Health Outcomes & Data Measures:
A Quick Guide for Health Center
& Housing Partnerships

INTRODUCTION

Partnerships between health centers and supportive housing providers employing a "Housing First" approach[1] have shown reductions in emergency department utilizations, inpatient hospital stays, and costs to the health system, increased use of preventative primary and behavioral health care as well as high rates of housing retention.[2] Clinical outcomes assessing changes in mental health status and a reduction in substance use is linked to Housing First programs, yet few studies or reports have addressed the impact of these programs on physical health outcomes such as diabetes, blood pressure, and asthma.[2]

As more health centers look to establish partnerships with housing providers or even begin delivering services to residents in supportive housing[3], they are starting to look at which physical health outcomes to track as part of housing programs. This quick guide will help communities understand the key health conditions experienced by homeless individuals that may be positively impacted with stable housing and the data elements generally tracked within the homeless health and housing sectors. This guide is designed to increase familiarity with measures already being tracked, enabling health and housing partnerships to leverage existing data and reduce administrative burden related to developing new mechanisms to track and report data.

Demonstrating improved health outcomes through health and housing partnerships not only builds interest and champions within the health center, it provides an evidence base to engage additional partners, including hospitals and managed care organizations. These entities already have a vested interest in improved health outcomes and shifting to primary and preventive care as appropriate, making them natural partners. From the housing side, improved health outcomes improves the quality of life of consumers, increases their housing stability, and helps improve overall service delivery. Demonstrating the impact of housing on health outcomes also shows the value of supportive housing, which can increase community support and investment in supportive housing.

IMPACT AREAS

When determining which health outcomes to track in relation to housing, it may be helpful to consider broader categories of health concerns linked to a lack of stable housing such as the ones described below. Not only will this guide aid planning but it can help narrow the scope of measures selected for tracking and reporting.

- **Chronic Health Conditions:** Managing chronic health conditions, such as diabetes and hypertension, can be difficult in the best of circumstances, but those experiencing homelessness have added barriers to maintaining their treatment plans and may be dealing with complications from unmanaged conditions. Those experiencing chronic homelessness are also more likely to experience multiple chronic conditions that would need to be addressed both before and after the individual moves into housing.[4] Health centers can generate reports identifying the most prevalent chronic diseases within their patient population.

- **Treatment and Medication Management:** Numerous factors impact medication management when housing is not available – lack of storage for medications, unsanitary environments, lack of transportation for follow-up appointments and so on. Once an individual is in housing, they have more accessible resources to help them manage their medications and are in a better position to prioritize their health and wellness. Measures of treatment management, including medication adherence and attending appointments, are important indicators of health management and stability.

- **Acute Conditions:** Individuals who are experiencing homelessness have higher rates of acute conditions resulting from circumstances such as poor management of chronic diseases, exposure to communicable diseases in shelters, exposure to harmful weather, violence, infections, and falls.[3, 5, 6, 7] Medical respite programs are a natural partner to help develop interventions and measures around acute conditions and

treatment outcomes. Communities are increasingly looking to bridge individuals from medical respite programs into permanent housing for maximum impact.

- **Insurance Coverage:** Insurance coverage can improve access to regular primary care and serve as a source of funding for services in supportive housing.[8, 9] Yet, in states that have expanded Medicaid, individuals experiencing homelessness may not have applied for coverage. Even in non-expansion states, many individuals may meet categorical eligibility but not have the necessary documentation on hand to apply. Housing First programs can track an increase in insurance coverage and assist with insurance applications, whether that is Medicaid, Medicare, or private insurance.

- **Emergency Room Utilizations & Hospital Inpatient Stays:** Housing First programs around the country are already tracking and finding reductions in emergency room utilization and hospital inpatient stays among their participants. These measures are invaluable to new Housing First programs and partnerships as they work to evaluate its impact on hospital utilization trends. Local hospitals and insurers, such as managed care organizations, are working to reduce readmissions and unnecessary costs and increasingly engaging in health and housing partnerships.

- **Mental Health Screenings:** Individuals experiencing chronic homelessness have higher rates of serious mental health diagnoses– approximately 30%[10] compared to 4% of the general population.[11] Studies have shown that supportive housing can help stabilize mental health conditions.[12] Conducting mental health screenings helps to ensure that the needs of individuals in the Housing First program are addressed.

- **Substance Use Screening & Treatment:** Like mental health, empirical evidence demonstrates that supportive housing can reduce substance use,[4] especially when paired with a Harm Reduction[13] approach, which focuses on mitigating negative effects of a behavior and individualizing treatment goals. Completing appropriate screenings and tracking progress over time can be another way to ensure that participants are meeting their own goals and that their needs are met.

- **Quality of Life:** Quality of life is an important measure to consider as those who do not have homes are living in high stress, dangerous environments. Health centers can assess this measure through standardized tools, which can be added to a health center's Electronic Health Record system. This can enable health centers to have a more holistic view of patients' health.

WHAT ARE HEALTH CENTERS REPORTING?

Health Centers already collect a wealth of data for their patient populations. This information is reported through various channels depending on funding streams, accreditation and/or certification programs, and various local and state level initiatives. For example, health centers report health-related patient encounter information to health plans, one or more managed care organizations, which then report to one or more state Medicaid agencies. Health centers also report certain patient-level measures in aggregate form through the Uniform Data System (UDS)[14] to the Health Resources and Services Administration (HRSA), the federal agency that administers the Health Center program. Unlike Medicaid data, UDS data includes information about patients who are uninsured. More information about the types of data reported to various payers and administrators is below.

UDS: Uniform Data System

While UDS measures are reported in aggregate, ensuring high quality data collection around housing status and the prevalence of health conditions can enable the health center to evaluate these aggregate outcomes and make the connection between these measures at the patient level. For instance, at the aggregate level, demonstrating which health conditions are more prevalent in homeless patients can be a starting point to determine which health outcome measures health centers may consider tracking as consumers move into housing.

UDS measures that health centers report at the population level (e.g., homeless and migrant) include, but are not limited to:

- Infectious and parasitic diseases: HIV, Tuberculosis, Sexually Transmitted Infections, Hepatitis B and C
- Respiratory diseases: Asthma, Chronic Obstructive Pulmonary Diseases

- Selected medical conditions: Includes Diabetes Mellitus, Heart Disease, Hypertension, Contact Dermatitis and other Eczema, Dehydration, Exposure to Heat or Cold, Overweight and obesity
- Mental health and substance abuse conditions: Alcohol Related Disorders, Other Substance Related Disorders, Tobacco Use Disorder, Depression and Other Mood Disorders, Anxiety Disorders including PTSD, Attention Deficit and Disruptive Behavior Disorders, Other Mental Disorders
- Diagnostic Tests/Screening/Preventive Services

Health centers may also be reporting some of the services they provide as part of a Housing First program as "Enabling Services" in the UDS including case management and housing navigation activities. Enabling services include:

- Case Management
- Eligibility Assistance Workers
- Outreach
- Transportation
- Language Interpretation
- Patient and Communication Education

- Patient Support Staff
- Non-statutory Enabling Services:* Food, Clothing, Housing, Laundry, Shower, Mailbox, Telephone, GED/Education, Employment, Assistance Managing Money, Medical Respite Services, Daycare/Childcare

ICD: International Classification of Diseases
There are thousands of ICD codes (International Classification of Diseases) that cover everything from wound care to tuberculosis to housing status. These codes are used by the health industry to capture and communicate health data nationally and internationally. ICD codes are also used for billing purposes. This information is already being tracked and could be a source of information to understand the impact of housing on physical health conditions in health and housing partnerships. In addition, since these codes are typically entered for each visit, they may be useful for tracking incidence of housing related health conditions longitudinally. In October 2015, health care providers began transitioning from ICD-9 to ICD-10[15] coding systems. As such, analysis of pre- and post-intervention measures that occur during the transition of coding systems may require the use of a code translator or converter.

HEDIS: Healthcare Effectiveness Data and Information Set
Additionally, health plans and preferred providers[16] around the country report Healthcare Effectiveness Data and Information Set[17] (HEDIS) measures to the National Committee for Quality Improvement (NCQA). These measures are used to evaluate the quality of care provided, including comparisons on a national scale and self-monitoring over time. In a health and housing partnership, evaluating these measures in relation to housing status can demonstrate high quality care across subpopulations, including those experiencing homelessness and those who have moved into permanent housing. In 2017, HEDIS included seven domains of care with a total of 88 measures.[18] These included:

- Effectiveness of Care
- Access/Availability of Care
- Experience of Care
- Utilization and Risk Adjusted Utilization

- Relative Resource Use
- Health Plan Descriptive Information
- Measures Collected Using Electronic Clinical Data Systems

WHAT CAN HOUSING PROVIDERS TRACK?
Housing providers who are part of their local Continuum of Care (CoC)[19] collect consumer-level data in their local Homeless Management Information System (HMIS).[20] HMIS is governed by the U.S. Department of Housing and Urban Development (HUD), which outlines a set of "Universal Data Elements" that all projects are required to

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* Non-statutory Enabling Services may be captured in the UDS under "Other Enabling Services." In this case, health centers will need to appropriately specify the type of services during reporting.

collect. In addition to these measures, some projects are required to collect "Program-Specific Data Elements",[21] many of which are health care related.

The HMIS Data Standards Manual[22] includes a list of data that is collected by other federal partners, including the Department of Health and Human Services. HUD-funded agencies have the option to include these in their data collection efforts. The list is program specific (e.g., PATH program, ESG program) but is intended to provide a starting place for housing providers to align their data with the data collected by providers funded through other federal agencies. These measures include:

- Health Insurance
- Physical Disability
- Developmental Disability
- HIV/AIDS (Required for HOPWA funded programs)[23]
- Mental Health Problem
- Substance Abuse
- Chronic Health Condition (list of qualifying conditions included in Table 1)
- Housing Status

HMIS enables providers to report basic information about each of the measures listed above, including type of insurance, duration or severity of health conditions, documentation of disability or severity, and whether or not the consumer is currently receiving services or treatment for the condition. Having this information in HMIS allows housing and service providers to identify special considerations for service delivery, especially for those with disability status. It also helps providers to identify potential gaps in care for those who are not receiving treatment for a health condition and is an opportunity to connect consumers to care. Moreover, housing providers may track additional information depending on the HMIS software provider in use, or may maintain separate case management software system with additional fields that uploads to HMIS at the CoC level. Accessing HMIS can also provide an opportunity for Health centers to see which services their consumers are already connected to and their housing status – including supportive housing, transitional housing, shelter, etc. – which can assist in care plan development. Health centers can also include a note, in systems that allow it, indicating that an individual is an established patient, making referral between service providers more streamlined.

In an effort to bring all this data together, Table 1 below aligns both the health and housing data measures along key Health and Housing Impact Areas.

Table 1: Overlap between HMIS measures, ICD-10 codes, and UDS measures.

Measure	HMIS	ICD-10[†]	UDS	Measures & Screening Tools
Housing Status	3.917	Z59	Table 4 Lines 17 - 23	
Health Insurance	4.4		Table 4 Lines 7 – 12	Insured, Medicaid, Medicare
Physical Disability	4.5	Z736, R532		
Developmental Disability	4.6	F70 - F89		
Chronic Conditions	4.7		Tables 6A & 6B	Blood Pressure, BMI, Pulmonary Function
Heart Disease		I0981 - I132	Table 6A Line 10	
Severe Asthma		J4550 - J45909	Table 6A Line 5	
Diabetes		O24012 - O2493	Table 6A Line 9	HbA1c <8%
Arthritis-related conditions		A0104, A0223, A1802, A3983 – A3984, A5422, A6923, B0682, B2685, B4282, E7881, G980, L4052, M0000 – M009, M0510 – M0609, M0680 – M069, M0800 – M0899, M130 – M1389, M150, M153 – M1993, M7720 – M7722		
Adult onset cognitive impairments		G3184, I6901, I6911, I6921, I6931, I6981, I6991, R4181, R41841, R4189, R419		
Severe headache/migraine		G43001 - G4489		
Cancer		C000 - D499	Table 6B Lines 11, 19	
Chronic bronchitis		J410 – J42		
Liver condition		K700 - K77		
Stroke		G463 – G464		
Emphysema		J430 – J439		
HIV/AIDS	4.8	O98711 – O9873, R75	Table 6A Line 1 – 2	Viral Load
Mental Health	4.9	F0150 – F09, F200 – F99	Table 6A Lines 20a – 20d	PHQ-9, GAD-7, PC-PTSD[24]
Substance Abuse	4.10	F1010 – 1999	Table 6A Lines 18 – 19a	SBIRT, CAGE, AUDIT, DAST[17]
Treatment Adherence				Attend Appointments, Medication Adherence
Acute Conditions				Episodes, Types of Diagnoses, Reduction in Preventable Conditions – Matched or Pre-Post Housing Comparison
Emergency Room Utilizations & Hospital Inpatient Stays				Hospital Data, Medicaid Data; ER Visits, Inpatient Days
Quality of Life				CDC Health Related QOL, RAND-36 (SF-36)[25]

[†] The ICD-10 codes listed in Table 2 may not represent every available code corresponding to the HMIS measure.

Communities around the country are working across sectors to implement Housing First programs with an emphasis on health care, including Frequent User Systems Engagement (FUSE)[26] programs that target high cost utilizers of emergency health services for supportive housing. These programs have come up with various outcome measures that they are tracking based on program goals.

Examples of the outcomes tracked by housing and health partnerships operating Housing First programs are in Table 2. These cities were chosen as samples based on participation in a peer-to-peer session on evaluation of Housing First programs with health center involvement or were featured in a series of profiles[27] highlighting frequent user programs that connect individuals to housing and primary care.

Table 2: Outcomes Tracked by Housing First – Health & Housing Partnerships[‡]

	Obesity (BMI)	Diabetes (A1c)	Vital Signs	Perception of Health Status	Hypertension (BP)	Preventive Screenings	Connect to Primary Care	Mental Health	Substance Use	Service Engagement	Health Functioning	Quality of Life	Emergency Room Visits	Hospitalizations	Housing Retention	Income	Criminal Justice Involvement
Orlando		X			X			X PHQ9					X	X	X	X	X
Houston								X PHQ9		X	X SF36	X	X	X	X	X	
Indianapolis	X		X				X	X									
Los Angeles													X	X	X		
Camden				X				X	X	X		X CDC	X	X	X	X	X
Washtenaw							X	X	X			X	X	X	X		X

These communities are working towards various goals and several are early in their evaluation periods. While longitudinal data is not yet available for specific health outcomes, initial results demonstrating a reduction in hospitalizations (85.7% of participants in Orlando), emergency room visits (down 71% in Los Angeles), and high levels of housing retention (81% in Washtenaw).

HOW ARE OTHER HEALTH CENTERS TRACKING HEALTH IN HOUSING?

Orlando, Florida
Orange Blossom Family Health is a Health Care for the Homeless (HCH) program that has developed innovative partnerships throughout their community to provide supportive housing to high utilizers of the local hospital system. The health center is the main outreach, health care, and supportive service provider for the community's Housing First initiative. To determine which measures to evaluate, the medical team and medical students from a local university embarked on a literature review and spoke with other health centers doing similar work to identify health outcome measures that may be meaningful and impacted through housing. As a health center, they already collect health status information in their EHR during encounters with patients. In planning the evaluation for the Housing First program, they decided to start with a focus on chronic illness. They are currently tracking A1c levels of housed clients with a diagnosis of diabetes, blood pressure stabilization for those with hypertension, and PHQ-9 scores as a depression measure. After the first few months, providers were surprised that some of the health measures they tracked were not representative of the most pressing concerns of their consumers, specifically they found that fewer

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[‡] Note: These communities may collect and measure other outcomes, including health outcomes, separate from their Housing First evaluation.

consumers in housing had a diabetes diagnosis than anticipated. They are continuing to evaluate their health measures in response to the needs of their patients and are constantly working to improve their evaluation methodology.

Yakima, Washington
Yakima Neighborhood Health Services (YNHS) is an integrated program with the health center operating a medical respite program and nearly 100 units of supportive housing. Their close work with the local Continuum of Care and their involvement in housing gives them access to the HMIS system in their community. YNHS has added a field to their electronic health record that allows them to document an individual's HMIS number, which helps to link their records. This allows providers to easily identify patients that are residing in supportive housing or part of their Medical Respite program. When the health center pulls reports, like UDS, they are able to compare the specific health outcomes they are reporting for their patient populations by housing status. Overall, they have seen an improvement in health for consumers in housing and Medical Respite across the board, with measures such as A1c levels improving to match or surpass the overall patient population.

Portland, Oregon
Central City Concern (CCC) is both a Health Care for the Homeless grantee and a housing provider, allowing for a highly integrated and comprehensive service delivery model. They have an internal team dedicated to data analysis and are working on creating a data warehouse. This will allow CCC to analyze health outcomes compared to housing status within their patient population. Having the ability to access this data will assist providers identifying strategies to best serve consumers both in and out of housing. It also will allow CCC to conduct a risk analyses on their consumers to advocate for improved payment methodologies for supportive services that improve housing stability.

CHALLENGES
Tracking health outcomes data is an important step towards demonstrating that housing is health care, but it is not without its challenges.

- **HIPAA Concerns.** Privacy concerns continue to be a barrier to cross-system data sharing and ultimately can become a challenge when evaluating collaborative programs. In many cases, creating a Business Associates Agreement[28] between partners can help to set parameters and protocols for data sharing that protect participant privacy under HIPAA. Determining what information can and should be shared with other providers is something that health centers should consider when setting up arrangements with partners.

- **Proving Causation.** Determining the effect of a program is always challenging since no one lives in a vacuum. Some health conditions naturally improve over time and/or individuals may be accessing multiple interventions. Changes within a community, as well as legislative and policy changes, can also impact multiple systems, so it becomes crucial to isolate specific interventions to examine impact. When developing an evaluation plan, it is important to involve those with expertise in demonstrating program effect. One strategy could include using a matched comparison group to get a picture of how participants may have progressed with treatment as usual. Scanning the community for other interventions is also a good starting point to determine how these may have impacted the effectiveness and the extent to which improvement is due to each program.

- **Literature.** The limited peer-reviewed evidence to date makes determining which outcomes to measure a challenge. Using the data available and learning from peers, health centers can determine what measures make the most sense for their program in light of their patient needs. Health centers can also consider publishing their health outcomes in a peer-reviewed journal to help build up the knowledge base in this area.

RECOMMENDATIONS
- **Assess what other communities are doing.** There are an array of resources that describe Housing First initiatives including the tools and outcome measures that are used to demonstrate impact. Many communities are willing to share lessons learned and promising practices. Do not be afraid to reach out to other communities or CSH for guidance.

- **Utilize data that is already being collected locally.** Partnering with agencies already collecting relevant data could reduce undue burden to patients and staff.
- **Encourage hospitals to use the ICD-10 code for homelessness (Z59.0).[29]** In addition to tracking health outcomes, it is also essential to collect information on housing status. This allows hospital reports to be generated specifically to patients who have experienced homelessness. Hospitals may need support to help their staff to understand the value of tracking housing status as well as best practices for soliciting this information in a sensitive manner from their patients.
- **Consider tracking other social determinants of health.** In addition to housing status, ICD-10 Z-codes are available for other social factors such as employment, literacy, and incarceration. Additionally, the National Association of Community Health Centers (NACHC) developed the PRAPARE tool[30] to screen for social determinants in the health center setting. Collecting accurate social determinant information provides a clearer view of the challenges that need to be addressed in housing to be able to improve health outcomes and sustain overall improvements in quality of life.
- **Remember the small victories.** Not every health victory can be quantified and anecdotal evidence can be an indicator of success. We hear stories of consumers who move into housing and are more engaged in their care, they are better at managing their medications, they are learning to prepare healthy meals, they open up to their case manager, or simply report feeling better today. These stories demonstrate progress that may not yet be quantifiable, but they are still valuable to tell the great work health and housing partnerships can achieve.

[1] Project profiles and additional resources available at http://www.csh.org/hrsa-publications-and-written-guidance/

[2] CSH, Housing is the Best Medicine: Supportive Housing and the Social Determinants of Health, 2014, http://www.csh.org/wp-content/uploads/2014/07/SocialDeterminantsofHealth_2014.pdf

[3] Note that "permanent supportive housing" and "supportive housing" are used interchangeably in this publication

[4] NHCHC, Homelessness & Health: What's the Connection?, 2011, http://www.nhchc.org/wp-content/uploads/2011/09/Hln_health_factsheet_Jan10.pdf

[5] NHCHC, Exploring the Experiences of Violence Among Individuals Who Are Homeless Using a Consumer-Led Approach, 2014, http://www.nhchc.org/wp-content/uploads/2014/09/meinbresse_2014_violence_homelessness.pdf

[6] NHCHC, Adapting Your Practice, General Recommendation for the Care of Homeless Patients, 2010, http://www.nhchc.org/wp-content/uploads/2011/09/GenRecsHomeless2010.pdf

[7] Mackelprang, J. L., Graves, J. M., Rivara, F. P., Homeless in America: Injuries Treated in US Emergency Departments, 2007-2011, International Journal of Injury Control and Safety Promotion, 2013, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3947742/

[8] CMS, Coverage of Housing-Related Activities and Services for Individuals with Disabilities, 2015, https://www.medicaid.gov/federal-policy-guidance/downloads/cib-06-26-2015.pdf

[9] NHCHC, Medicaid & Permanent Supportive Housing: A Quick Guide for Health Centers, 2015, http://www.nhchc.org/wp-content/uploads/2011/10/medicaid-psh-quick-guide4.pdf

[10] National Office of Drug Control Policy, Integrate Treatment for Substance Use Disorders into Mainstream Health Care and Expand Support for Recovery, 2011, https://www.whitehouse.gov/ondcp/chapter-integrate-treatment-for-substance-use-disorders

[11] National Institute of Mental Health, 2014, https://www.nimh.nih.gov/health/statistics/prevalence/serious-mental-illness-smi-among-us-adults.shtml

[12] CSH, Housing is the Best Medicine: Supportive Housing and the Social Determinants of Health, 2014 http://www.csh.org/wp-content/uploads/2014/07/SocialDeterminantsofHealth_2014.pdf

[13] Information on Harm Reduction is available at: http://harmreduction.org/about-us/principles-of-harm-reduction/

[14] Information on UDS reporting is available at: http://www.bphc.hrsa.gov/datareporting/reporting/index.html

[15] Information on ICD-10 codes is available at: https://www.cms.gov/medicare/Coding/ICD10/index.html

[16] Information on Preferred Providers available at: https://www.healthcare.gov/glossary/preferred-provider-organization-PPO/

[17] Information on HEDIS measures is available at: http://www.ncqa.org/hedis-quality-measurement/hedis-measures

[18] 2017 HEDIS Measures are available at: http://www.ncqa.org/Portals/0/HEDISQM/HEDIS2017/HEDIS%202017%20Volume%202%20List%20of%20Measures.pdf?ver=2016-06-27-135433-350

[19] Information on the Continuum of Care program is available at: https://www.hudexchange.info/programs/coc/; http://www.endhomelessness.org/library/entry/fact-sheet-what-is-a-continuum-of-care

[20] Information on HMIS is available at: https://www.hudexchange.info/programs/hmis/

[21] HUD, HMIS Data and Technical Standards, 2014, https://www.hudexchange.info/programs/hmis/hmis-data-and-technical-standards/

[22] HUD, HMIS Data Standards Manual, 2016, https://www.hudexchange.info/resource/3826/hmis-data-standards-manual/

[23] HUD, HOPWA Program HMIS Manual, 2015, https://www.hudexchange.info/resource/4449/hopwa-program-hmis-manual/

[24] Mental Health and Substance Use Screening tools available at: http://www.integration.samhsa.gov/clinical-practice/screening-tools

[25] CDC HRQOL available at: https://www.cdc.gov/hrqol/; RAND SF-36 available at: http://www.rand.org/health/surveys_tools/mos/36-item-short-form.html

[26] Information on CSH's Frequent Users Systems Engagement projects is available at: http://www.csh.org/fuse

[27] Community profiles and other resources available at: http://www.csh.org/hrsata

[28] Learn more about covered entities and business associates at: https://www.hhs.gov/hipaa/for-professionals/covered-entities

[29] NHCHC, Ask and Code: Documenting Homelessness Throughout the Health Care System, 2016, https://www.nhchc.org/wp-content/uploads/2016/10/ask-code-policy-brief-final.pdf

[30] Information on the PRAPARE tool is available at: http://nachc.org/research-and-data/prapare/