Project Narrative

Introduction

The Owen County Collaborative Addiction Treatment Initiative (OCCATI) is a project of a proposed consortium of Northern Kentucky University (NKU), the Northern Kentucky Area Development District (NKADD), Three Rivers District Health Department, Northkey Community Care, Owen County Drug Prevention Coalition, and Owen County Schools. The mission of this collaborative is to develop a strategic plan for essential evidence-based early intervention and treatment for new substance users as well as to shrink the behavioral and medical healthcare gaps in the eight-county Northern Kentucky region for those seeking treatment and support for substance use disorders (SUD). A secondary goal is to provide proof of concept through programming and training for Owen County High School health-related personnel. The longer-range vision is to provide a replicable model for the Commonwealth of Kentucky of regional health consortia that reduce substance abuse mortality and morbidity through more effective, data-driven resource allocation and intentional workforce development focused on targeted student or trainee recruitment, education, placement, and loan repayment programs.

Owen County, Kentucky, is a HRSA-designated rural county situated in one of the hardest hit regions of the opioid epidemic. It is a designated HPSA for both Mental Health Care and Primary Care. The calculated mortality rate for opioid related overdose deaths in Owen County for 2016 was 65, and the annual rate of drug consumption that resulted in hospital care is 1,180 per 100,000 residents (Kentucky Injury Prevention and Research Center (KIPRC), 2017). Almost half of all arrests in Owen County are drug-related (Kentucky police arrest reports, 2016). At the same time, there are no in-patient treatment facilities in Owen County. No one there is licensed to provide medication-assisted therapy. They have no syringe access exchange program, nor are there any naloxone distributors. Indeed, the entire greater Northern Kentucky region has less than a 24% capacity for treating SUD or opioid use disorder (OUD), with less than 18% capacity for outpatient services.

Through the formation of OCCATI, area partners will collaborate to address unmet health workforce needs by (1) developing early intervention programs that decrease reliance on emergency services; (2) increasing capacity for early intervention in adolescents (ages 13-17) and young adults (ages 18-22); and (3) developing recruitment, scholarship, field placement, and loan repayment assistance plans that target healthcare students from the rural areas.

With support of the HRSA Rural Communities Opioid Response Program Planning Grant (18-116), OCCATI can evolve into a formal organization with an infrastructure that will facilitate cooperation among consortium members and will efficiently and effectively procure and administer future grant funding for joint projects. The key objectives of this grant are to: (1) develop a detailed strategic plan for decreasing opioid use and dependence in Owen County, (2) develop a detailed strategic plan for increasing the healthcare workforce and services dedicated to opioid use disorder prevention and treatment in Owen County and surrounding regions, (3) create formal written agreements with partners about their participation in and contribution to OCCATI projects, and (4) expand the consortium network to other potential partners, including St. Elizabeth Healthcare, the Northern Kentucky Health District, local advocacy organizations, and the rural school systems of the surrounding counties. Through careful planning and implementing demonstration projects, OCCATI will establish the consortium's value as a sustainable and cost-effective mechanism for addressing the opioid epidemic in Owen County and beyond.

Needs Assessment

Substance abuse, especially opioid addiction, has been increasing at an alarming rate in the eight-county region known as Northern Kentucky (Boone, Campbell, Grant, Kenton, Carroll, Gallatin, Owen, and Pendleton counties). There was a 36% increase in emergency room visits for opioid overdoses from 2014 to 2016 in the region, and then at least another 30% increase from 2016-2017. Drug overdose deaths have also significantly increased there. Although Northern Kentucky accounts for only 10.3% of Kentucky's population, it had 26.8% of the heroin overdose deaths and 19.7% of fentanyl overdose deaths in Kentucky in 2016 (Northern Kentucky Health Department, 2018). The Northern Kentucky overdose death rate was 49.7 deaths per 100,000 residents in 2016, which significantly more than Kentucky's rate at 31.1 per 100,000 residents – and we note that Kentucky has the 5th highest overdose death rate in the county (CDC, 2018).

Importantly, in the Northern Kentucky region, young males aged 25-34 had the greatest number of overdose deaths in 2015, for the first time exceeding the number for the males aged 45-54. The majority of EMS opioid related incidents in 2017 were in this age group as well.

In addition, Northern Kentucky has over a third of the acute Hepatitis C cases in the Commonwealth. These rates are among the highest in the nation. In 2015, rates were 3.5 times the rate of Kentucky, and 11.9 times the rate of the U.S. And in June of this year, Kentucky Commissioner of Public Health Jeff Howard reported that a recent outbreak of Hepatitis A was the "worst on record across the nation" (Warren, 2018). More than half of these cases have been tied to illicit drug use.

Owen County in particular has significant challenges. The Kentucky Injury Prevention and Research Center developed an Overdose Risk Index Score by combining data on drug arrests, drug overdose related deaths, drug overdose related emergency room visits, and drug overdose related hospitalizations by county. Owen County was one of the counties identified as a statistically significant Drug Overdose Risk Index Hot Spot, with a 95% confidence interval (Bush et al., 2018). This ranking did not miss the mark, as death rates from overdoses in Owen County now outrank those of West Virginia, which has the highest rate of overdose deaths in the country.

But we have chosen to focus on Owen County because it has suffered a tremendous loss in its healthcare workforce over the past 18 months. In 2017, St. Elizabeth Healthcare, the largest healthcare provider in the Northern Kentucky region, closed their hospital and pulled out of Owen County entirely, leaving the county with only three primary care physicians (PCPs) to cover the entire 374 square mile region. Healthpoint, who employs the remaining three PCP's, just announced that they too were leaving Owen County within the next six months.

Owen County currently has no full-time mental health professionals from any discipline. The only full-time behavioral health worker is one school psychologist. While patients with SUD are referred to treatment facilities outside of the county, transportation issues and other financial and sociocultural barriers prevent many from receiving the care they require.

Owen County is in desperate need of an efficient and realistic workforce revival plan for serving those with SUD/OUD, as well as more effective ways of managing patients with burgeoning use disorders, especially among the juvenile and young adult population. A HRSA Rural Communities Opioid Response Program Planning Grant would allow for the development of exactly such plans and would bring together and support the regional team that could implement the requisite programs and activities.

1. Demographics of the target population(s) of the rural service area

The population of Owen County has decreased slightly since 2010. Currently there are 10,765 residents (Kentucky State Data Center, 2018) living within the 374 square mile boundaries of the

county, with an average household size of 2.7 -- which is larger than the 2.49 average household size in Kentucky and the 2.64 of the United States (U.S. Census Quickfacts, 2018). Only 1% of the population is Black or African American, with 1.2% two or more races and 2.8% Hispanic or Latino (American Indian, Alaska Native, Asian, Pacific Islanders each comprise less than 1% of the population). Fully 94.7% of Owen County are White, as compared to 84.6% in Kentucky and 60.7% for the United States (U.S. Census Quickfacts, 2018). Owen County has a relatively young population: 26.5% of its residents are under 18, while only 13.5% are over 65. This compares to 22.7% and 16% for Kentucky and 22.6% and 15.6% for the United States, respectively. (U.S. Census Quickfacts, 2018).

The median household income in 2016 dollars for 2012-2016 was $41,597 in Owen County, which is less than the median household income for Kentucky ($44,811) and in the United States as a whole ($55,322) (U.S. Census Quickfacts, 2018). The per capita annual income is $22,151, which again is less than Kentucky ($24,802) and the United States ($29,829). The unemployment rate is 4.1%, which is less than Kentucky's 5%, but comparable to the U.S.'s 4% (Kids Count Data Center, 2018). However, the federal poverty rate in Owen County (18.2%), while comparable to Kentucky's (18.5%), is substantially more than the United States (12.7%). And 25.4% of the children in Owen County live in poverty, which again is comparable to the 25.3% of children in Kentucky, but more than the 19% of children in the U.S. (Kids Count Data Center, 2018).

Due to the state's Medicaid expansion, only 6% of residents of Owen County are uninsured, which is the same as in Kentucky, but less than the United States (11.3%) (Gallup-Healthways Poll, 2017). As with Kentucky, 22% of Owen County residents are enrolled in Medicaid (Kentucky Health Facts, 2017). However, over 50% of Owen County youth (1,226 out of 2,409) are on public health insurance, compared to 40% for Kentucky and 36% for the United States (Kids Count Data, 2018). (Note: if the state's 1115 Waiver is approved, then we expect percentage of uninsured in Owen County to increase.)

2. Map of the target rural service area: See Attachment 8

3. OUD among the population(s) of the target rural service area

In 2016, the mortality rate for opioid-related overdose deaths in Owen County was 65 (7 deaths total) (KIPRC, 2017). This rate is higher than West Virginia (52), which has the highest overdose rate of any state in the country. The rate for the Northern Kentucky region was 49.7 and for Kentucky was 31.1. However, we should note that the small number of deaths in Owen County make these calculations statistically unreliable.

There were 42 cases of acute drug poisoning (overdose) for Owen County in 2016, 55 cases of nondependent abuse of drugs (without an overdose), and 30 cases of drug dependences, as reported by emergency departments and inpatient records (KIPRC, 2017). This puts the annual rate of drug consumption that required hospital care at 1,180 per 100,000 residents.

The 2015 National Survey on Drug Use and Health (NSDUH) indicates that in the Northern Kentucky Region, 7.2% of adults older than 26 had a past-year SUD; 15.5% ages 18-25 had past-year SUD, and 5% of youth 12-17 had past-year SUD, suggesting total of over 30,000 residents in Northern Kentucky with SUD. We do not have survey data specific to Owen County regarding counts of SUD or OUD; we anticipate collecting these data with our face-to-face survey teams (described below) as part of this project.

Police arrest data from 2016 indicate that in the Northern Kentucky region, 43% of all arrests were drug-related. In 2011, one in six drug arrests in Northern Kentucky involved heroin; in 2016, one in three did. Using police arrest data from the four zip codes that primarily comprise Owen County, we determined that 47% of all arrests there were drug-related.

EMS data for 2017 indicate that 3.6% of emergency runs in Northern Kentucky were opioid related, with naloxone being administered in 61.2% of the cases. This is up from the previous year, in which 2.1% of all EMS runs were opioid related. The majority of the opioid related cases in 2017 were in the 24-35 age range. The data in Owen County appear to be comparable to those of the region, though the numbers were too small to be reliable.

4. Overview of existing OUD programs and services, as well as gaps in services, in target rural service area

There are two out-patient drug treatment facilities in Owen County: Kentucky's Choice, LLC, an education and treatment facility, and Northkey Community Care, a community mental health facility. However, both of them are only open a few days each week in Owenton, the county seat of Owen County. Both facilities utilize licensed practitioners who provide counseling and educational programs for OUD. Triad Health offers medical services in Owen County and they do have a psychiatrist on staff part-time in the county. However, while Triad does provide OUD evaluation, they must refer virtually all treatment to providers outside the county. Healthpoint also currently provides medical services to the county, but they will be pulling out of the county very soon. Currently, they employ three full-time primary care providers but no mental health personnel. It is unclear what will remain in the county by 2019 as of this writing. While the county is able to support some one-on-one counseling, all emergent, MAT, and group needs must be referred elsewhere.

There are no in-patient treatment facilities in Owen County. There is no hospital located in Owen County. There are no Urgent Care Centers. No one in Owen County is licensed to provide medication-assisted therapy. There is no syringe access exchange program in Owen County. There are no naloxone distributors in the county. There are no Quick Response Teams (QRT) serving the county.

The Owen County Drug Prevention Coalition is operating under the Drug Free Communities federal granting program; they are in the final year of a three-year grant. However, per the grant guidelines, the Coalition's primary focus must be on alcohol and tobacco use. There are no other federal, state, or regional programs currently active in Owen County (though see discussion below). One additional community-driven prevention initiative for OUD is in Owen County: R.E.A.C.H., a Christian faith-based organization that promotes awareness and prevention to avert substance abuse. Neither the Drug Prevention Coalition nor REACH provides evidence-based treatment.

The recent *Community Health Improvement Plan for Northern Kentucky, 2016-2020* (2016) does not include Owen County or its rural neighbors. The Three Rivers Health Department's *Community Health Improvement Plan for Owen County, 2014-2017* (2017), completed its activities associated with drug misuse in 2017 and has not yet launched a new CHIP planning process.

NKU partnered with Northkey Community Care, St. Elizabeth Healthcare, the Northern Kentucky Health Department, and four other regional organizations to develop and implement ***S****creening,* ***B****rief* ***I****ntervention and* ***R****eferral to* ***T****reatment* (SBIRT) training to health professions students and community health and behavioral health providers. SBIRT addresses the needs for universal SUD screening and early intervention for unhealthy substance use. The project strengthened the region's existing health workforce and focused on increasing the SUD/OUD capacity of the regional workforce through the SBIRT student training project on campus. This effort was funded by a three-year Substance Abuse and Mental Health Services Administration (SAMHSA) grant. A significant portion of Northkey Community health care workers have already been provided this training as part of the SAMHSA grant, though none currently serving in Owen County.

NKU's efforts at improving treatment services for OUD have increased with a recent Department of Justice (DOJ) Comprehensive Opioid Abuse Site-Based Program grant in collaboration with regional police departments and detention centers, NKADD, St. Elizabeth Healthcare, and local advocacy groups, to expand and evaluate Quick Response Teams (QRTs) in the Northern Kentucky region, including Owen County. However, the DOJ grant is in its first year and no QRTs have been developed for Owen County yet.

OCCATI will leverage these initial efforts and regional collaborations to develop a long-term strategy and permanent solution for the chronic and systemic workforce, treatment, and service shortage for OUD in the Owen County and its surrounding rural neighbors. OCCATI's approach will be to diminish need by earlier interventions in OUD while simultaneously increasing the healthcare workforce through intentional recruitment, education, training, and loan relief programming for rural students. With a clear strategic plan and additional resources for administrative and operational support, the consortium will be better able to raise additional funds in order to expand our collaborations and to disseminate the results of our activities more widely in the region and across the state, which should, in turn, increase community commitment to OCCATI's proposed activities.

5. Overview of existing OUD workforce, as well as gaps in workforce, within the target rural service area

Northern Kentucky has increased treatment capacity since 2013, as well as diversified the types of treatment services offered. Applying estimates from the NSDUH to the Northern Kentucky population suggests that there are 1,935 adolescents and 28,368 adults who had a past-year SUD in 2015. All data suggest that those numbers have only increased from 2015 to today.

Northern Kentucky has an annual capacity of 852 (70 daily, 16 residential and 54 outpatient) for youth treatment of SUD/OUD for an estimated need of 1,935. There are no detox programs or MAT for patients under the age of 18. For adults, Northern Kentucky has an annual capacity of 8,952 (4,090 daily, with 41 detox, 131 residential, 218 therapeutic community, and 1,275 outpatient) for an estimated need of 28,368. The region has the capacity to provide MAT for 2,425 adult patients annually (HIRT, 2016).

It is clear that there are substantial gaps in treatment capacity for patients with SUD, including OUD. Overall, estimates are that Northern Kentucky has less than 24% treatment capacity for SUD or OUD. However, there are particular gaps in outpatient services, with mental health treatments having an estimated adult annual need of 4,255, but with only 292 spaces available, as well as outpatient rehab, with an estimated annual need of 6,014, but with capacity of only 1,508. This leaves 8,469 patients without appropriate treatment options, or less than 18% treatment capacity for outpatient services (HIRT, 2016).

Owen County is an HRSA-designated Health Professional Shortage Area for both Mental Health Care and Primary Care. The ratio of patients to Primary Care Physicians in Owen County is 2,680:1, as compared to 1,510:1 for Kentucky and 1,320:1 for the United States (County Health Rankings and Roadmap, 2018). The ratio of Mental Health Providers is 3,550:1 in Owen County, as compared to 520:1 for Kentucky and 470:1 for the U.S. (County Health Rankings and Roadmap, 2018). It is our understanding that, as of May 2017, one psychiatrist, one licensed clinical social worker, and one licensed substance use disorder counselor specializing in mental health care work part-time in the county. There is one full-time school psychologist in Owen County. There is no one in the county who has a Drug Enforcement Administration waiver to prescribe buprenorphine. Other than some limited one-on-one counseling, all SUD treatment is referred outside the county.

In 2017, St. Elizabeth Healthcare left Owen County for financial reasons, along with two full-time mental health care professionals. In addition, as with many rural areas, access to health

care in Owen County is limited not only by gaps in services and provider shortages within the county itself, but also by transportation barriers, socioeconomic factors, and cultural constraints.

6. Other relevant data

Medicaid reports that in 2016, only 34% of adults in Kentucky with a newly diagnosed episode of SUD initiated treatment within 14 days of diagnosis. Even worse, only 10% continued treatment within 30 days of their initial visit. The U.S. medians are 36% and 14%, respectively. Despite the vast majority of Northern Kentucky being insured, 65% of those who present to EDs with a heroin overdose self-pay, while 23% access public insurance plans and 12% use commercial insurance plans. Limited resources for those self-paying could help explain the poor treatment follow-up rates.

Three-quarters of those overdosing in Northern Kentucky are aged 35 or below, which is a relatively new trend in OUD. This trend suggests that prescribed pain medications are no longer the initial driving factor in the opioid epidemic.

Methodology

Below are outlines of the methods to be used to address the needs listed above and to meet the program requirements and expectations of this planning grant.

1. Methods for fulfilling core activities.

Developing Region-Specific Intervention and Workforce Development Projects. The primary goal for this HRSA Rural Communities Opioid Response Program Planning Grant is establishing OCCATI as a formal organization that would allow it to carry out key intervention and workforce development projects based on identified healthcare and community needs around OUD. In addition, the initial OCCATI activities, described below, will help reveal the primary organizational structures and functions the consortium would need in order to operate effectively over the long term. These would include: fundraising and grants-writing, implementing rural-specific workforce development and training programs, meeting county-specific community needs for OUD reduction beyond healthcare capacity limitations, and implementing effective evaluation and communication strategies to help expand OCCATI's efforts to the entire Northern Kentucky region.

Developing and strengthening the consortium. We will define the individual roles and responsibilities for each consortium partner in order to draft the OCCATI Memorandum of Understanding (MOU) by utilizing a modified version of the Community Health Systems Development Power Mapping for Effective Collaboration (n.d.) along with the Wilder Collaboration Factors Inventory questionnaire (2001). This strategy should enable us to not only recognize the long-term benefits of the consortium, but also facilitate maximizing our current partnerships and identifying other regionally based organizations that we need to bring into our collaboration. In particular, we will clearly outline each of the consortium members' current partners, the organizations' current missions and visions, the benefit each might derive from the consortium, and the potential for expanding the collaboration to other partner organizations. This outline will inform our potential to fully leverage the existing resources, influence, and position of each consortium member, which will in turn help define each member's roles and responsibilities in the consortium, as well as those of potential partners.

In particular, for each proposed activity and project (the outcomes of the strategic planning process), we will list the specific individuals of each member organization or other partner organizations who are required to launch the endeavor and determine their level of support for the proposed activity or project, their access to resources, and their level of connection to and influence over the target population. This exercise will highlight where

overlap occurs, where efficiencies might be found, as well as determine where improvements in relationship-building need to take place. The individual organizational roles and responsibilities will be defined in terms of the most efficient arrangement of resources balanced against the greatest use of influence across the member contributors.

We will follow this Power Mapping exercise with the Wilder Collaboration Factors Inventory questionnaire, which will help OCCATI to understand its own strengths and weaknesses as a consortium. We shall endeavor to write the MOU such that it capitalizes on our strengths and helps shore up our areas of weakness.

Conducting a detailed analysis to identify opportunities and gaps. In 2012, HIRT, an interagency group created under the aegis of NKADD to respond to the rising number of heroin overdoses in the region, partnered with the Northern Kentucky Health District to examine the status of regional substance abuse treatment resources (HIRT, 2016). They used estimates from the NSDUH to determine the gap between treatment need and current capacity.

However, since the 2016 HIRT report, healthcare resources have shifted, and data gathering techniques have significantly improved in the Northern Kentucky region. In particular, Owen County lost the services of three licensed mental health personnel in 2017, leaving the school psychologist as the only full-time mental or behavioral health professional for the entire county. At the same time, the Owen County Drug Prevention Coalition has shifted from concentrating almost exclusively on prevention efforts around alcohol and tobacco to being a multi-foci organization that does address the opioid epidemic.

Efforts to improve data collection and analysis in Northern Kentucky have been led by consortium members in collaboration with other local, regional, and state partners. Promoting integrated care delivery and coordination has been a priority. For example, with support from the Commonwealth of Kentucky, NKU is currently developing a health information interoperability infrastructure that will be combined with a single clinical Electronic Health Record (EHR) system for the state. This system will allow for increased data sharing and aggregating health information at both personal and population levels, which should improve patient care by promoting alerting services for admission, discharge and transfer events; PDMP integration with provider EHRs; and electronic clinical quality reporting, among other efficiencies. This level of data liquidity is uncommon in other states, where the data lack centralized management and consequently are fractionalized.

Unstructured data, such as the social determinants of health (SDOH), are also a very high priority for collection, given their use in treatment, analysis, and value-based modeling. Additional consortium member projects currently underway include normalizing social determinant variables identified within the free-text of provider notes using natural language processing as well as EHR drop-down boxes using tailored and finite categories.

NKU is also working with a community partner on a way to combine and analyze data from multiple healthcare and social service sources to prepare a Tailored Referral Plan. This technology will connect patients who have unmet needs to community resources. It will factor in patient-based characteristics such as sentiment, social support, health literacy, available benefits, as well as neighbor characteristics, to help patients improve their health and well-being.

In addition, the DOJ program grant will undertake a systematic analysis of available data on law enforcement calls for service and naloxone administrations to document the impact of the opioid epidemic at a local-, regional-, and state-level. The investigators are currently implementing a data model that will create a multi-state open-access common data set. This system will be able to stratify patients with expanded intake, enable analysis for treatment acceptance and completion and for efficacy by treatment type. The goal is to identify best

practices for response and referral to treatment such that that future programming decisions are consistent with resources and responsive to current service demands.

Detailed EMS service data are recently available on-line, as are medical examiner reports, through the Kentucky Injury Prevention and Research Center. Finally, Buchanich et al. (2018) were able to reallocate appropriate undefined overdose deaths to opioid-related deaths for each state in the United States and determined that many states, including Kentucky, were severely underreporting opioid-related deaths. The authors noted that, while still highly variable, Kentucky had shown significant improvement in accurate reporting, making it the 5th most impacted state regarding data corrections (see also Ruhm, 2016).

OCCATI will be able to leverage all these advances in data collection and analysis to allow it to be more precise in its estimations of OUD treatment needs and concomitant gaps in service as targeted to Owen County. It can capitalize on these initiatives to develop very detailed analyses of not only gaps in OUD prevention, treatment or recovery workforce, services, and access to care in the target region, but also of where patients are failing to use resources ready-at-hand, where they stop-out in the care continuum, and what impact that has on subsequent patient health and healthcare service demands. It will be able to better support OUD care coordination in Owen County and across the region, with the aim of improving both quality and process.

Consortium members and their partners are already heavily invested in population health initiatives, especially around OUD. Examples of such initiatives include: providing Narcan training for law enforcement personnel in the Northern Kentucky region, authoring the *Northern Kentucky Collective Response to the Heroin Epidemic: Our Plan for Recovery*, creating in-house OUD treatment programs for jails and detention centers, developing OUD-specific curricula for all NKU health profession degree programs, successfully lobbying the Kentucky legislature to make MAT and needle exchange programs more readily available, expanding and evaluating Quick Response Team (QRT) interventions, and initiating programs of complete wraparound services for pregnant women with OUD. OCCATI can use these initiatives and their connections to other community partners to devise a comprehensive list of current federal, state, and local resources being expended in the region to combat the opioid epidemic and then determine which programs are slated to be extended to Owen County, which could be with additional resources, and which should remain available in the region but for which it would inefficient to duplicate them in Owen County.

Developing a comprehensive strategic plan. OCCATI will adapt University of Kansas's Center for Community Health and Development 2018 Community Tool Box in developing a strategic plan, a planning process tool designed to assist community groups in defining their vision and developing practical ways to enact change through articulating a clear vision, mission, set of objectives, strategies to achieve the objectives, and action plans. This approach will help OCCATI set short-term goals in service of the long-term goals of addressing previously identified gaps in OUD prevention, recovery services, and access to care using innovative and evidence-based approaches to reducing morbidity and mortality associated with overdoses in rural communities. The subsequent tactical action plans will outline concrete steps for leveraging existing state, federal and local resources for implementing the strategic practices OCCATI has identified, including increasing efficiencies to reduce costs for all OUD patients in the target rural counties.

Following this approach will allow the consortium to build consensus around the steps it needs to take. And by including community voices through Owen County Drug Prevention Coalition's participation, it will ensure that its proposed strategies will address the true needs of Owen County, as well as increasing local ownership of the plan.

OCCATI's strategic plan will focus on defining measurable process objectives that will shift community-level outcomes, which will result in specific and defined changes in individual behavior. Possible objectives include: (1) increasing the utilization of early intervention techniques for OUD to increase the percentage of youth and young adult users who are referred for treatment before overdose, which will result in a decrease in the mortality and morbidity for individuals in the 24-35 age group; (2) recruiting more students from the target rural region and assisting in loan repayment applications to increase the community ratio of health care personnel, which will result in more skilled workers from Owen County returning there to establish practices; (3) implementing proactive and integrated outreach to successfully connect a greater percentage of high-risk overdose survivors to treatment and recovery services and decrease their individual chances of relapse; (4) developing clinical training sites for NKU students in Owen County to decrease costs for OUD care, which will increase the number of patients who can access treatment locally; (5) creating a publicly-funded medical transportation program to increase the percentage of patients diagnosed with SUD who seek and then continue treatment and services, which will result in decreasing the number of subsequent overdoses.

Specific intervention strategies to achieve these short-term goals will focus on enhancement of skills, support, services, access to opportunities, and incentives. Possible strategies include: (1) providing evidence-based training to school psychologists, resource officers, teachers, and faith leaders to enhance their ability to identify early users and refer them to appropriate treatment resources; (2) developing additional high school programming that provides college health degree credits to encourage students to enroll in a higher education degree program in a health-related field; (3) implementing a robust QRT in Owen County to decrease the time between an overdose occurs and entrance into treatment; (4) expanding the number of clinical students accepted into NKU's health professions' programs to increase their availability to meet area needs at low-to-no cost; (5) collaborating with Lyft or Uber to develop a just-in-time mode of publicly funded transportation.

Finally, OCCATI will develop an evaluation plan to systematically monitor whether, in implementing the action plan, the consortium is achieving its short-term strategic objectives and long-term goals. Engaging in on-going evaluation will also keep the strategic plan relevant and in focus and build accountability among consortium members.

Developing a comprehensive workforce plan. Loosely following the strategies outlined in the *Workforce Development Plan Toolkit: Guidance and Resources to Assist State and Territorial Agencies in Creating a Workforce Training and Development Plan* (n.d.), as developed by ASTHO and the Ohio State University, OCCATI will develop a comprehensive workforce plan to address the gaps in OUD intervention and recovery workforce in Owen County and surrounding rural areas, including strategies for recruiting St. Elizabeth Healthcare and other SUD providers into the consortium. As the planning efforts include additional rural areas surrounding Owen County, St. Elizabeth Healthcare will be central to the discussions, as they are the primary provider for the greater Northern Kentucky region, with approximately 90% penetration. St. Elizabeth had already signaled a willingness to be a part of the consortium; however, because they pulled out of Owen County a year ago, they are ineligible to be a full partner in the planning grant.

Owen County is already an NHSC site, as are the neighboring Boone, Campbell, Carroll, Gallatin, Grant, Kenton, and Pendleton counties that comprise the Northern Kentucky region.

NKU is the largest and primary workforce development and training entity in the Northern Kentucky region. It has a long history of collaborating with St. Elizabeth Healthcare, Northkey Community Care, NKADD, and healthcare support corporations to ensure that appropriate curricular programs are in place to meet current and emerging healthcare workforce

needs. NKU has recently integrated OUD training into all of its clinical and health-related programs, which include the following undergraduate degrees: Athletic Training, Addiction Services, Health Communication, Health Informatics, Health Science, Human Services, Nursing, Pre-medicine, Pre-pharmacy, Psychology, Social Work, Special Education, Radiation Therapy, and Respiratory Care; as well as health-related graduate certificates in: Applied Behavior Analysis, Emergency Management, Learning and Behavioral Disorders, Non-profit Management, and Worker Health; and graduate degrees in: Clinical Mental Health Counseling, Health Informatics, Health Science, Nurse Anesthesia, Nursing Practice, Nursing, Public Administration, School Counseling, and Social Work. In fall 2019, it will be launching a doctorate in Occupational Therapy, as well as an M.D. in collaboration with St. Elizabeth Healthcare and the University of Kentucky. In addition, as part of the SAMHSA grant, SBIRT training will be integrated into coursework in the undergraduate and graduate programs in Nursing, Social Work, Human Services/Addictions, and Clinical and School Mental Health Counseling. NKU is well and uniquely positioned to help manage any workforce development or training needs for the region, including potentially certification for peer support personnel.

The workforce plan will align with the vision and priorities outlined in the OCCATI strategic plan. Current workforce demographics will be summarized for the targeted region as well as for the entire Northern Kentucky region, as will anticipated population growth forecasts by county, its anticipated needs by education and certification requirements, and any emerging issues (e.g., significant anticipated increases in dual-use disorders of opiates and methamphetamine). Core competencies will be outlined, including those for specific disciplines, organizations, licensure, and accreditation. Continuing education requirements for each employment category will be noted.

Disciplinary educational and training needs will be captured, including those for the core competencies, health equity, and cultural competency. Quality improvement plans will be developed for the relevant agencies or organizations among the consortium partners. Finally, barriers and inhibitors to closing the identified workforce gaps will be described, with plausible solutions for addressing the challenges outlined. For example, establishing a tuition remission or repayment policy to overcome the financial challenges of seeking additional training.

A year-by-year recruitment plan will be created for the targeted region and surrounding rural areas, and a curricula plan for NKU will be developed, with appropriate financial incentives and instructor time allocations. A method for tracking regional-specific recruits will be implemented. And a schedule for review and revision of the workforce development plan will be implemented.

Finally, a plan to address non-talent acquisition barriers to closing the treatment gap will be developed. It will cover managing transportation, sociocultural, payment, reimbursement, insurance, and other related issues. NKU will also be initiating health career programming in regional middle and high schools to help enhance the health career pipeline early in the stream.

Completing a sustainability plan. Reflecting on the lessons learned as described in *The Dynamics of Sustainability: A Primer for Rural Health Organizations* (n.d.), OCCATI will complete a sustainability plan that outlines strategies for sustaining and expanding the consortium beyond the one-year term of the planning grant, operationalizing the activities proposed in the strategic and workforce development plans, and quantifying the metrics that will be used to assess the impact of all initiatives and programs. This plan will be developed simultaneously with the strategic plan, as they must mutually support one another if needs are to be supported for the long-term.

The sustainability plan will contain the following five components:

- A clear, well-articulated, practical, cohesive, and achievable long-term vision for what is to be accomplished that is shared across the members of the consortium, with a specific process for revisioning and mid-course corrections designed to keep consortium members and partners fully engaged as collaborators;
- Appropriate visionary leaders to manage OCCATI, collaborators who exhibit a shared sense of responsibility and have the leverage to be able to effect the needed changes, who can commit time and resources to ensure that activities are implemented and can be supported over time, and who can communicate effectively to all consortium members, potential community partners, and the target region population;
- Programs and activities aligned with documented community need, consortium members' ability to address the need over the long-term, and the real and perceived value that the consortium activities provide;
- Coherence with currently available community and regional infrastructures and organizations, building upon them instead of creating entirely new entities to minimize cost and personnel resources; and
- Funding diversification that could include indirect and in-kind contributions, earned income, sponsorships, grants, and government contracts.

An additional important dimension of the sustainability plan will on-going evaluation, which would include monitoring progress and the specific effect of program and activities, communicating outcomes to consortium members and community partners in measurable terms, mechanisms for incorporating community and consortium member feedback, and methods to revise programs and activities to improve efficiency or outcomes. Demonstrations of quantifiable impact and return on investment at the individual and population levels are crucial for garnering additional funding or influencing policy makers.

2. Methods for fulfilling additional activities

Owen County and the surrounding region need more effective ways of reaching patients with burgeoning use disorders, especially among the juvenile and young adult population, as they are now the primary demographic that is in danger of dying from an opiate-related overdose.

Justification of proposed activity. In 2016, 3.7% of adolescents aged 12 to 17 and 7.4% of young adults aged 18 to 25 misused opioids (SAMHSA, 2017b). We know that the age at onset of use inversely correlates with the likelihood of developing a substance use disorder (Levy & Williams, 2016). In addition, illicit drugs affect the development of the adolescent and young adult brain, especially in the prefrontal cortex. As a result, adolescents engaging in substance abuse exhibit deficits in cognitive tasks such as recall, attention, spatial skills and executive functioning (Silveri et al., 2016; Squeglia et al., 2009). Thus, it is imperative to intervene as early as possible with youths who are using substances to prevent neurocognitive deficits and future substance use disorder.

However, even experienced pediatric healthcare providers can miss up to two thirds of adolescents with moderate to severe substance use without the use of a screening tool (Levy & Williams, 2016). The Substance Abuse and Mental Health Services Administration (SAMHSA, 2017c) recommends universal screening for substance use SBIRT, the evidence-based approach to the delivery of early intervention and treatment to people with substance use disorders and those at risk of developing these disorders. Using motivational interviewing strategies, clinicians can quickly assess the severity of substance use, then briefly intervene if needed, focusing on increasing the person's insight and awareness regarding substance use. They can also refer to treatment those identified as needing more extensive treatment access to specialty care.

High schools provide a unique opportunity for screening adolescents, when the risks for future use and permanent brain damage are highest. The few schools that have implemented SBIRT in the school-based health clinics have seen positive outcomes. For example, when implemented in 13 rural schools in New Mexico, 85.1% of the students received brief intervention, after which the students reported decreased or no substance use at a six-month follow-up (Mitchell et al., 2012).

Description of proposed activity. We propose to partner with the Owen County School System to close an important gap in opioid use disorder (OUD) prevention, early intervention, and access to appropriate treatment and services in the targeted rural geographical area. Owen County has embedded nurses, resource officers, and a full-time school counselor, and the school system is eager to integrate an SBIRT protocol as a necessary first step toward a prospective evaluation of a well-functioning SBIRT in schools to better support youths who are using illicit substances. This program would have three goals: (1) to educate health and wellness staff located within the schools in SBIRT, (2) to track and analyze the outcomes of this education in terms of reported use, drug-related arrests, overdose rates, and attitudes toward illicit substances, and (3) to develop a "train the trainer" model for the Owen County health and wellness personnel to train teachers and faith leaders in the technique as well. Our ultimate goal is to provide a demonstration model of a cost-effective way to prevent OUD, especially in youth and young adults, which we could then work with community and state partners to implement in all of the Northern Kentucky region and beyond.

NKU's past and current experience providing training and intervention in the region will be leveraged to implement this plan. NKU is in the third year of a three-year SAMHSA SBIRT training grant and have trained nearly 450 regional health professionals in SBIRT, including with 68 health profession students. (None, however, currently work in the Owen County School System.) The SBIRT PI and faculty have collaborated with the Kentuckiana Health Collaborative in support of their recently published Opioid SBIRT Toolkit for Primary Care Settings. This Toolkit will be the foundation for much of the early intervention activities that could be proposed by OCCATI's strategic plan.

3. Method for disseminating program information

Regular and effective communication will be key among partners and the public to ensure that OCCATI is meeting its planning and program objectives. Frequent and open discussions are necessary for OCCATI to remain a valuable resource to its member and community partners, instead of becoming an additional entity with its own agenda beyond what the individual members want.

Currently, all consortium partners maintain their own webpages for informing the public of their activities and priorities. NKADD holds regular open forums for the interested public. The members of OCCATI have been communicating regularly via email, phone, and in face-to-face meetings. During the planning phase, OCCATI members will meet at least monthly, with minutes being distributed via email and then posted on commercial web-based restricted project management site (e.g., Asana). Agenda items for future meetings will be posted to that site, and any consortium partner will be able to add items to the agenda – to raise new ideas, gauge interest in a new project, or report out on current activities. This site will also be used to track the workflow for the planning project across all consortium members. It will maintain task schedules, time-on-task measures, technical resources, data analyses, brainstorming areas, draft reports, and methods for easily connecting with individual members or the consortium as whole. It can also send out reminders of task due-dates to relevant participants as needed.

Below is a sample communication plan rubric that OCCATI can utilize in developing its dissemination plan for updating consortium members and participating partners, the target rural service area, and the broader public on its activities, finalized data analysis, strategic initiatives, workforce development plans, lessons learned, and success stories. Points of contact for OCCATI's initiatives will also be determined and then publicly listed in all communication materials.

Audience	Key Messages	Communication Platform	Frequency of Communication	Entity Responsible
Consortium Members	TBD	Email; Videoconference; Listserv; Face-to-face; Website; Project management tool	Weekly	Project Director
Service Area		Newsletter; Email; Facebook; Posters; community events	Monthly	Owen County Drug Prevention Coalition; Three Rivers Health Care Department; Owen County Schools
General Public		Op-Eds; Newsletter; White papers; Facebook; Blogs; Instagram; Twitter	Quarterly	NKU; NKADD
Funding Agency		Reports; White papers	Per agreement	Project Director
State Legislature		Presentations; White papers	Quarterly	NKADD; NKU; Three Rivers Health Department
Media Outlets		Email; Phone; Blogs	As appropriate	Project Director

Underlying this plan will be profiles and relevant characteristics of the specific audiences (what they are influenced by, what makes information credible to them, and what could motivate change or action), from whom and where they receive information and which methods are most effective and cost appropriate, what their expectations are for frequency and protocols of communication, and who within the consortium would be most credible to deliver the message.

The Institute for Health Innovation (IHI) at NKU will host the website for OCCATI, which will detail its progress, post any resulting white papers and data analyses, and promote relevant activities for the target region and the general public. The IHI will also be able to develop and mail/email any posters or newsletters for the consortium.

4. Methods for engaging with the target rural population

Two of the consortium members are part of the target rural population. Both Owen County Schools and the Owen County Prevention Coalition are fully comprised of residents of Owen County. Because both of these entities will be equal partners in the planning and execution of the core activities and will be the recipient of the additional activity, they will be deeply immersed in grant activities themselves. The other consortium members have a long history of interaction the citizens of Owen County, as noted in the attachment 6.

In addition, the consortium will deploy personnel to personally contact residents of the county and to engage in face-to-face individual conversations using a brief open-ended

questionnaire to determine their perceptions of the primary barriers to seeking and sustaining healthcare treatment and services, especially when directed to OUD. This interaction will likely occur once during the tenure of the planning grant, with specific follow-ups as deemed necessary.

Both the Owen County School System and the Owen Drug Prevention Coalition will maintain regular, informal, contact with the target population through quarterly family and community events. And NKU will host at least two Q&A and brief training sessions for student families and the general public to explain the purpose of the grant as well as SBIRT.

5. Methods for maintaining consortium commitment

In order to complete the planning tasks outlined in this grant proposal, OCCATI needs to be more than maintained; it must flourish. But the complexity of the consortium alone means that its natural impetus will be to veer away from its stated goals. The inner and outer environments of the consortium partners are always changing and effective adaptations to those changes will be necessary for organizational health. Deliberate and intentional renewal is a basic need of consortia life. Hence, there is a need to develop procedures for maintaining optimal functioning in decision-making, executing activities, evaluating milestones, and sustainability planning.

What needs to remain constant across environmental change are the primary structures, functions, and relationships of OCCATI. A tentative list of these basic ingredients includes: the coalition's mission, vision, and long-term objectives; the basic governance structure and rules for operating; its leadership and membership; the division of labor among members; clear lines of accountability; the strategic, workforce, and evaluation plans; its visibility in the community; public support; funding streams; and the personal relationships among OCCATI participants.

OCCATI will utilize both formal and informal methods for maintaining member commitment. Formal specific member reviews will occur on a bi-quarterly basis, with each review period dedicated to a single member group. The content of the checklists for the review will depend upon which member is currently under consideration. These reviews are intended to be positive processes, promoting trouble-shooting and brainstorming to solve any challenges. In addition, regular Lightning Decision Jam sessions will be held with the OCCATI team to solve the larger stumbling blocks (https://medium.muz.li/a-super-simple-exercise-for-solving-almost-any-product-design-challenge-f9e6c0019d7d).

Monthly OCCATI meetings will end with each attendee listing their high/low for the month: what is working the best and what needs more attention, improvement, or help. The consortium members as a whole will strategize assistance, if needed. The Project Director will follow up with end-of-week causal check-ins regarding progress on the lows and will publicize successes to the group as a whole. Finally, personal affirmations and celebrations will be a regular part of the consortium, as it nourishes the human spirit and makes the work itself happier.

Success itself is reinforcing, so if the consortium is doing good work and the community supports that work, then it is more likely to remain fully engaged in its projects. As is institutionalization. The more the consortium can develop regular, reliable, and repeatable structures, the more it will develop an institutional identity of its own, the more those involved will have allegiance to the organization, and the more the community will depend upon that institution for its activities. Lastly, the value of camaraderie and vibrancy of spirit cannot be underestimated. The positive feeling that brought the consortium personnel together in the first place must be nurtured, for we all prefer to spend time with people we are comfortable with, doing the things we and they value.

Two of the consortium members reside fully within Owen County: the school system and the prevention coalition. Three additional consortium members have Owen County as a directed region of responsibility: Three Rivers Health Department, Northkey Community Care, and

NKADD. The final consortium member (NKU) teaches in the county and remains in contact with its alumni who reside in the area. All members of the consortium have a deep history of commitment to the rural regions of Northern Kentucky and to Owen County specifically. The fundamental organizational identities and commitments of the individual members of the consortium will ensure that the award remains vested in Owen County.

Work Plan: **See Attachment 1**

Resolution of Challenges

There is currently tremendous focus on the opioid epidemic both in the region and across the nation. As a result, many organizations have sprung up to meet this challenge. However, there can be little coordination among efforts and each organization's agenda may be incompatible with other similar organizations working with the same target population. Key to overcoming this sort of project inefficiency is adopting a collective impact model. This proposal embodies this approach as it requires that all the members come together around a common agenda, to develop a shared plan with mutually re-enforcing activities and with shared evaluation metrics. In addition, on-going communication among consortium members and with community members is not only encouraged, but it is built into our work plan, which will enhance trust among all participants.

The target region has little access to the best evidence-based practices for managing OUD, due largely to poor healthcare infrastructure. Introducing such practices into a new community can often be difficult for they can be at odds with traditional expectations. To overcome this challenge, the consortium must communicate its successes to its constituent audiences often and in terms that are meaningful to the population. The consortium must also take seriously the barriers and inhibitors to seeking and remaining in treatment from the survey data and identify ways to overcome these barriers and inhibitors that would be successful with the target population in their current state.

Community and volunteer organizations can have little expertise or experience in with working with logic models and technical evaluation processes. Here, the consortium can lead by example, demonstrating the value in developing the assessment infrastructure needed to evaluate activities in a robust manner. It should also work to ensure that its outcome and output measures are closely linked to identified project objectives and to take the time to explain the connections in the promotional materials.

Informally and anecdotally we know that transportation and scheduling issues present the largest barriers to successfully completing treatment in rural counties. Physical isolation of patients is a real and serious problem. While videoconferencing and telemedicine can overcome some of these inhibitors, not all patients will have easy access to the technological infrastructure required. The consortium will have to face the transportation challenge head-on and devise ways to more effectively and efficiently get patients and healthcare providers together. Sometimes this will mean taking the patient to the service; other times it could mean bringing the service to the patient. Neither effort is without cost, and creativity and innovation around funding resources will be required.

Evaluation of Technical Support Capacity

Core Initiative A: Developing and strengthening the consortium with MOU				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. List consortium members' (CM) current partners	Number of CM who respond to survey	Number of consortium partners listed	Project Director (PD) collects and publishes the information, with quarterly updates	List posted on project management system (PMS)
2. List organizations' current missions and visions	Number of CM who respond to survey	Number of statements listed	PD collects and publishes the information, with quarterly updates	List posted on PMS
3. List consortium benefits for each member	Number of CM discuss as agenda item in monthly meeting	Number of benefits listed	PD collects and publishes the information; updates at end of grant	List posted on PMS
4. List potential for expanding to other partner organizations	Number of CM discuss as agenda item in monthly meeting	Number of potential partner organizations collected	PD collects and publishes the information, with quarterly updates	List posted on PMS
5. Name specific individuals required for consortium launch	Number of CM who provide feedback on PI-created list	Number of individual names listed	PI publishes the information	List posted on PMS
6. List level of support for individual strategic activities	Number of CM who respond to survey	Number of survey answers collected	PD publishes survey outcomes, with quarterly updates	Survey outcomes posted on PMS
7. List access to resources	Number of CM who respond to survey	Number of survey answers collected	PD collects and publishes the information, with quarterly updates	Information posted on PMS

8. List connection to target population (TP)	Number of CM who respond to survey	Number of survey answers collected	PD publishes survey outcomes, with quarterly updates	Information posted on PMS
9. Wilder Collaboration Factors Inventory questionnaire	Number of CM who respond to survey	Number of survey answers collected	PD publishes survey outcomes	Survey outcomes posted on PMS
Core Initiative B: Analyzing gaps in OUD prevention, treatment, and recovery workforce, services, and access to care				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. Leverage on-going data collection and analysis efforts	Amount of 2016-2018 data that NKU collects	Level of interoperability of data collected	NKU collects data sets	NKU publishes summaries on PMS, writes white paper; CM distribute white paper; PI writes Op-Ed
2. Perform detailed analysis of gaps in OUD services	Amount of time spent on task	Number of gaps identified and their extent quantified	NKU collects the data	NKU develops and prints posters; CM distributes them
3. Determine when OUD patients fail to seek treatment and when they stop-out of care	Number of target population (TP) interviewed	Number of responses received	NKU collects the data	Survey outcomes posted on PMS
4. Document impact on patient health and service demands	Number of target population (TP) interviewed	Number of responses received	NKU collects the data	Survey outcomes posted on PMS
Core Initiative C: Determine which federal, state, regional, and local resources could be leveraged				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. List current consortium member and community partner initiatives	Number of CM who respond to survey	Number of survey answers collected	PD collects and publishes the information, with quarterly updates	List posted on PMS
2. Determine which initiatives could be extended to Owen County	Number of initiatives discussed in monthly meeting	Number of initiatives identified	PD collects and publishes the information; updates at end of grant period	Information posted on PMS

3. Determine which initiatives should be extended	Number of initiatives discussed in monthly meeting	Number of initiatives identified	PD collects and publishes the information updates at end of grant period	Information posted on PMS
4. Determine resources needed to extend initiatives	Number of resources considered in monthly meeting	Number of resource sources identified	PD collects and publishes the information; updates at end of grant period	Information posted on PMS
5. Determine which initiatives should not be extended	Number of initiatives discussed in monthly meeting	Number of initiatives identified	PD collects and publishes the information; updates at end of grant period	Information posted on PMS
Core Initiative D: Developing a comprehensive strategic plan				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. Define mission of the consortium	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information	Information posted on PMS and on website
2. Define vision for the consortium	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information	Information posted on PMS and on website
3. Determine long-term measurable process objectives	Number of objectives considered	Number of objectives accepted by consortium	PD collects and publishes the information	Information posted on PMS and on website
4. Determine short-term enhancement strategies for meeting each objective	Number of strategies considered	Number of strategies accepted by consortium	PD collects and publishes the information	Information posted on PMS and on website
5. Develop tactical action plans to enact short-term strategies	Number of actions considered	Number of actions accepted by consortium	PD collects and publishes the information	Information posted on PMS and on website
6. Develop evaluation plan for strategic plan's implementation	Number of evaluative strategies considered	Number of strategies accepted by consortium	PD collects and publishes the information	Information posted on PMS

Core Initiative E: Developing comprehensive workforce plan				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. Summarize current workforce demographics and expected growth	Number of characteristics to be measured	Number of characteristics measured	PD collects and publishes the information	Information posted on PMS
2. Summarize anticipated needs	Number of potential needs identified	Number of needs finalized	PD collects and publishes the information	Information posted on PMS
3. Summarize any emerging issues	Number of potential emerging issues identified	Number of emerging issues finalized	PD collects and publishes the information	Information posted on PMS
4. Outline core competancies and disciplinary educational/training needs.	Number of potential core competencies and training needs identified	Number of core competencies and training needs finalized	PD collects and publishes the information	Information posted on PMS
5. Outline continuing education (CE) requirements by type of hire	Number of CE requirements by hire type considered	Number of CE requirements by hire type identified	PD collects and publishes the information	Information posted on PMS
6. Develop quality improvement plans (QIP) for CM and relevant partners	Number of QIP constructed	Number of QIP adopted	Individual CM collect and publish the information	Information reported internally to CM and incorporated into PMS
7. Identify barriers and inhibitors to closing gaps	Number of barriers and inhibitors discussed	Number of barriers and inhibitors identified	PD collects and publishes the information	Information posted on PMS
8. Outline solutions for addressing barriers and inhibitors	Number of solutions discussed	Number of solutions adopted	PD collects and publishes the information	Information posted on PMS
9. Create a year-by-year recruitment plan for targeted regions	Amount of time spent on task	Number of NKU units that adopt plan	NKU collects plans	NKU circulates and discusses plans internally

10. Develop curricula plans	Amount of time spent on task	Number of NKU units that adopt plan	NKU collects plans	NKU circulates and discusses plans internally; CM advertise to their constituents using a variety of modalities
11. Implement method for tracking recruits	Amount of time spent on task	Number of NKU units that adopt method	NKU collects tracking data	Information posted on PMS
12. Develop schedule of review and revision for workforce plan	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information; updates at end of grant period	Information posted on PMS
13. Develop plan to address non-personnel barriers to closing treatment gap.	Number of barriers discussed	Number of barriers identified	PD collects and publishes the information	Information posted on PMS
Core Initiative F: Completing a sustainability plan				
Project Activities	**Process indicators**	**Outcome Indicators**	**Tracking Plan**	**Dissemination**
1. Develop long-term vision for accomplishments with revisioning process	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information; updates at end of grant period	Information posted on PMS
2. Identify appropriate leaders within consortium	Number of CM who provide feedback on PI-created list	Number of individual names listed	PI publishes the information	Information posted on PMS
3. Ensure programs and activities are aligned with documented need, ability to address need, and perceived value	Amount of time spent on task	Level of consortium member satisfaction	PI publishes meeting minutes	Information posted on PMS

4. Ensure that proposed programs and activities cohere with community and regional infrastructure	Amount of time spent on task	Level of consortium member satisfaction	PI publishes meeting minutes	Information posted on PMS
5. Develop diverse funding mechanisms	Number of funding mechanisms discussed	Number of mechanisms identified	PD collects and publishes the information	Information posted on PMS
6. Develop feedback and evaluation mechanisms	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information	Information posted on PMS
Core Initiative G: Additional activity: Early intervention for young users				
1. Train school health staff in SBIRT	Amount of time spent on task	Number of staff members trained	Trainer collects and PD publishes the information	Information posted on PMS; PI writes Op-Ed; CM advertise to TP and local media
2. Track youth outcomes of the training	Number of youth to be tracked	Number of outcomes tracked	NKU collects the data and publishes the information; updates at the end of the grant period	Information posted on PMS and on website; CM share with their stakeholders
3. Develop "train the trainer" model for teachers and faith leaders	Amount of time spent on task	Level of consortium member satisfaction	PD collects and publishes the information	Information posted on PMS

Organizational Information

1. List of consortium members: See Attachment 6
2. Organizational chart: See Attachment 5
3. Signed Letters of Commitment: See Attachment 4
4. Staffing Plan: See Attachment 2
5. Staff biographical sketches: See Attachment 3

Budget and Budget Narrative: See attachments in application

References

2008-2016 Small Area Health Insurance Estimates (SAHIE) (2018). United States Census Bureau. Accessed on 3 July 2018. https://www.census.gov/data/datasets/time-series/demo/sahie/estimates-acs.html.

ASTHO and OSU (n.d.) *Workforce Development Plan Toolkit: Guidance and Resources to Assist State and Territorial Agencies in Creating a Workforce Training and Development Plan.* Accessed on 15 July 2018. http://www.astho.org/Accreditation-and-Performance/Workforce-Development-Plan-Toolkit/.

Buchanich, J.M., Balmert, L.C., Williams, K.E., and Burke, D.S. (2018). The effect of incomplete death certificates on estimates of unintended opioid-related overdose deaths in the United States, 1999-2015. *Public Health Reports*, 133: 423-431. DOI: 10.1177/0033354918774330.

Bush, A., Bunn, T., Quesinberry, D., and Ward, P. (2018). Informing Public Safety and Public Health Efforts to Address Kentucky's Drug Overdose Burden, 2015-2016. Kentucky Injury Prevention and Research Center (KIPRC). Accessed on 2 July 2018. http://www.mc.uky.edu/kiprc/programs/kdopp/reports/DrugOverdoseIndex15-16Report_Jan2018.pdf.

Center for Community Health. (2018). Chapter 8: Developing a strategic plan. Accessed on 11 July 2018. https://ctb.ku.edu/en/table-of-contents/structure/strategic-planning.

Center for Disease Control. (2017). Drug Overdose Death Data. Accessed on 3 July 2018. https://www.cdc.gov/drugoverdose/data/statedeaths.html.

County Health Rankings and Roadmaps (2018). Robert Woods Johnson Foundation. Accessed on 4 July 2018. http://www.countyhealthrankings.org/app/kentucky/2018/measure/factors/4/data.

Gallup-Healthways Poll (2017). https://news.gallup.com/poll/208196/uninsured-rate-edges-slightly.aspx.

Georgia Health Policy Center (n.d.) *Dynamics of Sustainability: A Primer for Rural Health Organizations*. Accessed on 7 July 2018. https://www.ruralhealthinfo.org/assets/1211-4984/dynamics-of-sustainability.pdf.

Georgia Health Policy Center. (n.d.). Community Health Systems Development Power Mapping for Effective Collaboration. Accessed on 10 July 2018. http://ruralhealthlink.org/Portals/0/Resources/Power%20Mapping%20for%20Effective%20Collaboration%20QC.pdf

Heroin Impact Response Team (HIRT), Treatment Subcommittee. (2016). Status of Regional Substance Abuse Treatment Resources. White paper.

Kentucky Health Facts. (2017). Accessed on 3 July 2018. http://www.kentuckyhealthfacts.org.

Kentucky State Data Center (2018). Accessed on 2 July 2018. http://ksdc.louisville.edu.

Kids Count Data Center (2018) Annie E Casey Foundation. Accessed on 27 June 2018. https://datacenter.kidscount.org/

Levy, S.J. & Williams, J.F. (2016). Substance Use Screening, Brief Intervention, and Referral to Treatment. *Pediatrics, 138*(1): e2016121.

Medicaid State Health System Performance. (2018). Medicaid. Accessed on 2 July 2018. https://www.medicaid.gov/state-overviews/scorecard/state-health-system-performance/prevention-and-treatment/alcohol-drug-dependence-treatment-engagement/index.html.

Mitchell, S.G., Gryczynski, J., Gonzales, A., Moseley, A., Peterson, T., PhD, O'Grady, K.E., Schwartz, R.P. (2012). Screening, brief intervention, and referral to treatment (SBIRT) for substance use in a school-based program: Services and outcomes. *The American Journal on Addictions, 21*, S5 – S13.

Northern Kentucky Health Department. (2016). *Community Health Improvement Plan for Northern Kentucky, 2016-2020*. Accessed on 14 July 2018. https://nkyhealth.org/wp-content/uploads/2017/09/NKYCHIP16.pdf.

Northern Kentucky Health District. (2018). GEOStory of Opioid Addiction. Accessed on 3 July 2018. https://nkhd.maps.arcgis.com/apps/MapJournal/index.html?appid=8d43ab38289f4decbda45af1b4eff875.

Owen County Community Health Collaborative (2017). *Community Health Improvement Plan.* Updated 2017. Accessed on 24 July 2018. https://www.trdhd.com/documents/OC_CHIP_November_2017.pdf.

Ruhm, C.J. 2016. Drug poisoning deaths in the United States, 1999-2012: a statistical adjustment analysis. Popular Health Metrics, 14:2-14. DOI 10.1186/s12963-016-0071-7.

SAMHSA. (2017c). *About Screening, Brief Intervention, and Referral to Treatment*. Accessed on 14 July 2018. https://www.samhsa.gov/sbirt/about.

SAMHSA. (2017a). 2016 National Survey on Drug Use and Health (NSDUH). Table 5.6B. Accessed on 2 July 2018. https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2016/NSDUH-DetTabs-2016.pdf.

SAMHSA. (2017b). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Accessed on 4 July 2018. https://www.samhsa.gov/data/report/key-substance-use-and-mental-health-indicators-united-states-results-2016-national-survey.

Silveri, M.M, Dager, A.D., Cohen-Gilbert, J.E., & Sneider, J.T. (2016). Neurobiological signatures associated with alcohol and drug use in the human adolescent brain. *Neuroscience and Biobehavioral Reviews, 70*, 244-259.

Squeglia, L.M., Jacobus, J., & Tapert, S.F. (2009). The influence of substance use on adolescent brain development. *Clinical EEG and Neuroscience, 40*(1), 31 -38.

Warren, B. (2018). Kentucky's hepatitis A outbreak is the worse in the nation. *Louisville Courier Journal*. Accessed on 10 July 2018. https://www.courier-journal.com/story/news/local/2018/06/27/deadly-hepatitis-outbreak-worst-kentucky-history/737574002/.

Wilder Collaboration Factors Inventory. (2001). Amherst H. Wilder Foundation. Accessed on 10 July 2018. http://www.ruralhealthlink.org/Portals/0/Resources/Wilder%20Collaboration%20Factors.pdf.