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Timely reminder interventions to improve annual Papanicolaou (Pap) smear rates among HIV-infected women in an outpatient center of southern Nevada: a short report

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ABSTRACT

Current guidelines recommend annual Papanicolaou (Pap) smears for human immunodeficiency virus (HIV)-infected women for cervical cancer screening. Rates for such screening in Nevada are below the national rate. Our cohort includes 485 eligible HIV-infected adult women from an outpatient center in Southern Nevada of which only 12 women had obtained a Pap smear in the past year. An intervention was conducted from June 2015 to September 2015, in which reminders to schedule a Pap smear were sent to the remaining cohort of 473 women via sequential text messaging, followed by phone call attempts. Of all subjects, 94% contacted by text messages and 41% contacted by phone calls were successfully reached. There was an increase in the rate of completed Pap smears from 2.5% (12/485) at baseline to 11.8% (56/473) after interventions ($p < 0.0001$) in a period of three months. Out of the 68 Pap smear results, 20 (29.4%) were abnormal. Our intervention, utilizing methods of communication such as text messaging and phone calls, markedly increased the rate of completed Pap smear screening in our population.

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Introduction

All sexually active women are at risk for acquiring human papilloma virus (HPV), but women with an illness that compromises the immune system, such as HIV infection, have an increased risk of developing cervical cancer secondary to persistent HPV infection (Grulich, van Leeuwen, Falster, & Vajdic, 2007). The recommended screening frequency for HIV-infected women differs from that for HIV-negative women; the American College of Obstetricians and Gynecologists (ACOG) recommends two Pap smears in the first year of a diagnosis of HIV infection, and annually thereafter if all screening tests are negative for abnormalities (Bulletins–Gynecology, 2010). Nevertheless, studies have shown that 19%–23% of HIV-infected women did not receive appropriate testing in accordance with these guidelines and the prevalence of cervical cancer screening is low (Oster, Sullivan, & Blair, 2009; Stein et al., 2001).

The rate of Pap smear screening in Nevada is 72.6%, which is below the national rate of 84.5% (CDC, 2012). The age-adjusted incidence and mortality rates for cervical cancer in Nevada are 7.4 and 2.1 per 100,000, respectively ("University of Nevada Las Vegas, School of Community Health Sciences and the Bureau of Child, Family and Community Wellness. Cancer in Nevada," 2012). Several barriers to appropriate cervical cancer screening have been identified in the general population. Both HIV-infected and uninfected women share many factors that influence compliance, including age, ethnicity/race, weight, tobacco use, socioeconomic status, and risky sexual behaviors, while factors like HIV viral loads and CD4T lymphocyte counts are unique to HIV-infected women (Chapman Lambert, 2013).

Integration of automated text messaging and/or phone calling systems have been found to be effective in improving HIV care in the United States and abroad (Mbuagbaw et al., 2015). In a previously administered questionnaire, our population of HIV-infected women had identified a need for reminders as an important barrier to timely screening. We hypothesize that reminders to HIV-infected adult women by text messages and/or phone calls could improve rates of annual Pap smear screening. To

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our knowledge, no such study has been conducted in this geographical area before.

Methods

Sample and setting

The study was conducted at the HIV Wellness Center, an outpatient center affiliated with University Medical Center (UMC) of Southern Nevada. Out of 506 HIV-infected women at the center, 485 women aged 18 years and above were eligible for the study (excluded from the study if they had a total abdominal hysterectomy, already diagnosed with cervical carcinoma, male-to-female transgender patients, who had moved out of the county area and/or who were incorrectly listed). Review of records showed that the Pap smear rates were low (12 women [2.47%] had obtained a Pap smear in the past year, from 1 June 2014 to 1 June 2015). A questionnaire previously administered to the same cohort identified a need for reminders in scheduling a Pap smear. The research protocol was approved by the Institutional Review Boards (IRBs) of University Medical Center of Southern Nevada and University of Nevada, Las Vegas. A chart review of all HIV-infected women receiving care at the center was conducted. Demographic and HIV care-related data were obtained from medical records and stored on a password protected database with encrypted files.

Procedures

An intervention was then implemented from June 2015 to September 2015 who had no documented Pap smear result in the past year. Reminders were sent to schedule a Pap smear to the remaining 473 HIV-infected women, first via three sequential text messages, and subsequently by three phone call attempts. The messages addressed the patients saying that they were due for their annual Pap smear test and provided a phone number to call us back for any concerned questions. Concurrently with conducting the interventions, results of the Pap smears were collected at 3 consecutive periods of time at monthly intervals: (i) from 2 June 2015 to 1 July 2015; (ii) from 2 July 2015 to 1 August 2015; (iii) from 2 August 2015 to 1 September 2015. Patients were also provided flyers when they visited the center for their routine care to help explain the importance of cervical cancer screening.

Patients who underwent Pap smear screening were asked to bring documentation of such or to allow the center to contact their providers to confirm the results. Later, center staff provided the participants with a $10 Walmart gift card (Ryan White Part D Program granted funding through HRSA).

Statistical analysis

Data were de-identified and blinded in an ACCESS database (Microsoft, Redmond, WA) prior to all analyses. Demographic data, including age and race/ethnicity, were obtained for the population from the medical records, and descriptive statistics were calculated for selected clinical characteristics, including HIV viral load, CD4 count, and antiretroviral therapy (ART) status. The Pap smear rate from follow up compared to baseline was analyzed using McNemar's test for marginal homogeneity. Data were analyzed using SAS version 9.2.

Results

As per the data collected from the medical records, the mean age of the participants was 46.7 years (Standard Deviation 11.84). The predominant race/ethnicity was African-Americans (54.6%). Of the study population, 69% had an HIV viral load < 40 copies/ml, 418/485 (86.2%) had CD4 counts > 200 /mm^3, and 429/477 (89.9%) were receiving anti-retroviral therapy, indicating they had been in active care or compliant with their medication regimen. In our study, of all subjects, 94% contacted by text messages and 41% contacted by phone calls were successfully reached.

There was an increase in the rate of completed Pap smears from 2.5%(12/485) at baseline (before interventions) to 11.8% (56/473) after interventions ($p < 0.0001$). Of all 68 Pap smear results, 20 (29.4%) displayed abnormalities: atypical squamous cells of undetermined significance (ASC-US: 14.9%); low-grade squamous intraepithelial lesion (LSIL: 10.4%) and high-grade squamous intraepithelial lesion (HSIL: 4.5%). Women who had abnormal Pap smear tests were referred from this outpatient center to their own or preferred gynecology care providers for further treatment and follow up.

Discussion

The common use of text messaging and the ubiquity of cellular phones can provide unique opportunities to enhance communication in the realm of health care. However, there are some challenges associated, such as patients not opting to receive text messages, discomfort with the use of cell phones, service interruptions and the cost (Norton et al., 2014). Despite these challenges, in our study, nearly all subjects contacted by text

messaging and almost half of those contacted by phone were successfully reached.

The women might have heard of the information to get their Pap smear tests from elsewhere (like their own provider, nurses, news etc.) and we might have assumed that it was because of our interventions which might probably affect the results of this study. Our patients reported that the process of being referred to a separate site for gynecologic care was an obstacle and many believed that they needed to obtain a referral from their HIV health care provider before they could schedule a Pap smear appointment. Therefore, clear and accurate communication between primary HIV care providers, gynecologists, patients, and scheduling staff is essential to improving Pap smear scheduling (Fletcher et al., 2014; Ports, Haffejee, Mosavel, & Rameshbabu, 2015).

Finally, we conclude that our interventions, utilizing methods of communication like text messaging and phone calls, increased the rate of completed Pap smear screening among our population of HIV-infected women. Additional efforts are necessary to understand the importance of screening and to increase compliance with Pap smear recommendations.

Disclosure statement

No potential conflict of interest was reported by the authors.

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