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Peer navigation and take-home naloxone for opioid overdose emergency department patients: Preliminary patient outcomes

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1. Introduction

From 1999 to 2016, opioid overdose deaths increased more than five times, and is now a leading cause of death in the United States (U.S.) for people under the age of 50 (Centers for Disease Control and Prevention, 2017; Hedegaard, Warner, & Miniño, 2016). Between 2004 and 2011, opioid-related ED visits increased 183% (SAMHSA, 2013). Emergency department (ED) visits for non-fatal opioid overdose increased 30% from 2016 to 2017 (Vivolo-Kantor et al., 2018) but a minority result in linkage to addiction treatment (Larochelle et al., 2018; SAMHSA, 2013). After an overdose, individuals are at higher risk of death (Darke, Mills, Ross, & Teesson, 2011; Stoové, Dietze, & Jolley, 2009; Weiner, Baker, Bernson, & Schuur, 2017), however some studies have also shown increased enrollment in treatment for opioid use disorder (OUD) (Pollini, McCall, Mehta, Vlahov, & Strathdee, 2006). Therefore, each ED visit for opioid overdose is a critical opportunity to prevent future overdose death and provide linkage to addiction treatment.

The Centers for Disease Control and Prevention recommend hospital naloxone distribution and use of peer recovery coaches to provide addiction treatment linkage (Rudd, Seth, David, & Scholl, 2016). In 2014 RI emergency physicians collaborated with the RI Department of Health (RIDOH), the RI Department of Behavioral Healthcare, Developmental Disabilities, and Hospitals, and a community-based peer recovery organization to design and implement an ED opioid overdose education and naloxone distribution program, the Lifespan Opioid Overdose Prevention (LOOP) Program, in two RI EDs (E. Samuels, 2014). LOOP provides opioid overdose patients take-home naloxone, patient education on overdose rescue, and ED consultation with a community-based peer recovery coach for addiction treatment navigation.

Prior studies have demonstrated the reduced overdose mortality associated with community naloxone distribution programs (Maxwell, Bigg, Stanczykiewicz, & Carlberg-Racich, 2006; Piper et al., 2008; Walley et al., 2013), ED naloxone distribution feasibility (Dwyer et al., 2015; Samuels et al., 2016), patient factors impacting take-home naloxone acceptance (Kestler et al., 2017), effectiveness of hospital-employed patient navigators on linkage to treatment (Bernstein, Bernstein, & Levenson, 1997), and the role of peer recovery coaches in addiction treatment services navigation and support (Bassuk, Hanson, Greene, Richard, & Laudet, 2016; Boisvert, Martin, Grosek, & Clarie, 2008; Deering et al., 2011; James, Bibi, Langlois, Dugan, & Mitchell, 2014; Tracy & Wallace, 2016; Treatment, 2009). In recent years, many EDs have implemented similar naloxone distribution and peer recovery coach programs, but associated patient outcomes have yet to be assessed. This pilot study examines whether ED naloxone distribution and recovery coach consultation improves frequency and timeliness of linkage to evidence-based OUD treatment, reduces recurrent opioid overdose, and reduces incidence of opioid overdose death (Addiction Policy Forum, 2017; Dwyer et al., 2015; Kestler et al., 2017; Samuels et al., 2015; Vestal, 2017). To our knowledge, this pilot study is the first patient outcome evaluation of an ED take-home naloxone and peer recovery coach program on initiation of medication for OUD, repeat ED visits for opioid overdose, and mortality.

2. Material and methods

2.1. Study setting

In September 2014, LOOP was implemented at two EDs in Providence, RI: An urban, academic medical center with 110,000 annual visits; and a suburban, academic hospital with 61,000 annual visits. At the time of implementation, RI had the fifth highest rate of opioid overdose death in the U.S., with an increasing frequency of deaths due to fentanyl (Marshall et al., 2017; Mercado et al., 2017).

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Hospital study sites care for most opioid overdose cases in Providence. Prior to LOOP, neither hospital provided specialized ED addiction treatment services in addition to emergency social work and/or psychiatry consultation and neither hospital had a dedicated clinic to the treatment of OUD.

2.2. Intervention

LOOP was developed by a collaboration of physicians, pharmacists, behavioral health professionals, and individuals in long-term addiction treatment who were either members of the RIDOH's Overdose Prevention and Response Coalition or working at one of the study hospitals (E.A. Samuels, 2014). Orders for take-home naloxone and recovery coach consultation were built into an electronic medical record (EMR) order set. Patients could receive one of three treatments depending on patient and provider discretion and services availability: 1) usual care, 2) take-home naloxone, or 3) peer recovery coach with take-home naloxone. Usual care consisted of medical stabilization and provision of a substance use treatment program listed in printed discharge instructions. Those receiving take-home naloxone received usual care, take-home naloxone, and print and video patient education about naloxone assembly and use. Those receiving a peer recovery coach and take-home naloxone received the components of first two treatment cohorts as well as consultation with a peer recovery coach.

Study PIs educated all ED providers and staff about LOOP services and protocols through residency didactic conferences, faculty and staff meetings, email announcements, and signs posted in each ED work area. Email updates about program utilization and treatment engagement were distributed every 3 months.

2.2.1. Take-home naloxone

Take-home naloxone kits included two doses of 2 mg intranasal naloxone, a mucosal atomizer device, and pictorial and verbal assembly and administration instructions in English and Spanish (see Appendix A). Naloxone was purchased by the hospital, stored in ED medication dispensing machines, and given to the patient by an ED nurse. Education for patients, family members, and friends about overdose prevention, response, and naloxone administration was conducted with an educational video (Miller & Rollnick, 2012), a bilingual printed handout, and in-person recovery coach counseling, when available.

2.2.2. Peer recovery coach

Recovery coaches were individuals in addiction treatment for at least 2 years and employed by the partner community-based peer recovery organization after completion of their 36-hour peer recovery coach training in motivational interviewing, addiction treatment services, including OAT, and provision of peer-to-peer support. Cases were reviewed daily by supervising program staff. Coaches were paged through an answering service by an ED clinician and arrived in the ED within 30 min for an in-person patient consultation. Using motivational interviewing techniques (Miller & Rollnick, 2012) and a stages of change (Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, & Evers, 2002) behavioral framework, coaches assessed patients' readiness to seek treatment, identified overdose risk factors, and provided individualized support and addiction treatment navigation, including linkage to medication for OUD (i.e. buprenorphine, methadone, and naltrexone), at the time of and at least 90 days after the ED visit.

2.3. Study design

This is an observational, retrospective outcome study of ED patients treated and discharged after an opioid overdose in the six months after LOOP implementation. Patients treated in the six months after LOOP implementation, September 2014 to February 2015, were assigned to one of three treatment groups based on provider and patient discretion as previously described 1) usual care, 2) take-home naloxone, or 3) peer recovery coach with take-home naloxone. Patient outcomes were retrospectively assessed one year after their index ED visit.

2.4. Electronic medical record review

All adult patient records during the study period were screened for review through an initial EMR search by the hospital health information technology (HIT) team. HIT searched EMR fields (chief complaint, history of present illness, home medications, orders, discharge diagnosis, discharge instructions, and discharge prescriptions) with keywords related to opioid use and overdose identified by the study team (Supplemental 1). Patient search lists were merged to remove duplicates. Each record from the HIT screen was reviewed by a research assistant (RA) and selected for inclusion if the patient was treated and discharged after an accidental, nonfatal opioid overdose. An opioid overdose was defined as decreased mental status and/or respiratory depression from opioid use requiring naloxone administration prior to or during the ED visit. Some ED patients with OUD but not seen for opioid overdose were given take home naloxone and/or consultation with a recovery coach, however we limited study inclusion to opioid overdose patients because they represented the most obvious group of individuals for providers to provide take home naloxone and/or consult a recovery a coach and were considered to be at highest risk for subsequent overdose and overdose death. Only the first visit during the study period, the index ED visit, was included in the analysis. Subsequent visits, patients who were admitted, transferred, and visits by patients who were pregnant, incarcerated, or less than 18 years of age, were excluded. EMR review was conducted in accordance to accepted standards (Gilbert, Lowenstein, & Koziol-McLain, 1996; Kaji, Schriger, & Green, 2014) and reported using Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (von Elm, 2007).

Senior study staff developed study coding manual and a standardized data collection instrument. Data extraction was done by a RA with prior EMR review and data extraction experience. The RA was not involved in program design or implementation and was blinded to provider education and study hypotheses. The RA reviewed all records identified by HIT and selected ED visits for data extraction meeting study inclusion criteria. Record selection underwent regular validation checks by study PI. All extracted data underwent a second review by the study PI. Any discrepancies were resolved by the PI and used for retraining. Events not documented or recorded in the medical record were assumed to not have occurred.

2.5. Measurements

Primary outcomes were initiation of medication for OUD, repeat ED visit for opioid overdose, and all-cause mortality one year after index ED visit. To determine initiation of medication for OUD, we searched the RI Prescription Drug Monitoring Program (PDMP) to measure office-based medication for OUD and the Rhode Island Behavioral Health On-Line Database, which catalogues information about initiation of medication for OUD in addiction treatment programs receiving state funding, including methadone maintenance programs. The RI PDMP is linked to PDMPS in 41 other states, including nearby Connecticut and Massachusetts. Sub-analyses of medication for OUD were conducted for patients newly initiating and resuming medication for OUD. Recurrent overdose was determined through EMR review and limited to repeat overdose ED visits at study sites. To identify incidents of all-cause mortality, we queried the RIDOH Division of Vital Records for Death Certificates Database and the National Death Index to identify out-of-state deaths.

Confidential deterministic data linkages were conducted using Stronghold, an online, HIPAA-compliant, secure computing and storage environment. Study protocols were reviewed and approved by the Rhode Island Hospital and Brown University Institutional Review