

RESEARCH REPORT

Evidence-Based Interventions for Adolescent Opioid Use Disorder

What Might Work for High-Risk Ohio Counties?

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Evidence-Based Interventions for Adolescent Opioid Use Disorder

Introduction

Rising Inequality and the Opioid Epidemic

Opioid use disorder (OUD), a problematic pattern of opioid use with harmful consequences, is a serious national crisis in the United States. More than 115 people die each day from opioid-related overdose.¹ Rising economic inequality and related economic despair² have set the stage for the opioid epidemic, which has complex causes including overprescribing, misleading marketing of prescription opioids, and increased availability of illicit opioids (King et al. 2014). Over the past several decades, income inequality has risen—driven in part by economic recessions—alongside federal policies that primarily benefited higher-income families and failed to promote asset building among lower-income families (Steuerle et al. 2014), a policy trend that continues today (Tax Policy Center 2017). Research has shown that substance use disorders reinforce poverty and inequality, and vice versa (Dasgupta, Beletsky, and Ciccarone 2017; Karriker-Jaffe et al. 2012; Walker and Druss 2017).

Substance use disorders disproportionately affect low-income people. Though substance use affects people of all incomes, people in poverty have higher rates of illicit drug use in the past month than people with higher incomes.³ This pattern holds for adolescents, as data suggest that low-income youth with Medicaid or no insurance have higher rates of illicit drug use disorders than higher-income privately insured youth (Medicaid and CHIP Payment and Access Commission (MACPAC) 2018). And in the US justice system, economically disadvantaged people are much more likely to be punished for using illicit drugs.⁴

Disparities in mortality across socioeconomic subgroups have widened, and higher rates of drug overdose and suicide mortality have been linked to higher levels of unemployment and limited economic opportunities (Singh, Kogan, and Slifkin 2017). Drug poisoning rates, particularly related to opioids, are highest and increasing the fastest among people with less education (Richardson et al. 2015), continuing a cycle of poverty and deepening inequality. Rural communities have been hit particularly hard as rates of poverty, drug overdose deaths, and suicides, particularly among youth, have exceeded the rates in urban communities, and the disparity has continued to widen (Kelleher and

Gardner 2017; Mack, Jones, and Ballesteros 2017; Fontanella et al. 2015). And the consequences of risky substance use are likely greater for economically disadvantaged and minority populations than for other youth—because of, for example, greater risks of involvement with the criminal justice system, with attendant adverse impacts on economic outcomes (NRC 2014).

Gaps in Access to Prevention, Screening, and Treatment for OUD among Youth

OUD, like other substance use disorders, often originates with substance use in adolescence. Family and friends are the most common sources of prescription drugs used illicitly (SAMHSA 2010). In 2017, an estimated 214,000 adolescents (0.9 percent) ages 12 to 17 were current misusers of prescription opioids, and 2,000 adolescents (less than 0.1 percent) were current heroin users (SAMHSA 2018b). In 2011, more than one-third of people ages 18 to 30 admitted to a facility for treatment of prescription opioid misuse or heroin use had initiated substance use before age 18 (SAMHSA 2014). Initiating substance use during adolescence substantially increases the risk of developing dependence or use disorders. Although many people who initiate illicit substance use as adolescents spontaneously desist from use, others may experience years of chronic substance use disorder (SUD) or chronic relapsing SUD before getting treatment, if they get treatment at all. Most youth are not effectively screened for the need for substance use treatment (Harris et al. 2012; Levy and Williams 2016). Those identified through screenings as needing treatment for substance use are more likely to be referred to treatment and to receive treatment (Surgeon General 2016). However, economically disadvantaged youth have less access to effective treatment than other youth (Hodgkinson et al. 2017; Murphey, Vaughn, and Barry 2013).

A vast literature has documented the effectiveness of medication treatments for OUD, such as methadone, buprenorphine, and naltrexone (Schuckit 2016), and an emerging evidence base has demonstrated safety and efficacy among adolescents (as described in more detail below). However, use of these evidence-based therapies is very low among adolescents: only 2.4 percent of adolescents in treatment for heroin use receive medication treatment, and only 0.4 percent of adolescents in treatment for prescription opioid use receive medication treatment (Feder, Krawczyk, and Saloner 2017). Adolescents in rural communities face additional treatment barriers because of a lack of physicians who are able to prescribe medication treatment for OUD (Rosenblatt et al. 2015). Minority populations face additional barriers; black and Asian American people receive treatment for OUD less frequently than white people do (Wu, Zhu, and Swartz 2016), and access to evidence-based treatment for OUD is particularly low among minority and economically disadvantaged groups (Cummings et al.

2014). Identifying effective interventions for youth with OUD is important to help break cycles of poverty, inequality, and substance use among low-income, rural, and minority youth.

OUD in Ohio and the Focus Counties

Ohio's rate of opioid-related overdose death is among the highest in the US: 32.9 deaths per 100,000 people in 2016, more than double the national rate of 13.3 deaths per 100,000 people.⁵ The Addiction Policy Forum has been supporting the efforts of Warren, Pickaway, and Franklin counties in Ohio to develop county-specific plans (called "Blueprints") to address OUD in their adolescent populations—a critical policy and practice need expressed by stakeholders in those communities. To support the development of tailored Blueprints for these high-risk counties, we have reviewed the available evidence to identify promising interventions to address adolescent OUD. The three counties targeted by this study are described here.

Warren County is part of the Cincinnati-Middletown metropolitan area, population 227,000, where the number of overdose deaths has increased from 11 in 2004 to 58 in 2016 (Ohio Department of Health 2017). The county commissioners have identified county, state, and federal funds to support the development and implementation of a strategic plan to address the epidemic, and a broad coalition of stakeholders have been engaged in the development of this plan. The county is also building a new jail in part to address the consequences of opioid use, and leaders are highly motivated to divert justice-involved young people into treatment options instead of incarceration. According to stakeholders, the epidemic among adolescents is placing enormous stress on Warren County Children's Services, and officials at this agency are eager to adopt and promote evidence-based interventions.

Pickaway County is near Columbus, with 60,000 residents in rural and metropolitan areas. Overdose deaths have risen substantially in recent years, with drug overdose deaths rising from 3 in 2004 to between 6 and 14 deaths each year between 2011 and 2016 (Ohio Department of Health 2017). To address problematic substance use including OUD, Pickaway Addiction Action Coalition was founded in late 2015 with funding from the county's major health care provider, Berger Health System, and the participation of the county's school system, law enforcement agencies, health departments, treatment providers, and others. Berger Health is interested in becoming accredited by the Substance Abuse and Mental Health Services Administration (SAMHSA) to offer buprenorphine and methadone treatment for OUD and outpatient counseling. The board of education of the county's largest school district, in Circleville, Ohio, has been instrumental in focusing Pickaway Addiction Action Coalition on

adolescent opioid use. Schools throughout the county are highly motivated to implement evidence-based prevention, screening, and treatment strategies.

Franklin County is the most populous county in Ohio, with almost 1.3 million residents. Located in central Ohio, Franklin County encompasses the metropolitan area of Columbus and the surrounding suburban areas. Drug overdose deaths rose from 72 in 2004 to over 300 deaths in 2016 (Ohio Department of Health 2017). And drug-related overdose fatalities increased 47 percent in the county from 2016 to 2017 alone (353 deaths to 520 deaths).⁶ The county is working to combat the opioid epidemic by creating a countywide Opiate Task Force and implementing an Opiate Action Plan. Although the action plan is not targeted at adolescent use, the Alcohol, Drug and Mental Health Board of Franklin County has prioritized developing school-based, opioid-related interventions in county schools.

Goals of the Study

Key stakeholders working with Addiction Policy Forum in these three Ohio counties, including members from the counties' Commissioner's office, Children's Services, the Board of Education, Opiate Taskforce, and representatives from major hospital systems, requested up-to-date, objective, outcome-relevant information to guide communities and families on preventing and treating adolescent OUD. This study aims to provide input into this process through a systematic review and assessment of existing evidence to discern the effectiveness of interventions aimed to prevent and treat OUD among adolescents, focusing on ages 11 to 18.

Through a targeted systematic literature review, we identified and assessed promising interventions for addressing OUD among adolescents in three areas: (1) prevention, (2) screening and referral to treatment, and (3) treatment. The results of this review are intended to help selected Ohio communities choose among the interventions identified as evidence-based and to contribute to a road map for addressing adolescent OUD that meets the circumstances, resources, and needs of each community. This review also collected information on program costs and feasibility of implementation where available so communities could consider what resources are necessary to make these interventions accessible to their traditionally disadvantaged youth.

Methods

Review Process

We systematically reviewed literature and other resources describing evidence-based programs to identify interventions aimed to prevent, intervene early (such as screening and referral), and treat adolescent OUD. Our review included a search of PubMed’s database of biomedical and life science literature, Blueprints for Healthy Youth Development’s list of evidence-based programs, the National Institute on Drug Abuse’s list of evidence-based screening tools and assessments, and SAMHSA’s National Registry of Evidence-Based Programs and Practices.

LITERATURE REVIEW

Our PubMed search identified 240 potentially relevant titles, and we reviewed the full text of 21 peer-reviewed articles (five systematic reviews and 16 individual studies) that:

1. were published in English between January 2008 and September 2018;
2. employed an intervention targeting adolescents ages 11 to 18 (with some exceptions for older adolescents and young adults ages 15 to 24);
3. assessed an OUD-related outcome; and
4. focused on an intervention that has been certified by Blueprints for Healthy Youth Development, cited on the National Institute on Drug Abuse’s list of evidence-based screening tools for adolescent drug abuse, or deemed effective or promising by SAMHSA’s National Registry of Evidence-based Programs and Practices.

In addition to the full-text review, included studies underwent quality review based on the study design. Data were extracted from the final set of included peer-reviewed studies on the intervention, study design, participants, setting, effect size, and information relevant to the feasibility and fit of the intervention for Ohio counties. All steps of the literature review were conducted using DistillerSR systematic review software. Additional details on our review process, including search terms, counts of articles excluded for each criterion, and quality assessments used, can be found in appendix A.

Together, these 21 studies identified five specific evidence-based interventions that aim to address adolescent OUD: two screening/early interventions and three treatment interventions (some interventions were the topic of multiple studies). Our review of the literature did not identify any specific preventive intervention programs from studies that met all our criteria.

REVIEW OF OTHER RESOURCES

To identify as many evidence-based approaches as possible for Ohio counties, we supplemented our literature review with a search of Blueprints for Healthy Youth Development, National Institute on Drug Abuse’s list of evidence-based screening tools for adolescent drug abuse, and SAMHSA’s National Registry of Evidence-Based Programs and Practices.

Our search of these databases identified eight additional interventions (six preventive and two screening/early interventions) that targeted adolescents or an OUD-related outcome and have been characterized as promising or better by one of these databases.

Our review of the literature and other resources identified 13 potential interventions, displayed in table 1, for Ohio county stakeholders’ consideration.

To provide relevant information when considering Ohio county capacity to implement OUD treatment interventions, we examined the availability of treatment services in Ohio through

1. the SAMSHA Behavioral Health Treatment Services Locator, which identifies facilities offering adolescent services and medication treatment for OUD listed through May 2018; and
2. the Drug Enforcement Administration’s Active Controlled Substances Act Registrants database from the National Technical Information Service as of February 2018, which lists locations of prescribers with waivers to use buprenorphine to treat OUD.

Figures 1 and 2 are maps showing treatment capacity by county, appendix tables C.1 and C.2 list treatment facilities in Ohio counties.

Findings

In the following sections, we summarize interventions from our review of prevention, screening/early intervention, and treatment interventions targeting adolescent OUD. Detailed information on interventions from our literature review are in the appendix.

Primary Prevention of Initial Illicit Opioid Use during Adolescence

Preventive interventions for illicit drug use, including illicit opioid use, primarily seek to prevent or delay the first use of illicit drugs during adolescence. If teens have already engaged in use, preventive interventions can impede the transition from experimental use to addiction. School- and family-based

interventions are the most common setting for preventive interventions identified through our review. We describe findings from one systematic review on prevention programs used to address adolescent substance use disorders that found small program effects, if any, on OUD. We also describe evidence-based programs identified through our review that have been recognized by Blueprints for Healthy Youth Development.

Appendix table B.1 provides additional detail on the systematic review of preventive interventions, and appendix table B.2 summarizes the study's key findings.

SCHOOL-BASED INTERVENTIONS

School-based programs prevent or delay illicit drug use among adolescents in a way that can be made universally available. Interventions differ in program structure, curriculum content, and outcomes measured.

A Cochrane systematic review of school-based programs to reduce illicit drug use examined 51 randomized controlled trials with 127,146 participants, primarily in the United States (Faggiano et al. 2014). The Cochrane review analyzed four different program approaches: knowledge-based (i.e., informing students of health risks), social competence (i.e., teaching students cognitive behavior skills), social influence (i.e., normative education and resistance skills), and instruction combining the social competence and social influence approaches. According to this review, studies of knowledge-focused interventions found no effect. Although social competence curricula had some effect on drug use, no difference was found compared with the school's usual curricula or no intervention for other drug use (including heroin, cocaine, and crack). Some evidence showed that the social influence and combined approaches slightly reduced other drug use compared with normal curricula. However, the authors concluded that school-based programs' effects were small and may be most effective as part of more comprehensive strategies for drug preventions using multiple approaches (Faggiano et al. 2014).

Our review process identified four school-based prevention programs, listed below, recognized by Blueprints for Healthy Youth Development as evidence-based programs that have demonstrated success along four criteria: evaluation quality, intervention impact, intervention specificity, and dissemination readiness. Programs are rated as Promising, Model, and Model Plus, based on requirements of having demonstrated significant positive change on intended outcomes through an increasing number of high-quality studies. The programs with the highest ratings emphasize skills like social competence and social influence.

- 1. LifeSkills Training (Blueprints rating: Model Plus).** LifeSkills Training (LST) is a classroom-based prevention program that aims to reduce substance use among middle school students. Teachers receive training on the LST curriculum and incorporate the 30-session program over three years. LST encompasses the following skill sets: self-management, social, drug awareness, and drug refusal.⁷ An adaptation of LST in Iowa and Pennsylvania middle schools found that the program reduced the students' likelihood of initiating prescription opioids use for nonmedical reasons through grade 12, with a reduction of about 4 to 5 percent, compared with the control group who did not receive the LST intervention (Crowley et al. 2014). In addition to curtailing initial nonmedical prescription use, LST has proved effective in addressing substance use when combined with other interventions. Specifically, a recent study that integrated LST with the Strengthening Families Program 10-14 (SFP 10-14) found that the prevention program substantially reduced prescription opioid misuse for higher-risk participants, with a relative reduction between 43 and 79 percent, compared with the control group of no LST and SFP intervention (Spoth, Trudeau, et al. 2013).
- 2. Project Toward No Drug Abuse (Blueprints rating: Model).** Project Toward No Drug Abuse (TND), is a classroom-based preventive program in high schools that teaches students in late adolescence (ages 15 to 18) the importance of self-control, social skills, and decisionmaking to effectively deter substance use. The TND program consists of 12 40-minute interactive sessions led by teachers or health educators over four weeks. Research has shown that TND curbed prevalence in 30-day illicit drug use by 26 percent.⁸ TND also demonstrated long-term behavioral effects of a school-based model on illicit drug use (Sun et al. 2006).
- 3. PROSPER (Blueprints rating: Promising).** PROmoting School-community-university Partnerships to Enhance Resilience (PROSPER) is a delivery-based system intervention model that leverages partnerships to support the implementation of evidence-based prevention programs, such as LST (described above). PROSPER creates a cooperative extension system to form a coalition among schools (i.e., representatives from the public school system), community (i.e., human service agencies, service providers, youth and parents), and universities (i.e., state-level university researchers) that implements programs to prevent adolescent substance use problems.⁹ Once the partnership is formed, the team selects an evidence-based intervention to implement with middle school youth and families in their communities. One study examined the use of PROSPER where the implementation team chose to administer the SFP 10-14. The study found that the intervention demonstrated lower lifetime prescription opioid and prescription drug misuse among adolescents over a five-year follow-up period (Spoth, Redmond, et al. 2013).

4. **Good Behavior Game (Blueprints rating: Promising).** Good Behavior Game (GBG) is a classroom-based intervention for youth ages 5 to 11 that seeks to reduce disruptive and aggressive behaviors in elementary school students. Aggressive and other problem behaviors exhibited in children are a risk factor for adolescent and adult substance abuse, thus, targeting this behavior can potentially mitigate the onset of substance use. Teachers receive one year of GBG training and are equipped with the technical assistance of a coach. GBG is played three times a week for 10 minutes each time at the beginning of the intervention; it may be played every day for a longer period by the middle of the school year. Teachers use GBG to uphold the practice of good behavior through initially rewarding students after each game, and later through delayed reinforcement.¹⁰ The Baltimore Longitudinal Study on the first cohort of GBG students found that GBG is associated with reducing lifetime illicit drug use among men (Kellam et al. 2008).

FAMILY-BASED INTERVENTIONS

Family-based interventions leverage family relationships to prevent or delay adolescent substance use. By recognizing parents' influential role, this approach strengthens protective factors in the home that will mitigate the risks associated with adolescent substance use. Our review process identified two family-based programs, listed below, recognized by Blueprints for Healthy Youth Development:

1. **SFP 10-14 (Blueprints Rating: Promising).** SFP 10-14 is a school-based intervention that seeks to teach parents effective strategies to reduce the family's risk of adolescent substance use problems while separately teaching adolescent children social skills, including appropriate involvement in the family. SFP 10-14 is a seven-session, facilitator-led group parenting and youth skills program that can be implemented in the school or a community facility. SFP 10-14 requires that at least three facilitators receive a three-day training, which can be scheduled on site. In the intervention, one facilitator leads the parent group, two facilitators lead the youth group, and all three facilitators work together in the family session. SFP is associated with reducing initiation of alcohol and tobacco use.¹¹ An Iowa adaptation of SFP 10-14 specifically examined prescription drug use. According to one study, the intervention showed significant effects of decreasing prescription drug misuse, where relative reduction rates were 65 percent for prescription drug misuse and prescription-only medicines, compared with the control group of no SFP intervention (Spoth, Trudeau, et al. 2013). Additionally, SFP has contributed to other potentially positive outcomes, including improved perception of family supervision, communication, and involvement (Riesch et al. 2012).

2. **Familias Unidas (Blueprints Rating: Promising).** Familias Unidas is a multilevel, family-based intervention designed to prevent risky behaviors in Hispanic adolescents. Through establishing a parent support network and using culturally specific methods for Hispanic families, the program increases knowledge and empowerment.¹² Prado and colleagues (2012) found that Familias Unidas reduced reported illicit drug use from initial use at 29.1 percent to 22.5 percent nine months following the intervention).

Other programs have been developed in addition to the evidence-based prevention programs listed above. For example, Ohio's Start Talking! initiative, which includes school- and family-based components, is described in box 1.

BOX 1

Start Talking!, a New Multipronged Prevention Initiative with School- and Family-Based Interventions in Ohio

In 2011, Governor Kasich formed the Governor's Cabinet Opiate Action Team to address opioid use in Ohio. The Opiate Action Team has taken various measures to combat this issue including strengthening law enforcement, particularly drug enforcement efforts, and launching new drug prevention awareness campaigns (Yudko, Lozhkina, and Fouts 2007). The statewide Start Talking! drug prevention initiative, which launched in 2014, underscores the importance of parents and trusted adults including local law enforcement, nurses, and teachers having conversations with youth about the risks associated with taking illicit drugs. This initiative includes multiple school- and family-based interventions.^a These programs do not appear to have yet been evaluated, and thus were not eligible to be included in this review. The initiative has multiple prevention-focused components, including the following:

- **5 Minutes for Life:** a school-based program teaching responsible decisionmaking and leadership skills for at-risk high school students that has been well received across the state and has reached nearly 132,000 students
- **The Health and Opioid Abuse Prevention Education Curriculum:** a K–12 curriculum including lessons, assessments, and learning materials to develop student knowledge, attitudes, and skills to prevent drug abuse. This curriculum was developed to meet the requirements of Ohio House Bill 367,¹³ which was passed in 2014 and required the Governor's Cabinet Opioid Action Team to make recommendations for instruction in prescription opioid abuse prevention to Ohio's Department of Education, and that the Board of Education in each local district select a health curriculum that includes instruction on the dangers of prescription opioid abuse¹⁴
- **Parents360 Rx:** a family-based educational session to give parents the knowledge and confidence to speak with youth about substance use, particularly prescription drugs

- **Know!:** a family-based drug prevention education campaign targeted to parents and caregivers of middle school students to increase communication between parents and their children about substance abuse

As part of these efforts, Franklin County has established its own initiative, Start Talking Grandview,^b a community coalition that delivers outreach and education on alcohol and drug abuse.

^a“Start Talking! Building a Drug-Free Future”, State of Ohio, accessed September 27, 2018, <http://starttalking.ohio.gov/Resources>.

^b“Start Talking!: Building a Drug-Free Future Grandview,” Start Talking!, accessed September 27, 2018, <https://www.starttalkinggrandview.org/>.

Evidence-Based Screening/Early Interventions for Adolescent OUD

Among adolescents that have initiated substance use, screening and early intervention can reduce the risk that experimental use will develop into a substance use disorder, which is broadly defined as compulsive drug seeking and use, despite harmful consequences (see box 2 for signs of adolescent opioid misuse).¹⁵ Screening and intervention for adolescents is particularly important because adolescence is the peak period for initiation of substance use (Stockings et al. 2016); Hu and colleagues (2017) has found nonmedical prescription opioid use peaks at ages 18 to 21. Intervening in adolescence before problematic use ensues is critical because the developing brain is particularly vulnerable to negative effects of substance use, and because substance use in adolescence is often associated with substance use problems in adulthood (AAP 2016). Early screening and intervention programs can employ various screening tools to detect substance use, usually through self-report of alcohol and drug use.

BOX 2

Signs of Adolescent Opioid Misuse

The Office of Adolescent Health in the US Department of Health and Human Services gives the following guidance to families: “Signs of adolescent opioid misuse may include drowsiness, constipation, nausea, dizziness, vomiting, dry mouth, headaches, sweating, mood changes, loss of appetite, and weakness.”^a

Resources for families needing immediate access to information and help include the following:

- Substance Abuse and Mental Health Service’s National Helpline and Treatment Referral Routing Service at 1-800-662-HELP (4357) or <https://findtreatment.samhsa.gov/>.

- Addiction Resource Center 1-833-301-HELP (4357) or <https://www.addictionresourcecenter.org/>.
- To find a physician near you who is board certified in addiction medicine, select “Addiction Medicine” and your location at <https://certification.theabpm.org/physician-lookup>.

^a“Opioids and Adolescents,” US Department of Health and Human Services, Office of Adolescent Health, last reviewed November 29, 2017, <https://www.hhs.gov/ash/oah/adolescent-development/substance-use/drugs/opioids/index.html>.

We report findings from two systematic reviews and six standalone studies on illicit drug use screenings and brief interventions for adolescents, all of which include the capacity to address illicit opioid use. Of these standalone studies, one examined the use of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) tool, and five examined the use of the Car, Relax, Alone, Forget, Friends, Trouble (CRAFT) screening tool. Early intervention delivery settings include schools, health centers, and online platforms. Appendix table B.3 lists all studies on early interventions considered in our analysis, and appendix table B.4 captures the main findings from each study. We also report additional screening tools identified by the National Institute on Drug Abuse and the American Academy of Pediatrics (AAP) for detecting substance use disorders among adolescents.

SBIRT MODEL

The SBIRT model is an evidence-based practice that employs any valid screening tool (such as CRAFT) to screen, provide a brief intervention, and facilitate access to treatment for those who need it. Accordingly, SBIRT provides an appropriate method to address substance use at any point of use, including before use has started. SBIRT first uses a screening tool to determine substance use and categorize people into low-, moderate-, and high-risk groups. Based on the risk classification, a trained professional engages in a follow-up brief intervention to positively reinforce nonuse, reduce or eliminate use, and provide referrals to treatment, when needed. Box 3 describes examples where SBIRT has been implemented for adolescents.

BOX 3

Example SBIRT Models That Have Been Implemented for Adolescents

Programs using SBIRT with adolescents have been implemented in many locations and settings, including

- public middle and high schools in Massachusetts^a and Wisconsin,^b

- school-based health centers in New Mexico (Condon, Rosero, and Ramos 2017) and New York (B.R. Harris et al. 2016), and
- primary care providers in New Hampshire.^c

^a“SBIRT in Schools,” Massachusetts Screening, Brief Intervention, and Referral to Treatment Training and Technical Assistance Program, <http://www.masbirt.org/schools>.

^b“School SBIRT - Screening, Brief Intervention and Referral to Treatment,” Wisconsin Safe and Healthy Schools Center, <http://www.wishschools.org/resources/schoolsbirt.cfm>.

^c“SBIRT Initiative,” New Hampshire Youth SBIRT Initiative, <http://sbirtnh.org/about-sbirt-initiative/>. Materials and trainings from this initiative are available at <http://sbirtnh.org/training/>.

Effectiveness. A systematic review of using SBIRT for adolescents in primary care settings found that SBIRT can effectively identify adolescents at high risk of harm related to substance use, including opioid use, but the effectiveness of the “brief intervention” component was inconclusive. Specifically, SBIRT has insufficient evidence to support long-term effects on illicit drug use and limited research on the costs and benefits for substance use in adolescence (Pilowsky and Wu 2013). Another systematic review on the effectiveness of early intervention in adolescents for alcohol, tobacco, and illicit drug use yielded similar results. SBIRT interventions in primary care or school settings are not associated with reduced illicit drug use (Stockings et al. 2016).

However, one goal of SBIRT is to improve the links between primary care and school settings and specialized treatment providers that offer evidence-based treatments proven to reduce illicit drug use. More study is needed to investigate whether SBIRT strengthens such links and to assess whether adolescents reduce illicit drug use when they receive a facilitated referral to evidence-based treatment, as opposed to a referral to any type of treatment.

Despite the need for more research, the SBIRT model may provide a critical link to treatment for adolescents who need care. And, to the extent that SBIRT is implemented in primary care and school settings, the SBIRT model could lead to expansions in the provision of evidenced-based treatment (e.g., buprenorphine treatment).

Implementation barriers and other challenges. SBIRT is a promising strategy, although implementation barriers and challenges related to follow-up care and treatment can hinder the intervention’s effectiveness. A mixed-methods study examined the use of SBIRT across 27 community mental health organizations, where 2,873 adolescents were screened for OUD. The study reported the following challenges to implementation experienced by organizations internally: financing and reimbursement of SBIRT activities; integrating SBIRT data into existing databases such as electronic

medical records; tracking follow-up activities following a positive screen; connecting adolescents to treatment, as adolescents were either not ready to seek treatment or treatment resources specific to adolescents was limited; the lack of established protocols related to referral to treatment; and challenges concerning confidentiality issues related to informing parents of adolescent substance use (Stanhope et al. 2018).

Adaptability. SBIRT has been adapted from clinical settings to school settings to screen adolescents universally. Public schools in Massachusetts¹⁶ and Wisconsin¹⁷ have implemented SBIRT programs in middle and high schools. To the best of our knowledge, the Massachusetts program has not yet been evaluated. Evaluation of implementation of SBIRT in 10 high schools in Wisconsin showed promising evidence of the feasibility of implementing school-based SBIRT as a universal prevention and intervention strategy for adolescents (Maslowsky et al. 2017). To enhance the generalizability of study findings, this evaluation of SBIRT occurred at high schools that did not have school-based clinics, and the SBIRT programs were implemented by bachelor's-level paraprofessional staff who were selected for their strong interpersonal verbal skills but lacked professional health training. This study measured the effects of implementing this type of SBIRT program in high schools to determine if the intervention would change students' self-reported patterns of substance use. The study found that students who had not already initiated illicit drug use intended to abstain from future use, and those who had initiated use intended to reduce drug use, including the use of injection drugs, prescription drugs, and heroin (Maslowsky et al. 2017).

SBIRT has also been adapted to introduce treatment immediately after a positive screening result. More commonly, treatment is not received on the spot, but rather is a prolonged process, as treatment is usually sought following a referral, which imposes various barriers to people at-risk for SUD trying to access care. SAMHSA estimates that among adolescents ages 12 to 17 in need of specialty use treatment for illicit drugs or alcohol, only 9.1 percent receive the necessary treatment (SAMHSA 2013). Consequently, growing research suggests initiating treatment as part of the early intervention is beneficial (box 4). A randomized clinical trial studied the impacts of emergency department-initiated interventions among adults who screened positive for OUD. The following three intervention types were evaluated: (1) screening and referral to treatment services, (2) screening and brief motivational intervention, and (3) screening and immediate treatment with buprenorphine and ongoing primary care treatment. Patients who received the third intervention were substantially more likely to engage in treatment services and reported less use of illicit drugs than patients who received the alternative interventions without treatment (D'Onofrio et al. 2015). Given the promise of this SBIRT model for adults when OUD treatment and ongoing primary care immediately follows a positive screen, providing

immediate treatment interventions for adolescents with OUD when they are screened could increase the effectiveness of the intervention in leading to the initiation of treatment when needed.

BOX 4

Providing SBIRT for SUD in Emergency Departments

Localities and states are increasingly considering implementing SUD screening, brief intervention, and referral in their emergency departments (ED). EDs could play a critical role in interventions targeting adolescents with SUDs, because ED users have higher rates of SUDs than others. A recent rapid review of the available evidence showed that estimated per patient intervention cost for the intervention was between \$24 and \$173, and the savings related to initiating treatment were far higher.^a Programs that include initiation of evidence-based SUD treatment in the ED, as opposed to waiting to initiate treatment with the referred provider, are particularly promising.^b

^a Lisa Clemans-Cope, Sarah Benatar, Marni Epstein, and Nikhil Holla, “Potential Cost Savings Associated with Providing Screening, Brief Intervention, and Referral to Treatment for Substance Use Disorder in Emergency Departments: Rapid Review” (Washington, DC: Urban Institute).

^b Gail D’Onofrio, Patrick G. O’Connor, Michael V. Pantalon, Marek C. Chawarski, Susan H. Busch, Patricia H. Owens, Steven L. Bernstein, and David A. Fiellin, “Emergency Department–Initiated Buprenorphine/Naloxone Treatment for Opioid Dependence: A Randomized Clinical Trial,” *JAMA* 313, no. 16 (2015): 1636–44, <https://doi.org/10.1001/jama.2015.3474>; and “Levels of Care,” Baltimore City Health Department, <https://health.baltimorecity.gov/levels-care>.

CRAFFT SCREENING TOOL

The CRAFFT tool is a brief assessment guide with an adolescent version (CRAFFT 2.0)¹⁸ designed to quickly screen adolescents ages 12 through 18 for problems with alcohol or drug use. CRAFFT can be used as the first (i.e., the screening) component of the SBIRT. CRAFFT is recommended for use by the AAP¹⁹ and is copyrighted by the Center for Adolescent Substance Abuse Research, Children’s Hospital Boston. The abbreviation is a mnemonic device stemming from the central themes of each question: car, relax, alone, forget, friends, and trouble. The complete CRAFFT survey begins with questions about alcohol and drug use in the past 12 months and follows up with a series of yes/no questions that cover each CRAFFT theme. The CRAFFT Screening Interview (version 2.0) and the self-administered questionnaire (version 2.0) are publicly viewable at <https://ceasar.childrenshospital.org/crafft/>.

Adolescents who report substance use in the past 12 months and have a CRAFFT score of greater than 2 are classified as “high risk” and are recommended to receive information about risks related to substance use (particularly while driving or riding in a car), advice, a follow-up visit, and referral to counseling and treatment. Adolescents who report no substance use in the past 12 months and “yes” to

the CRAFFT question about cars, or who report substance use in the past 12 months and a CRAFFT score of less than 2, are classified as “medium risk” and are recommended to receive the same information, brief advice, and a possible follow-up visit. Other youth are recommended to receive the same information as the other groups (CeASAR 2017).

Effectiveness. The CRAFFT screening test is the most commonly used instrument for identifying substance use disorders in adolescents (Pilowsky and Wu 2013). Existing literature suggests that youth reporting substance use in the past 12 months and a CRAFFT score of greater than 2 are at “high risk”; the greater-than-2 CRAFFT score is the optimal cut point for identifying high risk of substance use disorder among adolescents ages 14 to 18 (CeASAR 2017; Knight et al. 2002) and ages 12 to 17 (S.K. Harris et al. 2016; Mitchell et al. 2014).

Adaptability. The CRAFFT assessment is widely adaptive for detecting substance use in adolescents. A case-control study of the dissemination of a school- and web-based survey that included the CRAFFT test detected nonmedical use of prescription drugs among high and middle school students (a use rate of 5.9 percent for all types of nonmedical prescription drugs). As part of this web- and school-based survey, additional characteristics of opioid use were measured, including sources of prescription drug diversion, routes of administration (e.g., oral), and motives for use. Among those who reported nonmedical use of prescription opioids, the motivation for use varied by CRAFFT scores. Specifically, reported nonmedical use of prescription opioids and a positive CRAFFT score were associated with motivation to get high or to experiment (52 percent of respondents), compared with negative CRAFFT scores, which were associated with motivation related to pain management (73 percent of respondents; McCabe et al. 2012).

Although most of the studies reviewed took place in school-based settings, clinical settings also use the CRAFFT, and current evidence suggests that short screening questionnaires facilitated by primary care physicians can effectively detect illicit drug use problems in adolescents (Pilowsky and Wu 2013). Limited data support the efficacy of CRAFFT screenings in clinical settings for determining illicit use of drugs such as opioids, although identification of adolescents at risk for alcohol and marijuana use is strong (D’Amico et al. 2016). A recent case study compared an electronic self-administered screening with a physician-administered screening to determine if there was a difference in detecting substance use disorder based on past-year use. The self-administered screening not only expedited the screening completion time but also had comparable sensitivity and specificity when discerning substance use related to alcohol, tobacco, and marijuana (S.K. Harris et al. 2016). Another recent study found a self-administered, computerized CRAFFT screener in a primary care setting identified adolescents at risk of alcohol and marijuana use, but few positive screens for any other drugs (including prescription drugs;

Smyth et al. 2018). Another clinical example couples CRAFFT screenings with urine drug screenings to detect illicit drug use among adolescent inpatients in psychiatric hospitals. Without a sufficient number of positive opioid screens, the study was unable to find an association with positive CRAFFT scores among adolescent psychiatric inpatients (Oesterle et al. 2015). Although primary care offices provide a convenient setting to screen adolescents seeking routine care, adaptations of the CRAFFT screening to identify opioid use are limited (S.K. Harris et al. 2016; Oesterle et al. 2015). Additional research is needed to evaluate whether uptake of CRAFFT screening in clinical settings is an efficient and effective way to detect illicit opioid drug use.

CRAFFT screenings have also been made available on open-access, online platforms. A recent randomized controlled study assessed the effect of an online intervention, where alcohol use was the primary outcome of interest, and drug use was the secondary outcome of interest. The online intervention was twofold: the CRAFFT test was used as an initial screener to identify youth at risk and was followed by a motivational intervention program to elicit self-generated pros and cons (i.e., “decisional balance”) and reinforce confidence and resistance to peer pressure. Although the study found modest decreases in the use of one or more drugs among at-risk users exposed to the motivational intervention, further research is needed given the small sample size (Arnaud et al. 2016).

ADDITIONAL SCREENING TYPES

Other screening tools have demonstrated effectiveness in measuring drug use, misuse, and risk of OUD. The National Institute on Drug Abuse and the AAP recommend using the Screening to Brief Intervention (S2BI) in primary care settings for detecting SUDs.²⁰ S2BI detects substance use, including illicit drug use, through a self- or clinician-administered screening, and it assesses use frequency on the following scale: never, once or twice, monthly, weekly or more. Patients are then classified into the following risk categories: no reported use, lower use, and higher use. Existing literature corroborates the validity of frequency-based screenings, including S2BI, as an appropriate tool for detecting high-risk for SUDs in primary care offices (Kelly et al. 2014; Levy et al. 2014). In addition to S2BI, AAP recommends the Global Appraisal of Individual Needs tool. This tool examines both SUDs and mental health disorders by assessing an individual’s substance use–related problems, physical health, risk and protective involvement, mental health, and environment situation.²¹

The Drug Abuse and Screening Test (DAST-20) is a 20-item tool that examines drug-related consequences, including for illicit drug use and prescription opioid misuse, typically for patients with psychiatric disorders or patients receiving inpatient care for substance use disorder. Through evaluating past-year use and asking respondents a series of yes/no questions, DAST-20 effectively

quantifies problems associated with drug use disorders. A cutoff of 6 to 11 “yes” responses has evidenced high specificity and sensitivity in determining diagnosis for substance use disorders (Yudko, Lozhkina, and Fouts 2007). Actionable follow-up intervention items are provided in accordance with the DAST-20 score, including monitoring substance use, brief counseling, outpatient treatment, and intensive inpatient treatment.

BOX 5

Screening for Adverse Childhood Experiences (ACEs)

In addition to screening for OUD and other substance use disorders, screening for adverse childhood experiences (ACEs) could be useful in identifying adolescents at high risk for substance use problems. ACEs encompass traumatic experiences including abuse, neglect, household dysfunction, parental separation, mental illness, domestic violence, and substance misuse. Research has shown an association between higher ACEs scores and higher risk of nonmedical prescription drug use among adults (Anda et al. 2008), and similar patterns have been observed among adolescents, where greater ACEs were associated with illicit drug initiation, drug use problems, and addiction (Dube et al. 2003).

Evidence-Based Treatment for Adolescent OUD

Among adolescents with OUD, the rate of spontaneous remission, or unexpected improvement with little or no treatment, is low (AAP Committee on Substance Use and Prevention 2016), but there are effective treatment options for adolescents with OUD. Treatment guidelines from the AAP recommends medication-assisted treatment (MAT) with one of three medications approved by the FDA to treat OUD, buprenorphine, naltrexone, and methadone (AAP Committee on Substance Use and Prevention 2016). Buprenorphine is FDA approved for the treatment of opioid dependence for those ages 16 and older (PCSS 2013). However, federal regulations strictly limit methadone programs from treating most patients who are younger than 18 (SAMHSA 2015).²² Medication treatment rates for adolescents with OUD are low. A recent study showed that between 2001 and 2014, 2 percent of adolescents ages 13 to 15 and 10 percent of those ages 16 to 17 were treated with a medication within six months of an OUD diagnosis. For those ages 16 to 17 who received treatment, 81 percent received buprenorphine treatment and 19 percent received naltrexone treatment (Hadland et al. 2017). An analysis of 2014 and 2015 Medicaid claims data from 11 states found that only 4.7 percent of

adolescents younger than age 18 and 26.9 percent of young adults ages 18 to 22 received buprenorphine, naltrexone, or methadone within three months of an OUD diagnosis (Hadland et al. 2018).

Depending on severity, preference, and other contextual factors, some adolescents could be successfully treated with medication and psychosocial therapy in an outpatient setting, but others may require more intensive, comprehensive care. In all cases, trauma-informed approaches need to be considered because of the evidence linking OUD with trauma and ACEs (CTIPP 2017). Treatment options for adolescents with more severe OUD could include intensive outpatient treatment or partial hospitalization programs (which could be at a specialty addiction treatment facility, a community mental health center, or another setting) or a residential addiction treatment facility or hospital. Although residential treatment has been the recommended treatment intervention for adolescents with co-occurring substance use and mental health disorders, evidence shows that multidimensional family therapy as a community-based intervention is a promising alternative to residential treatment. Multidimensional family therapy involves therapists working in four domains— adolescent, parent, family, and community—where treatment involves developing motivation, promoting change in emotions and behavior, and reinforcing change and substance use termination from treatment. A recent randomized controlled study compared the impacts of multidimensional family therapy with residential treatment programs for youth with co-occurring mental health and substance use disorders. The study found that youth receiving multidimensional family therapy had maintained significant decreases in substance-related problems, frequency of use and delinquency, in the two to 18 months following the baseline period, compared with their counterparts in residential treatment (Liddle et al. 2018).

Most treatment guidelines recommend combining medication treatment for OUD with behavioral or psychosocial therapy, also called MAT. Further research is needed to assess the benefit of adding behavioral or psychosocial treatment to medication-focused treatment in all patient groups, including adolescents and adults (Dugosh et al. 2016). Adolescents with OUD may have risks and vulnerabilities that would benefit from a treatment approach that includes behavioral or psychosocial treatment.

The three FDA-approved OUD medications have well-documented benefits for adults, such as a reduction in the risk of death by 2.4 times (Degenhardt et al. 2010). Outcomes of buprenorphine treatment for OUD include decreased mortality (Degenhardt et al. 2009; Schwartz et al. 2013; Sordo et al. 2017); reduced morbidity (Romelsjö et al. 2010; Sordo et al. 2017); reduced HIV and hepatitis C infection (Lawrinson et al. 2008; Tsui et al. 2014); increased retention in OUD treatment (Mattick et al. 2014); decreased relapse events like hospitalizations or emergency department visits (Clark et al. 2011); and reduced involvement with the justice system (Dunlop et al. 2017). Unlike buprenorphine,

naltrexone requires a patient seeking treatment to first go without using opioids between 7 and 10 days, which is a highly vulnerable time for relapse (Stanciu 2018). But, once treatment begins, naltrexone is safe and effective at reducing opioid overdose and mortality (Wermeling 2015). A recent study that examined the link between timely (i.e., within three months of diagnosis) receipt of OUD medication and retention in treatment among youths with OUD found that, compared with youths who received behavioral therapy only, those who were timely treated with buprenorphine were 42 percent less likely to discontinue care, those who were timely treated with naltrexone were 46 percent less likely to discontinue care, and those who were timely treated with methadone were 68 percent less likely to discontinue care (Hadland et al. 2018). Various clinical, preference, and contextual factors may affect which medication therapy is most appropriate for each patient.

Adolescents and young adults with OUD differ from adults seeking OUD treatment; for example, their opioid use history is generally shorter and the potential to prevent comorbidities like psychiatric and medical complications may be higher (Levy et al. 2007). In addition, adolescents have varied developmental needs, meaning best care practices for adolescents should be tailored to their needs.

Clinicians and researchers are developing an evidence-based consumer guide to assess the quality of key components of effective adolescent substance use treatment (Cacciola et al. 2015; Garcia and Rapp 2016). The following criteria for high-quality treatment programs addressing adolescents with OUD incorporate this evidence with other evidence and recommendations, as described above:

1. **Timeliness.** The provider should see the adolescent within 48 hours (SAMSA 2018).
2. **Medication.** The program should offer FDA-approved medication treatments (including both buprenorphine and naltrexone, and methadone if the facility is licensed to dispense it) when appropriate.
3. **Screening/assessment.** Comprehensive adolescent patient assessment should include rapid service provision, reassessment, and monitoring of progress.
4. **Attention to mental health.** The provider should assess mental health needs, provide rapid service including medication or coordination with another service provider, reassessment, and monitoring of progress.
5. **Comprehensive treatment.** Comprehensive treatment integrates treatment with referrals to address physical health, infectious disease and sexual health, educational/vocational needs, juvenile justice system needs, prosocial connections, trauma care, and factors to promote resiliency.

6. **Family involvement in treatment. Provider** assesses family functioning and refers parents and household members to treatment when needed, and provides family therapy and opportunities for the family to obtain information and provide input.
7. **Developmentally informed programming.** Provider treats adolescent patients only with other adolescents, and provides opportunities for adolescents to provide input toward treatment and adolescent-specific features that address developmental issues, such as peer group influences, identity formation, and autonomy.
8. **Strategies to engage and retain adolescents in treatment.**
9. **Staff qualifications and training.** Staff have clinical skills and training in relevant fields and in adolescent development.
10. **Person-first treatment.** Treatment is culturally competent and person-first, including gender-specific group sessions and curricula and programming for vulnerable and marginalized youth.
11. **Continuing care and recovery supports. Program provides** transition to lower levels of care, relapse prevention services, family education, links to relevant community services, and monitoring and reengagement if needed.
12. **Program evaluation.** Program has comprehensive electronic medical records, program performance measures, independent evaluations, and service improvements related to evaluations.

Unfortunately, assessment of specific adolescent OUD treatment programs is not possible because of the lack of published evidence on these programs. Therefore, we focus on one component of adolescent treatment for OUD—medication treatment—for which research is available. Even with that narrower focus, the research is limited on medications for OUD treatment for adolescents younger than age 16. We report treatment findings from ten standalone treatment studies and two systematic reviews on the topic. Appendix table B.5 lists the study design details found in the stand-alone articles, and appendix table B.6 lists the main outcomes. All 12 studies included in the treatment section use medication for detoxification, maintenance, or both.

BUPRENORPHINE

Buprenorphine is a promising treatment for adolescents with OUD because of its excellent efficacy, its safety profile, and the convenience of at-home treatment (Borodovsky et al. 2018). Additionally, it has no additional safety concerns specific to adolescents or young adults (AAP Committee on Substance Use and Prevention 2016), and buprenorphine is approved for adolescent patients as young as 16 years

old (Borodovsky et al. 2018). A study in which adolescents were interviewed showed that buprenorphine seems to be preferred over methadone by this age group (Moore, Guarino, and Marsch 2014).

Buprenorphine therapy and buprenorphine maintenance treatment reduce the symptoms of opioid withdrawal and craving (SAMHSA 2011) and block or reduce the effect of other opioids.²³ Buprenorphine is a partial opioid agonist, meaning it acts on certain opioid receptors in the brain, providing relief from pain and from withdrawal symptoms, though at weaker levels than a full opioid agonist like methadone. Buprenorphine has a lower risk of misuse and improved safety compared with methadone because side effects, including respiratory depression, plateau at a moderate dose and do not increase, a “ceiling effect” (SAMHSA 2016). Accordingly, buprenorphine has been associated with lower risk for overdose than methadone (Bell et al. 2009). Buprenorphine medications to treat OUD, such as Suboxone and Zubsolv, often include both buprenorphine and naloxone. Naloxone is added to deter potential misuse of this medication such as injection use, because injection of the buprenorphine/naloxone combination causes opioid withdrawal effects. Buprenorphine may not be appropriate for patients who use alcohol or other sedative drugs (Kampman and Jarvis 2015).

Buprenorphine is used for treatment of withdrawal symptoms and is used for maintenance therapy for OUD. Treatment with buprenorphine commonly begins after 12 to 48 hours of opioid withdrawal symptoms (depending on whether the patient has last used a short-acting or long-acting opioid; ASAM 2015). After a stabilization phase where the dose may need adjustment, a maintenance phase on a steady dose of buprenorphine continues for a period tailored to each patient.²⁴

While the optimal duration of treatment with buprenorphine may differ across individuals, studies generally show that long-term maintenance treatment with buprenorphine (e.g., a duration longer than 12 weeks) is more effective than shorter-term buprenorphine treatment and tapering (SAMHSA 2016). Studies among adolescent populations are limited. In a randomized controlled trial, youth ages 16 to 24 with OUD (based on the DSM-IV criteria) were assigned to either a 28- or 56-day taper treatment, which included buprenorphine/naloxone detoxification. All patients received behavioral therapy as part of the treatment process, which included therapies on psychoeducation, cognitive behaviors, and family systems. The study followed patients for 63 days and found that longer buprenorphine taper treatment regimens were more effective in opioid abstinence and treatment retention compared with the control of a shorter treatment period (Marsch et al. 2016). Matson and colleagues (2014) also found that continued buprenorphine treatment and retention reduced long-term recurrence of opioid use. An older study by Woody and colleagues (2008) on buprenorphine treatment duration also found that longer treatment durations were associated with improved outcomes, and concluded that adolescents

that are successful on buprenorphine treatment should continue treatment. Patients with OUD may need long-term maintenance buprenorphine treatment for the best odds of success, as research has shown that those who end buprenorphine treatment after a few months have high rates of relapse even when they receive intensive behavioral therapy (Bart 2012). A long-term buprenorphine treatment study showed that only 9 percent of patients who were quickly tapered off buprenorphine after 12 weeks of treatment had not relapsed within two months of the taper; among patients that continued daily buprenorphine treatment, 80 percent had not relapsed at either 18 months or 42 months.²⁵

Buprenorphine can be provided to treat people with OUD by prescription from any prescriber (e.g., physician, nurse practitioner, physician assistant) who has obtained a buprenorphine waiver from the Drug Enforcement Administration. Buprenorphine is available for take-home use, so it can be taken conveniently and privately at home or wherever patients are. It is recommended that parents monitor their child's self-administration of buprenorphine, not only to ensure that youth are adhering to their medication, but also to be cognizant of potential relapse signals (Fishman et al. 2010; Levy et al. 2007; PCSS 2013).

In a systematic review to assess the effectiveness of different outpatient pharmacological treatments for adolescents and young adults (ages 13 to 21) with OUD, Minozzi and colleagues (2014) found that buprenorphine treatment reduces the treatment participants' dropout rate and increased the rate of participant engagement in long-term naltrexone treatment following buprenorphine treatment compared with those who started with clonidine treatment (naltrexone treatment is discussed below). The systematic review also found that buprenorphine maintenance treatment reduces the dropout rate compared with buprenorphine detoxification (Minozzi et al. 2014). Long-term buprenorphine treatment is considered more cost-effective than detoxification for adolescents in an outpatient setting because of the chronic relapsing nature of OUD (Polsky et al. 2010).

For adolescents who need more support than is offered by outpatient care, buprenorphine treatment can be provided in more intensive treatment settings, including partial hospitalization, residential, or inpatient settings (Kampman and Jarvis 2015). Buprenorphine detoxification treatment for youth or young adults may be more effective when delivered in a residential setting. One study found that young adults (ages 18 to 24) receiving opioid detoxification with buprenorphine in a residential treatment setting, along with motivational enhancement, cognitive-behavioral and family-based therapeutic approaches delivered in a 12-step "abstinence model," had six-month opioid abstinence rates similar to buprenorphine maintenance treatment (Schuman-Olivier et al. 2014). Similarly, buprenorphine treatment for youth may be more effective when treatment is started and maintained in an inpatient setting for an extended period. A recent study showed that adolescents who

complete eight weeks of inpatient buprenorphine/naloxone treatment are more likely to be retained in treatment and to be abstinent at the one year mark than those who do not complete the inpatient treatment (Mutlu et al. 2016).

For those seeking access to buprenorphine treatment for adolescents, online search tools facilitate identification of buprenorphine treatment practitioners, including SAMHSA's Buprenorphine Treatment Practitioner Locator.²⁶

NALTREXONE

Naltrexone is also FDA-approved for treatment of OUD, although not for adolescents despite its reported use among this population. Naltrexone works by binding to and blocking opioid receptors, thereby blocking the euphoric and sedative effects of opioids. Because naltrexone is also approved for treatment of alcohol use disorder, it may be a good treatment option for adolescents with co-occurring OUD and alcohol use disorder. Unlike buprenorphine and methadone, naltrexone has very limited potential for misuse or diversion, is not a controlled substance, and can be prescribed by any licensed prescriber without any special waiver. Naltrexone can be taken as a daily pill or as a monthly extended-release injectable.

Induction to naltrexone requires abstinence from opioids for 7 to 10 days before starting naltrexone to avoid precipitated withdrawal. Recent studies have found the dropout rate before initiation of naltrexone is considerably higher than the dropout rate before initiation of buprenorphine; however, once a patient starts naltrexone, it appears to be as safe and effective as buprenorphine (Lee et al. 2018). There is evidence that relapse prevention medications including buprenorphine and extended-release naltrexone can be effectively incorporated into standard community treatment for opioid addiction in young adults (Fishman et al. 2010; Vo et al. 2016). Patients taking naltrexone may have reduced tolerance to opioids, so a recurrence of opioid use could increase risk of overdose.²⁷

METHADONE

Methadone is a full opioid agonist, and a large body of research demonstrates that it is effective in treating OUD (Mattick et al. 2014), although no controlled clinical studies have focused on methadone treatment for adolescents. Like buprenorphine, it can be used for both detoxification (i.e., medically supervised withdrawal) and maintenance treatment of OUD. It works by reducing or eliminating the withdrawal symptoms from illicit opioid use. Methadone is difficult to access for treatment of adolescents because of stricter federal regulations regarding treatment initiation for adolescents, and because methadone maintenance treatment requires attendance at a federally certified methadone

clinic for daily treatment. Federal regulations require documentation that the adolescent had two treatment failures of detoxification treatment and a written consent by the parent or guardian for methadone to be dispensed to adolescents ages 16 to 18.

A recent study found higher retention rates in treatment for adolescents with OUD receiving methadone than those receiving buprenorphine, naltrexone, or behavioral health services only (Hadland et al. 2018). Another study found both methadone and buprenorphine were effective in reducing heroin use among adolescents within three months (Smyth et al. 2018).

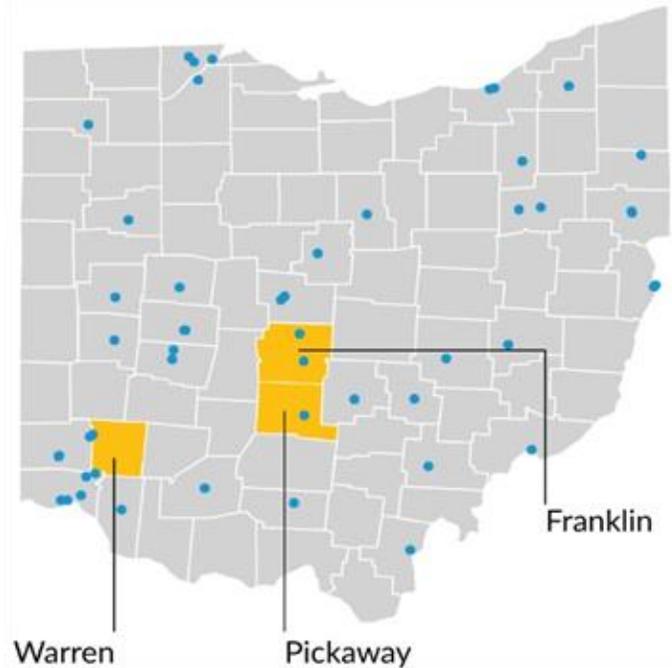
CAPACITY IN SELECTED OHIO COUNTIES FOR ADOLESCENT MEDICATION TREATMENT OF OUD

Availability of treatment programs that offer both adolescent-focused services and medication treatment for OUD is very low across the nation (Hadland et al. 2017; Mericle et al. 2015). As an initial snapshot of adolescent OUD treatment capacity and access in Ohio and the three focus counties, we examined facilities listed on the SAMSHA Behavioral Health Treatment Services Locator, a publicly available resource to help patients identify potential treatment providers, through May 2018.²⁸ We identified all facilities that offer services for adolescents and offer buprenorphine, methadone, or naltrexone treatment.²⁹ These facilities are shown in a map (figure 1) and directory listing (appendix tables C.1 and C.2). In the three focus counties, we found limited facilities that offer adolescent OUD treatment:

- **Warren County:** One treatment facility offers services to adolescents. Access Counseling Services LLC is an outpatient facility with an intensive outpatient treatment program and offers buprenorphine and naltrexone.
- **Pickaway County:** One treatment facility offers services to adolescents. Scioto Paint Valley Mental Health Center Pickaway County Office offers outpatient services, an intensive outpatient treatment program, a partial hospitalization/day treatment program, and buprenorphine and naltrexone.
- **Franklin County:** Two treatment facilities offer services to adolescents. Maryhaven Inc. Inpatient and Outpatient for Youths and Adults has an opioid treatment program and offers outpatient and residential services. Maryhaven offers methadone, buprenorphine, and naltrexone. North Community Counseling Centers Inc. is an outpatient facility that offers buprenorphine and naltrexone.

FIGURE 1

Facilities Locations in Ohio That Offer Adolescent-Specific Services and Medication Treatment for OUD



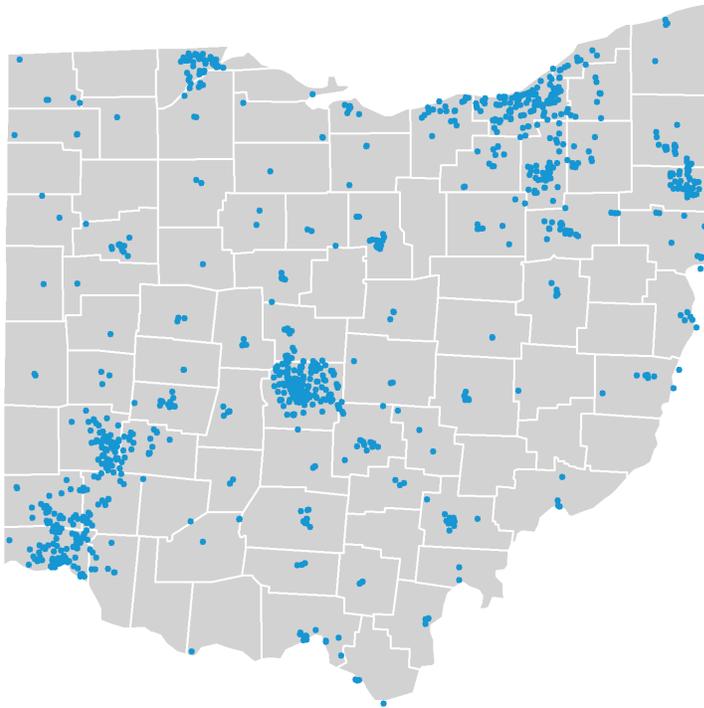
URBAN INSTITUTE

Source: SAMHSA Behavioral Health Treatment Service Locator (2018).

Medication treatment capacity for OUD, including buprenorphine treatment capacity is very limited at the state and national levels, and Ohio is no exception (Jones et al. 2015). Therefore, we also examined the geographic distribution of buprenorphine-waivered prescribers in Ohio across counties (figure 2). We used data as of February 2018 from the Drug Enforcement Administration Active Controlled Substances Act Registrants database from the National Technical Information Service. Buprenorphine-waivered prescribers' addresses were geocoded through the Google Geocoding API and mapped. The Drug Enforcement Administration data show the locations of all buprenorphine-waivered prescribers, not just those listed publicly in the SAMHSA treatment locator. Figure 2 shows a few buprenorphine providers in Warren County (37 publicly listed buprenorphine-waivered prescribers), fewer in Pickaway County (6 publicly listed buprenorphine-waivered prescribers), and many more in Franklin County (261 publicly listed buprenorphine-waivered prescribers), although the southern and western parts of Franklin County have very limited local access to buprenorphine providers. The figure likely overrepresents access to buprenorphine treatment for adolescents, because not all prescribers may be willing to treat adolescent patients.

FIGURE 2

Locations of Prescribers in Ohio Who Have Obtained Waivers to Prescribe Buprenorphine to Treat OUD



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Source: Drug Enforcement Administration Active Controlled Substances Act Registrants Database (2018).

Matching Programs to the Focus Counties and Considerations for Implementation

After reviewing the available evidence on prevention, screening/early intervention, and treatment of adolescent OUD, we have identified a promising set of interventions that could be appropriate for implementation in Warren, Pickaway, and Franklin Counties. Table 1 summarizes all interventions identified through this review, including information on cost where available. Below, we summarize some key considerations for Ohio counties on the potential implementation of programs identified in this review.

Prevention Programs

- Several robust, school-based substance use prevention programs have been found effective in preventing illicit opioid use and may be offered universally to all students. These include LST, Project Towards No Drug Abuse, PROSPER, and GBG. Ohio's State Targeted Response to the Opioid Crisis Grants Individual Grant Award identified GBG and LST as key approaches to implement (SAMHSA 2017).
- Select family-based interventions have effectively reduced illicit opioid use, particularly when targeted at specific groups. These interventions include SFP 10-14 and Familias Unidas for Hispanic families.
- There is some evidence that integrating the school-based intervention LST with the family-based intervention SFP 10-14 may be an effective strategy to reduce prescription opioid misuse for higher-risk participants (Spoth, Trudeau, et al. 2013).
- Ohio schools may be able to incorporate these evidence-based prevention programs as part of their Start Talking! initiative. Preventive interventions should continue to be evaluated (particularly for students with diverse backgrounds), and these programs may be most effective integrated with multiple approaches including screening/early intervention, and treatment.

Screening/Early Intervention Programs

- Brief screener tools in school-based and clinician-based settings have been found to effectively identify youth at risk for OUD for early intervention. Middle and high schools in these three counties could consider the uptake of the SBIRT model to implement the CRAFFT screener, and primary care doctors could use DAST-20 or S2BI, which are the most promising screening tools for detecting OUD in adolescents in these respective settings.
- Additional effort may be required to address barriers to accessing treatment for individuals who receive a referral, such as establishing protocols for referral to treatment and ensuring the availability of treatment services specific to adolescents.
- Providers, health educators, and others involved with early intervention may want to assess for trauma, including ACEs, which are strongly associated with substance use disorders, as part of the screening process.

Treatment Programs

- It will be important for stakeholders in the three counties to evaluate the quality of adolescent substance use treatment services in accordance to the evidence-based consumer guide of effective adolescent substance use treatment, as described earlier (Cacciola et al. 2015; Garcia and Rapp 2016).
- Buprenorphine treatment initiated for adolescents in a residential or inpatient setting is a promising option for adolescents needing intensive treatment options. Communities must assess whether there is need for additional high-quality SUD treatment programs focused on treating adolescents in a residential or inpatient setting, given these programs' very limited availability (figures 1 and 2).
- Buprenorphine treatment with behavioral or psychosocial therapy in an outpatient setting is a promising option for adolescents with OUD needing less intensive treatment options. However, given small number of waived buprenorphine providers in the focus counties (figure 2), the communities may want to consider the following steps to expand treatment options:
 - » Engage with the local opioid safety coalitions to raise the issue of buprenorphine treatment capacity and encourage local prescribers to get waived (including physician assistants and nurse practitioners, who are licensed under state law to prescribe and administer the medications).
 - » Encourage pediatricians and other prescribers who care for adolescents to become waived to prescribe buprenorphine for OUD.
 - » Engage with community health centers, EDs, hospitals, and existing addiction treatment programs to add buprenorphine treatment capacity and develop programs, processes, and protocols appropriate for adolescents.
 - » Expand access to buprenorphine through telehealth care. Ohio's state Medicare Board passed rules in 2017 to allow prescribing of both noncontrolled and controlled treatment through telehealth.
 - » Work with health plans to encourage prescribers to become waived to prescribe buprenorphine and to offer financial incentives to encourage more providers to offer screening and MAT to adolescents that need treatment.
- To remove barriers to treatment, these counties may need to also address affordability of buprenorphine and naltrexone for the treatment of OUD in office-based settings or in

comprehensive programs for adolescent treatment. Without insurance, buprenorphine treatment costs from \$1,000 (for a generic buprenorphine/naloxone tablet) to \$5,000 (for a brand name buprenorphine/naloxone film) per year. Naltrexone costs about \$15,600 per year for 12 monthly injections.³⁰ Therefore, without comprehensive insurance coverage like Medicaid, these treatments will be out of reach for many.

As these counties work to strengthen OUD treatment capacity for adolescents, developing and disseminating information on available treatment resources could help families and health providers find the services they need.

TABLE 1

Selected Evidence-Based Programs

Program name	Intervention type	Desired age group	Objectives	Blueprints rating	Program costs
LifeSkills Training (LST)	Prevention, school-based	12–14 years	Cultivates self-management, social, drug awareness, and drug refusal skills as it relates to substance use	Model plus	Teacher training, student materials, and instruction to 600 students cost \$10,050; \$16.75 per student
Project Toward No Drug Abuse (TND)	Prevention, school-based	15–18 years	Focuses on self-control, social skills, and decisionmaking to effectively deter substance use	Model	Training for 25 teachers, materials, and workbooks for 2,159 students cost \$33,800; \$15.65 per student
Promoting School-Community-University Partnerships to Enhance Resilience (PROSPER)	Prevention, community-based, school-based	12–14 years	Leverages partnerships among universities, schools, and community teams to tackle substance use issues	Promising	Implementation plan for three communities, staff training, director and coordinator salaries, data collection, and reporting cost \$148,960; \$123 per participant is <i>Cost of the evidence-based program is not included.</i>
Good Behavior Game (GBG)	Prevention, school-based	5–11 years	Reinforces positive behavior in the classroom through monitoring disruptive and aggressive behaviors associated with substance use	Promising	Training for 20 teachers, coach salary, booster session, and materials for 900 students cost \$158,500; \$176 per student
Strengthening Families (SFP) 10-14	Prevention, family-based	5–11 years; 12–14 years	Builds cohesion, communication, and involvement in families to address substance use	Promising	Training for 10–15 facilitators, materials for 60 families, and intervention monitoring cost \$10,390; \$173 per family
Familias Unidas	Prevention, family-based, community-based	12–14 years; 15–18 years	Fosters social skills, child involvement, and increased parental supervision relating to substance use	Promising	Training for 20 guidance counselors, curriculum, and materials cost \$100,000; cost per student not available

Program name	Intervention type	Desired age group	Objectives	Evidence-based rating	Program costs
CRAFFT (car, relax, alone, forget, friends, and trouble)	Screening, school-based, clinician-based	12–18 years	Briefly screens for substance and alcohol use among adolescents	AAP-recommended	Not available
Screening, Brief Intervention, and Referral to Treatment (SBIRT)	Screening, early intervention, school-based, clinical-based	Applicable for various age groups	Aims to reduce the harms and costs of substance use through linking schools, primary care settings, and other providers in the uptake of evidence-based screenings and early interventions	SAMHSA listed as evidence-based practice	Dependent on screening, intervention, and treatment resources used
Screening to Brief Intervention (S2BI)	Screening, early intervention, clinical-based	12–17 years	Detects the likelihood of DSM-V SUDs based on frequency of past reported use of eight different substances	Recommended by The National Institute on Drug Abuse and AAP	Not available
The Drug Abuse and Screening Test-20 (DAST-20)	Screening, clinical-based	Older youth	Identifies drug use disorders and quantifies problems associated with drug use	Listed by The National Institute on Drug Abuse, evidence-based screening tool for adolescents FDA-approved	About \$50 for 100 screeners (Center for Addiction and Mental Health (CAMH) 2018)
Buprenorphine	Treatment, waiver-approved providers, clinical-based, home-based	Ages 16 and older	A partial opioid agonist medication used for treatment of withdrawal symptoms and for maintenance therapy. Daily dose, monthly injection, six-month implant		Usually covered under insurance; without insurance, cost including medication and twice-weekly visits is approximately \$115 per week or \$5,980 per year for a stable patient (NIDA 2018)

Program name	Intervention type	Desired age group	Objectives	Evidence-based rating	Program costs
Naltrexone	Treatment, clinical-based, home-based	Ages 16 years and older	An opioid antagonist medication for treatment that disables the euphoric and sedative effects of opioids; daily dose or monthly injection	FDA-approved	Usually covered under insurance; without insurance, the medication, drug administration, and related services are approximately \$1,177 per month or \$14,112 per year (NIDA 2018)
Methadone	Treatment, clinical-based	16 years and older (additional documentation required for those ages 16 to 18)	A full opioid agonist used to reduce withdrawal and cravings, and for maintenance therapy; daily dose	FDA-approved	Usually covered under insurance; without insurance, the medication and integrated psychosocial and medical support services (daily visits) is estimated at \$126 per week or \$6,552 per year (NIDA 2018)

Source: Blueprints for Healthy Youth Development.

Notes: Blueprints ratings: Promising = one high quality randomized controlled trial or two high-quality quasi-experimental evaluations have indicated significant positive change on intended outcomes; Model = at least two high-quality randomized controlled trials, or one high-quality randomized controlled trials and one high-quality quasi-experimental evaluation found sustained impact for a minimum of 12 months after intervention ends; Model Plus = model criteria and independent replication of at least one of the high-quality studies.

Conclusion

Through our analysis, we have crafted a resource guide to help the three Ohio counties identify promising prevention, early intervention, and treatment programs aimed at adolescent OUD based on the existing literature. These interventions may be of particular importance to low-income or other traditionally disadvantaged populations, such as residents of rural communities and racial or ethnic minorities, who have been found to be at increased risk for SUD and less likely to have access to treatment (Rosenblatt et al. 2015; Wu, Zhu, and Swartz 2016; Cummings et al. 2014).

The approaches outlined in this report present opportunities to address OUD in adolescence to prevent initiation of illicit opioid use, or, if illicit opioid use has been initiated, to prevent further harmful consequences that may occur as adolescents age into adulthood using evidence-based interventions. Interventions vary in effectiveness, and the feasibility of implementation will depend on each county's availability of resources, residents' willingness to support expansions of evidence-based programs, county medical providers' ability and willingness of to provide evidence-based care. A combination of prevention, screening/early intervention, and treatment is required for a comprehensive strategy that addresses the risks of OUD at all phases, while promoting positive development for youth from different income levels and backgrounds. This report is intended as a resource in further discussions with Ohio counties to identify approaches that best fit their needs.

Appendix A. Literature Review

We systematically reviewed the literature published between January 2008 and September 2018 to identify peer-reviewed studies on the effect of prevention, early intervention (such as screening and referral), and treatment interventions on adolescent OUD and related outcomes. For the purposes of our review, we define the adolescent population as ages 11 to 18, but we also include studies targeting older adolescents and young adults (ages 15 to 24). All steps of the review were conducted using DistillerSR systematic review software.

We conducted our review in PubMed using the search terms shown in table A.1. We also included citations recommended by subject matter experts. Titles and abstracts were screened by two reviewers to identify studies that met our criteria. In addition to being published within the desired time frame and focusing on adolescents and OUD-related outcomes, studies had to focus on an intervention that has been deemed effective or promising by SAMHSA's National Registry of Evidence-based Programs and Practices, certified by Blueprints for Healthy Youth Development, or on the National Institute on Drug Abuse's list of evidence-based screening tools for adolescent drug abuse. We excluded articles written in languages other than English. Any disagreements on selection between the two reviewers were discussed and resolved.

TABLE A.1

Search Terms

Searched March 21, 2018, updated September 21, 2018

Topic	Search terms
Prevention	(adolescen* OR "young adult*") AND ("opioid use disorder*" OR "opioid abuse" OR "opioid use") AND prevention*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication]) (adolescen* OR "young adult*") AND ("heroin") AND prevention*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication])
Early intervention	(adolescen* OR "young adult*") AND ("opioid use disorder*" OR "opioid abuse" OR "opioid use") AND screen*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication]) (adolescen*[Title] OR "young adult*[Title]) AND ("substance use disorder*[Title] OR "substance abuse"[Title] OR "substance use"[Title]) AND screen*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication]) (adolescen* OR "young adult*") AND ("heroin") AND screen*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication])
Treatment	(adolescen*[Title] OR "young adult*[Title]) AND ("opioid use disorder*[Title] OR "opioid abuse"[Title] OR "opioid use"[Title]) AND treatment*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication]) (adolescen* OR "young adult*") AND ("opioid use disorder*[Title] OR "opioid abuse"[Title] OR "opioid use"[Title]) AND treatment*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication]) (adolescen*[Title] OR "young adult*[Title]) AND ("heroin*[Title]) AND treatment*[Title] AND ("2008/01/01"[Date - Publication] : "3000"[Date - Publication])

After retrieval of full texts from reviews that met our inclusion criteria, included studies underwent quality review based on the study design. The corresponding quality assessments used are displayed in table A.2.

TABLE A.2

Quality Assessments Used to Evaluate Included Articles

Study design	Quality assessment
Systematic review	AMSTAR2 (except for Cochrane reviews, which meet rigorous quality criteria)
Randomized controlled trial	NHLBI Quality Assessment of Controlled Intervention Studies
Case control study	Newcastle-Ottawa Quality Assessment Scale for Case Control Studies
Cohort study	Newcastle-Ottawa Quality Assessment Scale for Cohort studies
Before-after, no control group study	NHLBI Study Quality Assessment Tool for Before-After (Pre-Post) Studies with No Control Group
Case series study	NHLBI Study Quality Assessment Tool for Case Series Studies

Systematic reviews focused on preventive interventions had a broader focus than OUD and primarily focused on alcohol, tobacco, and marijuana. Thus, only citations specific to OUD and published during our designated time frame were pulled from those reviews for inclusion. Data were extracted from the final set of included studies on the intervention, study design, participants, setting, effect size, and information relevant to the feasibility and fit of the intervention for Ohio counties.

Included Articles

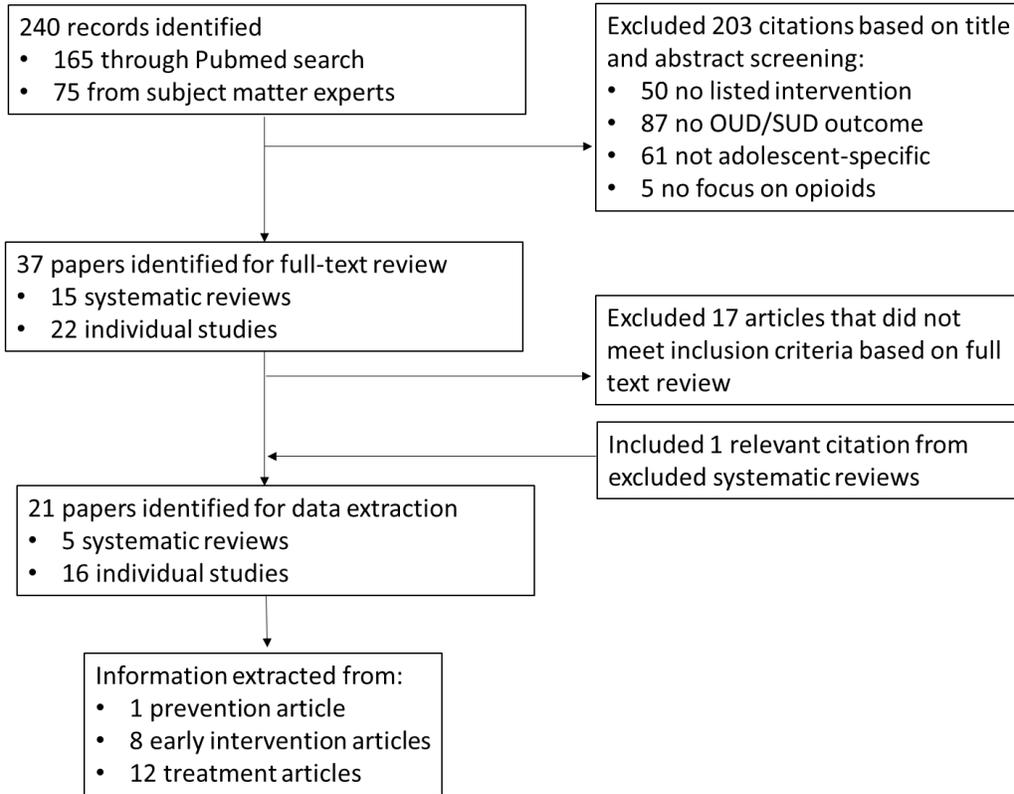
Our search identified 240 potentially relevant titles. Of these, 203 were excluded after initial title and abstract screening for study eligibility; 50 were excluded because they were not empirical studies of an intervention; 87 were excluded because they did not analyze SUD or OUD and related outcomes; 61 were excluded because they did not focus on adolescents; and 5 were excluded because the abstract did not contain a focus on opioid use. The remaining 37 full texts were eligible for review. Of the 37 papers that met initial inclusion criteria, 15 were systematic reviews and 22 were individual studies.

In the next stage, the full texts were evaluated for criteria including a focus on OUD and related outcomes. After completing the full-text review, 17 articles were excluded for the following reasons: the article was not available in English, the article did not focus on opioids, the article was not an empirical study, or the article did not analyze the use of an evidence-based intervention. Of the 17 excluded articles, 11 were systematic reviews covering multiple prevention programs that targeted a range of adolescent behaviors beyond opioid-related outcomes. Examination of the individual studies included in these 11 systematic reviews did not identify any studies that met all of our inclusion criteria but did identify one Cochrane review synthesizing findings from randomized controlled trials of multiple school-based interventions with hard drug use (including opioids) as an outcome that we determined would be relevant for our purposes. Examination of the two systematic reviews related to early intervention and the two systematic reviews related to treatment identified that the entire systematic review was relevant to OUD and related outcomes. This resulted in 21 papers meeting the full-text eligibility criteria.

Data were extracted from 21 papers: 5 systematic reviews (1 on prevention, 2 on early intervention, and 2 on treatment) and 16 individual studies. Of the final 21 papers, 1 focused on prevention (a systematic review); 8 on early intervention (including two systematic reviews); and 12 on treatment, including two systematic reviews (figure A.1).

FIGURE A.1

Search Flow Diagram



URBAN INSTITUTE

Source: Urban Institute.

Appendix B. Findings from Included Literature

TABLE B.1

Study Description: Primary Prevention

Intervention type	Author (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
School-based	Faggiano et al. (2014)	Cochrane review of randomized controlled trials	51 studies with 127,146 participants in school-based interventions mainly delivered in sixth and seventh grade. Most trials were conducted in the US.	School-based interventions to prevent illicit drug use and to prevent the transition from experimental use to addiction were categorized into four main groups: (1) knowledge-focused curricula, (2) social competence curricula, (3) social norms approaches, and (4) a combination of the previous three methods.	Short-term (<12 months) and long-term (<=12 months) marijuana, hard drug (heroin, cocaine, crack) and any drug use (compared with usual curricula or no intervention)

TABLE B.2

Study Results: Primary Prevention

Outcome	Intervention type	Author (year)	Targeted population; control group	Key findings
Hard drug use	School-based	Faggiano et al. (2014)	Mostly sixth and seventh graders (ages 12–13) in programs focused on knowledge, social competence, social norms, or a combination of social competence and social norms; control arm (usual curricula or no intervention)	<p>Knowledge- and social competence-focused approaches vs. usual curricula or no intervention yielded no difference in hard drug use at <12 months or 12+ months.</p> <p>One study on the social influence approach vs. usual curricula or no intervention found a significant protective effect on hard drug use 12+ months but did not provide data for the meta-analysis.</p> <p>Combined approach vs. usual curricula or no intervention found no difference for dichotomous outcome (RR 0.85; 95% CI 0.63 to 1.14), but results favor the combined intervention for continuous outcome (MD -3.10; 95% CI -5.90 to -0.30). No difference was found in 12+ month hard drug use.</p>

Notes: RR = relative risk. CI = confidence interval. MD = mean difference.

TABLE B.3

Study Descriptions: Early Intervention

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
Web-based motivational intervention, included CRAFFT screening	Arnaud et al. (2016)	Randomized controlled trial	2,673 (ages 16–18); community-based intervention conducted in the Czech Republic, Germany, Sweden and Belgium	At-risk teens were recruited online to participate in a motivational intervention on substance use. Teens who scored 2 or above on a modified CRAFFT screening were considered at risk and included in the trial. Participants were randomized and assigned to the “Wiseteen” intervention group (n=715). Participants completed a baseline assessment, then received the motivational online session, and completed a follow-up assessment after three months.	<i>Primary outcome:</i> alcohol use in the past 30 days <i>Secondary outcome:</i> prevalence and frequency of illegal drug and polydrug use in the past 30 days
Computer-based CRAFFT screening	Harris et al. (2016)	Case series	139 (ages 12–17); clinical-based program in primary care offices in Boston	Patients completed both a self-administered online substance use screener and a clinician-facilitated screener to determine the validity of computer self-administration. Order of screener type was randomly assigned to each patient. Screening included questions on past 12-month use, past three-month use, and each CRAFFT component. Participants received a \$25 gift card for completion of the screens.	Past 12- and 3-month substance use (tobacco, alcohol, marijuana, other drugs); length of completion for screening lead by physician vs. length when self-administered
Self-administered, computerized CRAFFT screening	Lange et al. (2018)	Case series	330 (mean age 17.1); urban, hospital-affiliated outpatient adolescent medicine clinic	Patients were asked to complete the CRAFFT screener on tablet computers using Research Electronic Data Capture. Screening was conducted in examination rooms prior to the patient meeting with his or her health care provider. Three introductory yes/no questions (“Part A”) assessed past-year use of alcohol, marijuana, and other drugs. Patients reporting any use in Part A received the full six CRAFFT questions; patients reporting no use in Part A received only the car question.	<i>Primary outcome:</i> the usefulness of self-administered, computerized CRAFFT screening in a general adolescent clinic population <i>Secondary outcome:</i> substance use (alcohol, marijuana, or any other drug use) in the past 12 months

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
School-based SBIRT	Maslowsky et al. (2017)	Case series	2,513 (ages 14–16); universal school-based intervention in 10 Wisconsin high schools	Health educators administered SBIRT, screening for reasons for and frequency of substance use. If student reported use, the student was screened for SUDs using the CRAFFT test. Subsequent intervention included referral for extensive screening, identification of how to modify behavior, and information on treatment resources.	Past-year substance use (alcohol, marijuana, tobacco, prescription drugs); future substance use intentions or nonuse; status of referral; reason for reducing use
School-based CRAFFT screening, digital platform	McCabe et al. (2012)	Case-control	2,744 (ages 12–18); middle and high school-based program in Detroit	Participating schools disseminated an online survey to measure nonmedical use of prescription opioids. The survey included six CRAFFT items to determine an association between nonmedical use of prescription opioids and CRAFFT statuses.	Nonmedical use of prescription opioids in the past month; diversion sources of drugs; routes of administration; motives for nonmedical use of prescription opioids
CRAFFT screening	Oesterle et al. (2015)	Case series	645 (ages 15–18); clinical-based program within Minnesota treatment hospitals	Patients at the adolescent psychiatric hospital who completed a self-administered CRAFFT screening upon admission were used for a retrospective study. CRAFFT screening test results were compared with other measures of use, including routine urine drug testing and diagnosis of SUDs.	Diagnosis of SUDs upon discharge; substance use for eight substances, including opiates
Clinician-based SBIRT, parent/family-based	Pilowsky & Wu (2013)	Literature review using the Ovid Medline and PsycInfo databases	351 students (ages 10–18); school-based program administered in elementary schools in Oregon; 35 journal articles (adolescents-ages not specified); primary care settings in the US	Clinician-based screening tools commonly used to detect alcohol and drug use among adolescents including SBIRT and CRAFFT. A universal school-based, multimodal intervention program was randomly administered to fifth graders across six elementary schools. The intervention adopted the Linking Interests of Family and Teachers framework, which examines youth behavior with peers (at school) and parents (at home), and interactions between parents and teachers. Intervention components included GBG, parent management training skills, and social and problem-solving skills for students. Students completed annual assessments on substance use through twelfth grade. Parents and teachers were paid \$75–\$100 for participation in intervention sessions and for completing follow-up assessment.	Comparative effectiveness of each screening tool used to detect alcohol/drug use including sensitivity, specificity, positive predictive value, negative predictive value, and alpha; frequency of alcohol, tobacco, and other drug use; growth rates in alcohol, tobacco, and other drug use

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
Family-based, school-based, structural-based screenings, including SBIRT	Stockings et al. (2016)	Systematic review of randomized controlled trials	Number of reviews assessed is unavailable, (young people's ages not specified); various settings and countries	Prevention, early intervention, harm reduction, and treatment programs used to curtail use of alcohol, tobacco, and illicit drugs (cannabis, opioids, amphetamines, or cocaine) among young people. Interventions were assessed across various settings including schools, family, communities, and structural (i.e., governing policies).	Effectiveness of interventions as it relates to reducing use; problematic use; injury or harm of tobacco, alcohol, and illicit drugs

TABLE B.4

Study Results: Early Intervention

Outcome	Intervention type	Authors (year)	Targeted population; control group	Key findings
Illegal drug use	Web-based motivational intervention, including CRAFFT screening	Arnaud et al. (2016)	At-risk teens in four European countries; control arm (no treatment) = 734 adolescents	<i>Wiseteen group (motivational intervention)</i> Baseline illegal drug use: prevalence 49.8%; SE 0.02 Three-month follow-up illegal drug use: prevalence 41.7%; SE 0.02 <i>Control Group</i> Baseline illegal drug use: prevalence 49.6%; SE 0.02 Three-month illegal drug use: prevalence 39.8%; SE 0.02
Screening completion time	Computer-based CRAFFT screening	Harris et al. (2016)	Adolescents in primary care settings; no control arm	<i>Self-administered screening</i> Completion time: M 49 seconds; (95% CI: 44-54) <i>Clinician-facilitated screening</i> Completion Time: M 74 seconds; (95% CI: 68-87)
Usefulness of self-administered, computerized CRAFFT screening; substance use in the past 12 months	Self-administered, computerized CRAFFT screening	Lange et al. (2018)	Adolescents in primary care settings; no control arm	330 out 346 adolescents approached were willing to complete a CRAFFT screen on tablet computers, suggesting that computerized self-administered screening is an acceptable option in primary care clinics. Any substance use in the past 12 months n (%): 130 (39.4) Other drug use (other than alcohol or marijuana) in the past 12 months (illegal drugs, over the counter and prescription drugs, and things that you sniff or "huff") n (%): 6 (1.8) <i>Positive CRAFFT screen score ≥2 n (%): 79 (23.9)</i>
Intention to reduce/delay drug use	School-based SBIRT	Maslowsky et al. (2017)	High school students; no control arm	57.4% of substance users strongly agreed intentions to reduce drug use (injection, prescription, heroin drug use) after the SBIRT session (overall mean: 5.66/7)
Motives for nonmedical use of prescription opioids	School- and web-based CRAFFT screening	McCabe et al. (2012)	Middle and high school students; control arm (no past-year nonmedical use of prescription opioids) = 2,478 students	<i>Used nonmedically to relieve pain</i> Past-year nonmedical use (-CRAFFT) 72.9%; reference Past-year nonmedical use (+CRAFFT) 48.1%; AOR 0.5 (95% CI: 0.2-1.0) <i>Used to get high/experimental reasons</i> Past-year nonmedical use (-CRAFFT) 2.4 %; reference Past-year nonmedical use (+CRAFFT) 51.9%; AOR 47.8 (95% CI: 8.6-264.9)
Opioid drug use	CRAFFT screening	Oesterle et al. (2015)	Adolescents admitted to psychiatric hospitals; no control arm	<i>Subjects with at-risk CRAFFT (score ≥2)</i> Positive opioid drug screening n (%): 7 (3.63) Negative opioid drug screening n (%): 186 (96.37) <i>Subjects with low-risk CRAFFT (score <2)</i> Positive opioid drug screening n (%): 5 (1.85) Negative opioid drug screening n (%): 266 (98.15)

Outcome	Intervention type	Authors (year)	Targeted population; control group	Key findings
Effectiveness of screening tools	Clinician-based	Pilowsky & Wu (2013)	Adolescents; control group not specified	The CRAFFT screening tool is the most widely used tool for this and has demonstrated internal consistency. CRAFFT cutoff of ≥ 2 : Sensitivity value 0.80 Specificity value 0.86
Effectiveness of various early interventions, including SBIRT	Family-, school-, and structural-based screenings	Stockings (2016)	Young people; control arm for applicable studies	There is insufficient evidence to determine the effectiveness of SBIRT in primary care settings and emergency departments as it relates to reducing drug use and problematic drug use. Evidence shows that SBIRT is ineffective in reducing drug use and problematic use in school or work settings.

Notes: Negative (-) CRAFFT = Score <2; Positive (+) CRAFFT = Score ≥ 2 . AOR= adjusted odds ratio; M = mean; CI= confidence interval; SE= standard error.

TABLE B.5

Study Descriptions: Treatment

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
Buprenorphine/ clonidine/ or naloxone	Borodovsky et al. (2018)	Systematic review of three randomized controlled trials	241 adolescents (ages 12–17) or young adults (ages 18–25); clinician-based or self-administered treatment	The treatment used in three randomized controlled trials differed by medications, where one study used buprenorphine and clonidine, compared with the other two studies that offered buprenorphine and naloxone. Detoxification periods also varied by length of treatment, which ranged from 14 to 56 days, and the inclusion of a tapering period, which could include an additional four weeks.	Opioid abstinence; treatment retention
Buprenorphine, naltrexone, or methadone	Hadland et al. (2018)	Retrospective cohort study	4,837 (ages 13–22); outpatient, partial hospitalization, residential or inpatient care	Timely addiction treatment, defined as receipt of behavioral health services and/or OUD medication (buprenorphine, naltrexone, or methadone) within three months of OUD diagnosis.	Treatment retention; receipt of timely addiction treatment
Buprenorphine/ naloxone	Marsch et al. (2016)	Randomized controlled trial	53 (ages 16–24); hospital-based research clinics	Patients were randomly assigned to a double-blind intervention, which consisted of a 28-day buprenorphine and bup./naloxone taper or a 56-day buprenorphine and bup./naloxone taper. Starting dosage varied from 6 to 16 mg. Patients initially received treatment daily in the research clinic, which was then administered in the home. Urine drug tests	Opioid abstinence; treatment retention

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
				were administered at intake and randomly collected on days where patients attended a visit. Patients were awarded \$798.75 in vouchers based on negative urine samples, perfect clinic attendance, and the completion of all assessments. Behavioral therapy and contingency management were offered to all participants.	
Buprenorphine/naloxone	Matson et al. (2014)	Retrospective study	103 (ages 14–25); outpatient hospital-based MAT clinic	Outpatient buprenorphine/naloxone treatment. Requirements to remain in the program included a urine drug screen positive for buprenorphine/naloxone and negative for other drugs of abuse, and participation in six to nine hours of drug rehabilitation therapy a week.	Treatment retention
Buprenorphine/clonidine/or naloxone	Minozzi et al. (2014)	Cochrane systematic review of two randomized controlled clinical trials	190 adolescents (ages 13–18); outpatient treatment	The pharmacological treatment used in the two randomized controlled trials differed by treatment programs. The first trial examined administering 28-day buprenorphine detoxification in treatment retention compared with the use of a clonidine patch. The second trial assessed the effectiveness of buprenorphine-naloxone maintenance treatment versus use of buprenorphine for detoxification.	Treatment retention
Buprenorphine, clonidine	Motamed et al. (2008)	Cohort	36 (ages 13–18); university-based research clinic	Patients were administered buprenorphine or clonidine during a 28-day detoxification, intensive behavioral therapy, and incentives for opioid abstinence.	Treatment retention; opioid abstinence
Buprenorphine/naloxone	Mutlu et al. (2016)	Cohort	112 (ages 14–18); substance treatment center	Eight-week inpatient buprenorphine/naloxone treatment. Dosing was adjusted in an individual flexible titration determined by a clinician.	Program retention; treatment retention; abstinence rates
12-step-oriented residential treatment	Schuman-Olivier et al. (2014)	Case series	292 (ages 18–24); residential treatment facility	Motivational enhancement, cognitive-behavioral, and family-based therapeutic approaches were used to facilitate problem recognition, treatment engagement, and recovery. Buprenorphine was used for opioid detoxification. No maintenance medication was offered at discharge.	Treatment use; abstinence rates; substance use
Young person program using MAT	Smyth et al. (2012)	Case series	100 consecutive patients (ages 15–18); substance treatment center	The main pillars of treatment involved opioid substitution medication (methadone or buprenorphine), counseling (cognitive-behavioral therapy; motivational interviewing; or humanistic, person-centered therapy), and family therapy in some cases.	Treatment retention; heroin abstinence; final progression routes

Intervention type	Authors (year)	Study type	Number of participants (age range); setting	Intervention details	Outcomes measured
Buprenorphine, methadone	Smyth et al. (2018)	Case series	120 (ages 14–18); substance treatment center	The intervention consisted of methadone or buprenorphine medication treatment combined with counselling to address patients' psychosocial needs. Patients were also provided with treatment of comorbid medical or psychiatric conditions.	of patients; mortality Heroin abstinence; treatment retention
Buprenorphine, extended release naltrexone	Vo et al. (2016)	Case series	56 (ages 19–26); outpatient opioid addiction treatment center	The treatment integrated relapse prevention medications with psychosocial treatment. Selection of buprenorphine versus naltrexone was based on patient preference and clinical recommendation.	Treatment retention; rates of negative urine opioid screen
Buprenorphine/naloxone	Woody et al. (2008)	Randomized trial	152 (ages 15–21); six community MAT programs	Patients were randomized to 12 weeks of buprenorphine-naloxone treatment or a 14-day taper. Patients in the 12-week buprenorphine-naloxone group were prescribed up to 24 mg per day for nine weeks and then tapered to week 12. Patients in the detox group were prescribed up to 14 mg buprenorphine per day and then tapered to day 14.	Opioid-positive urine test results at weeks 4, 8, and 12; treatment retention; substance use

TABLE B.6

Study Results: Treatment

Outcome	Intervention type	Authors (year)	Targeted population; control group	Key findings
Opioid abstinence	Buprenorphine/naloxone; clonidine	Borodovsky et al. (2018)	Adolescents (ages 12–17) or young adults (ages 18–25) with OUD; control arm for each randomized controlled trial	Evidence shows that longer buprenorphine administration periods are more effective in opioid abstinence outcomes compared with shorter detoxification periods. Abstinence rates for longer treatment demonstration periods ranged from 30 to 57 percent and significantly differed compared with outcomes for shorter periods. Evidence also supports that buprenorphine is a more effective pharmacological treatment for opioid abstinence compared with clonidine.
Treatment retention; receipt of timely addiction treatment	Buprenorphine, naltrexone, or methadone	Hadland et al. (2018)	Youth (ages 13–22) with diagnosis of OUD, a 60-day before period without OUD treatment, and at least three months of Medicaid enrollment after diagnosis; no control arm	<i>Treatment retention, median number of days</i> Behavioral health services only: 67 Buprenorphine: 123 Naltrexone: 150 Methadone: 324 <i>Behavioral health services retention, median number of days</i> Behavioral health services only: 65 Buprenorphine: 108 Naltrexone: 152 Methadone: 217 <i>Timely addiction treatment n (%)</i> Any treatment: 3,654 (75.5) Behavioral health services (with or without OUD medication): 3,238 (88.6) OUD medication: 1,139 (23.5)
Opioid abstinence; treatment compliance and retention	Buprenorphine/naloxone	Matson et al. (2014)	Opioid-dependent adolescents (ages 14–18) and young adults (ages 19–25); no control arm	<i>Opioid abstinence (%)</i> : (85.2) <i>Treatment compliance (%)</i> : (86.6) <i>Treatment retention (%)</i> At 60 days: (45) At one year: (9)
Opioid abstinence and treatment retention	Buprenorphine/naloxone	Marsch et al. (2016)	Opioid-dependent adolescents (met DSM IV criteria); control arm: 28 individuals	<i>Opioid abstinence (%)</i> Control (28-day bup. taper): (17) Intervention (56-day bup. taper): (35) <i>Treatment retention (%); days retained in treatment</i> Control (28-day bup. taper): (18); 26.4 Intervention (56-day bup. taper): (36); 37.5

Outcome	Intervention type	Authors (year)	Targeted population; control group	Key findings
Treatment retention	Buprenorphine/naloxone; clonidine	Minozzi et al. (2014)	Adolescents (ages 13–18) with OUD; control arm for each randomized controlled trial	Evidence supports no difference in dropout rates between the buprenorphine treatment and clonidine treatment. Dropout rates and self-reported opioid use among the buprenorphine-naloxone maintenance treatment group were less than the detoxification group.
Treatment retention	Buprenorphine, clonidine	Motamed et al. (2008)	Prescription opioid-dependent adolescents and heroin-dependent adolescents; no control arm	<i>Treatment retention during entire treatment (%)</i> Buprenorphine: prescription opioid (87.5), heroin-dependent (60.0) Clonidine: prescription opioid (44.4), heroin-dependent (33.3) <i>Opioid abstinence (%)</i> Buprenorphine: prescription opioid (67.7), heroin-dependent (60.8) clonidine: prescription opioid (35.2), heroin-dependent (28.7)
Program retention	Buprenorphine/naloxone	Mutlu et al. (2016)	Heroin-dependent adolescents; no control arm	<i>Program retention n (%)</i> One month: 91 (81.3), six months: 44 (39.3), one year: 27 (24.1) <i>Treatment retention n (%)</i> One month: 78 (69.6), six months: 29 (25.9), one year: 18 (16.1) <i>Abstinence rates n (%)</i> One month: 60 (69.0), six months: 17 (19.5), one year: 9 (10.3)
Treatment utilization	12-step-oriented residential treatment	Schuman-Olivier et al. (2014)	Emerging adults; control arm (no opioid misuse) = 161 individuals	<i>Treatment use n (%)</i> Six months: dependent 13 (25.0), misuse 10 (23.3), no opioid misuse 20 (17.1) One year: dependent 7 (15.2), misuse 7 (16.7), no opioid misuse 9 (7.6) <i>Abstinence rates n (%)</i> Six months: dependent 31 (42.5), misuse 18 (31.0), no opioid misuse 68 (42.2) One year: dependent 21 (28.8), misuse 13 (22.4), no opioid misuse 52 (32.3)
Treatment retention	Young Persons Program using MAT	Smyth et al. (2012)	Heroin-dependent adolescents; no control arm	<i>Treatment retention n (%)</i> Three months: 63 (63), six months: 55 (55), one year: 50 (50) <i>Final progression routes of patients n (%)</i> Transfer: 36 (39) Dropout: 29 (32) Planned detox: 20 (22) Imprisonment: 7 (8) <i>Heroin abstinence n (%)</i> One year: 19 (39)

Outcome	Intervention type	Authors (year)	Targeted population; control group	Key findings
Heroin abstinence; treatment retention	Buprenorphine, methadone	Smyth et al. (2018)	Heroin-dependent adolescents (ages 14–18); no control arm	<i>Heroin abstinence among patients with 12 months of treatment n (%)</i> Third month of treatment: 8 (21) Twelfth month of treatment: 18 (46) <i>Treatment retention n (%)</i> 12 months: 39 (32.5)
Treatment retention	Buprenorphine, extended release naltrexone	Vo et al. (2016)	Young adults with OUDs; no control arm	<i>Treatment retention (%)</i> 12 weeks: (65), 24 weeks: (40) <i>Rates of negative urine opioid screen (%)</i> 12 weeks: (50), 24 weeks: (39) No significant differences between medication groups across 24 weeks of treatment in rates of retention or opioid-negative urine tests.
Opioid-positive urine test and treatment retention	Buprenorphine/naloxone	Woody et al. (2008)	Opioid-dependent adolescents (ages 14–18) and young adults (ages 19–21) (met DSM IV criteria and sought treatment); control arm: 78 individuals	<i>Opioid-positive urine test (%)</i> Control (detox group): week 4: (61), week 8: (54), week 12: (51) Intervention (buprenorphine-naloxone group): week 4 (26), week 8: (23), week 12 (43) <i>Treatment retention (%)</i> Control (detox group): (20.5) Intervention (buprenorphine-naloxone group): (70)

Appendix C. Treatment Facilities in Ohio Counties

TABLE C.1

Treatment Facilities from the SAMHSA Behavioral Health Treatment Services Locator That Offer MAT and Services for Adolescents in Pickaway, Warren, and Franklin Counties

Center name	Address	County
Access Counseling Services LLC	4464 South Dixie Highway, Franklin, OH 45005	Warren
Scioto Paint Valley Mental Health Center Pickaway County Office	145 Morris Road, Circleville, OH 43113	Pickaway
Maryhaven Inc. Inpatient and Outpatient for Youths and Adults	1791 Alum Creek Drive, Columbus, OH 43207	Franklin
North Community Counseling Centers Inc.	1855 East Dublin Granville Road Suite 204, Columbus, OH 43229	Franklin

TABLE C.2

Ohio Treatment Facilities from the SAMHSA Behavioral Health Treatment Services Locator That Offer MAT and Services for Adolescents

Center name	Address	County
Recovery and Prevention Resources of Delaware and Morrow Counties Inc	118 Stover Drive, Delaware, OH 43015	Delaware
Maryhaven Inc	88 North Sandusky Street, Delaware, OH, 43015	Delaware
Mercy Memorial Hospital Mercy REACH	904 Scioto Street, Urbana, OH 43078	Champaign
Consolidated Care Inc	1522 East U.S. Highway 36 Suite A, Urbana, OH 43078	Champaign
Scioto Paint Valley Mental Health Center Pickaway County Office	145 Morris Road, Circleville, OH 43113	Pickaway
Recovery Center Inc	201 South Columbus Street, Lancaster, OH 43130	Fairfield
Maryhaven Inc Inpatient and Outpatient for Youths and Adults	1791 Alum Creek Drive, Columbus, OH 43207	Franklin
North Community Counseling Centers Inc	1855 East Dublin Granville Road Suite 204, Columbus, OH 43229	Franklin
Consolidated Care Inc	118 Maple Street, Bellefontaine, OH 43311	Logan
Recovery and Prevention Resources of Delaware and Morrow Counties Inc	950 Meadow Drive Suite C, Mount Gilead OH, 43338	Morrow
Recovery Services of North West Ohio	511 Perry Street, Defiance, OH 43512	Defiance
A Renewed Mind	885 Commerce Drive Suite C, Perrysburg, OH 43551	Wood
A Renewed Mind Behavioral Health	1832 Adams Street, Toledo, OH 43604	Lucas
Philio Inc DBA New Concepts	5301 Nebraska Avenue, Toledo, OH 43615	Lucas
Harbor Behavioral Health	6629 West Central Avenue, Toledo, OH 43617	Lucas
Muskingum Behavioral Health	601 Underwood Street Suite D, Zanesville, OH 43701	Muskingum
Perry Behavioral Health Choices Inc	203 North Main Street, New Lexington, OH 43764	Perry
Trinity Health System Behavioral Medical Center	380 Summit Avenue, Steubenville, OH 43952	Jefferson

Center name	Address	County
Jefferson Behavioral Health System CORE	525 North 4th Street, Steubenville, OH 43952	Jefferson
Ravenwood Health	12557 Ravenwood Drive, Chardon, OH 44024	Geauga
Catholic Charities Services Hispanic Program	1515 West 29th Street Floor 2, Cleveland, OH 44113	Cuyahoga
Cleveland Treatment Center Inc	1127 Carnegie Avenue, Cleveland, OH 44115	Cuyahoga
Family Recovery Center Fleming House	7300 Rose Drive, Lisbon, OH 44432	Columbiana
Family Recovery Center Outpatient Program	964 North Market Street P.O. Box 464, Lisbon, OH 44432	Columbiana
Meridian HealthCare Outpatient/ Adult and Youth	527 North Meridian Road, Youngstown, OH 44509	Mahoning
CommQuest Services Inc	412 Lincoln Way East, Massillon, OH 44646	Stark
CommQuest Services Inc	1341 Market Avenue North, Canton, OH 44714	Stark
Mansfield Urban Minority Alc and Drug Abuse Outreach Program	400 Bowman Street P.O. Box 1316, Mansfield, OH 44901	Richland
Access Counseling Services LLC	4464 South Dixie Highway, Franklin, OH 45005	Warren
Sojourner Recovery Services	1430 University Boulevard, Hamilton, OH 45011	Butler
Community Behavioral Health Inc	820 South Martin Luther King Jr Blvd, Hamilton, OH 45011	Butler
Community Behavioral Health Middletown	1659 South Breiel Boulevard, Middletown, OH 45044	Butler
Clermont Recovery Center Inc	1088 Wasserman Way Suite C, Batavia, OH 45103	Clermont
FRS Counseling and Family Recovery Services	313 Chillicothe Avenue, Hillsboro, OH 45133	Highland
Crossroads Center	311 Martin Luther King Drive East, Cincinnati, OH 45219	Hamilton
Talbert House Passages for Young Women	1515 CarlI Street Cincinnati, OH 45225	Hamilton
Talbert House Youth Behavioral Health	4760 Madison Road, Cincinnati, OH 45227	Hamilton
eXclusive Services	11134 Lushek Drive, Cincinnati, OH 45241	Hamilton
Individual Care Center Inc	8833 Chapel Square Drive, Suite A, Cincinnati, OH 45249	Hamilton
Shelby County Counseling Center Inc	1101 North Vandemark Road, Sidney, OH 45365	Shelby
Miami County Recovery Council	1059 North Market Street, Troy, OH 45373	Miami
Reasonable Choices Inc	4867 Urbana Road, Springfield, OH 45502	Clark
Mercy REACH (Mercy Crest Medical)	30 West McCreight Avenue, Suite 204, Springfield, OH 45504	Clark
Health Recovery Services Inc Gallipolis Outpatient	3086 State Route 160, Gallipolis, OH 45631	Gallia
Scioto Paint Valley Mental Health Center Pike County Office	102 Dawn Lane, Waverly, OH 45690	Pike
Hopewell Health Centers	90 Hospital Drive, Athens, OH 45701	Athens
L and P Services Inc	207 Colegate Drive Suite D, Marietta, OH 45750	Washington
Lima Urban Minority Alcohol Drug Abuse Outreach Program	311 East Market Street, Lima, OH 45801	Allen
Alcohol and Drug Services of Guernsey County	927 Wheeling Avenue Suite 310, Cambridge, OH 43725	Guernsey
Community Health Center Adolescent Treatment Program	702 East Market Street, Akron, OH 44305	Summit

Notes

- ¹ “Opioid Overdose Crisis,” National Institute on Drug Abuse, last revised March 2018, <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis>.
- ² Signe-Mary McKernan, Caroline Ratcliffe, C. Eugene Steuerle, Caleb Quakenbush, and Emma Kalish, “Nine Charts about Wealth Inequality in America (Updated),” Urban Institute, February 2015, <http://apps.urban.org/features/wealth-inequality-charts/>.
- ³ Tom Kertscher, “Are Poor People Less Likely to Use Drugs?,” *PolitiFact Wisconsin*, July 7, 2017, <http://www.politifact.com/wisconsin/statements/2017/jul/07/gwen-moore/are-poor-people-less-likely-use-drugs/>.
- ⁴ See note 3.
- ⁵ “Ohio Opioid Summary,” National Institute on Drug Abuse, last revised February 2018, <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state/ohio-opioid-summary>.
- ⁶ Clare Roth, “More Than 500 People Died from Overdoses in Franklin County Last Year,” WOSU, April 3, 2018, <http://radio.wosu.org/post/more-500-people-died-overdoses-franklin-county-last-year>.
- ⁷ “LifeSkills Training (LST) Drug and Violence Prevention Program | Fact Sheet,” Blueprints for Healthy Youth Development, <http://www.blueprintsprograms.com/factsheet/lifeskills-training-lst>.
- ⁸ “Project Towards No Drug Abuse Substance Abuse Program | Fact Sheet,” Blueprints for Healthy Youth Development, <http://www.blueprintsprograms.com/factsheet/project-towards-no-drug-abuse>.
- ⁹ “PROSPER | Fact Sheet,” Blueprints for Healthy Youth Development, <http://www.blueprintsprograms.com/factsheet/prosper>.
- ¹⁰ “Good Behavior Game Classroom Behavior Management | Fact Sheet,” Blueprints for Healthy Youth Development, <http://www.blueprintsprograms.com/factsheet/good-behavior-game>.
- ¹¹ “Strengthening Families 10-14 Parent Effectiveness Training | Fact Sheet,” Blueprints for Healthy Youth Development, <https://www.blueprintsprograms.com/factsheet/strengthening-families-10-14>.
- ¹² “Familias Unidas™ | Fact Sheet,” Blueprints for Healthy Youth Development, <http://www.blueprintsprograms.com/factsheet/familias-unidas>.
- ¹³ Substitute House Bill Number 367, Ohio 130th General Assembly (2014), http://archives.legislature.state.oh.us/BillText130/130_HB_367_EN_N.pdf.
- ¹⁴ “Opioid Abuse Prevention,” Ohio Department of Education, last updated November 9, 2017, <http://education.ohio.gov/Topics/Learning-in-Ohio/Health-Education/Opioid-Abuse-Prevention>.
- ¹⁵ “The Science of Drug Abuse and Addiction: The Basics,” National Institute on Drug Abuse, last updated October 2016, <https://www.drugabuse.gov/publications/media-guide/science-drug-abuse-addiction-basics>.
- ¹⁶ “SBIRT in Schools,” Massachusetts Screening, Brief Intervention, and Referral to Treatment – Training and Technical Assistance Program, <http://www.masbirt.org/schools>.
- ¹⁷ “School SBIRT - Screening, Brief Intervention and Referral to Treatment,” Wisconsin Safe and Healthy Schools Center, <http://www.wishschools.org/resources/schoolsbirt.cfm>.
- ¹⁸ “The CRAFFT,” Center for Adolescent Substance Abuse Research, <https://ceasar.childrenshospital.org/crafft/>.
- ¹⁹ “Substance Use Screening and Brief Intervention for Youth,” American Academy of Pediatrics, <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Pages/Substance-Use-Screening.aspx>.

- ²⁰ National Institute on Drug Abuse, “NIDA Launches Two Adolescent Substance Use Screening Tools,” news release, November 1, 2017, <https://www.drugabuse.gov/news-events/news-releases/2017/11/nida-launches-two-adolescent-substance-use-screening-tools>; and “Substance Use Screening,” American Academy of Pediatrics.
- ²¹ “Substance Use Screening and Brief Intervention for Youth,” American Academy of Pediatrics, accessed September 27, 2018, <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Pages/Substance-Use-Screening.aspx>
- ²² Federal guidelines for clinics that offer methadone maintenance treatment stipulate: “A person under 18 years of age is required to have had two documented unsuccessful attempts at short-term detoxification or drug-free treatment within a 12-month period to be eligible for maintenance treatment. No person under 18 years of age may be admitted to maintenance treatment unless a parent, legal guardian, or responsible adult designated by the relevant State authority consents in writing to such treatment” (SAMHSA 2015).
- ²³ “Buprenorphine Maintenance Treatment,” Interagency Working Group on Youth Programs, accessed September 27, 2018, <https://youth.gov/content/buprenorphine-maintenance-treatment>.
- ²⁴ “Buprenorphine,” Substance Abuse and Mental Health Services Administration, last updated May 31, 2016, <https://www.samhsa.gov/medication-assisted-treatment/treatment/buprenorphine>.
- ²⁵ Eric Sarlin, “Long-Term Follow-Up of Medication-Assisted Treatment for Addiction to Pain Relievers Yields ‘Cause for Optimism,’” *NIDA Notes*, National Institute on Drug Abuse, November 30, 2015, <https://www.drugabuse.gov/news-events/nida-notes/2015/11/long-term-follow-up-medication-assisted-treatment-addiction-to-pain-relievers-yields-cause-optimism>.
- ²⁶ “Buprenorphine Treatment Practitioner Locator,” Substance Abuse and Mental Health Services Administration, <https://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator>.
- ²⁷ “Naltrexone,” Substance Abuse and Mental Health Services Administration, last updated September 12, 2016, <https://www.samhsa.gov/medication-assisted-treatment/treatment/naltrexone>.
- ²⁸ “Buprenorphine Treatment Practitioner Locator,” Substance Abuse and Mental Health Services Administration, accessed September 27, 2018, <https://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator>.
- ²⁹ The services included in MAT are one or more of the following listed services in the Treatment Locator: buprenorphine maintenance, buprenorphine maintenance for predetermined time, buprenorphine detox, methadone maintenance, methadone maintenance for predetermined time, methadone detox, outpatient methadone/buprenorphine or naltrexone, methadone used in treatment, buprenorphine used in treatment, methadone, buprenorphine sub-dermal implant (Probuphine®), buprenorphine with naloxone (Suboxone®), buprenorphine without naloxone, naltrexone used in treatment, and naltrexone (oral).
- ³⁰ “Buprenorphine/Naloxone,” GoodRx, accessed June 12, 2018, <https://www.goodrx.com/buprenorphine-naloxone>.

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