Local Overdose Fatality Review Team Recommendations for Overdose Death Prevention

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This study compiled and detailed recommendations from Maryland Local Overdose Fatality Review Teams (LOFRTs) to provide state and local health departments with innovative strategies to address the worsening opioid epidemic and overdose-related deaths. LOFRTs consist of jurisdictional multiagency, multidisciplinary teams that share data to critically examine drug overdose cases. Goals include identification of risk factors and intervention opportunities to inform overdose prevention programs and policy. The authors qualitatively analyzed reports from Maryland LOFRTs case reviews to categorize outcomes and assess using frequency analyses. A total of 9 macro-level categories emerged from the review of approximately 361 recommendations from LOFRTs. Most recommendations related to Prevention Education, Integrated Care, and Harm Reduction strategies. Overdose fatality review is an effective means of understanding the opioid epidemic, strengthening coordinated interventions, and informing local and state health department overdose prevention strategic planning. Teams have a unique vantage point from which to view systems-level gaps and policy issues because of their collaborative nature and the quality of data provided by agencies that directly served decedents.

Keywords: *community health; health promotion; partnerships/coalitions; public health laws/policies; strategic planning; community intervention; substance abuse*

INTRODUCTION

The United States is in the midst of what the Centers for Disease Control and Prevention (CDC) refers to as an opioid epidemic, as drug overdose deaths continue to rise, particularly in states affected by the distribution of illicit synthetic opioids. In 2015, more than 52,000 people died of a drug overdose. Among those deaths, 63% involved an opioid (Rudd, Seth, David, & Scholl, 2016). Mirroring national trends, the number of overdose deaths in Maryland has nearly doubled since 2010, reaching 1,259 deaths in 2015 (Maryland Department of Health [MDH], 2016). Compared to the 1,041 deaths in 2014, this represented a 21% increase statewide. Nationally, the increase from 2014 to 2015 was 11.4%, placing Maryland above the national average in overdose death rates every year from 2010 to 2015 (Rudd et al., 2016). The trajectory of overdose deaths in Maryland continued upward in 2016, reaching an all-time annual high of 2,089 deaths (MDH, 2017). In response, the MDH developed a comprehensive overdose prevention plan including enhanced surveillance of overdose deaths, implementation of a

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prescription drug monitoring program, naloxone distribution, and expansion of the substance use disorder treatment system. In addition, MDH initiated Local Overdose Fatality Review Teams (LOFRTs) through policy change, data sharing, and technical support to teams coordinated by local health departments. Fatality review allows for a detailed understanding of the circumstances surrounding a death and the ways in which it could have been prevented, and this was the first known systematic, statewide application of fatality review to overdose deaths.

BACKGROUND

The concept of overdose fatality review is based on long-established hospital-based mortality review as well as child fatality review (CFR), which was first established in 1978 in Los Angeles and is now operational in almost every state (Durfee, Parra, & Alexander, 2009). The key components of CFR are anchored in public health. They include multidisciplinary participation, investigation of death(s), and development of population-based recommendations and interventions for prevention. CFR encourages in-person participation from health care providers, child protective services, social services, law enforcement, and the coroner/medical examiner's office. During fatality review, in-depth discussion, analysis, and assessment with a focus on the interactions among the family, child, and agencies are expected. In addition, changes to policy and programs are recommended in an effort to prevent future similar child deaths. The use of CFR is endorsed as a best practice by the American Academy of Pediatrics (Christian, Sege, Committee on Child Abuse and Neglect, & Committee on Injury, Violence, and Poison Prevention, 2010) and provides an effective model for overdose fatality review.

Multiple assessments of fatality review demonstrate its ability to facilitate an understanding of the circumstances of a death and the relevant prevention interventions. Maternal and infant mortality review has been attributed to improved coordination of participating service providers, quality improvement initiatives of local health departments, and a variety of recommendations with public health significance for health departments and services providers (Klerman, Cleckley, Sinsky, & Sams, 2000). Examples include physician practice improvements (Fogarty, Sidebottom, Holtan, & Lupo, 2000) and increased access to family planning services and youth education (Berg, 2012). Douglas and Cunningham (2008) published a review of CFR recommendations from teams across the United States. Resulting macro-level categories reflect the breadth of outcomes from case review, including agency communication, the child welfare system, mandatory reporting policies, public education and outreach programs, home-visiting programs, and risk factors for child death in different settings.

Maryland LOFRTs draw from the rich CFR experience. LOFRTs are multiagency, multidisciplinary teams convened at the county or jurisdictional level that investigate the lives of those who died from drug overdose and critically analyze their involvement with different agencies and service providers to identify risk factors and missed opportunities for intervention. LOFRTs meet at least quarterly to review two to five cases. Participating entities that have had contact with the decedent throughout the course of his or her lifetime provide records and additional qualitative details to elucidate the circumstances of death. Discussion about the decedent's interaction with agencies draws attention to service-level gaps such as referral networks and other barriers to health care service access. Similar to CFR teams, LOFRTs make recommendations to local and state agencies for relevant program and policy changes. The MDH provides oversight and technical assistance during this process. To the authors' knowledge, Maryland is the first state to adapt the case review model for overdose deaths. The development and initial implementation of Overdose Fatality Review is described in Rebbert-Franklin et al. (2016).

This study analyzed the recommendations of Maryland's LOFRTs from 2 years of case review (2015-2016) to identify how this novel public health approach to overdose prevention provides unique opportunities for interagency collaboration, locally driven prevention efforts, and innovation. Overdose-related death data made available from Maryland's centralized Office of the Chief Medical Examiner (OCME), codification of the program in state statute in 2014, and stakeholder commitment have contributed to the success of the program. Recommendations and other program outcomes provide MDH, local health departments, and other state and local agencies with strategies for addressing the growing opioid epidemic and rising incidence of overdose death.

METHOD

The authors conducted a retrospective review of each LOFRT's case reporting forms from January 2015 to December 2016 to quantify case attributes and

develop macro-level categories of prevention recommendations. LOFRTs record observations, case attributes, and recommendations on a standardized paper form. The form captures the decedent's demographics, cause of death, interaction history with 22 different entities, and presence or absence of 13 unique case attributes. It also includes space for discussion summary and subsequent recommendations (see the Appendix). LOFRTs submit forms to MDH, where they are compiled in a Microsoft Access database consisting of 15 fields, including the following:

- *Decedent information*: county of residence, county of death, age, race, and sex, as well as the specific circumstances of each overdose death, date of death, manner, and cause
- *LOFRT meeting*: meeting date, disciplines represented at the meeting, and parties that contributed relevant information regarding each case
- *Decedent risk factors during lifetime*: somatic health condition, recent time of abstinence (<2 weeks after treatment, release from jail, or other brief time period without access to substances), previous nonfatal overdose, polysubstance use, polypharmacy, parole/probation history or at time of death, pain management, multiple emergency department (ED)/hospital visits, mental health diagnosis or treatment history, intimate partner violence (IPV)/domestic abuse, history of alcohol use/arrested while driving under influence, homelessness, history of suicide attempts/ideation, family history of substance use, and other
- *Recommendations*: summary of program or system-level discussion by attendees
- *Challenges*: a description of data challenges or limitations for each case

Identification of Case Attributes

For each case, LOFRTs document specific case attributes in a checklist located on the case reporting form. In free text space, LOFRTs also include attributes not listed on the checklist or clarify indicated attributes. Indicated attributes are entered into the Access database by MDH staff. The observation of specific attributes in case review reflects both the occurrence of the trend among overdose decedents and the availability of relevant data. Specific attributes are not often associated with particular data sources and emerge through the data-sharing process and following discussion. For example, a history of IPV may be indicated in records from law enforcement, the court system, Department of Social Services, and/or a local IPV agency that provided services to the individual.

Coding of LOFRT Recommendations

The authors reviewed and identified themes among the LOFRTs' reports and grouped them into macro-level categories. Categories were based on the existing content of the compiled reports and were not predetermined. The research team used an inductive, consensus-building process to resolve conflict on category determination. Authors met regularly to review and discuss macro-level themes in order to reach agreement on content groupings, interpretation, and significance. Recommendations similar in theme would be debated by the authors and ultimately placed in the macro-level category that was considered broader in interpretation.

Analysis

Case attributes and categories were analyzed using Microsoft Excel. After coding, the count of recommendations within each macro-level category was totaled. Each recommendation was listed alongside the LOFRT's jurisdictional name and case attributes such as age, gender, race, substances identified as the cause of death, and agency interactions with decedents.

RESULTS

In total, 18 LOFRTs submitted 416 case reporting forms to MDH, representing 416 overdose decedents reviewed between January 2015 and December 2016. Submitted case reporting forms analyzed by MDH for this study contained 1,076 case attributes and 361 recommendations.

Case Attributes

LOFRTs observed 1,076 case attributes in the 416 reviewed cases. As shown in Table 1, the majority of decedents reviewed were in the 25 to 34 age range (28.4%) and the 45 to 54 age range (24.0%), male (71.9%), and White (81.0%) and had heroin present at the time of death (54.8%). The most common substances identified as the cause of death were heroin (42.1%), followed by fentanyl (32.93%), alcohol (20.2%), cocaine/crack (19.5%), and morphine (18.0%); however, deaths were commonly attributed to a combination of substances. Teams reported a total of 2,166 agency interactions with decedents. The agencies that most often provided data for case reviews were law enforcement (64.0% of cases), Emergency Medical Services (62.5%), local hospitals (58.2%), the court system (40.1%), and local health department substance use disorder treatment programs (36.5%). During the analysis period from January 2015 to December 2016, a

TABLE 1
Local Overdose Fatality Review Team Case Demographics (N = 416)

Demographics	*Total*	*%*
Age, years		
<18	2	0.48
18-24	40	9.62
25-34	118	28.37
35-44	96	23.08
45-54	100	24.04
55-64	55	13.22
65+	5	1.20
Gender		
Male	299	71.88
Female	117	28.13
Race/ethnicity		
White	337	81.01
Black or African American	70	16.83
Hispanic or Latino	3	0.72
Other	6	1.44
Heroin status		
Present	228	54.81
Not present	188	45.19

total of 3,348 drug- and alcohol- related intoxication deaths occurred in Maryland, including 2,945 opioid-related intoxication deaths (MDH, 2017). Since reviewed cases represent a small sample of total overdose deaths in Maryland during this time period, the results cannot be generalized. Case attributes that informed the recommendations, program initiatives, and priorities identified by LOFRTs and documented on the checklist include the following:

- *Mental health comorbidity*: The most commonly reported attribute, a mental health disorder diagnosis and/or engagement in mental health services, was identified in 40.4% of cases reviewed. Co-occurring mental illness and substance use disorders are associated with several negative outcomes, including increased rates of incarceration, homelessness, suicide, and nonadherence to treatment (McKee, 2017).
- *Chronic somatic health condition*: LOFRTs identified a chronic somatic health condition in 27.5% of the cases reviewed. Somatic health conditions included infectious diseases such as HIV and hepatitis C, seizure disorders, chronic pain, and cardiovascular and pulmonary diseases and often contributed to frequent ED visits and hospital admissions.
- *Previous overdose*: LOFRTs observed and reported a previous overdose in 23.4% of cases reviewed. This observation aligns with existing and emerging research on overdose risk factors. In a large cohort study in Canada, Caudarella et al. (2016) found that a previous nonfatal overdose was associated with a subsequent overdose death, and endorse targeting overdose survivors with overdose prevention interventions.
- *Pain management*: Engagement in pain management treatment was indicated in 23.4% of cases reviewed. LOFRTs identified acute and chronic pain issues and engagement in a range of pain management services, ranging from long-term specialty care to ED visits.
- *History of suicide attempts and/or suicidal ideation*: In 18.0% of cases, LOFRTs documented a history of suicide attempts and/or suicidal ideation, indicated in hospital records, mental health records, and interviews with family members. Infrequently, based on information gathered in case review, LOFRTs have suggested that the reviewed death may have been a suicide or involved a degree of intentionality.

Emerging case attributes documented by LOFRTs in the free text space include the following:

- *Overdose deaths occurring at hotels and motels*: LOFRTs in at least nine jurisdictions have reviewed fatal overdoses occurring in hotels and motels. Decedents overdosing in hotels were frequently homeless at time of death or had a documented history of homelessness. The possibility that individuals are alone while overdosing in their hotel/motel rooms might contribute to this attribute, as there is no one there to promptly provide aid. Assessment of opioid-related deaths in San Francisco, California, identified a majority of decedents (68%) were reportedly alone at the time of death, and a large portion of deaths occurred in hotel rooms (47%; Davidson et al., 2003). When represented on a map, overdose deaths tended to be clustered around single room occupancy hotel units (Visconti, Santos, Lemos, Burke, & Coffin, 2015). Overdose deaths occurring in a hotel or motel was added to the Maryland LOFRT case attribute checklist in 2017.
- *History of acquired brain injury*: LOFRTs in six jurisdictions documented recent and historic acquired brain injury experiences among overdose decedents. History of acquired brain injury was added to the Maryland LOFRT case attribute checklist in 2017.

LOFRT Recommendations

Based on the review of the 416 cases described above, nine macro-level categories emerged. Table 2 lists these recommendation categories, examples of each, and the number of counties suggesting recommendations.

Prevention Education emerged as the most commonly discussed theme, indicating LOFRT consensus around the importance of public awareness of the opioid epidemic, the risks of opioid use, and methods for risk mitigation. Many teams identified the need for public education campaigns and activities that raise general awareness, but also efforts targeted to specific service providers, physicians, and local businesses such as hotels and motels. Teams suggest education topics such as fentanyl education, family drug education and outreach, school-based education and outreach, and safe opioid use strategies, which informed local health department placement of general education campaign materials as well as identified new audiences for community-based naloxone training and distribution.

Integrated Care appeared most frequently in LOFRT discussions second to Prevention Education. This category includes recommendations that aim to strengthen the incorporation of behavioral health services such as substance use screening and peer support into somatic health services and medical settings to meet a patient's variety of health care needs. LOFRTs suggested ways to improve patient-centered care approaches and care coordination, which is the increased organization and synchronization of various providers within the behavioral and somatic health care system to improve patient outcomes. For example, LOFRTs recommend the placement of counselors who are considered peers, or individuals with lived substance use experience, in different somatic care settings such as EDs and primary care clinics to link patients to substance use disorder treatment programs. Peer support for individuals with substance use disorders has been found to increase patient satisfaction with treatment, improve client–provider relationships, and lower the rates of relapse (Reif et al., 2014). Georgia, New Jersey, and Michigan have implemented innovative and successful peer-delivered health and wellness services that focus on delivering patient-centered planning, promoting health engagement and health self-management, providing resources, and assistance in navigating the health system (Swarbrick, Tunner, Miller, Werner, & Tiegreen, 2016). In addition, LOFRT recommendations included the establishment of protocols for follow-up of a referral and implementation of tools for screening for substance use disorders in somatic care settings. The high frequency of the Integrated Care recommendations supports local and state advocacy for funding of the evidence-based practice Screening, Brief Intervention, and Referral to Treatment as well as for peer recovery specialists in EDs.

A *Harm Reduction* category derived from LOFRT recommendations for interventions that aim to reduce the negative consequences associated with drug use, including public education campaigns about Good Samaritan Laws that provide immunity to those who respond to an overdose emergency, prevention of overdose death with the use of naloxone, provision of naloxone trainings for people who use drugs and their families, and holding naloxone trainings that specifically target those with recent periods of abstinence. The Maryland Good Samaritan Law provides protection from arrest as well as prosecution for specific crimes such as possession or use of uncontrolled dangerous substances for anyone who seeks, attempts, or assists in the provision of medical assistance during an overdose crisis (MDH, 2018). People who use drugs are most likely to witness and respond to an overdose and, due to this likelihood, should be priority audiences for community-based overdose education and naloxone distribution (Latkin, Edwards, Davery-Rotherwell, Yang, & Tobin, 2018). In addition, family members, due to their proximity to and interaction with those who are at risk of overdose, were a commonly recommended priority audience for harm reduction education. The Massachusetts Department of Public Health Overdose Education and Naloxone Distribution Program found that 27% of their enrollees were family members and that they were responsible for 20% of rescue attempts (Bagley, Forman, Ruiz, Cranston, & Walley, 2018). LOFRTs' attention to harm reduction interventions has contributed to expansion of related services by member agencies, such as naloxone training of staff and clients, and provided a forum for critical conversations among providers about the significance of syringe services programs (SSP) as a means of reaching and engaging people who use drugs. SSPs are community-based programs that provide sterile injection equipment, overdose prevention education, treatment referrals, and naloxone to people who inject drugs (CDC, 2018). A majority of SSPs in the United States offer naloxone kits to laypersons as part of their services and are an important access point for substance use disorder treatment (Des Jarlais et al., 2015). In addition, these programs have been associated with a reduction in drug use, and people who inject drugs are 5 times more likely to enter treatment for substance use disorder when they are engaged with an SSP, thus reducing their overdose risk (CDC, 2017).

TABLE 2
Count of Recommendations (Total = 361) in Each Macro-Level Category Made by Local Overdose Fatality Review Teams (*N* = 416), Number of Counties Making Recommendations, and Examples of Recommendations Made in Each Category

Macro Recommendation	*Total Recommendations*	*Total Counties Making Recommendations*
Prevention Education	104	11
– Drug education and outreach to families		
– Encourage parents to conduct drug education		
– Substance use treatment outreach to surviving family members		
– Engage families in grief support and at funeral homes		
– Education and outreach to youth		
– Improve prevention education in secondary school		
– Coordinate prevention programs with school systems		
– Focus on disconnected youth		
– Fentanyl education and outreach		
– Fentanyl-specific community awareness campaign		
– Messaging about fentanyl in cocaine		
– Fentanyl alert for certain counties		
Integrated Care	95	13
– Increase use of peer support counselors		
– Peer-led home visiting program for women in substance use disorder treatment		
– Peer specialists for antistigma training with Emergency Medical Services		
– Integration of peer specialists in somatic health treatment		
– Increase Prescription Drug Monitoring Program (PDMP) use		
– Encourage provider utilization of PDMP prior to prescribing		
– Advocate for medication-assisted treatment and opioid treatment program providers to use PDMP		
– Coordination of referrals and follow-ups		
– Care coordination and provider follow-through to ensure continuity of care		
– Need to present alternative treatment approaches to complicated cases		
– Embed behavioral health providers in somatic care offices		
Harm Reduction	67	13
– Syringe services programs		
– Good Samaritan Law education		
– Naloxone education and training		
– Naloxone training for families		
– Naloxone training upon discharge from substance use disorder treatment		
– Reach out to motel owners for naloxone training		
– Naloxone more available in prisons since illicit drugs can be obtained there		
Criminal Justice Institution	29	10
– Judge education and outreach		
– Make standard substance evaluations for judges		
– Drug, coprescription, and referral education for judges		
– Education on substance use disorders and have judges enforce treatment referrals		

(continued)

TABLE 2 (CONTINUED)

Macro Recommendation	*Total Recommendations*	*Total Counties Making Recommendations*
– Establish referral process following release from jail – Connect with peer specialist on release from detention center – Violation of probation cases could present opportunity to set up some reentry supports – Focus on sentencing – Preliminary screening of detention center pretrial detainees – Sentencing intervention where judges enforce completion of drug and alcohol programs – Increase drug testing for people on parole or probation, and shorten time between test and results		
Underserved populations – Support for children of overdose patients – Connect surviving family members to support group for overdose family survivors – Need better resources for veterans – Provider education on prescribing methadone during pregnancy – Emergency Medical Services intervention if individual refuses transport to hospital after an overdose	19	7
Service enhancing – More accessible trauma counseling – Engage treatment providers in overdose prevention – Provide access to services during nontraditional hours – Treatment facilities should accept couples – Increase capacity for opioid treatment programs to test for fentanyl	16	8
Information Sharing – Focus on communication among agencies – Emergency room notify courts of overdose – Police compile statewide database – Share information with aid agencies – Inform provider of death by overdose	15	9
Standardization – Need for standardized shelter services – Limiting opiate prescriptions – More oversight of pain management clinics – Create a protocol for reengaging the client in treatment	10	5
Law Enforcement and Forensic Intervention – Police with mental health focus – Peers to strengthen law enforcement outreach – Referral during earlier contacts with law	6	3

Criminal Justice Institution as a theme reflects the role of detention centers, parole and probation, prosecution and sentencing, including judges, court systems, and drug court programs in overdose prevention and addressing stigma related to substance use. LOFRTs suggestions included increasing focus on reducing internal treatment barriers when individuals with substance use disorders are transitioning to jail, expanding the number of treatment options available to incarcerated individuals, increasing screening for substance use disorders, and strengthening substance use disorder content of release protocols. Some LOFRTS identified a potential opportunity to place peers in detention centers in order to link inmates to substance use disorder treatment on discharge, hold naloxone trainings in detention centers and central booking, increase access

to naloxone in prisons, and support the standardization of the referral process. The 2 weeks following release from jail is a critical intervention period, because it is estimated that there is significantly greater risk of fatal overdose than the general population due in part to decreased tolerance by imprisonment (Binswanger et al., 2007; Merrall et al., 2010). In addition, LOFRTs suggested evaluating the efficacy of drug court interventions and educating judges on drug court referral options, substance use, coprescription implications, substance use disorders, and encouraging them to look at past records and drug use histories when sentencing.

Distinct from these postsentencing interventions, recommendations that identify improvements to law enforcement activities and interventions with people with substance use disorders that are driven by law enforcement officials coalesced into *Law Enforcement and Forensic Intervention.* This category includes recommendations that affect proceedings during criminal investigations, such as providing referrals to treatment at earlier contacts with the law instead of during or after sentencing, partnering peer specialists with law enforcement, and training police to respond to mental health crises.

Other themes emerged with less frequency. A number of recommendations indicated a need for increased communication among various agencies facilitated through the sharing of data and other information, which were grouped under *Information Sharing.* Suggestions related to communication between different entities include requiring Emergency Medical Services or law enforcement to share information regarding an individual's overdose, whether it be nonfatal or fatal, with any agencies that the individual might have had contact with such as providers, parole and probation, judicial courts, or social services agencies. This information could be helpful in developing timely, appropriate responses for each of these agencies as well as identifying more high-risk individuals for intervention and referral.

Service Enhancement captured recommendations that aim to improve existing services to better meet the needs of those affected by substance use. For example, homeless shelters could allow alcohol and drug use, and remain open during nontraditional hours. With these changes, there is an opportunity for staff to intervene if an overdose occurs. In addition, teams suggest fentanyl screening by treatment centers, routine overdose education at pain management clinics, and increasing trauma counseling at crisis centers.

Standardization included typically state-level interventions that aim to set policy and accountability measures in an effort to make service delivery more efficient; for example, improving monitoring of pain management clinics and enforcement of regulations to improve quality of medication-assisted treatment for opioid use disorder. This category also captured suggestions to regulate certain services such as standardizing shelter services, protocols for reengaging a client in treatment, the process for hospital review of high-risk patients, and limiting opiate prescriptions.

Finally, *Underserved Populations* formed from recommendations focused on specific populations that are at high risk or adversely affected by drug use, substance use disorders, and overdose. These populations include individuals who have experienced sex trafficking, veterans, children of those who overdosed, pregnant individuals who are in substance use treatment, and family members of individuals who were incarcerated, overdosed, or attempted/completed suicide.

DISCUSSION

Maryland LOFRTs perform a unique method of data collection, are a demonstrated tool for strategic planning, and support local coalition building for an improved community response to the opioid epidemic. The themes identified in this article provide a framework through which to grasp the diverse LOFRT recommendations. Local and state agencies can use this methodology to prioritize recommendations, which is particularly important in environments with limited resources for implementation. The variety of themes derived from LOFRT recommendations show the potential for this program to inform a comprehensive response to the national opioid epidemic and may be a resource for jurisdictions using overdose fatality review to inform prevention strategy.

Results of this study reflect the quality of data provided by LOFRTs. LOFRT data are unique in collection methodology, considering the combination of record review and qualitative discussion, along with the detailed investigation. Case reviews are also conducted and reported in a more timely manner than quantitative sources such as the CDC's National Violent Death Reporting System, allowing local authorities to be responsive to emerging issues. LOFRTs identified new populations of focus and potential trends as a starting point for additional state or local pursuit. After recognizing acquired brain injury as a case attribute, MDH initiated collaborated projects between the offices that oversee brain injury and substance use prevention. The two offices developed educational materials for substance use treatment providers whose clients may have an acquired brain injury. In addition, MDH pursued federal grants to support LOFRTs, which resulted in the

receipt of funding for four teams to pilot enhancement of team activities to include outreach to surviving family members and associated prescribers.

The quality of data and process of case review allowed LOFRTs to apply a person-centered approach to the improvement of system-level gaps and support for people at risk for overdose. Recommendations made by LOFRTs inform local and state policy and activities by identifying unmet needs for new or expanded services at one or more agencies in the jurisdiction, informing activities undertaken through existing grant programs, and generating discussion related to and support for new initiatives. Implementation of policy and practice based on LOFRT recommendations varies based on the agencies affected and the availability of resources; however, many were implemented by existing prevention and harm reduction programs managed by the local health departments. For example, four LOFRTs recommended training hotel and motel staff in the use of naloxone. In at least three jurisdictions, staff of the Overdose Response Program, Maryland's centralized naloxone distribution program overseen by MDH, were subsequently tasked with reaching out to hotels and motels. Local health departments brought naloxone to where people are using opioids and experiencing overdose as a result of fatality review. Seven jurisdictions who recommended enhanced education campaigns related to fentanyl initiated social marketing campaigns funded through another state discretionary grant.

Results of overdose fatality review is also a tool for LOFRTs and local health departments to influence policy change. Each year, LOFRTs are required to summarize and share priority recommendations and findings in an annual report. Reports are public documents used by local and state OFR staff for a variety of purposes, including evaluation, policy consideration, and program enhancement. LOFRTs often share their annual report with local media, policy makers, county councils, executive bodies, and other partners. In 2017, MDH successfully amended LOFRT statute to allow for the review of nonfatal overdose cases. LOFRT recommendations to facilitate broader access to naloxone were taken into consideration when MDH pursued removal of training requirements for naloxone.

Moreover, case review and subsequent recommendations contributed to the enhancement or initiation of coordinated services as well as strengthened partnership, communication, and commitment among community agencies. LOFRTs have expanded membership to include representatives that can speak to specific case attributes, such as local IPV agencies, pain management specialists, and mental health care providers. While the monitoring and impact of team member participation is beyond the scope of this article, the authors believe the quality of recommendations reflect LOFRTs' ability to create a strong sense of coalition. Team members come together to achieve a common goal of overdose prevention, and make recommendations in spaces in which they feel heard, protected, and supported.

The nine macro-level categories that emerged from the systematic review of LOFRT recommendations reflect the breadth and depth of the case review process, multidisciplinary team membership, and the expertise of those who contribute to LOFRT discussions. The recommendations generated by the LOFRTs evince a public health approach to substance use and overdose prevention with a focus on populations that could be better prioritized and served, which has significant implications for local government and agency responses. Moreover, LOFRTs have identified multiple specific case attributes that serve as a starting point for future research, partnership, and service coordination. Case attributes may vary by jurisdiction and community. As case review reveals system-level gaps in care, recommendations often require cross-agency collaboration or engagement of new partners, contributing to the building of capacity and strengthening of existing public health infrastructure in responding to the opioid epidemic.

LIMITATIONS

The findings of this study are limited by LOFRT data collection processes, validation of recommendations by existing literature, and capacity for their implementation. LOFRTs review a small sample of total overdose deaths in Maryland, and case attributes identified are not representative of all overdose deaths. Considering the majority of Maryland's overdose deaths occur in the central region of the state, and LOFRTs in the central region jurisdictions neither meet more frequently nor review more cases than those in other regions, the trends and recommendations of the central region are underrepresented in the data analyzed for this paper. Moreover, the results of case review serve as a starting point for further investigation. MDH evaluates recommendations by comparing them to existing peer-reviewed literature. LOFRTs are discouraged from pursuing recommendations that are not supported or validated by existing research, which resulted in certain recommendation being excluded from this article; for example, some LOFRTs recommended routine reporting of overdose survivors' children to social services and urine screens for substances among social service recipients.

In addition, while regular participation is encouraged, the availability of team members, attendance, and the quality of the data brought to meetings may vary and affects case review outcomes. Many attributes were identified in the free text field, so likely the final counts are an underrepresentation of the true number. Finally, the subjectivity of the individuals recording data for the LOFRTs, as well as of the individuals entering data into the LOFRT database may influence its interpretation. Many recommendations could be read in different ways, and the high number of prevention education recommendations could be credited to local health department leadership of the teams.

Barriers to implementation of recommendations limit the applicability of the study results. Many LOFRTs do not have the resources, such as funding and personnel, available to move forward on new initiatives. Those that have been successful rely on existing grants or make improvements to established programs. In addition, LOFRTs are bound by confidentiality laws and cannot redisclose identifying case information, which may limit how they communicate recommendations. Interventions involving data sharing among participating agencies are limited by these laws that allow information sharing only within the context of fatality review.

APPENDIX

LOFRT CASE REPORTING FORM

OCME Case Number:	
Age, sex, race	
Substances listed in CODICD	
Heroin identified	Yes/No
Date of death	
Emergency Medical Services	Yes/No/Day of Death Only/Unknown
Law enforcement	Yes/No/ Day of Death Only/Unknown
Detention center	Yes/No/Unknown
Hospital (inpatient)	Yes/No/Day of Death Only
Hospital emergency department	Yes/No/Day of Death Only
Crisis intervention services	Yes/No/Unknown
Court system	Yes/No/Unknown
Juvenile services	Yes/No/Unknown
Mental health treatment	Yes/No/Unknown
Department of Social Services	Yes/No/Unknown
Community supervision	Yes/No/Unknown At the time of death Yes/No
States Attorney's Office	Yes/No/Unknown
BCHD Syringe Exchange Program	Yes/No/Unknown
Maryland Overdose Response Program	Deceased: Yes/No/Unknown Family member(s): Yes/No/Unknown
Human Services	Yes/No/Unknown
Local pharmacy	Yes/No/Unknown
Private funded drug treatment	Yes/No/Unknown At the time of death Y/N
Health department drug treatment	Yes/No/Unknown At the time of death Y/N
Private insurance company	Yes/No/Unknown
School system	Yes/No/Unknown
Anecdotal/community	Yes/No/Unknown

(continued)

APPENDIX (CONTINUED)

OCME Case Number:	
Family members	Yes/No/Unknown
Trends	◦ Previous overdose ◦ Mental health comorbidity ◦ Chronic somatic health comorbidity ◦ Pain management ◦ History of intimate partner violence/ domestic violence ◦ Recent time of abstinence (<2 weeks after jail, treatment, etc.) ◦ History of a DUI ◦ History of suicide attempt ◦ Suicide ideation ◦ Enrollment in public assistance programs (i.e., food stamps) ◦ Homeless at the time of death ◦ On probation or parole at the time of death ◦ Veteran status ◦ Other:_____
Summarize discussion and potential recommendations for each case	
Follow-up needed from BHA	

NOTE: OCME = Office of the Chief Medical Examiner; CODICD = cause of death, International Statistical Classification of Diseases; BHCD = Baltimore City Health Department; DUI = driving under influence; BHA = Behavioral Health Administration.

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