

Implementation of a Wound Care Algorithm at Local Syringe Services Program

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Abstract

Skin and soft tissue infections disproportionately affect people who inject drugs (PWID). Wounds and infections that occur secondary to injection drug use have physical, emotional, and social effects. PWID place a significant burden on the healthcare system and increase healthcare costs due to emergency department utilization and prolonged hospitalizations resulting from use. Syringe services programs (SSP) offer an opportunity to provide early access to healthcare services, such as wound care, to improve the health of clients, decrease emergency department visits and hospitalizations, and thus, reduce overall health care costs. There are currently no guidelines for providing wound care services at these sites. The purpose of this project was to implement an algorithm to guide the distribution of educational tools, first aid supplies, and provide skin assessments and referrals by non-medical staff. The project's measurables included data collection related to the number of clients who visited the site, how many had wounds, the number of first aid kits distributed, the number of skin assessments completed, and the total number of referrals made. The Plan-Do-Study-Act (PDSA) framework was used to evaluate algorithm compliance by staff. Analysis of the data, process, and staff feedback were the key drivers of the PDSA cycle reviews. During the 12 weeks of implementation there was 100% algorithm compliance in nine of the 12 weeks, with an overall usage of 96%. Barriers included staff availability, client participation, referral options, and a lack of medical personnel. It is imperative that healthcare services at SSPs be supported as they have the ability to positively impact patient health outcomes and decrease overall healthcare costs.

Keywords: syringe services program, syringe exchange program, skin and soft tissue infections, wound care, and algorithm

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Section I. Introduction

Background

The opioid crisis traces back to the 1990s, when the pharmaceutical industry promoted pain management through the use of narcotics, insisting that they would not cause addiction (Centers for Disease Control and Prevention, 2021). As the distribution of opioid prescriptions increased, misuse, abuse, and dependence of these substances rose throughout the nation (National Institutes of Health, 2021). As the severity of substance use escalates, it can lead to practices such as injection drug use of substances such as heroin, meth, and cocaine (Semel Institute for Neuroscience and Human Behavior, n.d.). Complications associated with injection drug use can include overdose, death, endocarditis, communicable diseases, and skin and soft tissue infections (SSTI) (Semel Institute for Neuroscience and Human Behavior, n.d.). SSTIs are prevalent complications associated with injection drug use and are a leading cause of hospitalization in this patient population (Visconti et al., 2019).

Organizational Needs Statement

The organization is associated with a branch of the North Carolina Harm Reduction Coalition. This organization works with other local groups, including the local health department, to provide various services to those experiencing homelessness and substance use disorder in this county and the surrounding area. These services include daily meals, clothing services, ministry and bible study, and syringe exchange services. The organization's mission is to provide harm reduction services, advocate for policy change, and improve public health services; they work to provide resources and education to optimize the health and quality of life of those who suffer from addiction (NC Harm Reduction Coalition, n.d.).

The Centers for Disease Control and Prevention (CDC) support and encourage syringe services programs (SSPs) as they improve community health through a non-abstinence approach that focuses on meeting people ““where they are at.”” (Centers for Disease Control and Prevention, 2019a; Sanchez et al., 2021, p.6). Research supports that SSPs are "safe, effective, and cost-saving, do not increase illegal drug use or crime, and play an important role in reducing the transmission of viral hepatitis, HIV and other infections" (Centers for Disease Control and Prevention, 2019a, para. 2). Also, SSPs promote entry into drug treatment programs, decrease opioid deaths secondary to overdose and increase public safety through proper disposal of needles (Centers for Disease Control and Prevention, 2019a). The CDC acknowledges that components of SSPs should include on-site wound care, harm reduction strategies such as education on safer injection methods, and appropriate referrals to medical care and resources (Centers for Disease Control and Prevention, 2019b.).

Healthy People 2030 primary objectives include reducing addiction and increasing communicable disease screenings and treatments (Office of Disease Prevention and Health Promotion, n.d.). In conjunction with the syringe services program, the Health Department plans to implement communicable disease screenings, treatments, and wellness checks through the organization’s current services. As stated above, skin and soft tissue infections are a significant risk factor associated with the practice. Over half of people who inject drugs (PWID) report wounds (Sanchez et al., 2021). Wounds and SSTI have physical, emotional, and social effects on those who suffer from them (Sanchez et al., 2021). This can lead to a significant burden on the healthcare system and healthcare costs due to increased rates of emergency department utilization for primary care and the need for prolonged hospitalization secondary to sepsis and endocarditis (Sanchez et al., 2021).

Due to the nature of the activity, practices associated with injection drug use, and concurrent homelessness, many clients suffer from or are at high risk for wounds secondary to injection (██████████, personal communication, June 22, 2021). The organization's directors have expressed that wound care is a primary need for clients who utilize the syringe services program (██████████, personal communication, June 22, 2021). Unfortunately, PWID typically avoid healthcare facilities and healthcare professionals due to past negative experiences and discrimination or fear of judgment (Biancarelli et al., 2019). Another factor related to healthcare avoidance is a lack of insurance and financial ability to cover services (Sanchez et al., 2021). Fortunately, PWID typically develop trusting relationships with those at the SSPs and are more likely to seek and obtain medical care in this setting (Sanchez et al., 2021).

Research shows that successful SSPs have wound care initiatives that improve the client's health and contribute to substantial cost savings for the healthcare system (Sanchez et al., 2021). Although wound care is a primary need of the program, the project site is in the early stages of developing on site health care services; therefore, they have yet to establish and offer wound care services (██████████, personal communication, June 22, 2021). With a focus on communicable disease and wellness clinic rollout and only one physician on the SSP team, there is a lack of resources and medical volunteers to develop and implement a wound care services initiative.

There are no known metrics for this project currently. The components of the project work to address all areas of the Triple Aim. The project intends to improve the health of this population as seen in the incidence and prevalence of disease burden associated with injection drug use and SSTI using the Triple Aim (Stiefel & Nolan, 2012). Over time the

project can positively impact the client's perceived experience with healthcare professionals and decrease per capita healthcare costs, emergency department visits, and hospitalizations in PWID (Stiefel & Nolan, 2012).

Problem Statement

Wounds and skin and soft tissue infections are strongly associated with injection drug use and are linked with significant health problems and increased hospitalizations (Rapoport et al., 2018). The organization voiced that wound care services are a primary need of its clients (██████████, personal communication, June 22, 2021). One beneficial component of many established syringe services programs is addressing wound care needs; unfortunately, implementation of these services had not yet occurred at this local syringe services program.

Purpose Statement

The purpose of this project was to implement an algorithm to guide the distribution of educational tools, first aid supplies, and provide skin assessments and referrals by non-medical staff of this organization. The project's measurables included data collection related to the number of clients who visited the site, reported wounds, the number of first aid kits distributed, the number of skin assessments completed, and the total number of referrals made. By implementing this project, the components of the Triple Aim: population health, improved patient experience of care, and per capita costs were addressed (Stiefel & Nolan, 2012).

Section II. Evidence

Literature Review

The literature review for this project was performed in several phases using variations of terms. Caring for people who inject drugs is complex; multiple factors often complicate wounds in this population, including drug use practices, negative personal experiences with healthcare professionals, and social determinants of health (Sanchez et al., 2021). Some social determinants of health to consider include housing insecurity, lack of transportation, and being uninsured (Figgatt et al., 2021; Sanchez et al., 2021). These factors mentioned significantly affect behaviors, morbidity, and access to care, and therefore should be considered when implementing a program aimed at harm reduction (Sanchez et al., 2021; Zaw & Mehra, 2020).

With assistance from the University's librarian, a broad search was initially conducted on wound care, patient education, and first aid kits, as this is the project of interest. PubMed was utilized as the search engine for this search, incorporating MeSH terms, *Soft Tissue Injuries*, *Patient Education as Topic*, and *First Aid*, along with keywords and synonyms and Boolean operators. These keywords included variations of wound care, wounds, skin injuries or trauma, skin assessment, patient education, education materials, educational tools, and first aid kit. The initial search yielded 23 results, which all titles were reviewed and found that none were relevant to people who inject drugs or syringe services programs. The MeSH terms stated above were then excluded. Only the keywords above were searched with Boolean operators, which resulted in two irrelevant articles as one discussed pediatric injuries and the other was related to vehicle accidents.

The literature search was expanded with a focus on wounds, wound care, and syringe services programs. Again, utilizing PubMed, variations of wounds, wound care, skin assessment, skin trauma or injuries, and soft tissue injuries, along with syringe service, syringe exchange, or needle exchange, were used, as many of these terms are interchangeable. The search conducted with the mentioned keyword phrases, synonyms, and Boolean operators yielded 43 results. An attempt was made to filter these results by article type using The National Center for Biotechnology Information filters but was unsuccessful and received no results when these article filters were utilized. Therefore, 43 results were filtered to include only those of the English language and published in the last five years, generating 14 results. A preliminary review of the remaining articles was conducted; titles and abstracts focused on human immunodeficiency virus (HIV), needle stick injuries and disposal, and law enforcement were excluded. Inclusion criteria included titles that mentioned wounds, abscess, skin and soft tissue infections, particularly within syringe services programs, access to medical care, or mentioned health care costs. Six relevant articles were retained from this search.

Utilizing PubMed, a review of the literature was conducted with variations of the following keywords: people who inject drugs, injection drug use, primary care, and primary care provider, healthcare, and access to care, in combination with Boolean operators. This search yielded 159 results. Filters were applied to include only those published in the last five years and of the English language, resulting in 87 articles. These 87 titles were reviewed, and those that focused on HIV or hepatitis C virus (HCV) in people who inject drugs, opioid treatment and treatment programs, or mentioned research conducted in a country outside of the United States were excluded. Articles that mentioned syringe services programs,

infection, people who inject drugs, barriers to care, and primary care were part of the inclusion criteria and thus reviewed for relevancy. Through this method, four articles of interest were retained.

Next, a review was conducted on education, prevention, and wound care in people who inject drugs. Again, the PubMed search engine was utilized, along with key phrases and Boolean operators. The following search terms and variations included: education, educational tool, educational intervention, patient education, educational material, prevention, preventive health, wounds, wound care, abscess, skin and soft tissue infections, people who inject drugs, people who use drugs, syringe services program, needle exchange program, and syringe exchange program. This search yielded 16 articles. These results were filtered to include publications in the last five years and written in English, leaving eight remaining articles. Upon reviewing the remaining eight titles, those mentioning supervised drug injection practices, law enforcement, or another country were excluded. Other inclusion criteria included articles that discussed behavioral and hygiene practices, abscesses, and skin and soft tissue infections, retaining four articles of interest.

While the above articles were beneficial to understand the importance of program implementation, most lack specific recommendations for wound care services provided in a syringe services program. To adequately review current recommendations and implementation strategies for syringe services programs, a Google search of “harm reduction and syringe services programs” was performed; this search yielded results for national and professional organizations. These organizations included the National Harm Reduction Coalition, a nationally recognized organization that provides information and resources about harm reduction practices and people who inject drugs, and the Centers for Disease Control

and Prevention. In addition, a Google search was performed to review the Centers for Disease Control and Prevention recommendations specifically, the phrase “CDC and syringe services programs” was utilized. One document that focused on planning, design and implementation of syringe services programs was retained. Following this search, a second Google search was conducted as "wound care guidelines for syringe services program." Results that appeared to be from state and national organizations were reviewed, resulting in guidelines for various states including, California, Minnesota, Virginia, and North Dakota. This search was necessary to obtain guidelines, policies, and procedures for syringe services programs and harm reduction services from various states across the country and the World Health Organization. For example, the Minnesota Department of Health recommends syringe services programs provide a list of trusted medical providers for referral or assist in finding a provider and encourage wound care services to the extent of the volunteer's knowledge (Minnesota Department of Health, 2019). The Virginia Department of Health offers services that include wound care supplies, risk reduction counseling, and referrals to medical care (Virginia Department of Health, n.d.). These findings led to a search of the Google database for "guidelines for syringe services program in North Carolina." This search resulted in the North Carolina Department of Health and Human Services recommendations for syringe services programs.

Using the websites mentioned above and the 14 articles retained from the PubMed database, a further review of these resources was performed to complete a literature matrix of the most relevant literature for implementation. All 14 articles were read in their entirety to determine if they applied to this project. The Evidence-Based Medicine Pyramid was used as a reference to assess the level of evidence in each article (Glover et al., 2006). Due to limited

research findings on syringe services program algorithms and recommendations related to on-site wound care, all articles meeting the above inclusion and exclusion criteria were considered initially. This allowed for a fundamental understanding of the existing knowledge, practices, recommendations, and evidence-based practice. Unfortunately, the above search criteria yielded no articles that were meta-analyses or systematic reviews valid to the project; the primary levels of evidence utilized were Level III and Level IV.

Current State of Knowledge

Although people who inject drugs are disproportionately affected by skin and soft tissue infections, unfortunately, no guidelines exist for the care of injection drug-related wounds at syringe services programs (Sanchez et al., 2021). The literature on this topic emphasizes the need and benefit of wound care at syringe services programs (Baltes et al., 2020; Figgatt et al., 2021; Huyck et al., 2020; Sanchez et al., 2021; Zaw & Mehra, 2020). However, it does not provide direct guidelines or recommendations on what implementation consists of and what specific services should be provided (Sanchez et al., 2021). The Centers for Disease Control and Prevention discuss the planning, design, and implementation of general services at syringe services programs and emphasize completing a community needs assessment to address priority problems first and promptly (Javed et al., 2020).

Syringe services programs provide a trusting environment for this population, who often have difficulty trusting healthcare providers and fear mistreatment and judgment (Figgatt et al., 2021). Since people who inject drugs have a high prevalence of skin and soft tissue infections and increased rates of emergency department use for healthcare, one can infer that a need exists for education, prevention, and early treatment amongst this patient population (Sanchez et al., 2021). Therefore, syringe services programs are ideal for early

harm reduction implementation and should provide services such as education, wound care kits, and access to on-site care and referrals (Baltes et al., 2020; Figgatt et al., 2021).

Current Approaches to Solving Wound Care Needs in People Who Inject Drugs

There is a resounding agreement throughout the literature that people who inject drugs are disproportionately affected by wounds and skin infections and often delay care for various reasons, including socioeconomic disparities and emotional factors (Cahn et al., 2021; Figgatt et al., 2021; Huyck et al., 2020; Sanchez et al., 2021; Ozga et al., 2021). Harm reduction strategies implemented in syringe services programs are cost-efficient and beneficial in improving outcomes in people who inject drugs (Huyck et al., 2020; Robinowitz et al., 2014; Sanchez et al., 2021). Therefore, wound care services implemented at these sites will provide an "upstream" approach to addressing a significant need of this population (Cahn et al., 2021; Sanchez et al., 2021, p. 572).

Several syringe services programs have optimized their unique position to positively impact their clients by offering wound care clinics on-site to promptly address wound care needs (Cahn et al., 2021; Robinowitz et al., 2014). By doing so, they have successfully implemented wound care education, assessment, and treatment initiation, which is reflected in cost savings and decreased utilization of emergency departments and overall hospitalizations in people who inject drugs (Castillo et al., 2020; Robinowitz et al., 2014). These early adopters are foundational models for other syringe services programs to replicate (Castillo et al., 2020; Robinowitz et al., 2014).

As stated above, there are no definitive guidelines for wound care at syringe services programs (Sanchez et al., 2021). Upon review of the Centers for Disease Control and Prevention and the North Carolina Department of Health and Human Services websites, there

are no direct recommendations for wound treatment at syringe services program sites, but “ideally, SSPs will provide various screening, diagnostic, and referral services” (Javed et al., 2020, p. 15). The Centers for Disease Control and Prevention also state that syringe services programs should consider addressing the educational needs as displayed by those who utilize the site and provide on-site access or referrals for basic wound care (Javed et al., 2020). Sanchez et al. (2021) attempt to summarize best practice recommendations to include the availability of trained medical staff, point of care testing, ability to perform incision and drainage, oral antibiotics, and ultrasound if available. Sanchez et al. (2021) also recommend that these sites provide basic wound care and essentials, including instructions and supplies. While the recommendations presented by Sanchez et al. (2021) are ideal, they require adequately trained medical staff and the availability of resources that programs may not have on the initial establishment of services. The North Carolina Department of Health and Human Services advises syringe services programs to add additional services with caution since attempting to implement too much, too quickly, may not be sustainable (North Carolina Department of Health and Human Services, n.d.). When considering expanding on-site services, the implementation of new services should only begin once the organization can ensure its sustainability (North Carolina Department of Health and Human Services, n.d.). Sites should ensure adequate resources and community connections are available for clients if their needs cannot be met on-site (North Carolina Department of Health and Human Services, n.d.).

Discussions with a neighboring syringe services program were held to examine current approaches in addressing the wound care needs of their clients. Their program site offers wound care to their clients on an as-needed basis; it consists of a skin assessment by

non-medical volunteers, basic discussion of treatment with over-the-counter aids, and referrals as necessary ([REDACTED], personal communication, September 12, 2021).

Components of their wound care kits include: bandages, antibiotic ointment, Vitamin C lip balm, hand sanitizer, and arnica gel ([REDACTED], personal communication, September 12, 2021). Depending on each member's specific needs, other components such as antiseptics, gauze, and sterile water may be added to the kit ([REDACTED], personal communication, July 19, 2021). It is important to note that non-medical professionals perform this site's wound care due to a lack of medical professional volunteers at the site ([REDACTED], personal communication, July 19, 2021). A syringe services program in Michigan has provided the contents of their wound care kits which include alcohol pads, triple antibiotic ointment, and bandages (Western Upper Peninsula Health Department, n.d.). Also, simple interventions such as hand hygiene education and training, and access to alcohol-based hand rubs were found to successfully minimize the risk for infection at one syringe services program (Mezaache et al., 2021).

Evidence to Support the Intervention

One essential criterion for developing a syringe services program is utilizing a needs assessment and reviewing existing resources and services (Javed et al., 2020). Although the clients at the project site are persons who inject drugs, the project site expressed the need for general basic first aid kits, as opposed to solely focusing on injection drug-related wounds. The project site director voiced that general wounds are a problem because so many of their clients suffer from homelessness; they often complain of various skin conditions, including bug bites, poison ivy, and burns ([REDACTED], personal communication, August 27, 2021). The project site director and the project partners of the local health department agreed that

education, skin assessments, wound care supplies, and referrals are the primary needs of the clients at this site ([REDACTED], personal communication, July 19, 2021; [REDACTED], personal communication, July 19, 2021; [REDACTED], personal communication, July 19, 2021). Syringe services programs offer an ideal opportunity to address harm prevention, provide education, resources and supplies, and appropriate referrals in an environment already trusted and accessed by them. (Baltes et al., 2020; Sanchez et al., 2021).

The implementation of wound care services such as education, focused skin assessments by non-medical staff, basic first aid kits, and appropriate referrals is the best intervention for the project site and the clients. This project addressed the site's perceived primary need while keeping the project manageable as recommended by the North Carolina Department of Health and Human Services (n.d.). No medical personnel were currently employed or volunteering regularly on site; therefore, the non-medical staff were the most accessible option to provide care to clients. Project partners supported the use of non-medical staff for this quality improvement project implementation; they felt it was likely the more sustainable option by not depending on medical volunteers to provide wound care services on site ([REDACTED], personal communication, December 2, 2021).

Evidence-Based Practice Framework

The framework utilized to develop, implement, and evaluate this project was the Plan-Do-Study-Act (PDSA) cycle. Walter Shewhart and Edward Deming originally developed the PDSA cycle as a means to gain knowledge and insight about an idea, project, or process in a systematic way (The W. Edwards Deming Institute, 2021). The Institute for Healthcare Improvement (n.d.) describes the PDSA cycle as a method to test a change and then use the knowledge gained to improve practice. During the first step, *Plan*, development

of the proposed intervention occurs, and details of how the data will be collected are determined; this step also includes predicted outcomes (Institute for Healthcare Improvement, n.d.). Secondly, *Do*, implementation of the intervention takes place; during this phase, evaluation of the intervention takes place to assess for any problems or setbacks. In the third phase, *Study*, the data obtained during the intervention will be reviewed and evaluated, particularly as it relates to the anticipated outcomes outlined during the planning phase. Lastly, for the last phase of this cycle, *Act*, the initial plan will be modified based on knowledge and data gained during the other phases (Institute for Healthcare Improvement, n.d.).

The planning phase of the DNP quality improvement project focused on the implementation of the developed algorithm, educational tools for the non-medical staff and clients, and first aid wound care components to be utilized at the syringe services program. These components included the distribution of educational tools, first aid wound care kits, basic skin assessment and recommendations, and a referral process for skin and soft tissue infections as needed. The project lead observed and evaluated the above process for ease and efficacy based on feedback from the staff and clients. Utilization of the algorithm was evaluated based on the number of first aid kits distributed, the number of clients assessed, and those referred for further care, when compared to the overall daily number of clients who reported skin and wound concerns. Evaluation of the referral process was assessed based on staff and client feedback. Staff and client feedback and quantitative data was collected and evaluated at a minimum biweekly to modify implementation components, such as the overall process, educational materials, and the first aid kits (Institute for Healthcare Improvement, n.d.).

Ethical Consideration & Protection of Human Subjects

Ethical considerations of the project included ensuring we do no harm to the client, respecting those that utilize these services, and guaranteeing that all clients receive fair and equal treatment. All persons who utilized this syringe services program had the same opportunity to access the wound care educational tools, first aid kits, skin assessments, and referrals at the site. Social determinants of health that may have affected a person's ability to access these resources included, but were not limited to, transportation issues and employment schedules, which may already be barriers to access the fixed syringe service location.

Potential harm to these clients included psychological distress from skin assessments in cases of experiences of abuse or history of, as well as client fear of judgment. These risks were mitigated by providing adequate volunteer training pre-implementation and offering these services in a welcoming, non-judgmental environment, that ensured client privacy, throughout the project. Access to the educational tools, supplies, and referrals were not conditional to the client agreeing to a skin assessment. First aid wound care kits were offered to all clients who voiced they had an active wound, or if requested by the client, even if they chose to opt-out of the skin assessment.

The literature suggests that individuals who inject drugs are more likely to refuse or avoid medical care (Sanchez et al., 2021). By providing services in a familiar and trusting environment clients could feel more comfortable seeking care if necessary. Participation in project implementation was voluntary and included the use of low-risk interventions and supplies that are accessible over the counter.

During the Doctor of Nursing Practice I Summer session, preparation for the formal approval process included completing the Collaborative Institutional Training Initiative (CITI) training modules Group 2 Social/Behavioral Research Investigators and Key Personnel. Before initiating project design, a visit was made to the project site to help anticipate potential challenges and better understand the current practices, procedures, available resources, and discuss the site's needs with the director and staff. The project site does not have an organizational institutional review board (IRB); however, an organizational letter of support was obtained. The University Quality/IRB Self-Certification tool was completed, and the project was deemed as quality improvement with no further IRB required.

Section III. Project Design

Project Site and Population

The quality improvement project was conducted at a syringe services program site in a rural community. The project lead collaborated with the site director, assistant director, project site champion, the local health department, and site staff, also known as peer support staff. The project aimed to implement an algorithm to address wound care needs at the syringe services program by standardizing a workflow to provide early education, basic wound care, and referrals to persons who inject drugs (see Appendix A).

The syringe services program site is primarily a fixed location which can pose as a barrier for many clients, considering many are homeless, lack transportation and a driver's license. To note, as the syringe services program continues to grow, services and resources constantly evolved as well, as was discovered throughout project design and implementation. The site does have a "mobile unit" service, which is essentially a delivery service that helps bring supplies to clients that may be unable to access the fixed location due to transportation issues. For the purposes of this project, implementation was not expanded to include the mobile unit. Other barriers to the project include a lack of volunteers, particularly medical personnel, time of day in which the site is open, as well as continuously changing processes and roles and responsibilities of the staff. Implementation of other services occurring concurrently with the project allowed for the potential of increased stress and burden on the staff during implementation, which was lessened through modifications to the project when and as needed. For example, the site assists clients in enrolling in Medicaid or Medicare as appropriate, therefore staff chose to obtain the client's insurance status as well.

Description of the Setting

The setting for this quality improvement project was in a rural community in the piedmont region of North Carolina and is the county's only syringe services program. Non-medical staff provide syringe exchange services at this site. The syringe services program site is open every Tuesday and Friday from 2pm to 4pm.

Description of the Population

The current staff at the syringe services program consist of a director, assistant director, and three peer support persons who are employed through Uwharrie Harm Reduction Initiative grant funding. To mention, peer support staff are those with lived experience who assist with site operations, including referrals, support, and mentoring. As with many programs that accept volunteers, the number of volunteers on site are subject to change. Unfortunately, there were no volunteers during implementation. Each day the number of clients who utilized the site varied, with most clients arriving during the last hour of operation. The site saw an average of 13 clients each day. The client population served are people who inject drugs, and they vary in gender, race, age, and sexual orientation. Approximately 80% of clients are White, 8% African American, with the remaining 12% to include Hispanic, Asian, and Native American ethnicity. Males account for 55% of clients, with 70% of all clients identifying as either homeless or living-in substandard housing. While the exact percentage was not provided, the site reports that most clients do not have a car or driver's license. The site estimates that 60% of clients with substance use disorder also have wounds (██████████, personal communication, December 14, 2022).

A basic first aid kit is most beneficial to this population because they suffer from wounds associated with injection drug use, as well as those sustained from environmental

elements such as poison ivy, cuts, and insect bites and stings (██████████, personal communication, August 27, 2021). As stated above, injection drug use can increase morbidity and mortality and be costly to the healthcare system by treating infections associated with use (Centers for Disease Control and Prevention, 2019b). According to the CDC, “health care provided at SSPs [syringe services programs] can catch these problems early and provide easy-to-access treatment to a population that may be reluctant to go to a hospital or seek other medical care” (Centers for Disease Control and Prevention, 2019b, para. 5).

Project Team

The project team consisted of the project leader, project champion, the site director, assistant director, three peer support persons, and the local health department's public health education specialist. The project champion and the public health education specialist are both employed by local health departments. The county's health department received grant funding for the implementation of the syringe services program services; therefore, department representatives actively participate in discussions and helps to organize and oversee implementation of desired services and resources at the project site.

During the planning phase, the project lead collaborated with the project champion and site directors. During the implementation and evaluation phases, feedback from site directors, peer support staff, and clients was utilized. Prior to the initial day of implementation, the process of how the algorithm would be incorporated into routine operations had been undecided. A joint decision was made between project lead and the assistant director that the assistant director would take on the role of screening for wounds and the need for skin assessments as she was already processing clients and recording their

desired supplies. Others were educated on the process occurring with the obtainment of usual supplies. After screening for the presence of a wound, a first aid kit would be offered and she would inquire if the client was interested in a skin assessment, if interested, the client would then be taken to a private area that had been set up for skin assessments, as well as future screening for infectious diseases. Although all staff were educated on the processes and basic wound care, one peer support person designated herself to skin assessments, treatments, and referral assistance as she had the most interest and comfort in this area.

The site's directors and peer support staff were essential to implementing and evaluating this project. The project lead evaluated the project weekly and made changes and provided education as needed based on data obtained and feedback from staff. The project lead performed nonformal interviews with staff and clients at a minimum biweekly to evaluate processes and receive feedback.

Project Goals and Outcome Measures

The quality improvement project aimed to develop and implement an algorithm for non-medical staff to utilize to better address the wound care needs of the clients at the syringe services program. This project evaluated the implementation of this algorithm through the utilization of two data collection tools. One data tool prompted the initial screening for existing wounds, the need for a first aid kit, and offered a wound assessment as applicable (see Appendix B). If willing to receive a wound assessment, the second data collection tool then assessed the staff's use of the developed algorithm, additional recommendations, such as the need for additional supplies and/or referral for further evaluation and treatment (see Appendix C).

This project's measurable outcomes focused on the staff's utilization of the algorithm by evaluating if clients were screened for wounds and offered wound assessments, the number of

first-aid kits distributed to those with wounds, the use of the project algorithm, and if referrals were made when appropriate. Informal interviews were conducted to obtain staff feedback to evaluate the ease of the wound care algorithm, overall understanding of the process, and confidence in their ability to follow the algorithm and refer when appropriate. Staff feedback was essential to ensure future project sustainability (see Appendix D).

Description of the Methods and Measurement

Utilization of the Plan-Do-Study-Act (PDSA) cycle occurred throughout the quality improvement project implementation. The focus of the project was to develop and implement an algorithm to address wound care needs at the syringe services program. The algorithm addressed a primary need of this population through education, access to basic first aid supplies, early wound assessment, and referrals for people who inject drugs to reduce harm, provide early access to care, and improve health outcomes.

The directors and staff at the site were educated on the developed algorithm and data collection tools, wound basics, including various wound types and causes, signs and symptoms that require further medical evaluation, local referral options, “red flag” symptoms that need emergency medical attention, and education on the first-aid kit components and recommended use. The first-aid kit components included the following: hand sanitizer, alcohol pads, sterile water, bandaids in various sizes, triple antibiotic ointment, hydrocortisone cream, lip balm, and gloves. Other items that were available on an as-needed basis included telfa, gauze, kerlix, silvex cream, and medical tape (see Appendix E).

Once the client received their syringes and supplies, educational tools were distributed and the staff member inquired about any current wounds. If wound(s) were present, a first-aid kit was offered, as well as a wound assessment. The algorithm was then

utilized by staff to further assess the wound, determine the need for additional supplies, and referrals were made as deemed appropriate by staff. If a referral was recommended, staff inquired about the client's willingness to be seen and transportation status. Staff often assisted clients as needed. A referral sheet was provided to staff with referral site's phone numbers and addresses for reference. Staff were willing and able to assist clients with appointment scheduling and transportation. Transportation could also be scheduled via SCUSA Transportation services.

The clients were educated on warning signs and symptoms that would indicate the need to seek immediate or emergency medical care due to a worsening condition. All clients received educational handouts which contained pictures of various skin concerns, warning signs and symptoms, and tips for safer injection practices to reduce the occurrence of wounds (see Appendix F). The development and implementation of this algorithm provided clients with harm reduction and basic wound education, first-aid supplies, and early wound assessment and referral, if needed, for those who may not receive medical care otherwise.

As stated above, the use of the PDSA cycle assessed the utilization of the algorithm through a weekly review of the data collected and informal interviews and feedback from staff. Identified barriers and volunteer feedback lead to additional PDSA cycle reviews. The project lead was on-site weekly to assess the use of the algorithm and the data collection process.

Discussion of the Data Collection Process

Due to ease of use and available resources, the program site staff performed the data collection. The data collection tools were on printed sheets of paper to be available and completed on-site by staff following each client encounter (Appendix B, Appendix C). The

algorithm prompted the volunteer to ask the client questions, acknowledge areas of concern, perform a basic skin assessment, and distribute education tools and a first aid kit (Appendix A). The staff completed the data collection tool through their engagement with the client as outlined in the algorithm. By week two of implementation, certain staff members had assumed roles in the project implementation process. The assistant director was responsible for the initial intake and screening for wounds, need for assessment, distribution of the kit and for collecting information on the use of the algorithm. One staff person designated herself as the individual who would perform the skin assessments, provide education on the wound and use of supplies, assist with referrals as necessary, and determine if a referral was necessary. This staff member was asked to collect this information, noting if the client received the referral, if necessary, and recording any other supplies required for care outside of the first aid kit (Appendix C). These two combined were used to assess the compliance of the algorithm, the number of kits distributed, assessments performed, and referrals made.

Staff were reminded not to place patient identifiers on the data collection tool and were instructed to place completed forms in the red folder provided for pickup by project lead. These sheets were collected and reviewed weekly. Data from these forms were placed into a table via Microsoft Word for the project lead to later utilize for analysis. The project lead obtained feedback about the algorithm and implementation from staff at minimum, biweekly. Informal discussions with clients helped gain feedback on the readability and usefulness of the educational tools, first aid kit supplies, assessments, referrals, and barriers to care.

Implementation Plan

Implementation of this project began with a review of the educational tools, first aid kit components, and algorithm with the project champion. The project lead collaborated with the project site director, project champion, and the health department's education specialist to obtain items for the first aid kits as these products were supplied through grant funding provided to the health department. One week prior to implementing the project, a lunch-and-learn was held with the site directors and one staff member. During this session, project goals, basic skin conditions and treatment, and first aid kit supplies were discussed. Education was provided via Microsoft PowerPoint, and project lead answered questions regarding content and project implementation. With the help of site directors and staff, first aid kits were also created in preparation for the first day of implementation. The project was implemented the week following the lunch-and-learn session. Educational handouts, data collection tools, algorithm for reference, referral contact information, and the Microsoft Powerpoint slides designed as a booklet were all provided for director and staff use. The project lead educated the other two peer support staff on the algorithm, wound care basics using the PowerPoint created, and the educational tools.

Project implementation occurred over 12 weeks. The project lead was on site at least weekly throughout implementation, at which time data collection sheets were obtained and reviewed, the need for more educational materials and first aid kits was assessed, and any questions or concerns were addressed. The project lead reviewed data obtained, observed use of the algorithm, and feedback from the informal staff interviews to guide PDSA cycle reviews which occurred at various intervals. Based on the findings, the project lead initiated necessary changes and continued to evaluate the implementation of the algorithm.

Timeline

The project lead developed the educational tools and algorithm to be used for implementation. These items were completed by January 2022 with the assistance of a consultant from New Hampshire Harm Reduction. The project lead collaborated with the project champion, project site directors, and the health department to obtain first-aid kit supplies. Staff training was held on-site the week before implementation began and then the week of implementation for the other two support staff. Implementation of the quality improvement project began in January 2022 and lasted through April 2022, taking place over 12 weeks (see Appendix G).

Section IV. Results and Findings

The primary purpose of the quality improvement project was to implement an algorithm that would provide early access to wound care services at a local syringe services program. The project lead was on-site at least once a week throughout implementation to observe processes, assist with questions, obtain feedback, and make changes accordingly. Critical evaluation of quantitative data and informal discussions were used to assess common themes, opportunities for improvement, and gaps in the process.

Results

Throughout the 12 weeks of project implementation, the site had 298 client visits, ranging from 11-18 clients per day, with an average of 24.8 clients per week (see Appendix K). It is important to note that these 298 client visits were not separate individuals, and this number more accurately depicts the number of visits to the site by clients over the 12 weeks. Due to the nature of the site, the same clients often visit the site each week.

Over the 12 weeks of implementation, 34 (11.4%) of the 298 clients, reported the presence of wounds. Of the 34 clients with reported wounds, 10 (29.4%) received skin assessments. Four of the ten (40%) clients who received skin assessments were referred for further care (see Appendix H, Appendix K). These referrals included the emergency department, urgent care, primary care office, and health department. The need for referral to the emergency department was identified by peer support staff using the algorithm. All clients who reported wounds received a first aid kit, unless they declined, and preventative kits were distributed as requested, totaling 43 kits distributed (Appendix K).

During the first week of implementation, feedback from two peer-support staff was obtained regarding their opinion and assessment of the educational tools. A discussion was

held about the clarity of the material taught during the pre-implementation education session, and their comfort using the algorithm and available resources to refer to if needed. Over the 11 of the 12 weeks of data collection, the overall usage of the algorithm was 96% (see Appendix I). Week 11 data was unavailable due to being misplaced, therefore it was not included in calculating the overall algorithm usage (Appendix I). Throughout nine of the twelve weeks, algorithm compliance was 100%, with a decrease in algorithm compliance seen in weeks five, nine, and eleven (Appendix I). A common theme noted during these weeks was that either one or both staff members who had assumed responsibility for the algorithm was not present on site. This highlights a gap in the process when all staff members are not available to perform their self-designated roles.

Analysis of the data, process, and staff feedback were the key drivers of the PDSA cycle reviews. Throughout project implementation, regular check-ins and informal interviews were conducted with staff and clients to inquire about their thoughts regarding the algorithm, first-aid kits, and educational tools to receive feedback. The project lead collected data sheets at a minimum of once every seven days. PDSA cycles were performed at weeks two, five, and nine. A lack of timely collection and reporting of data requested were identified during the PDSA review process. The algorithm and data tools were evaluated and modified several times to improve ease of use and clarity in timelier data reporting.

During week nine, a discussion was held with two of the three peer support staff members about future sustainability, given that only one person was primarily conducting the skin assessments. One of these staff members was not regularly involved with skin assessments but stated they felt that the education and tools were sufficient, and they felt

comfortable following the algorithm if needed. During week eleven, no data was provided on the number of clients and use of the algorithm.

Discussion of Major Findings

A review of the literature, along with previous discussions with the site directors and health department representatives indicated a high prevalence of associated wounds and skin conditions in this population (██████████, personal communication, June 22, 2021; Sanchez et al., 2021). Findings over the 12 weeks of project implementation revealed that only 11.4% of the clients stated they currently had a wound or skin concern. While the literature does discuss this population's hesitancy to seek medical care due to mistreatment and distrust in the healthcare system, it also highlights that when healthcare services are offered in a trusting environment, people are more likely to seek care (Sanchez et al., 2021). During project implementation, staff perceived that even in a trusting environment, clients are often still unwilling to receive care due to the shame felt by the client surrounding wounds secondary to their substance use. The project findings indicated that 79% of the clients with wounds accepted a first aid kit for at-home care. Only 29.4% of the clients with wounds were agreeable to a skin assessment, reflecting client's hesitancy to accept care.

In addition, other common themes related to refusal of skin assessments, aside from shame, included transportation issues, time constraints, current lack of concern, or not wanting to be inconvenienced. These common themes were recognized over the twelve weeks through informal interviews and conversations with staff and clients. Throughout the project, the staff's perception, experience working with clients, and input from their own personal experience with substance use disorder, was invaluable.

Section V. Interpretation and Implications

Costs and Resource Management

The financial costs associated with the quality improvement project at this site were minimal compared to the potential long-term cost-savings benefit. One study reports that the median cost for an inpatient hospital admission for lower extremity cellulitis was \$7,341 (Challener et al., 2017). Another study in North Carolina found that the median inpatient hospital cost for endocarditis associated with substance use was \$54,281, with 42% of those people either uninsured or having Medicaid (Fleischauer et al., 2017). Endocarditis, osteomyelitis, and sepsis are all conditions that may result from wound complications and infections (Zaw & Mehra, 2020). Emergency department visits and hospitalizations among persons who inject drugs are often due to infections, such as cellulitis, secondary to injection drug practices (Zaw & Mehra, 2020). The use of harm reduction strategies as developed and implemented in this project, seen in the educational tools provided, are recommended to help reduce the prevalence and decrease healthcare costs (Fleischauer et al., 2017).

Before implementing this project, site staff were already hired and accounted for in the site's budget. No additional staff were hired or utilized from elsewhere for this project. Staff were educated about the project during scheduled work hours. Implementation was conducted during regular organizational hours and integrated into the routine operations without interrupting the normal flow of the site or requiring anything else to be neglected in the process. It was estimated that approximately 200 hours were spent directly related to project research, development, and implementation. Had the organization attempted to hire a public health nurse for this project, at an average pay of \$29.47 per hour, this project would have cost \$5,894 in salary alone (NurseJournal Staff, 2022).

Wound care supplies expenses were estimated at a total cost ranging from \$300-\$400, which included supplies for kits and additional wound care items (██████████, personal communication, May 29, 2022). The price of one first aid kit is approximately \$5.60. With 43 kits distributed during implementation, the total cost of the kits distributed was \$240.80. Development and professional color printing of educational tools for staff and clients were approximately \$230 and an additional \$10 to print data tools (see Appendix J).

Educational tools were provided and discussed initially with clients and as needed, but handouts were not supplied with each visit to the same client to conserve materials. After the initial distribution of educational tools, the amount distributed significantly reduced once clients had already received the information and teaching. The initial proposed project included providing a first-aid kit to every client. In an effort to conserve resources and decrease costs, staff decided to only distribute kits to those with existing wounds.

If this project were implemented on a larger scale, costs of first-aid supplies, additional wound care materials, and educational tools would likely increase in proportion to the additional number of clients as there would likely be more items distributed. A larger site does not necessarily indicate there would be more staff on-site, but if so, this would also increase payroll costs. Increased access to resources such as telemedicine service, the utilization of healthcare students, and medical volunteers on-site would not increase any additional costs to the site.

The overall and long-term cost savings benefits of this project are difficult to project as the number of assessments was small. Based on the figures mentioned above, it can be predicted that clients who require basic medical treatment are much cheaper to treat early in the outpatient setting rather than waiting to seek care in an emergency room, or worse, when

requiring hospitalization. The full benefits to the clients and the community will not be seen for some time, and a prospective study should be considered in future research.

Implications of the Findings

This quality improvement project has many implications with the ability to impact and inspire many different populations. As discussed in the previous section, the data did not show immediate and large acceptance by clients, but the algorithm was utilized by staff regularly, unless affected by staffing changes. Referrals were a primary barrier to care following skin assessments as anticipated, due to many clients lacking health insurance and the ability to pay for services. With the continuation and expansion of this project, and buy-in from other stakeholders, the local healthcare community will experience significant financial benefits secondary to early access to care. Persons in the community will be positively impacted through the availability of services to those uninsured and suffering from substance use disorders.

Implications for Patients

The quality improvement project had the most immediate impact on the syringe services program clients. The educational tools provided were used to increase awareness and knowledge of safety practices associated with injection drug use to reduce the incidence of wounds and skin and soft tissue infections. These tools also provided visuals of various wounds so clients could increase their knowledge and understanding of minor skin problems versus major “red flag” signs and symptoms.

Due to socioeconomic factors such as financial, transportation, or education barriers, some clients may not have the means to obtain or understand the use of over the counter first aid supplies. Through the development of this project, clients were able to obtain over the

counter first aid supplies to help treat and heal basic wounds at home to prevent worsening of conditions. Education on the first aid supplies was provided on site; by ensuring the client's understood how to use the products, they were empowered to become engaged in their healthcare. Establishing relationships and positive associations with medical treatment will help those with substance use disorder have improved experiences and help decrease the apprehension many feel towards those in healthcare. By offering early assessment and education on basic skin conditions and appropriate use of first aid supplies, clients will not need to utilize the emergency department for non-emergent care.

Implications for Nursing Practice

Implications for nursing practice include providers recognizing the implicit bias they may have toward this community and working to improve their treatment of those in this community. Persons who inject drugs should be treated with the same respect and care that is given to those with other chronic conditions. Consideration should be made for healthcare providers to undergo implicit bias training geared toward substance use disorders as the prevalence is overwhelming. Many providers may be unaware of their implicit biases that are affecting their patient care and could benefit from taking courses to expose underlying biases, particularly in vulnerable populations (FitzGerald & Hurst, 2017). Providers must recognize the stigma and shame a person who injects drugs experiences with their injection drug use practices, as both strongly impact their willingness to obtain care and often results in a delay of treatment until the condition is severe (American Psychiatric Association, 2020). Suppose a patient is struggling with substance use and injection drug use, in that case, providers should encourage and refer their patients to utilize the resources available at syringe services programs and encourage harm reduction practices. It is imperative that nurses and providers

understand this population's complex needs, including basic needs such as food, water, clothing, housing, access to healthcare and mental health services, transportation barriers, and a lack of social support. Providers need to be aware of the available services and local resources in their communities for those with substance use disorder and refer appropriately.

Interprofessional collaboration through partnerships with nursing, physician assistant, paramedicine, and public health students would be an excellent opportunity for students to obtain clinical hours and gain experience with this community while providing much-needed medical care to the clients. As seen with medication-assisted treatment, the collaboration between the nurse and the provider allows the nurse to perform much of the patient care under the provider's supervision. Replicating this practice at the syringe services program site would expand access to medical care on-site.

Impact for Healthcare System(s)

The Triple Aim framework was utilized throughout the design and implementation of this project to improve population health, improve clients' experience of care, and decrease health care costs (Stiefel & Nolan, 2012). According to the Centers for Disease Control and Prevention (2019a), if nurses are available at syringe services program sites, persons who inject drugs will be more likely to participate in primary care services. Early access to wound care decreases infections and overall cost to the healthcare system associated with injection drug use (Zaw & Mehra, 2020). Future considerations should include partnerships with local healthcare systems and academic institutions to provide medical services on site at syringe services programs. One study found that implementing medical services, including on site wound care, at a local SSP by medical staff and students in Florida, cost approximately \$960 per visit, totaling \$109,451 per year (Bartholomew et al., 2021). In comparison, another

study found that hospital admissions of PWID cost the Florida hospital systems approximately \$379,788,291 in one year (Coye et al., 2020). These numbers clearly support the financing of healthcare services at SSPs to significantly decrease overall costs to healthcare systems.

Sustainability

The syringe services program site plans to continue this project. From project implementation, current staff members have the knowledge and resources to continue to educate clients, create and distribute the first aid kits, and provide basic skin assessments. Concerns for future sustainability include site and project dependence on continued grant funding, staff availability to perform services as project and site continue to grow, and the ability of staff to teach future staff members. With one staff member assigned the primary role of wound care needs and referrals, it is concerning that if this staff member were to leave, the ability to provide these services would be compromised. The gaps in the current processes were highlighted when the staff members were not available to perform roles. This barrier to algorithm use presents an opportunity in the future to explore potential solutions further, such as hiring additional staff as the need continues to grow. To promote the sustainability and growth of this project, staff and the health department should attempt to establish partnerships with local universities and healthcare systems to provide care by healthcare professionals in an outpatient setting. Establishing an accessible site for referrals or being able to provide care by medical professionals on site is the next most important step in continuing and growing this project to provide the most benefit to the community.

Dissemination Plan

Findings of this project were presented to University's College of Nursing on July 12, 2022, as well as submitted for public access to "The ScholarShip." The project lead planned to share the designed algorithm and tools with a neighboring county, as requested by the project champion to begin implementation of this algorithm there by non-medical staff. The findings of this project, along with resources, were disseminated to the site and local health department to help aid ongoing funding of resources at this site. There is consideration for abstract submission in September 2022 to the *Journal for the American Association of Nurse Practitioners* to increase awareness of syringe services programs and resources and encourage the participation of nurse practitioners in these programs.

Section VI. Conclusion

Limitations and Facilitators

The limitations of this project were extensive. The syringe service site is growing and changing; therefore, the project concept and design were forced to evolve with changing plans and resource limitations during the initial stages of development. Initially, local paramedics were to implement the project, which would allow for comprehensive physical assessments and the ability to medically assess and treat clients on-site. Unfortunately, due to the ongoing pandemic and the paramedics workloads, they could not commit to the project. This change led to the use of non-medical staff for project implementation.

Project design later pivoted to focus on training non-medical personnel to implement the project. In the early stages of the project, the project site had several volunteers. However, prior to implementation, it was explained that those volunteers were no longer with the site, so hired site staff would be implementing the designed algorithm. The project champion and health department supported the project changes. They believed non-medical staff were a more sustainable option long term for the site given resources and varying schedules, and availability of paramedics depending on community needs and demands.

Initial implementation design was arduous as the site was hesitant to agree upon specific implementation processes and instead wanted to see how the project would flow within the site's ongoing practices. Staff expressed concerns that establishing protocols and structure can be difficult with this patient population so they expressed that it was best to see how the algorithm could naturally fit into their current practices and make changes as needed. Algorithm compliance was assessed using the data collection forms completed by the staff. The data collection tools were challenging to obtain at times and there was often a

delay with the staff returning them. The staff did not always remember to track the requested data in real-time making the data obtained less accurate and more difficult to assess true algorithm compliance, as seen in week 11 when no data was documented. The project champion was made aware of the difficulty with the data collection process, and she stated that she had similar findings with the site in the past. She provided some insight into potential reasons for this, including the relaxed flow of the site and the fact they are already tracking several other services, so this addition may take some time to become ingrained in their data collection processes. Reminders were given to staff at various intervals about completing the data collection tools and placing them into the folder to be retrieved by the project lead. The project lead encouraged staff to track data by acknowledging the potential impact it could have for future site funding.

Frequent on-site visits by the project lead helped assess algorithm compliance, including skin assessments and referrals despite delayed documentation. Other limitations to the project were the lack of client willingness to receive skin assessments due to perceived shame, time, and lack of transportation. The need for reliable and accessible referral options was a primary limitation of the project, as found when a client needed outpatient care. Unfortunately, there were limited outpatient referral options for individuals uninsured, and accessing the health department was found to be rather cumbersome and required upfront payment for services. Again, the biggest limitation was the availability of providers willing to treat individuals with substance use disorder, often due to stigma and personal bias. One local site had initially agreed to provide care to these patients and would be the primary referral site, but then later declined. The director at a local primary care site was unwilling to

see this patient population due to their ongoing substance use, even though one of their providers was agreeable and willing.

It is difficult to fully assess the benefits and limitations of the algorithm due to the small number of skin assessments performed during the 12 weeks. Often one designated peer support person was performing the skin assessments. This staff member had some medical knowledge and baseline comfort with wounds and first aid care, making it difficult to assess how effectively the teaching resources and algorithm work when utilized by others. A lack of staff and volunteers made it difficult to provide wound services when one was off-site, as evident in weeks five, nine, and eleven. Lastly, a limitation to the project was the ability to account for the actual number of individual clients that utilized the site. There were 298 visits to the site during the 12 weeks of implementation, but this does not indicate the number of individuals. Many of the clients frequent the site, so they often presented multiple times throughout the weeks, making the actual number of individuals exposed to the project less than the total number visits.

Facilitators

There were many facilitators throughout the implementation process. One of the critical facilitators was the available grant funding, which allowed for continual availability of supplies and printing. The funds support employing staff, allowing for consistency in on-site persons to implement the algorithm and distribute educational materials and supplies. Although an initial limitation, utilizing non-medical staff allowed the project to start as soon as possible, as requested by the site director.

With the small number of staff, it was easier for staff education to be provided in real time and obtain staff feedback on potential changes regularly. Community stakeholders

strongly support this project due to the potential benefits it can provide to the clients and the community's healthcare systems. Those active in the harm reduction community are passionate about this work and were very welcoming, encouraging, and willing to help throughout project design and implementation.

Recommendations for Others

Recommendations for others interested in implementing an algorithm, or any other service, with this population is first to understand that this is a unique population and a unique setting. Healthcare providers are accustomed to structure, protocols, and policies, but the individuals working and volunteering in harm reduction services are often not accustomed to the same. When developing new processes in this environment, it is imperative that one listens to the site to determine how and where to incorporate new practices into the organization's current processes. The proposed change must be easy on the clients because they may be reluctant to participate if there are too many additional steps. Staff buy in is essential to algorithm compliance at the site. Using staff feedback to guide changes will increase support of the algorithm and employee satisfaction.

Design and implementation of an entirely new process can be challenging, particularly in a setting with limited resources. Individuals attempting to implement a new algorithm into existing practices at a site need to be open to changes and willing to adapt as needed. Other syringe service sites could adopt this algorithm with limited staff and non-medical volunteers.

In terms of recommendations for sustainability, it is essential to have access to funding or donations to obtain supplies and educational materials for distribution. Hiring and retaining staff can be difficult due to funding, and volunteers are not readily available. It's

important that community services establish relationships with local colleges and universities to support quality improvement initiatives to improve care and services. Students from healthcare programs could provide medical services in exchange for clinical experiences at syringe services programs. These classes could also require a module on basic wound care and implicit bias and stigma training. By doing so, the site would have access to students interested in healthcare, which would allow future providers to visit and learn more about this population and their needs.

One necessary aspect of expanding this project is to have provider buy-in, on-site and in the community who are willing to provide care to this population. Creating a collaborating agreement with a local site or urgent care for telehealth options could be pursued as there are limited options for referrals, particularly for uninsured people and those who have transportation issues. Another consideration is to designate some of the grant funding to assist clients with office visit fees, transportation, and prescriptions to maximize outpatient care utilization.

Recommendations Further Study

Given the inability to fully assess the algorithm's usefulness, it is recommended that other sites implement the algorithm and utilize the data tracking tools, to assess the effectiveness and usefulness of the algorithm in other locations. Another beneficial study could include a comparison of client outcomes at a site utilizing the algorithm versus a site that does not. Future studies could consider providing implicit bias training and assessing if this impacts provider's care and the patient's experience.

The originally designed project could be a great asset to a syringe services program if paramedicine resources or providers were on site to provide care. If a study were conducted

utilizing medical providers, client participation and cost savings to the healthcare system could be more accurately analyzed. Another consideration for future study could focus on referring patients from the emergency department to syringe services programs and monitoring if the patient's emergency department use decreases with the utilization of harm reduction resources. Other opportunities for further study include the use of telemedicine for primary care services at syringe services programs in order to decrease barriers and improve access to care. As this project continues past the 12-week implementation period, it would be interesting to see if client willingness to receive skin assessments and care increases. Over time, clients may become more comfortable and willing to receive care on site.

Final Thoughts

Individuals who inject drugs are disproportionately affected by skin and soft tissue infections. This population often delays healthcare due to various reasons that include a lack of health insurance, transportation, and overall distrust of healthcare providers. The primary purpose of this project was to incorporate an algorithm that provides persons who inject drugs with early access to wound care services and resources through a screening, assessment, and referral process. This project provides a foundation for providing early wound care services by non-medical personnel in the syringe services program setting. Implementation an algorithm to guide assessments and education for individuals who inject drugs has the potential to improve health outcomes and decrease health care costs associated with injection drug use.

References

- American Psychiatric Association. (2020). *Stigma, Prejudice and Discrimination in People with Mental Illness*. <https://tinyurl.com/rca466bu>
- Baltes, A., Akhtar, W., Birstler, J., Olson-Streed, H., Eagen, K., Seal, D., Westergaard, R., & Brown, R. (2020). Predictors of skin and soft tissue infections among sample of rural residents who inject drugs. *Harm Reduction Journal*, 17(1), 96. <https://tinyurl.com/yjsdazbj>
- Bartholomew, T. S., Patel, H., McCollister, K., Feaster, D. J., & Tookes, H. E. (2021). Implementation and first-year operating costs of an academic medical center-based syringe services program. *Harm Reduction Journal*, 18(1), 116-116. <https://doi.org/10.1186/s12954-021-00563-8>
- Biancarelli, D. L., Biello, K. B., Childs, E., Drainoni, M., Salhaney, P., Edeza, A., Mimiaga, M. J., Saitz, R., & Bazzi, A. R. (2019). Strategies used by people who inject drugs to avoid stigma in healthcare settings. *Drug and Alcohol Dependence*, 198, 80-86. <https://doi.org/10.1016/j.drugalcdep.2019.01.037>
- Cahn, B. A., Bartholomew, T. S., Patel, H. P., Pastar, I., Tookes, H. E., & Lev-Tov, H. (2021). Correlates of injection-related wounds and skin infections amongst persons who inject drugs and use a syringe service programme: A single center study. *International Wound Journal*, 18(5), 701–707. <https://doi.org/10.1111/iwj.13572>
- Castillo, M., Ginoza, M., Bartholomew, T. S., Forrest, D. W., Greven, C., Serota, D. P., & Tookes, H. E. (2020). When is an abscess more than an abscess? Syringe services

- programs and the harm reduction safety-net: a case report. *Harm Reduction Journal*, 17(1), 34. <https://doi.org/10.1186/s12954-020-00381-4>
- Centers for Disease Control and Prevention. (2019a, May 23). *Safety & effectiveness summary*. <https://www.cdc.gov/ssp/syringe-services-programs-summary.html>
- Centers for Disease Control and Prevention. (2019b, May 23). *Syringe Services Programs (SSPs) FAQs*. <https://www.cdc.gov/ssp/syringe-services-programs-faq.html>
- Centers for Disease Control and Prevention. (2021, March 17). *Understanding the epidemic*. <https://www.cdc.gov/opioids/basics/epidemic.html>
- Challener, D., Marcelin, J., Visscher, S., & Baddour, L. (2017). Hospital costs for patients with lower extremity cellulitis: a retrospective population-based study. *Hospital practice*, 45(5), 196-200. <https://doi.org/10.1080/21548331.2017.1384690>
- Coye, A. E., Bornstein, K. J., Bartholomew, T. S., Li, H., Wong, S., Janjua, N. Z., Tookes, H. E., & St Onge, J. E. (2021). Hospital Costs of Injection Drug Use in Florida. *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America*, 72(3), 499–502. <https://doi.org/10.1093/cid/ciaa823>
- Figgatt, M.C., Salazar, Z. R., Vincent, L., Carden-Glenn, D., Link, K., Kestner, L., Yates, T., Schranz, A., Joniak-Grant, E., & Dasgupta, N. (2021). Treatment experiences for skin and soft tissue infections among participants of syringe service programs in North Carolina. *Harm Reduction Journal*, 18(1), 80. <https://doi.org/10.1186/s12954-021-00528-x>
- FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: A systematic review. *BMC Medical Ethics*, 18(1), 19-19. <https://doi.org/10.1186/s12910-017-0179-8>

- Fleischauer, A. T., Ruhl, L., Rhea, S., & Barnes, E. (2017). Hospitalizations for endocarditis and associated health care costs among persons with diagnosed drug dependence — north carolina, 2010–2015. *MMWR. Morbidity and Mortality Weekly Report*, 66(22), 569-573. <https://doi.org/10.15585/mmwr.mm6622a1>
- Glover, J., Izzo, D., Odat, K., & Wang, L. (2006). *EBM Pyramid and EBM Page Generator* [Infographic]. Trustees of Dartmouth College and Yale University. <https://guides.lib.uci.edu/ebm/pyramid>
- Huyck, M., Mayer, S., Messmer, S., & Yingling, C. (2020). Community Wound Care Program Within a Syringe Exchange Program: Chicago, 2018-2019. *American Journal of Public Health*, 110(8), 1211–1213. <https://doi.org/10.2105/AJPH.2020.305681>
- Institute for Healthcare Improvement. (n.d.). *Model for improvement: Plan-Do-Study-Act (PDSA) Cycles*. <https://tinyurl.com/5cd668mk>
- Javed, Z., Burk, K., Facente, S., Pegram, L., Ali, A. & Asher, A. (2020). *Syringe Services Programs: A Technical Package of Effective Strategies and Approaches for Planning, Design, and Implementation*. Atlanta, GA: US Department of Health and Human Services, National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention, Centers for Disease, Control and Prevention; 2020. <https://tinyurl.com/4kvpfdj8>
- Mezaache, S., Briand-Madrid, L., Rahni, L., Poireau, J., Branchu, F., Moudachirou, K., Wendzinski, Y., Carrieri, P., & Roux, P. (2021). A two-component intervention to improve hand hygiene practices and promote alcohol-based hand rub use among people who inject drugs: a mixed-methods evaluation. *BMC Infectious Diseases*, 21(1), 211. <https://doi.org/10.1186/s12879-021-05895-1>

Minnesota Department of Health. (2019, November 8). *Wound care*.

<https://www.health.state.mn.us/people/syringe/woundcare.pdf>

National Institutes of Health. (2021, March 2021). *Opioid overdose crisis*. U.S. Department of Health and Human Services. <https://tinyurl.com/4vzfaf25>

NC Harm Reduction Coalition. (n.d.). *About*. <https://www.nchrc.org/about/>

North Carolina Department of Health and Human Services. (n.d.). *Syringe exchange FAQs*. <https://tinyurl.com/kk28mv82>

NurseJournal Staff. (2022, January 21). *How much do public health nurses make?*

<https://tinyurl.com/3v8eb93z>

Office of Disease Prevention and Health Promotion. (n.d.). Browse Objectives. *Healthy People 2030*. U.S. Department of Health and Human Services.

<https://health.gov/healthypeople/objectives-and-data/browse-objectives>

Ozga, J., Syvertsen, J., Zweifler, J., & Pollini, R. (2021). A community- based study of abscess self-treatment and barriers to medical care among people who inject drugs in the United States. *Health & Social Care in the Community*.

<https://doi.org/10.1111/hsc.13559>

Rapoport, A.B., Fischer, L.S., Santibanez, S., Beekmann, S.E., Polgreen, P.M., & Rowley, C.F. (2018). Infectious diseases physicians' perspectives regarding injection drug use and related infections, United States, 2017. *Open Forum Infectious Diseases*, 5(7), 1-10. <https://doi.org/10.1093/ofid/ofy132>

Robinowitz, N., Smith, M. E., Serio-Chapman, C., Chaulk, P., & Johnson, K. E. (2014).

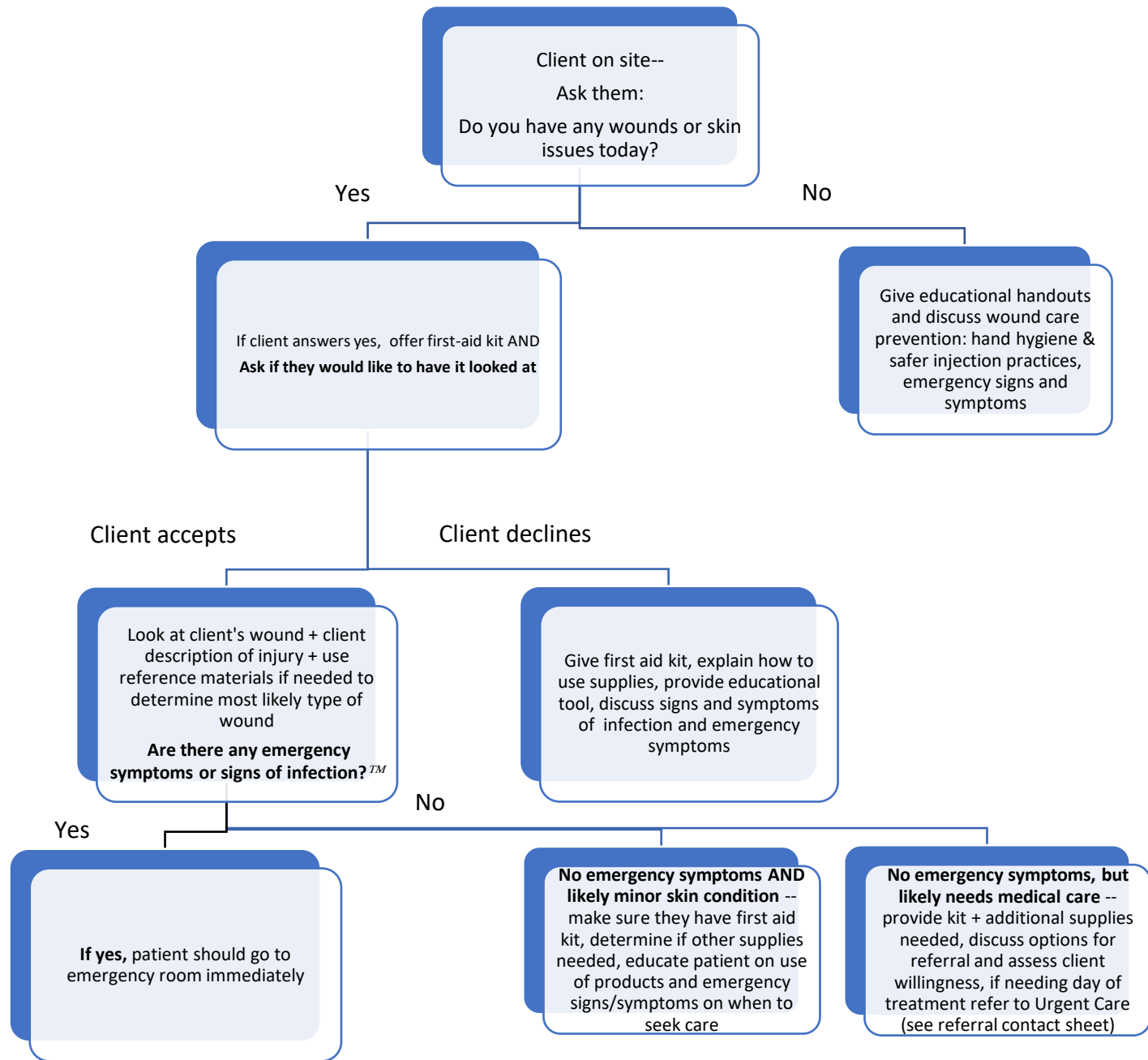
Wounds on wheels: implementing a specialized wound clinic within an established

- syringe exchange program in Baltimore, Maryland. *American journal of public health*, 104(11), 2057–2059. <https://doi.org/10.2105/AJPH.2014.302111>
- Sanchez, D. P., Tookes, H., Pastar, I., & Lev-Tov, H. (2021). Wounds and skin and soft tissue infections in people who inject drugs and the utility of syringe service programs in their management. *Advances in Wound Care*, 10(10), 1-12. <https://doi.org/10.1089/wound.2020.1243>
- Semel Institute for Neuroscience and Human Behavior. (n.d.). *Potential complications of IV drug use*. The University of California. <https://tinyurl.com/pdbmsa7s>
- Stiefel, M., & Nolan, K. (2012). *A guide to measuring the Triple Aim: Population health, experience of care, and per capita cost* [White paper]. Institute for Healthcare Improvement. <https://tinyurl.com/3vrtm87w>
- The W. Edwards Deming Institute. (2021). *PDSA Cycle*. <https://deming.org/explore/pdsa/>
- Virginia Department of Health. (n.d.). *Comprehensive harm reduction and syringe services program*. <https://www.vdh.virginia.gov/lenowisco/harm-reduction/>
- Visconti, A. J., Sell, J., & Greenblatt, A. D. (2019). Primary care for persons who inject drugs. *American Family Physician*, 99(2), 109-116.
- Western Upper Peninsula Health Department. (n.d.). *Syringe service program*. <https://www.wupdhd.org/syringe-service-program/>
- Zaw, C., & Mehra, D. (2020). The efficacy of syringe services programs in reducing skin and soft tissue infection-associated healthcare costs and multidrug-resistant bacteria. *American journal of infection control*, 48(4), 467–468. <https://doi.org/10.1016/j.ajic.2019.12.009>

Appendix A

Wound Care Algorithm

Please give all clients educational handouts and explain information on handouts as needed and/or requested.



When using algorithm remember:

- ⇒ *Skin issues can be anything related to the skin including wounds, burn, rashes, bug bite, etc.
- ⇒ See booklet provided for reference to recognize wounds, symptoms, warning signs, and recommended treatment, if needed.
- ⇒ Symptoms of infection can include, *increased pain, swelling, warmth, redness at site and/or red streaks coming from wound site, fever, chills, fast heart rate, nausea, vomiting, change in the color or drainage or pus from site.*
- ⇒ TMEmergency symptoms include an absent pulse near wound, fever or chills, loss of “feeling” around wound, darkening around wound/skin color change that is purple, black or blue, large burns particularly on hands, feet, or groin, and confusion.
- ⇒ See infographic from Maryland Primary Care Physicians for assistance in determining when to refer to Health Department/Primary Care Provider vs. Urgent Care vs. Emergency Department
- ⇒ When it doubt, always recommend client be evaluated by a medical provider!

Appendix B

Data Collection Tool #1 to Evaluate Algorithm Utilization

Date:

Total number of clients that day:

***If a client has a wound, or gets a first aid kit,** please fill out the following questions below. Please complete one section per client please.

<p>Do they have a wound? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Did they get a kit? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to give to client <input type="checkbox"/></p> <p style="padding-left: 40px;">No kits available <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p> <p>Did they get a wound assessment? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">No one available to assess <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to ask client <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p>
<p>Do they have a wound? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Did they get a kit? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to give to client <input type="checkbox"/></p> <p style="padding-left: 40px;">No kits available <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p> <p>Did they get a wound assessment? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">No one available to assess <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to ask client <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p>
<p>Do they have a wound? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Did they get a kit? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to give to client <input type="checkbox"/></p> <p style="padding-left: 40px;">No kits available <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p> <p>Did they get a wound assessment? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="padding-left: 20px;">If no, why not? Declined <input type="checkbox"/></p> <p style="padding-left: 40px;">No one available to assess <input type="checkbox"/></p> <p style="padding-left: 40px;">Forgot to ask client <input type="checkbox"/></p> <p style="padding-left: 40px;">Other _____</p>

Appendix C

Data Collection Tool #2 to Evaluate Algorithm Use with Skin Assessments

Please complete after every skin assessment. No names or personal information, thank you.

<p>Date:</p> <p>Was algorithm used? Y / N</p> <p>Did the client have any skin conditions you felt needed a referral? Y / N</p> <p>⇒ If yes, did they receive referral? Y / N</p> <p>⇒ If yes, where to?</p> <p><i>Other:</i> Suspected skin issue:</p> <p>If they required supplies outside of first aid kit, what were they?</p> <p>Insurance type:</p>	<p>Date:</p> <p>Was algorithm used? Y / N</p> <p>Did the client have any skin conditions you felt needed a referral? Y / N</p> <p>⇒ If yes, did they receive referral? Y / N</p> <p>⇒ If yes, where to?</p> <p><i>Other:</i> Suspected skin issue:</p> <p>If they required supplies outside of first aid kit, what were they?</p> <p>Insurance type:</p>
<p>Date:</p> <p>Was algorithm used? Y / N</p> <p>Did the client have any skin conditions you felt needed a referral? Y / N</p> <p>⇒ If yes, did they receive referral? Y / N</p> <p>⇒ If yes, where to?</p> <p><i>Other:</i> Suspected skin issue:</p> <p>If they required supplies outside of first aid kit, what were they?</p> <p>Insurance type:</p>	<p>Date:</p> <p>Was algorithm used? Y / N</p> <p>Did the client have any skin conditions you felt needed a referral? Y / N</p> <p>⇒ If yes, did they receive referral? Y / N</p> <p>⇒ If yes, where to?</p> <p><i>Other:</i> Suspected skin issue:</p> <p>If they required supplies outside of first aid kit, what were they?</p> <p>Insurance type:</p>

Appendix D

Informal Interview Questions for Staff

1. Do you feel the education you received via Powerpoint, along with the provided resources is sufficient to assess and make recommendations for first aid level care?

If no, what would improve your comfort and ability to do so?

2. Do you feel the algorithm is easy to understand and follow?

If no, why not?

3. Do you feel the supplies in the first aid kit is sufficient to meet most basic and minor wound care needs at this site?

If no, what do you feel would improve the kit?

4. Do you feel able to suggest appropriate referrals and aid the client in making appointments?

If no, why not?

Appendix E

First Aid Kit Components

- Hand sanitizer, travel size
- Alcohol pads (6 pads)
- Sterile water (6)
- Band-Aids (6 waterproof, assorted sizes)
- Triple antibiotic ointment, small packets (5)
- Hydrocortisone cream, small packets (3)
- Lip balm
- Pair of gloves (1)

Other items that will be available on an as needed basis include, Telfa, gauze, kerlix, burn cream, and medical paper tape

Appendix F

Syringe Services Program Educational Handouts

A Skin Care Guide For People Who Inject Drugs

THINGS THAT PROBABLY WON'T KILL YOU

- ✔ A little redness
- ✔ A little swelling
- ✔ Itchiness
- ✔ A little warmth to small area
- ✔ Scrapes or small cuts

MINOR SKIN STUFF



Scrapes



Rashes



Small sores

Cellulitis VS. Abscess



Cellulitis: Area usually red, tender, swollen, painful, and warm

- ✔ Starts out small and spreads
- ✔ Antibiotic usually required



Abscess: Swollen, tender area of skin filled with pus

- ✔ Small area of redness at site
- ✔ May go away on its own without antibiotic



Ulcer: May start as a sore or open wound that doesn't go away or gets bigger

- ✔ Often requires more advanced wound care from medical provider

Ways to Care for Minor Stuff

- ✔ Wash with soap & clean water
- ✔ Apply over the counter skin care items as directed
- ✔ Seek guidance for care when needed or worried
- ✔ Apply a warm wet washcloth or warm compress to small sores or abscesses
- ✔ Rest and elevate arm/leg using pillows when swollen or injured

NOPE:

- ✔ Try not to scratch or pick areas
- ✔ Do not lick needles
- ✔ Avoid cutting or opening your own wound (often makes infection worse)
- ✔ Avoid antibiotics that haven't been prescribed to you (only certain antibiotics are helpful for skin infections)
- ✔ Don't inject in the same arm or leg as skin issue

GET TO A HOSPITAL ASAP

(Or a clinic, urgent care, or any medical place!)

- ✔ Fever or chills
- ✔ Grey/blue/black/pale skin of hands/feet
- ✔ You can see bone and/or muscle
- ✔ Numbness/tingling
- ✔ Area is getting bigger/spreading
- ✔ Confusion

Find More Injection Safety Tips and Information at NHHRC.org & harmreduction.org

SHOOTING UP & NOT F*ING UP THE BASICS:



- 01** Pick places you feel safe, comfortable, relaxed, not rushed, and have plenty of space when possible.
- 02** A clean, dry, and well-lit environment is best.
- 03** Always use new supplies! This includes needles, syringes, cotton, water, and cookers
- 04** Do not share supplies!
- 05** Prevent skin infections and abscesses by **ALWAYS** washing hands with soap and clean water, or hand sanitizer, and clean site well **BEFORE** injecting
- 06** Rotate sites. Don't inject in or near areas with damaged skin, wounds, or injury. Avoid injecting in feet, legs, or groin area if possible.

TIPS TO INJECT MORE SAFELY:

- ✓ Always wash hands (or use hand sanitizer) before!
- ✓ Clean site well with alcohol swab before injecting. Use back and forth motion and friction
- ✓ Always insert needle into vein with hole side of needle facing up at a 15-to-35-degree angle, in the direction of the heart
- ✓ Once needle is inserted, pull back on plunger. Dark red, slow-moving blood should appear= vein!
- ✓ When in vein, remove tourniquet before injection-- this decreases bruising
- ✓ Push plunger gently
- ✓ Pull the needle out at the same angle you inserted it
- ✓ Apply pressure to area after using clean gauze or tissue. Apply a Band-Aid to area if needed. Don't use alcohol swab for pressure, it can make bleeding worse

FYI:

- ✓ No blood? Probably not in a vein
- ✓ Bright red blood? Gushing blood? This is probably an artery= Do not inject!
- ✓ **Do not inject into a pulse, or throbbing area, this is an artery= dangerous!
Ok, now what? Take needle out, take off tourniquet, apply pressure to site with gauze if bleeding, Find new site.



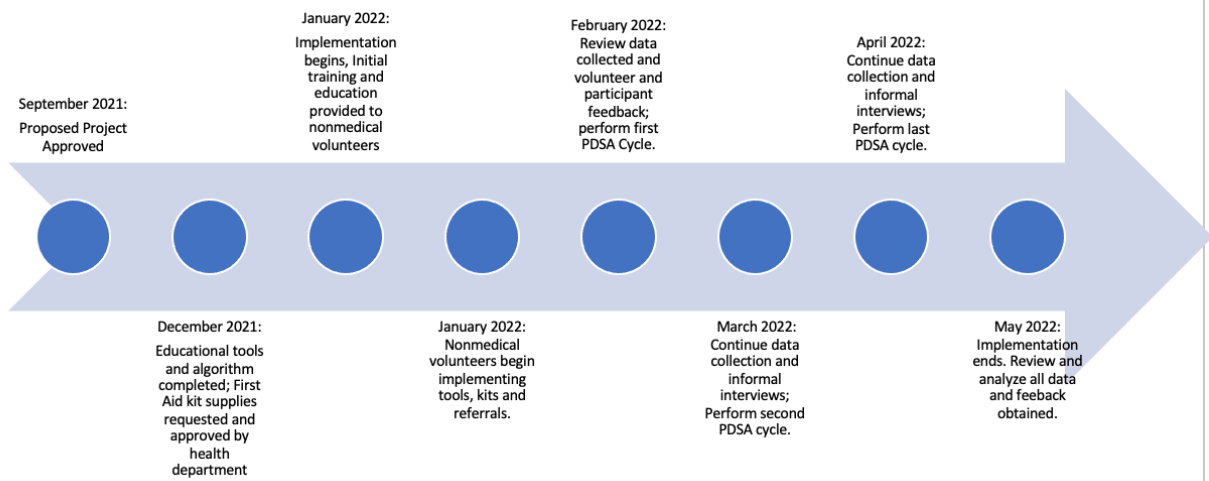
MISSED SHOT?

Apply warm compress or soak in warm water right away if possible

Watch for any signs of injury, changes, or infection to the area and seek medical care if needed

Appendix G

Project Implementation Timeline

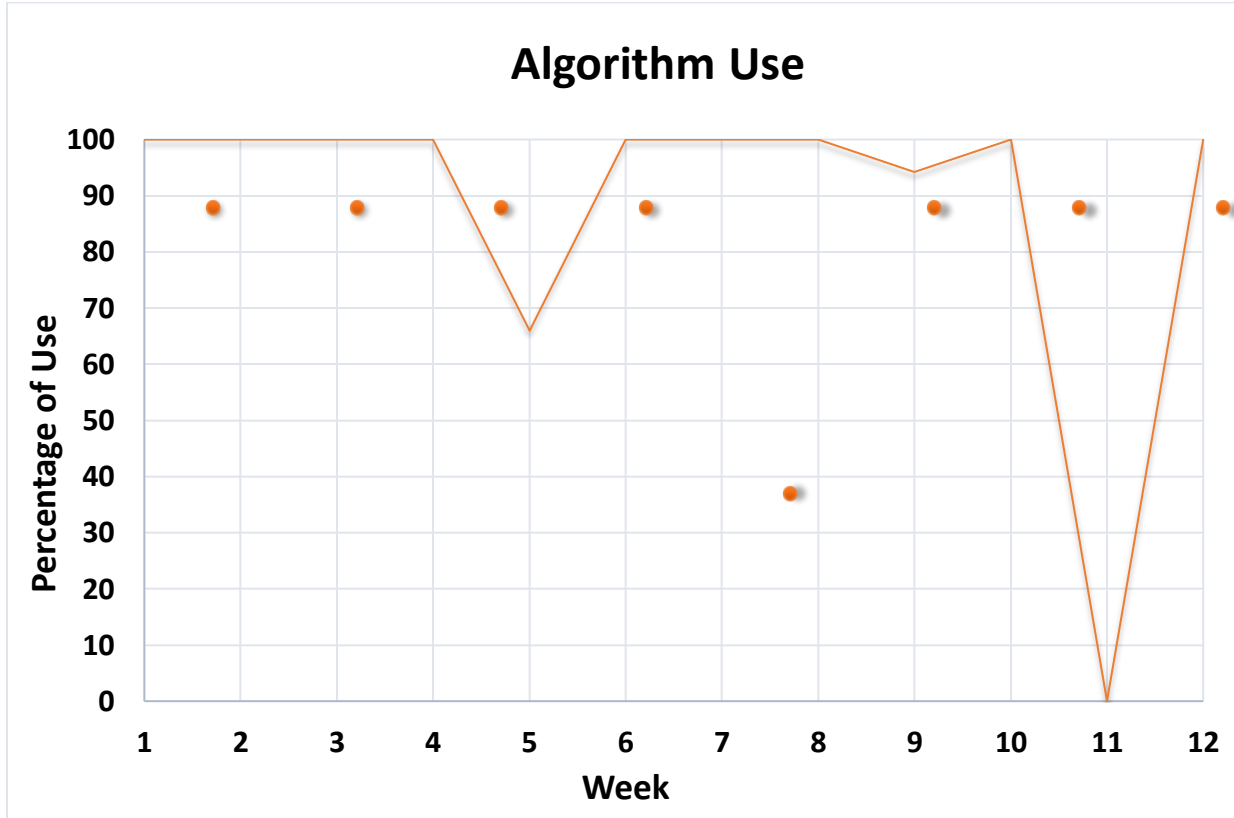


Appendix H**Algorithm Compliance Monitoring**

Week	Clients	Wounds Reported	Number of Kits provided	Assessments of those with wounds	Algorithm Used
1	24	2	2	2	24
2	22	2	1	0	22
3	23	1	1	0	23
4	34	2	2	1	34
5	28	3	3	1	27
6	29	5	5	0	29
7	30	7	7	0	30
8	26	2	2	0	26
9	34	3	8	0	32
10	19	5	5	4	19
11	Not available	0	Not available	0	Not available
12	29	2	7	2	29

Appendix I

Algorithm Utilization Over 12 Weeks



Appendix J

Itemized Budget of Direct Costs of Quality Improvement Project

Item	Quantity	Cost per unit	Total Cost
Hand Sanitizer (travel size)	1	\$1.06	\$1.06
Alcohol pads	6	\$.04	\$0.24
Sterile Water	6	\$0.18	\$1.08
Band-aids	6	\$.09	\$0.54
Triple Antibiotic Ointment (single use packets)	5	\$0.10	\$0.50
Hydrocortisone Cream (single use packets)	3	\$0.58	\$1.74
Lip Balm	1	\$0.26	\$0.26
Gloves	2 (1 pair)	\$0.10	\$0.20
First Aid Kit	43	\$5.60	\$240.80
Material Costs			
Graphic Design of Educational Tools	3	N/A	\$100
Educational Handouts	100	\$.96	\$96.00
Wound Spiral Bound Book	1	\$33.00	\$33.00
Miscellaneous Printing costs	100	0.10	\$10.00
Clipboard	2	\$1.97	\$3.94
Folders for Data Log Sheets	2	\$1.00	\$2.00
Education Costs			
Lunch supplied for Lunch and Learn Session (3 people)	1	\$10.00	\$30.00
TOTAL COST OF PROJECT			\$515.74

Appendix K**Numbers from Visits***Total Number During 12 Weeks*

	Number
Client Visits	298
Wounds Reported	34
Kits Provided	43
Assessments Performed	10
Referrals	4

Note. Week 11 data not available.

Appendix L

Doctor of Nursing Practice Essentials

	Description	Demonstration of Knowledge
Essential I <i>Scientific Underpinning for Practice</i>	<p>Competency – Analyzes and uses information to develop practice</p> <p>Competency -Integrates knowledge from humanities and science into context of nursing</p> <p>Competency -Translates research to improve practice</p> <p>Competency -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes</p>	<ul style="list-style-type: none"> Literature review conducted to assist with development of algorithm Harm reduction and wound information analyzed and used to develop educational materials for distribution to clients and for staff teaching purposes pre implementation
Essential II <i>Organizational & Systems Leadership for Quality Improvement & Systems Thinking</i>	<p>Competency –Develops and evaluates practice based on science and integrates policy and humanities</p> <p>Competency –Assumes and ensures accountability for quality care and patient safety</p> <p>Competency -Demonstrates critical and reflective thinking</p> <p>Competency -Advocates for improved quality, access, and cost of health care; monitors costs and budgets</p> <p>Competency -Develops and implements innovations incorporating principles of change</p> <p>Competency - Effectively communicates practice knowledge in writing and orally to improve quality</p> <p>Competency - Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems</p>	<ul style="list-style-type: none"> Wound and wound care teaching developed for staff and a PowerPoint was created as a teaching tool PowerPoint information presented and discussed orally pre-implementation and a printed copy was provided for staff to use as a reference throughout project implementation Data collection tools were developed specifically stating to not include any client identifiers
Essential III <i>Clinical Scholarship & Analytical Methods for Evidence-Based Practice</i>	<p>Competency - Critically analyzes literature to determine best practices</p> <p>Competency - Implements evaluation processes to measure process and patient outcomes</p> <p>Competency - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients</p> <p>Competency - Applies knowledge to develop practice guidelines</p> <p>Competency - Uses informatics to identify, analyze, and predict best practice and patient outcomes</p> <p>Competency - Collaborate in research and disseminate</p>	<ul style="list-style-type: none"> Literature review performed to inform and design project Review of the literature performed to evaluate the level of evidence. Data collection tools designed to evaluate algorithm use Designed algorithm using knowledge gained through literature review, suggested wound care practices and guidelines

<p>Essential IV <i>Information Systems – Technology & Patient Care Technology for the Improvement & Transformation of Health Care</i></p>	<p>Competency - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery & quality of care Competency - Analyze and operationalize patient care technologies Competency - Evaluate technology regarding ethics, efficiency and accuracy Competency - Evaluates systems of care using health information technologies</p>	<ul style="list-style-type: none"> • Data was evaluated and analyzed utilizing Microsoft Office and Excel • Utilized computer program to access graphic designers to design new educational materials for clients- advanced software was utilized to create more visually appealing and useful educational materials
	<p>Description</p>	<p>Demonstration of Knowledge</p>
<p>Essential V <i>Health Care Policy of Advocacy in Health Care</i></p>	<p>Competency- Analyzes health policy from the perspective of patients, nursing and other stakeholders Competency – Provides leadership in developing and implementing health policy Competency –Influences policymakers, formally and informally, in local and global settings Competency – Educates stakeholders regarding policy Competency – Advocates for nursing within the policy arena Competency- Participates in policy agendas that assist with finance, regulation and health care delivery Competency – Advocates for equitable and ethical health care</p>	<ul style="list-style-type: none"> • Virtual meetings attended with UHRI • Email correspondence conducted with local clinic, project champion and local health department to determine referral options for uninsured clients
<p>Essential VI <i>Interprofessional Collaboration for Improving Patient & Population Health Outcomes</i></p>	<p>Competency- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship Competency – Provide leadership to interprofessional care teams Competency – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings</p>	<ul style="list-style-type: none"> • Collaborated interprofessionally with site staff to implement project • Project lead available on site weekly to assist with questions, • Consulted with project champion and DNP instructor to develop and refine systems during project implementation
<p>Essential VII <i>Clinical Prevention & Population Health for Improving the Nation’s Health</i></p>	<p>Competency- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery Competency – Synthesizes information & cultural competency to develop & use health promotion/disease prevention strategies to address gaps in care Competency – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity</p>	<ul style="list-style-type: none"> • QI project developed based on gap in care presented to project lead by local health department and SSP • Data collection logs obtained weekly, PDSA cycles performed periodically pending findings from logs and

		<p>staff interviews, changes initiated as needed</p>
<p>Essential VIII <i>Advanced Nursing Practice</i></p>	<p>Competency- Melds diversity & cultural sensitivity to conduct systematic assessment of health parameters in varied settings Competency – Design, implement & evaluate nursing interventions to promote quality Competency – Develop & maintain patient relationships Competency –Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes Competency – Mentor and support fellow nurses Competency- Provide support for individuals and systems experiencing change and transitions Competency –Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures</p>	<ul style="list-style-type: none"> • Project lead on site weekly to provide support to staff throughout 12 weeks of implementation • Critical thinking and advanced clinical judgement demonstrated through literature review and development of QI project to improve patient outcomes in underserved patient population