, Friel S, Bell R, Houweling TA, Taylor S, Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health *Lancet*. 2008;372:1661-1669.
10. Marmot M, Allen J, Bell R, Bloomer E, Goldblatt P. WHO European review of social determinants of health and the health divide. *Lancet*. 2012;380(9846):1011-1029.
11. Cohen DA, Mason K, Bedimo A, Scribner R, Basolo V, Farley TA. Neighborhood physical conditions and health. *American Journal Of Public Health*. 2003;93(3):467-471.
12. Littenberg B, Strauss K, MacLean CD, Troy AR. The use of insulin declines as patients live farther from their source of care: results of a survey of adults with type 2 diabetes. *BMC Public Health*. 2006;6:198-198.
13. Mayer VL, McDonough K, Seligman H, Mitra N, Long JA. Food insecurity, coping strategies and glucose control in low-income patients with diabetes. *Public Health Nutrition*. 2016;19(6):1103-1111.
14. Ross CE, Mirowsky J. Does employment affect health? *Journal Of Health And Social Behavior*. 1995;36(3):230-243.
15. Seligman HK, Bindman AB, Vittinghoff E, Kanaya AM, Kushel MB. Food insecurity is associated with diabetes mellitus: results from the National Health Examination and Nutrition Examination Survey (NHANES) 1999-2002. *Journal Of General Internal Medicine*. 2007;22(7):1018-1023.

16. Strauss K, MacLean C, Troy A, Littenberg B. Driving distance as a barrier to glycemic control in diabetes. *Journal Of General Internal Medicine*. 2006;21(4):378-380.
17. Vijayaraghavan M, Jacobs EA, Seligman H, Fernandez A. The association between housing instability, food insecurity, and diabetes self-efficacy in low-income adults. *Journal Of Health Care For The Poor And Underserved*. 2011;22(4):1279-1291.
18. Sattler ELP, Lee JS, Bhargava V. Food insecurity and medication adherence in low-income older Medicare beneficiaries with type 2 diabetes. *Journal of Nutrition in Gerontology and Geriatrics*. 2014;33:401-417.
19. Berkowitz SA, Meigs JB, DeWalt D, et al. Material need insecurities, control of diabetes mellitus, and use of health care resources. Results of the Measuring Economic Insecurity in Diabetes Study. *JAMA Internal Medicine*. 2015;175(2):257-265.
20. Lyles CR, DeWalt D, Wolf MS, et al. Food insecurity in relation to changes in hemoglobin A1c, self-efficacy, and fruit/vegetable intake during a diabetes educational intervention. *Diabetes Care*. 2013;36:1448-1453.
21. Kerner JF, Dusenbury L, Mandelblatt JS. Poverty and cultural diversity: Challenges for health promotion among the medically underserved. *Annual Review of Public Health*. May 1993;14:355-377.
22. Mullainathan S, Shafir E. *Scarcity: Why having too little means so much*. New York: Times Books; 2013.
23. Senn T, Walsh J, Carey M. The mediating roles of perceived stress and health behaviors in the relation between objective, subjective, and neighborhood socioeconomic status and perceived health. *Annals of Behavioral Medicine*. 2014;48:215-224.
24. Kissane R. What's need got to do with it? Barriers to use of nonprofit social services. *Journal of Sociology and Social Welfare*. 2003;30(2):127-148.
25. Remler D, Glied S. What other programs can teach us: Increasing participation in health insurance programs. *American Journal of Public Health*. 2003;93(1):67-74.
26. Wu C-F, Eamon M. Need for and barriers to accessing public benefits among low-income families with children. *Children and Youth Services Review* 2010;32:58-66.
27. Beaglehole R. International trends in coronary heart disease mortality, morbidity, and risk factors. *Epidemiologic Reviews*. 1990;12:1-16.
28. Link B, Phelan J. Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior*. 1995;Extra Issue:80-94.
29. Melchior M, Caspi A, Howard L, et al. Mental health context of food insecurity: a representative cohort of families with young children. *Pediatrics*. 2009;124(4):e564-572.
30. Ng W, Diener E, Arora R, Harter J. Affluence, feelings of stress, and well-being. *Social Indicators Research*. 2009;94:257-271.
31. Blazer D, Sachs-Ericsson N, Hybels C. Perception of unmet basic needs as a predictor of depressive symptoms among community-dwelling older adults. *Journal of Gerontology: Medical Sciences* February 2007;62(2):191-195.
32. Sachs-Ericsson N, Schatschneider C, Blazer D. Perception of unmet basic needs as a predictor of physical functioning among community-dwelling older adults. *Journal of Aging and Health*. December 2006;18(6):852-868.
33. Blazer D, Sachs-Ericsson N, Hybels C. Perception of unmet basic needs as a predictor of mortality among community-dwelling older adults. *American Journal of Public Health*. February 2005;95(2):299-304.
34. Taylor S, Repetti R. Health Psychology: What is an Unhealthy Environment and How Does it Get Under the Skin? *Annual Review of Psychology*. 1997;48:411-447.
35. Lynch J, Kaplan G, Shema S. Cumulative Impact of Sustained Economic Hardship on Physical, Cognitive, Psychological, and Social Functioning. *New England Journal of Medicine*. 1997;337:1889-1895.
36. Kushel M, Gupta R, Gee L, Haas J. Housing instability and food insecurity as barriers to health care among low-income Americans. *J Gen Intern Med*. 2006;21(1):71-77.
37. Timmerman G, Acton G. The relationship between basic need satisfaction and emotional eating. *Issues in Mental Health Nursing*. October/November 2001;22(7):691-701.

38. Acton G, Malathum P. Basic need status and health-promoting self-care behavior in adults. *Western Journal of Nursing Research*. November 2000;22(7):796-811.
39. Stanford University-UCSF Evidence-based Practice Center. Closing the quality gap: A critical analysis of quality improvement strategies. Volume 2 - Diabetes Mellitus care. Technical Review Number 9. Accessed online at <http://www.ahrq.gov/downloads/pub/evidence/pdf/qualgap2/qualgap2.pdf>. 2004.
40. Peek ME, Ferguson M, Bergeron N, Maltby D, Chin MH. Integrated community-healthcare diabetes interventions to reduce disparities. *Current Diabetes Reports*. 2014;14(467):1-9.
41. Sandberg SF, Erikson C, Owen R, et al. Hennepin health: A safety-net accountable care organization for the expanded Medicaid population. *Health Affairs*. 2014;33(11):1975-1984.
42. Thompson T, Kreuter MW, Boyum S. Promoting health by addressing basic needs: Effect of problem resolution on contacting health referrals. *Health Education and Behavior*. Advance publication available at <http://heb.sagepub.com/content/early/2015/08/18/1090198115599396.full.pdf+html>. In press.
43. Cappelletti ER, Kreuter MW, Boyum S, Thompson T. Basic needs, stress and the effects of tailored health communication in vulnerable populations. *Health Education Research*. 2015;30(4):591-598.
44. Kreuter MW, McQueen A, Boyum S, Fu Q. Unmet basic needs and health intervention effectiveness in low-income populations. *Prev. Med.* Oct 2016;91:70-75.
45. Fitzpatrick-Lewis D, Ganann R, Krishnaratne S, Ciliska D, Kouyoumdjian F, Hwang S. Effectiveness of interventions to improve the health and housing status of homeless people: a rapid systematic review. *BMC Public Health*. 2011;11:638.
46. Wolitski R, Kidder D, Pals S, et al. Randomized Trial of the Effects of Housing Assistance on the Health and Risk Behaviors of Homeless and Unstably Housed People Living with HIV. *AIDS Behav*. 2010;14(3):493-503.
47. Thomson H, Thomas S, Sellstrom E, Petticrew M. The Health Impacts of Housing Improvement: A Systematic Review of Intervention Studies from 1887 to 2007. *American Journal of Public Health*. 2009;99(3):681-692.
48. Leventhal T, Brooks-Gunn J. Moving to Opportunity: an Experimental Study of Neighborhood Effects on Mental Health. *American Journal of Public Health*. 2003;93(9):1576-1582.
49. Ludwig J, Duncan G, Gennetian L, et al. Long-term neighborhood effects on low-income families: Evidence from moving to opportunity. *American Economic Review: Papers and Proceedings*. 2013;103(3):226-231.
50. Williams D, Costa M, Odunlami A, Mohammed S. Moving upstream: How interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract*. 2008;14(Suppl):S8-17.
51. Bachrach D, Pfister H, Wallis K, Lipson M. Addressing patients' social needs. An emerging business case for provider investment. Commonwealth Fund publication 1749. Available online http://www.commonwealthfund.org/~media/files/publications/fund-report/2014/may/1749_bachrach_addressing_patients_social_needs_v2.pdf. 2014.
52. Weisberg R. *Creativity: Understanding innovation in problem solving, science, invention, and the arts*. Hoboken, NJ: John Wiley & Sons; 2006.
53. Boyum S, Kreuter MW, McQueen A, Thompson T, Greer R. Getting Help from 2-1-1: A Statewide Study of Referral Outcomes. *Journal of Social Service Research*. 2016/05/26 2016;42(3):402-411.
54. Adler NE, Stead WW. Patients in context - EHR capture of social and behavioral determinants of health. *New England Journal of Medicine*. 2015;372(8):698-701.
55. Health Leads. Social needs screening toolkit. Available at <http://healthleadsusa.org/resources/tools/>. 2016.
56. Institute of Medicine. *Capturing social and behavioral domains and measures in electronic health records: Phase 2*. Washington DC: The National Academies Press; 2014.
57. Collins GS, Mughal S, Barnett AH, Fitzgerald J, Lloyd CE. Modification and validation of the Revised Diabetes Knowledge Scale. *Diabetic Medicine: A Journal Of The British Diabetic Association*. 2011;28(3):306-310.

58. Fitzgerald JT, Funnell MM, Anderson RM, Nwankwo R, Stansfield RB, Piatt GA. Validation of the Revised Brief Diabetes Knowledge Test (DKT2). *The Diabetes Educator*. 2016;42(2):178-187.
59. Garcia AA, Villagomez ET, Brown SA, Kouzekanani K, Hanis CL. The Starr County Diabetes Education Study: development of the Spanishlanguage diabetes knowledge questionnaire. *Diabetes Care*. 2001;24(1):16-21.
60. Hess GE, Davis WK. The validation of a diabetes patient knowledge test. *Diabetes Care*. 1983;6(6):591-596.
61. Quandt SA, Ip EH, Kirk JK, et al. Assessment of a short diabetes knowledge instrument for older and minority adults. *The Diabetes Educator*. 2014;40(1):68-76.
62. Toobert DJ, Hampson SE, Glasgow RE. The summary of diabetes self-care activities measure: results from 7 studies and a revised scale. *Diabetes Care*. 2000;23:943-950.