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Improving Syphilis Follow-up Rates: A Quality Improvement Project

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**Abstract**

San Diego County has seen a rise in the number of syphilis cases over the past decade. Syphilis is relatively simple to treat, but requires close serological monitoring to ensure the patient received adequate treatment. Repeat serological testing should be completed at 3 months for patients diagnosed with primary and secondary syphilis. The patient population at a public health clinic in San Diego County has a poor rate of compliance with follow-up appointments (7%). Patient reminders are known to improve patient adherence with follow-up visits. The goal of this project was to incorporate patient reminder cards and patient education to improve follow-up rates among those diagnosed with primary and secondary syphilis.

## Background

In 2015, the United States experienced a 19% rise in primary and secondary syphilis diagnoses, with a rate of 7.5 per 100,000 in population (County of San Diego, Health and Human Services Agency, 2016). The County of San Diego Health and Human Services Agency (2016) reported the 2015 rate of primary and secondary syphilis in San Diego County as twice the national rate at 15.2 per 100,000 in population. Men that have sex with men have been disproportionately affected and the majority of diagnoses are in males with a rate of 29.4 per 100,000 in population (County of San Diego, Health and Human Services Agency, 2016). The California Department of Public Health has identified improving follow up rates and treatment as one of the goals needed in eliminating syphilis infections.

Syphilis is a bacterial infection caused by *Treponema pallidum* and is mainly spread through sexual contact. Once infected, early syphilis is defined by three stages, primary, secondary and early latent. Without treatment, the infection progresses to late syphilis. Primary syphilis presents with a painless indurated chancre that usually occurs at the site of direct contact. The chancre can resolve spontaneously without intervention but this is not indicative of bacterial clearance. Secondary syphilis presents with more systemic manifestations including malaise, adenopathy, and rash. The rash of syphilis is a macular or papular rash that spreads across the torso, palms and soles; it also manifests as patchy alopecia. Once symptoms of primary and secondary syphilis have resolved, it is categorized as early latent. Late syphilis develops when early stage syphilis goes untreated. The effects of late syphilis can cause damage to the cardiovascular system and the central nervous system. Neurosyphilis can occur during any stage of syphilis

infection. The increase in primary and secondary diagnoses was and is concerning due to the fact that these are the stages in which the infection is most easily transmitted.

Treatment for syphilis infection involves intramuscular injection of benzathine penicillin G as a single dose or oral doxycycline twice daily for 14 days in the case of penicillin allergy (Workowski & Bolan, 2015). If not treated adequately, syphilis can lead to long-term complications, including neurological deficits, stroke, and blindness.

Treatment failure is not uncommon, even in the setting of adequate treatment based upon the stage of infection in which the patient presents to the provider. Unrecognized neurosyphilis, which does not respond to intramuscular benzathine penicillin G, is a major consequence of inadequate response to treatment. Close follow-up with serial non palladium specific tests, such as the rapid plasma reagin (RPR) or Venereal Disease Research Laboratory (VDRL), is recommended by the Centers for Disease Control and Prevention (CDC) to confirm appropriate response to treatment and, for those patients who do not achieve the expected serologic response, to determine if treatment failure has occurred (Workowski & Bolan, 2015).

Privacy and confidentiality are paramount when contacting patients about sexually transmitted infection results or following up about missed appointments. Maintaining these fosters a positive patient-provider relationship and could increase likelihood of follow-up care.

### **Purpose/Aims**

The purpose of this intervention was to improve follow-up rates and the ability of sexually transmitted disease (STD) clinic staff to track patients diagnosed with and treated for primary and secondary syphilis. Due to the large volume of patients seen at the

main STD clinic and the satellite clinics, only the patients diagnosed and treated for primary and secondary syphilis at the main branch were considered eligible for the evidence-based practice intervention.

### **Setting**

The San Diego STD clinics, the main clinic and the satellite sites, diagnosed and managed 39% of the primary and secondary syphilis cases in 2015. Clinic providers educate patients and stress the importance of close follow-up to patients during the initial visit; however, there is no mechanism in place to ensure that the patients return to the clinic for the recommended serological testing.

The main clinic was the site for this quality improvement project. The main clinic sees a large volume of patients with a limited number of staff on a daily basis. The site plans to implement an electronic health record in the future but did not have one at the time of the project intervention. Without an electronic health record it was impossible to generate reports based on diagnosis to easily identify patients that have failed to appear for follow-up surveillance. One barrier to follow-up is the current appointment scheduling system. The clinic opens the appointment line for two hours in the morning of each clinic day. There are a few slots open for walk-ins but space is limited. The appointment scheduling is set up this way to reduce wait times for patients. Due to the unpredictable nature of STD acquisition and symptoms and the need for immediate treatment it is difficult to allow future timeframe appointment scheduling, which could result in a high no show rate or reduced capacity to see patients in need. However, this scheduling style does not allow for patients treated for primary or secondary syphilis to schedule follow-up appointments three months in advance. Therefore, the clinic would

benefit from an efficient streamlined process requiring little staff time to track follow-up syphilis testing.

### **Literature Review**

There is little literature on identifying best practices for follow-up for of STD infections. Literature for this type of population was difficult to find. There are studies that discuss the cost of missed appointments and cancellations.

McLean and colleagues (2016) conducted a systematic review of the efficacy of reminder systems and patient adherence with follow-up. The review showed that while reminder systems improve attendance, they are not used optimally. There are also many barriers to reminder systems, some of which are significant to this population. Mailed reminders are inappropriate for this project's population due to the sensitivity of information. Also, the clinic sees a large number of transient patients and some patients do not provide accurate contact information. A reminder given during the visit and encouragement for the patient to set a personal reminder is more appropriate for this population.

### **Evidence-based Project Plan Process**

The Iowa model of evidence-based practice to promote quality care and discussion with the providers at the site identified a problem-based trigger. Low follow-up rates of patients diagnosed with and treated for primary and secondary syphilis at the main STD clinic for San Diego County was identified. The following steps follow the outline of the Iowa model (Melnik & Fineout-Overholt, 2011). Syphilis follow-up adherence was a priority for the organization and a team consisting of a DNP student and the medical director of the site prepared for a quality improvement intervention.

Assessment of baseline follow-up rates of patients diagnosed with primary or secondary syphilis was conducted by the DNP student, using a complete chart review of patients with a syphilis diagnosis between March 2016 through September 2016. Out of 68 patients diagnosed and treated for primary or secondary syphilis at the main STD clinic, only 5 (7%) returned for the three-month recommended serological testing. There was no indication in the charts of those that did not follow-up if they had been called to encourage follow-up or to determine whether or not they followed-up elsewhere.

After a literature search and further discussion with the nurse practitioners and physicians, appointment reminder cards were deemed an appropriate intervention for the population served. The DNP student and the medical director developed a appointment reminder card that suited the needs of the patient population and the clinic. In December 2016, staff received brief face-to-face education and demonstration for the new process. Due to time constraints, intervention evaluation included patients seen and treated for primary and secondary syphilis from December 19, 2016 through January 20, 2017. Once the intervention effectiveness is determined the clinic can then make changes to improve the process and begin a second phase to implementation.

During the initial visit, the provider provides the patient with an appointment reminder card that indicates the week that the patient should return to the clinic for serological follow-up. The patient also receives education of the importance of follow-up and encouragement to set a personal reminder, such as a phone reminder, before ending the visit. The appointment reminder card has a detachable section for the provider to document patient information, reason for and date of follow-up syphilis testing. The

detached section is filed in a designated place at the front desk when the patient chart is returned. The cards are organized by the week of desired follow-up.

After the initial visit, back office staff conduct a weekly review of patients for whom recommended follow-up should have occurred two weeks previously. The staff will perform chart reviews to determine if the patient returned to the clinic and confirm that serological testing has been performed. If the patient has not been retested, staff reaches out to the patient to determine if follow-up occurred elsewhere, and if not, educate the patient on the importance of follow-up.

### **Results**

There were no problems encountered with implementation of the system. Personal checks with the providers showed that they were receptive to the idea but were unsure of its effectiveness. A more inclusive, team approach was in the initial concept, but that would have involved a change in the workflow for many different areas of care. To minimize confusion and interruption of workflow, the burden of implementation ended up placed mainly on the providers. The providers gave the cards to all patients with early syphilis diagnosis and filed them according to project protocol. During the project period, only three patients were diagnosed with primary or secondary syphilis. One of the three eligible patients returned for follow-up monitoring during the recommended time frame. Although a follow-up rate of 33% is an improvement from pre-intervention rates, the patient group is too small and the period is too short to assess the long-term success of the new system related to assessing if providers have incorporated giving out and filing appointment reminder cards as a part of their routine and the actual effectiveness of the cards in improving patient follow-up serological testing.

It is difficult to determine the cost benefit of such an intervention. The county STD clinic does not accept insurance and accepts a small payment when the patient has the means to do so. This quality improvement project had low costs beyond the time of the DNP student to conduct the baseline assessment. Society benefits from the potential reduction in inadequately treated syphilis, which can result in long-term personal morbidity requiring increased expenditure of healthcare dollars and the spread of syphilis. Syphilis can be transmitted vertically from mother to fetus. The 2015 rate of congenital syphilis of 16.4 per 100,000 children is three times higher than the 2011 rate (California Department of Public Health, 2015).

### **Discussion**

Creativity and patience are crucial in developing interventions with limited resources in a high volume county clinic. Simple, inexpensive interventions are best for quality improvement in the absence of an electronic medical record, with a transient population and limited staffing. These findings are consistent with the principles for quality improvement. There was buy-in by the medical director who was an active member of the design and implementation team. Additionally, the providers uniformly recognized low follow-up rates were an important problem. The solution was low cost and low burden for providers and staff alike.

### **Conclusions/Implications for Nursing Practice**

Syphilis infections are on the rise in San Diego County, which has important implications for the health of the community. What is the best way to reach at risk

populations? This project has shown that much work is needed when addressing sensitive issues with at risk populations in San Diego. However, simple solutions that are sensitive to clinic workflow and have low burden on providers may be effective in improving follow-up rates.

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