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Pilot of a brief, web-based educational intervention targeting safe storage and disposal of prescription opioids

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HIGHLIGHTS

- Patient knowledge of safe opioid use revealed key deficits at baseline.
- Open pilot demonstrated intervention feasibility in diverse healthcare clinics.
- Intervention significantly improved patient knowledge of safe opioid use.
- Improvements in knowledge were sustained at one-month follow up.
- Patients reported reductions in some misuse behaviors at one-month follow-up.

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ABSTRACT

Prescription opioid misuse has been declared an American epidemic and a significant proportion of misused opioids are diverted from legitimate prescriptions. Patient education regarding appropriate use and the dangers of misuse has been identified as a key intervention target. The current study presents findings from the open pilot of a patient-tailored, brief, web-based intervention designed to improve knowledge of safe medication use, storage and disposal.

Methods: Subjects were 62 treatment-seeking outpatients at two diverse outpatient health clinics (dental and pain management) who were prescribed an opioid medication. Subjects completed an online assessment of risk factors for prescription opioid misuse and the 15-minute Script Safety intervention. Knowledge and misuse behaviors were assessed at baseline, immediately post intervention (knowledge only) and at one-week and one-month follow up. Knowledge regarding safe prescription opioid use, storage and disposal improved significantly from pre to post intervention and was sustained at follow up (% correct from baseline to one-month follow up: unsafe to retain unused pills, 66.1% vs. 96.5%; unsafe to borrow pills from family/friends, 87.1% vs. 98.2%; best to store pills in cool, dry, secure location, 45.2% vs. 89.5%; not recommended to use expired medications, 75.8% vs. 96.5%; not recommended to flush all medications down the toilet, 45.2% vs. 82.5%, ps<.01). Reductions in self-reported misuse behaviors were also observed. Although preliminary, the findings highlight the potential utility of integrating brief, web-based educational interventions in community and primary health care settings.

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1. Introduction

1.1. Scope of the problem

Opioid analgesics are among the most effective treatments for pain and are the most commonly prescribed medication of any category in the United States (Kuehn, 2007). As the rate of legitimate prescriptions for opioids has increased significantly over the past decade, so has the incidence of medication misuse and associated negative sequelae, such as addiction and overdose (Becker, Sullivan, Tetrault, Desai, & Fiellin, 2008; FDA, 2011; Hall et al., 2008). Data from the 2008 National Survey on Drug Use and Health (NSDUH; $N = 68{,}736$) show that approximately 4.7 million individuals 12 years of age and older endorsed non-medical use of prescription opioids in the past month, and approximately 1.7 million individuals meet criteria for prescription opioid abuse or dependence (Substance Abuse and Mental Health Services Administration [SAMHSA], 2009). Data from the Treatment Episode Data Set (TEDS) indicate that, from 1998 to 2008, the proportion of treatment-seeking patients reporting prescription opioid abuse increased more than fourfold (SAMHSA, 2010). Furthermore, prescription

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opioids are the most commonly implicated drug in unintentional overdose fatalities, which increased 124% from 1999 to 2007, largely due to increases in opioid analgesic overdoses (Centers for Disease Control and Prevention [CDC], 2010; Hall et al., 2008).

1.2. Role of dental and primary care practitioners

While some misusers obtain opioid analgesics from family and friends, many obtain them from physicians. A recent study of prescription opioid dependent individuals found that the majority of men (58.3%) and women (83.3%) reported being initially introduced to prescription opioids by a physician (Back, Payne, Simpson, & Brady, 2010). In most cases, patients described suffering a physical injury (e.g., broken limb) or having a medical procedure (e.g., wisdom tooth removal) that necessitated an opioid analgesic to relieve pain. After the pain subsided, however, patients continued to use the opioid medication for alternative reasons (e.g., to get "high" or decrease anxiety). Specifically, dentists and primary care/family medicine practitioners are the leading prescribers of immediate release opioids (Denisco et al., 2011; Rigoni, 2003). Interventions provided in primary health care and dental settings that educate patients on the proper use, storage and disposal of opioid analgesics have been identified as one feasible step to curtail prescription opioid misuse while preserving patient care (Denisco et al., 2011; FDA, 2012).

1.3. Utility of web-based intervention approaches

Technologic advances in intervention delivery, such as the use of e-health platforms, provide alternative service delivery models that can overcome many of the challenges associated with providing interventions in health care settings, primarily the lack of physician and staff time. Brief web- and computer-based interventions have been successfully used to reduce hazardous use of substances, including alcohol and nicotine (Cunningham, Wild, Cordingley, van Mierlo, & Humphreys, 2009; Hester, Delaney, Campbell, & Handmaker, 2009; Hutton et al., 2011; Neighbors, Larimer, & Lewis, 2004; Pemberton et al., 2011; Vogl et al., 2009). Further, web- and computer-based interventions offer efficient, cost-effective methods of delivering standardized patient information in busy health care settings (Christensen & Hickie, 2010). For example, Gilbert et al. developed an interactive "Video Doctor" computer-based program that simulates an ideal conversation with a health care provider concerning HIV risk behaviors (Gilbert et al., 2008). The program was successfully integrated in five diverse outpatient HIV medical clinics ($N = 476$) and resulted in significantly reduced drug and sexual risk behaviors.

1.4. Aims of the current study

In response to the critical need to curtail prescription opioid misuse and in line with recommendations for patient education highlighted by the recent Food and Drug Administration (FDA) Risk Evaluation and Mitigations Strategies (REMS) for extended release/long-acting opioids (FDA, 2012), we developed a brief, interactive intervention ("Script Safety") to help educate patients about the risks of misuse and ways to safely use, store and dispose of prescription opioid medications. The decision to provide this information through a web-based approach was driven by the following considerations: (1) potential to overcome low-literacy barriers through the use of video or audio narrated content throughout the site that did not require provider or staff resources for delivery; (2) evidence suggesting that interactive learning approaches facilitate knowledge acquisition and retention (e.g., Di Noia, Schwinn, Dastur, & Schinke, 2003; Tait, Voepel-Lewis, Mosucci, Brennan-Martinez, & Levine, 2009; Webb, Jospeh, Yardley, & Michie, 2010); (3) ability to standardize dosage (i.e., users could not advance in the site until after the completing the designated content and web analytic data confirmed completion of the site); (4) ability to provide personalized feedback regarding responses to post-knowledge check questions (i.e., key content); (5) ease of updating information to keep pace with the state of the science; and, (6) potential for low-cost scalability and dissemination should Script Safety demonstrate efficacy in subsequent controlled trials.

The primary aim of this open pilot trial was to test the feasibility and preliminary efficacy of Script Safety with respect to increasing patient knowledge in two diverse health care settings (pain management and dental clinics). In addition to the primary outcome of changes in knowledge regarding safe use of prescription opioids, exploratory analyses were conducted to examine self-reported misuse behaviors over a one-month follow-up period.

2. Methods and materials

2.1. Participants

Participants were 62 adult outpatients who presented for treatment at an academic chronic pain management clinic or dental clinic. Clinics served a range of patients, including individuals with private insurance, self-pay, and Medicaid/Medicare eligible; however, few Medicaid/Medicare patients typically presented to the dental clinic due to lack of coverage for the majority of standard procedures. Prior to conduct of this study, neither clinic standardly provided patients with content analogous to that delivered by Script Safety; however, the chronic pain management clinic physicians did complete an Opioid Therapy Treatment Agreement with patients at the outset of treatment. Both clinics had Institutional Review Board (IRB) approval.

Each time a patient was prescribed an opioid analgesic, clinic staff screened the patient for study interest. Interested patients then met with a research assistant in a private office to discuss the study, evaluate inclusion criteria, and answer any questions. For inclusion in the study, individuals were required to (1) be between the ages of 21 and 80, (2) be a patient at one of the participating clinics, (3) have been prescribed a prescription opioid medication at the appointment, (4) be accessible for follow-up via telephone, and (5) possess the cognitive and physical capabilities necessary to complete the web-based intervention. Eligible patients were given a full description of the study and asked to read and sign an IRB-approved informed consent form before any study procedures occurred. Ineligible patients were referred to treatment-as-usual.

2.2. Procedures

Following informed consent, patients remained in the private office and completed the Script Safety intervention on an internet-connected laptop computer. The research assistant accessed the Script Safety website and indicated the specific opioid medication that the patient was prescribed so that the information would be tailored specifically to that medication (e.g., some opioids may be flushed down the toilet whereas others must be disposed of in the garbage/returned to pharmacy or designated "take back" sites). The most commonly prescribed opioids were: Vicodin (43.5%), Methadone (11.3%), and Oxycodone or OxyContin (14.6%). Participants were given headphones to listen to the program. Following completion of the intervention, usability of the Script Safety site was briefly assessed. At one-week and one-month post intervention, the study research assistant contacted participants by telephone to assess knowledge change and/or retention, medication misuse behaviors, and patient satisfaction. Participants received $10 for completing the Script Safety intervention at the initial visit, $15 for the one-week follow-up and $20 for the one-month follow-up.

2.3. Study intervention

Script Safety is a brief (approximately 15 min), interactive, patient-tailored, web-based intervention designed to provide patient education regarding the hazards of prescription opioid misuse, and