An Asthma Protocol to Reduce Acute Asthma Exacerbations in Adults Residing in Shelter Settings

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The Centers for Disease Control and Prevention (CDC, 2017) reported that an estimated 39.5 million people in the United States (US) had been diagnosed with asthma in their lifetimes. The number of adults aged 18 and over who currently have asthma is over 18.4 million (CDC, 2017). Asthma is a chronic inflammatory disease of the lungs. It can be acute or chronic. In the case of acute asthma, the airways are normal between attacks. In chronic asthma, there is some narrowing of the airways all the time, with greater narrowing during acute exacerbations. Asthma exacerbations are among the most common causes for emergency department (ED) visits and hospitalizations for both adults and children (Allangari, 2014).

Prevalence and incidents are extraordinarily high among the poor, children, and even higher numbers among the homeless population (National Institutes of Health [NIH], 2017). The winter months are especially problematic, especially for the homeless population, because many are exposed to the cold weather for long periods of time, before seeking shelter. Other reasons include exposure to pollutants in the air, environmental allergens, global warming, tobacco and cigarette smoke, and overcrowding in places such as prisons and shelters (NIH, 2017; CDC, 2017).

As per the National Asthma Education and Prevention Program ([NAEPP], (2016), important milestones have been reached in the treatment of asthma, thereby reducing morbidity and mortality rates; however, there are more challenges ahead (NAEPP, 2016). The reason for the challenges ahead, is that asthma not only affects the individual patient, but it affects their families, and the society at large through missed work and school, impacts the quality of life,

emergency department visits, hospitalizations, and it also places a heavy burden on the budget of the country (Nunes, Pereira, & Morais-Almeida, 2017).

While there have been significant strides made due to new research, there is a continuing need for more because the prevalence and incidence rates remain high (Akinbami, et al., 2016). Research continues to improve management of asthma, and new guidelines are developed. Subsequently, there are several studies on asthma, especially asthma in children. This DNP project called *Breathe Easy (*BE*)*, is an asthma protocol aimed at reducing the risk of acute asthma exacerbations in adults who are residing in a shelter setting.

Background of Asthma

Historically asthma was not readily understood because its etiology was unknown. It was described as "noisy breathing" ([NIH], 2012). The mortality rate of people with asthma was high due to lack of effective treatment (NIH, 2012). In the 1950s, scientists reached their first understanding of asthma physiology. They discovered the difficulty patients experienced in breathing was due to smooth muscle constriction in the airway of the lungs (NIH, 2012). During this time, researchers also discovered that the airways of asthma sufferers were many times more sensitive to various environmental factors. Through continued research, the vital role of the immune system in asthma was discovered and asthma was classified as an inflammatory disease. The first successful treatments were with bronchodilators, which ease the airway constriction and corticosteroids to suppress airway inflammation. These practices are still being used in this the 21st century (CDC, 2014; NIH, 2012).

The prevalence of asthma in the US has increased considerably since the 1980s. In 2009, there were 23 million people diagnosed with asthma; with children accounting for 7 million of that number. In 2017, nearly 49 million people had asthma. Educational programs, such as the

NAEPP, has completely turn around the way patients live with their asthma (NIH, 2017). The programs motivate and inspire people to be active participants in the management of their asthma by taking their medications and minimizing the triggers in their environment (Akinbami, 2016). According to the NIH (2017), the Asthma and Allergic Diseases Cooperative Research Centers conduct basic and clinical research on the mechanisms, diagnosis, treatment, and prevention of asthma. In 2010, the NIH collaborated with the Agency for Healthcare Research and Quality (AHRQ) to develop standardized definitions and methodologies for asthma outcome measures that can be broadly used by clinical researchers (NIH, 2017).

Asthma is categorized based upon the frequency of the symptoms, severity of symptoms, and objective measures, such as peak flow measurements and/or spirometry results. The four categories: mild intermittent; mild persistent; moderate persistent; and severe persistent. Asthma affects adults and children of all ages and is characterized by repeated episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing.

Pathophysiology and etiology of asthma. The etiology of asthma is still not fully known, however, there is certainty among scientists, and the medical profession that asthma likely results from complex interactions between multiple genetic and environmental variables (CDC, 2017). Studies of twins and families with asthmatic members have shown that, in many cases, asthma occurs in a pattern consistent with heritable factors (CDC, 2017). Currently, the specific genes responsible for asthma have not been definitively identified. There is ongoing research in this area (Jackson et al., 2012).

Significance. This project is significant to nursing for various reasons. There are nearly 40 million people in the US who have been diagnosed with asthma over their lifetime, and presently, there are 18 million adults with asthma (NAEPP, 2017). This project contributes to

nursing practice by setting a standard for the implementation of an asthma screening protocol for adults in the shelter setting who are afflicted with chronic asthma.

The BE protocol is aimed at reducing acute asthma exacerbations of in adults while they are residing in the shelter system. Presently, there is no asthma screening protocol at the host site. There have been incidents where elderly adults with asthma have been rushed to the ED of the nearby hospital due to acute asthma exacerbation (Kimbler, DeWees, & Harris, 2017). By having a screening protocol in place, appropriate management and prevention of acute asthma exacerbations may assist in reducing unnecessary asthma related hospital visits.

Screening in the medical sense serves two main purposes; namely to detect a disease prior to the person seeking treatment, and secondly, for detecting individuals with existing disease (secondary or tertiary prevention) to avoid worsening symptoms. An example of this would be an asthma screening, and patient education (American College of Allergy, Asthma and Immunology, 2017).

Problem Statement

Asthma is a public health problem, and scientific evidence has improved treatment and outcomes for this condition. Nearly 40 million people are affected, and of that number, 18 million are adults (CDC, 2017). The latest statistics on the homeless population in the US was over 560,000 in 2017, many of whom had long term debilitating conditions (US Department of Housing and Urban Development [HUD], 2017). In New York City, there was a 4.1% increase in the number of homeless persons, mainly among families in emergency shelters and transitional housing (HUD, 217). The homeless are at greater risk of acute asthma exacerbations due to uncontrolled shelter conditions. Shelter residents face overcrowded and unsanitary conditions, exposure to pollutants, and allergens which can increase acute asthma exacerbations

(NAEPP, 2017). Not much is known about the health status of the homeless. Therefore, upon entering the shelter setting, it is imperative to implement a screening protocol for diseases such as asthma. This is both a safety issue for the individual as well as for the shelter (CDC, 2017; NAEPP, 2017).

Purpose Statement

Presently there is no asthma screening protocol at the practice site. The purpose of this DNP project is to implement an asthma screening protocol for adults in the shelter setting. This asthma protocol, will assist in the reduction and prevention of acute asthma exacerbations of adult patients in the homeless shelter setting. The BE protocol will improve care practices in the homeless shelter setting to reduce and prevent acute asthma exacerbations. The BE protocol should also reduce ED visits and hospitalizations.

Project Question

In homeless adults with asthma entering shelters, does the implementation of an asthma screening protocol, compared to shelters where there is no standardized protocol, reduce incidents of acute asthma exacerbations over a period of 4 weeks?

P (Population) = Homeless adults with asthma
I (Intervention) =Asthma Protocol at initial contact
C (Comparison) = No asthma protocol at initial contact
O (Outcome) = Reduced acute asthma exacerbations
T (Time) = Over a period of 4-6 weeks

Project Objectives

The objectives of this DNP project are as follows:

Develop an asthma screening protocol in the practice site to reduce the risk of acute asthma exacerbations.

Implement asthma screening protocol.

Evaluate the strengths and weaknesses of the screening protocol.

Literature Search

An electronic search using databases including CINAHL, PubMed, Medscape, Ebscot, Cochrane Collaboration, Cochrane Library, TUN-Jay Sexter Library, Google Scholar, and other governmental regulatory agencies such as the NIH, National Guideline Clearinghouse (NGC), CDC were used. Search terms included asthma, homeless adults, shelters, health screenings, asthma screenings, asthma guidelines were used. Searches were limited to studies conducted in the US, to ensure relevance and consistency with project will is in the US.

Standard inclusion criteria were used based on project guidelines, which included referencing of at least 10 articles which consisted of meta-analysis, and randomized controlled trials. No article over five years old was included, to ensure relevance and the most up to date research evidence. Non-English articles were excluded. Exclusion criteria were articles concerning children in shelters with asthma, articles over five years, except for historical perspective. There were 25 eligible articles identified through the search, and 16 were selected for appraisal and literature review. These articles included meta-analysis, systematic reviews, randomized control trials and cohort studies.

Literature Review

Impact of the Problem

Asthma is common among both adults and children, yet most of the research is focused on children, and on settings such as urban communities. There are over 10 million children diagnosed with asthma, compared to over 18 million adults in the US diagnosed with asthma. The literature confirms the substantive role of inflammation in asthma, as well as the impact of indoor and outdoor allergens, and air pollution (National Heart, Lung and Blood Institute [NHLBI], 2012). Likewise, clinical practice has benefited from research that confirms the

efficacy of using pharmacotherapy (such as inhaled corticosteroids), and non-pharmacotherapy methods (patient education, self-monitoring, recognizing triggers and eliminating those triggers) in the control of asthma (CDC, 2017).

In comparison, a study that examined the incidents of asthma in shelters found that shelter staff cited lack of resources to ensure that environmental triggers were removed (Buu et al. 2013). The adults identified many asthma triggers; however, they had no control over the situation. The shelter staff wanted to institute a smoking ban but noted problems to implementation (Buu et al. 2013). In such cases, ensuring that there is access to medications, and providing asthma education can be beneficial (Buu et al., 2013). At the practice site for this project, smoking is prohibited inside the building, however, on a few occasions residents have complained of others smoking inside their room. Smoking is allowed on the premises, but in the outdoors.

Addressing the Problem with Current Evidence

According to the NGC (2017) asthma is categorized as mild intermittent (patient experiences mild symptoms up to two days a week and up to two nights a month); mild persistent (symptoms appear more than twice a week, but no more than once in a single day); moderate persistent (symptoms appear once a day and more than one night a week); and severe persistent asthma (the patient experiences symptoms nearly every day, and very often during the night). **Inhaled corticosteroids are** anti-inflammatory drugs, and some common ones include fluticasone (Flonase, Flovent HFA), and budesonide (Pulmicort Flexhaler, Rhinocort) (Nunes, Pereira, & Morais-Almeida, 2017).

There are many treatments for acute asthma exacerbations, especially in emergency situations, and in cases of an ED. In a multicenter study in the US, it was noted that the

admission rate of all ED visits with acute asthma was 23% percent (Allangari, 2014). On the other hand, a European study showed that only about 7% percent of all patients with acute asthma exacerbation required hospitalization (Allangari, 2014). These statistics suggests that treatment of asthma and prevention of asthma exacerbations are vital.

Patient education is a fundamental part of nursing care in the US. Persons who suffer from chronic diseases such as acute asthma are often seen in the EDs, where the nurse usually provides information and explanations to the patient (Samuels-Karen, Stack, & Porter, 2012). However, the education provided is limited, and many patients leave without a full understanding of what to do to prevent another hospital visit (Samuels-Karen,et al., 2012). For this reason, many patients are not properly educated on how to manage their asthma to prevent exacerbations.

Prevention. Asthma cannot be cured, but its symptoms can be controlled with medications, and by patients taking other precautions such as establishing an asthma control plan. The primary objective is to stop asthma attacks before the start, and patient education plays a vital role in controlling behaviors to prevent asthma exacerbations ((Akinbami, 2016). Part of the plan includes being aware of the triggers and eliminating them to reduce acute asthma exacerbations (Akinbami, 2016). In case of an asthma exacerbation, the use of a quick-relief inhaler, such as albuterol is recommended. Patients should be educated in learning what their triggers are and how to avoid them. The lack of asthma screening and education results in frequent emergency room visits (Allangari, 2014).

In a systematic review, the researchers examine factors that were predictors of future exacerbations and keys to stability. They found that individuals with asthma had nearly five times more hospital visits ($p < 0.01$), and lower productivity ($p < 0.01$) when compared to those

without asthma. (Ko et al. 2012). Since many shelter residents are part of the labor force, an acute asthma exacerbation while in the shelter will also cause them to lose work, and possible pay. Therefore, prevention and education are important for the person diagnosed with chronic asthma (Al-Jahdali et al.2013). In a cross-sectional study, the researchers looked at 450 patients who were admitted to the emergency room. Of that number 230 (46%) did not know how to use an inhaler. Also, 54 % had no patient education on asthma medication, and they were more likely to use the inhaler incorrectly (Al-Jahdali et al.2013).

Current recommendations. Currently, the National Guideline Clearinghouse (NGC, 2017) has several recommendations based on the quality of evidence presented on asthma screening. These are procedures necessary to make a diagnosis of asthma. Their recommendations are based on the quality of evidence and this is categorized in levels. A level one (1) recommendation is the highest and best (NGC, 2017). The current recommendation is Level 1.1, and it states that at the initial encounter, the staff (nurse) should identify adults with an asthma diagnosis by reviewing the health record. If there is no health record, the nurse should conduct a physical exam, and administer a spirometry test. The spirometry is a test that determines the extent of the narrowing of the bronchial tubes by checking how much air the patient can exhale after a deep breath, and how quickly they can breathe out. A peak flow meter can also be used in the absence of a spirometry tube. It measures how hard the patient can breathe. Lower than usual peak flow readings are a sign the lungs may be inflamed, and patient's condition could exacerbate (NGC, 2017).

Diagnosis should be made by the supported lung function measurements, and by asking the following two questions to the patient:

1. Have you ever been told by a health care provider that you have asthma?

2. Have you ever used a puffer/inhaler or asthma medication for breathing problems?

Synthesis of Evidence

Patient education and self-care were discussed in the majority of reviewed. Part of this self-care instruction included medication adherence, as well as the patient's perception of their susceptibility to the worsening of their condition (O'Connor et al. 2014). Many adults did not practice self-care because they were not using their medications correctly, and others were not sure if their symptoms of fatigue, shortness of breath, and cough were due to their asthma or some other chronic illness (Al-Jahdali, 2016). Many individuals diagnosed with asthma develop coping strategies which allowed them to continue with their daily activities while experiencing the symptoms (O'Connor et al. 2014).

Bronchial airways inflammation is the most important pathological feature of asthma. Inhaled corticosteroids (ICS), through their anti-inflammatory effects have been the mainstay of treatment of asthma for many years. Systemic and ICS are also used in the treatment of acute asthma exacerbations (Allangari, 2014; Edmonds, Milan, Camargo, Pollack, & Rowe, *2012).*

Benefits of current recommendations. The current recommendations are important to the clinical practice because it is evidence-based, and it gives the DNP a clear blueprint of what to do and how to do it. It is also important for the patients, because they will learn their status and can take the necessary precautions to reduce an asthma attack. The shelter setting staff will also be aware of the number of residents in the shelter diagnosed with asthma, and therefore can take measures to remove triggers or make special accommodations. Since most shelter settings are not equipped to handle medical emergencies, residents will have to visit the ED, and this is costly.

Patient education. Themes identified throughout the literature indicate that patient education is very important in the control of asthma and quality of life (O'Connor et al., 2014; Al-Jahdali, 2016). According to the literature asthma affects each patient differently, hence the need for an asthma action plan (O'Connor et al., 2014). The CDC (2017) recommends that all patients with asthma receive a written action plan to guide how they practice self-management. The plan should consider the patient's literacy level to unsure they can follow the instructions.

The AAP provides instruction and information on how to self-manage one's asthma daily. It includes taking medications as prescribed and identifying and avoiding exposure to allergens and triggers that can cause exacerbations. In addition, the AAP provides the patient with information on how to recognize and handle the situation if their asthma worsens, and who to contact in the event of an emergency, taking medications appropriately, and identifying and avoiding exposure to allergens and irritants that can bring about asthma symptoms (NCG, 2017).

Needs further investigation. There are many studies on children with asthma living in shelters, but very little research has been conducted on adults diagnosed with asthma residing in shelters. Also, there is a need for research on asthma screenings in homeless shelters compared to health clinics, because adults in the shelter could be sent to a health clinic instead of the ED. Perhaps a follow up research on the elderly with asthma living in shelters will be helpful because the elderly are a population with many risk factors such as environmental, social, and age.

Barriers/ controversies. There are many barriers when it comes to the control of asthma for persons residing in shelters. There are also barriers to implementing the quality improvement program (Shinn, Greer, Bainbridge, Kwon, Zuiderveen, 2013). Homeless patients are often transient, and follow-up can be difficult. Many lack health insurance; therefore, do not

have a primary care provider to routinely assess and treat their health conditions (Shinn, et al., 2013), and therefore, do not see a doctor to get their medications. Another barrier is lack of patient education and an asthma control plan (Kimbler, DeWees, Harris, 2017). Shelters have limited resources to care for residents experiencing any type of emergency such as an asthma exacerbation (Shinn, et al, 2013). As was noted in one study, the shelter staff was unable to get the administrator and owner to agree to make the shelter smoke free (Pinnock, 2017).

Currently, there is no asthma screening protocol at the practice site, and that is a barrier to overcome. The administrative staff and operators agree with the new asthma screening protocol. However, there are a few staff members who have expressed concern that they will have more paperwork to do without extra pay. It is believed that by the time of implementation, all the staff will welcome the change because it is for the benefit and protection of everyone.

There is a need for health screenings, and especially in the shelters. The homeless population is often forgotten when it comes to health screenings, yet they do face many chronic diseases and conditions such as asthma (Shinn, et al., 2013). If they are screened, they will be able to get treated and learn how they can practice self-care despite being in the shelter setting.

Theoretical Framework

Orem's theory of self-care provides the theoretical framework for this project. The theory was developed by Dorothea Orem in 1959 and updated in 2001 (Ahtisham, 2017). The theory is based on the ability of humans to adapt to their environment. Orem believed that patients want to care for themselves, but due to sickness, they become unable to do so effectively, and nursing process should make up for the deficits (Shah, et al., 2015). The tenets of the theory are self-care, self-care agency therapeutic self-care demand, and self-care requisites

(Black, 2014). Self-care requisites are universal, developmental, and health deviation (Black, 2014, Shaw & Khan, 2015).

Major Tenets of Self-Care Theory

According to Orem (1991), the theory of self-care outlines six objectives which include assessment of the patient's condition by the nurse practitioner; identification of patient's needs; communication and interact with the patient; selection of a treatment plan based on the needs of the patient; apply the treatment plan to solve the problems identified, and evaluate the extent to which the process was successful (Shah, et al., 2015). In other words, the nurse has specific roles such as needs assessment in order to provide the proper treatment for the patient. The patient also has some responsibility in the process, and that is to continue with the treatment after the nurse or physician has done their part. All this can be summed up under nursing process which is the assessment of the needs of the client, diagnose and create a plan, and implement the plan (Shah, et al. 2015).

Self -care. Self-care refers to the activities that individuals initiate and perform on their own behalf to preserve and maintain life, health and well-being (Black, 2014). In many healthcare situations, some adults are able to perform their daily living skills, such as grooming themselves, practicing proper hygiene, and in the case of those suffering with a disease such as asthma, self-care includes learning to use an inhaler, learning their triggers and avoiding them when possible.

Self-care agency. Self-care agency is the will power or indomitable spirit that all human beings have to care for themselves, especially after being cared for by a nurse or physician (Ahtisham, 2017). Self-care agency is challenging because it involves more than determination

and will power. It involves things such as age, gender, stage of development, family systems and environmental factors (Shah, et al., 2015).

Therapeutic self-care demand. Therapeutic self-care demand refers to the totality of all the necessary self-care actions that must be performed. In the case of a person who suffers from asthma, and learning their triggers and avoiding them, and learning to use an inhaler (Shah, et al., 2015; Pinnock, 2017).

Self-care requisites._ Self-care requisites are the required steps that must be taken to maintain health, based on the disease. Again, in the case of a person who suffers from asthma, self-care requisites include keeping an asthma diary, and knowing their peak flow number (Pinnock, 2017).

Application of Self-Care Theory to Current Practice

Most individuals would rather care for themselves, however, when incapacitated or incapable of doing so for some other reason, then it is expected that nursing will provide that care (Black, 2014). Orem's theory of self-care proposes that individuals be given the necessary assistance to help themselves. As a result, Orem's theory is one of the most widely used theory in instances of medication adherence, and in the case of chronic diseases such as diabetes and asthma (O'Connor, et al., 2017; Pinnock, 2017).

Self-care. Self-care is used for asthma management, especially in identify triggers. According to (Pinnock, 2017), the successful implementation of an asthma management protocol is a combination of education, skills training for the professionals in the setting.

Self- care agency. Self-care agency is practiced by giving the patient the information they need to care for themselves and manage their chronic condition. Studies have shown that self-monitoring and regular medical reviews along with a written action plan for self-

management of exacerbations almost halved the risk of hospitalization (risk ratio 0.58 (95% confidence interval 0.43–0.77) (McCleary, Andrews, Morrow, 2016).

Therapeutic self-care demand. Working with patients to create their personal AAP has been effective in reducing hospitalizations as a result of acute exacerbations (McCleary et al., 2016). Self-care demand means the patient is able to comply with medication adherence, ensure sufficient food intake, water, protect themselves from abuse, and be in charge of their situation. In the case of asthma, self-care demands requires patients who are on medications to adhere to their medication regimen (McCleary et al., 2016).

Self-care requisites. AAP should be discussed and agreed to by both the individual and the healthcare provider. According to Pinnock (2017), while there will be differences, there are some commonalties such as format of action points (symptom versus peak flow triggered either of which action should be taken), number of action points (three common points are Peak flow <80% best: increase inhaled steroids Peak flow <60% best: commence oral steroids and seek medical advice Peak flow <40% best: seek urgent medical advice); peak flow levels (personal best should be assessed once treatment has been optimized and peak flows are stable); and treatment instructions (patients who utilize steroids may safely hold an emergency supply of prednisolone tablets for use if their symptoms continue to deteriorate and/or if their peak flow falls to 60% of their best (Pinnock, 2017).

Applicability of Self-Care Theory to DNP Project

Self-care. The self-care theory will be applied to this project by emphasizing self-care agency, self-care demand, and self-care requites. These are the basic actions that patients can take on their own to prevent asthma exacerbations while in the shelter setting. Self-care includes the individual learning to use an inhaler and learning their triggers and avoiding them when

possible. Project leader will teach staff, and they will demonstrate how to use an inhaler to the patients. There will be individual sessions as well as group sessions for demonstrations like utilizing an inhaler. Utilizing self-care agency, project leader will teach shelter staff what self-care is and demonstrate how to collaborate with clients to create an asthma action plan (AAP).

Therapeutic self-care demand. Therapeutic self-care demand will be utilized by staff under the direction of project leader. Individuals will practice using an inhaler through role-paly situations. Individuals who have a diagnosis of asthma will be educated by the site staff on how to write down the events that occurred just before their acute asthma exacerbation. For example, were they near someone who was smoking.

Self-care requisites. The following project will apply self-care requisites principles through the development of a set of teaching and learning demonstrations that will be taught to the shelter staff and nurses who will implement the protocol. The protocol will include patient education in its totality on how to prevent acute asthma exacerbations. Self-care theory is about collaboration between nurse and patient for better health care outcomes. Nursing is about caring, and teaching patients how to practice self-care. Since asthma affects everyone differently, it is important for patients to receive education on how to do self-care to prevent acute exacerbations (Shinn, Greer, Bainbridge, Kwon, Zuiderveen, 2013). Nurses can create an asthma action plan for patients, and provide patient education using the self-care theory. Nurses can demonstrate to patients how to use an inhaler in the event of an asthma exacerbation.

Project Design

The following project utilizes a quality improvement (QI) design. According to Moran et al. (2017), a QI project is one that is focused on improving patient outcomes, implementing new policies and programs at an organizational level. Martires (2016) noted that QI and training of

nurses can be impactful in preventing certain health issues, as well as improve organizational functioning.

This project will be executed in the following manner:

Phase 1) Participants will be recruited

Phase 2) Training of all the participants at the practice site will occur

Phase 3) The healthcare providers will implement the protocol

Phase 4) Data collection and analysis of objectives will occur

This design was selected because it is congruent with the objectives of the project. It incorporates components of qualitative and quantitative methods to innovate, evaluate, and improve the quality of service being provided at the practice site. This project is aimed at introducing a new asthma screening protocol in a homeless setting in New York City, with the key objective being to reduce the instances of asthma exacerbations in adults residing in a shelter setting.

The staff consists of six NPs, eight RNs, two MDs, one DNP, two psychiatrists, two licensed social workers, one receptionists. The population of interest is the staff at the practice site that includes the nineteen healthcare practitioners (HCPs), the two social workers and the receptionist. The stakeholders that have been identified are members of the development team (Director, Assistant director, all healthcare practitioners at the site, support staff), and the community board.

More and more, it is expected of nurse leaders to make quality improvement changes to advance healthcare and improve patient outcomes (Brownlee, Minnier, & Martin, 2013). Quality improvement focuses on gauging performance and improving processes (Agency for Healthcare

Research and Quality [AHRQ], 2014). This project is designed to reduce asthma exacerbations of adults in a homeless shelter setting.

Setting

The setting for this project is a not-for-profit family shelter for homeless individuals located in New York City. They serve approximately 200 individuals and families daily. The population served include approximately 90% African Americans and Hispanics, and 20% Caucasians, Asians, and Chinese. Within the shelter, there is a health clinic that provides immunizations, BPH test, women health services, day care services for small children up to age six years old, and dental services. The services are administered through the primary care physicians and the nurse practitioners. The clinic is partially funded through the state and federal government in the ratio of 85% to 15% respectively. Medicaid and Medicare are accepted at the clinic. The clientele are residents of the shelter who are usually in the shelter for approximately 90 days before leaving for temporary or permanent housing through the Section 8 program. The homeless shelter is open 24 hours; however, the health clinic is open Mondays through Fridays from 9:00 a.m. until 6:00p.m. The site administrator has approved the project and staff have been informed.

Population of Interest and Stakeholders

The population of interest are registered nurses (RN), advanced nurse practitioners (NPs), physicians, clinical nurse specialists (CNS) and social workers located at the practice site. There will be 22 participants (n=22) in the project. There are six NPs, eight RN's, two primary care physicians, two psychiatrists, two licensed social workers, one clerical staff, and one case manager. In a systemic change process, if sustainability is to happen, people need to be trained to continue the process (Porter-O'Grady & Malloch, 2015). This is a new protocol which is

expected to become the standard for all homeless applicants to the shelter system. Approval has already been granted by the site administrator.

The stakeholders have been informed of the innovation. The stakeholders are those with an interest in the practice site and the services being offered, which would include the patients, clerical and managerial staff, and the local community where the clinic operates. Those identified as key stakeholders were the director, assistant director, healthcare practitioners, and the clerical staff, and a representative from the local community board.

According to Moran et al. (2013), when conducting a project, it is important to identify key holders who have a vested interest in the project and the organization. The stakeholders are those with an interest in the practice site and the services being offered, which include the patients, mentors, administrators, the board, clerical and managerial staff, and the local community where the clinic operates. Stakeholders are critical to any project implementation because they have influence and can determine success or failure. Stakeholders can contribute their perspectives, lend support, communicate with other influencers and create momentum (Moran et al., 2013). If stakeholders do not support the project, the chances of successful implementation and sustainability diminish.

New innovations can encounter opposition and challenges; therefore, it is important to identify stakeholders early and then pitch the ideas to them (Lambooij & Hummel, 2013). Providing clear concise information to stakeholders is very important. Stakeholders priorities, and positions might also differ and those things are better discussed early in the process. Disagreements encountered early, can be rectified before the project is developed too far (Lambooij, & Hummel, 2013). There are benefits to be derived from including stakeholders in

any organizational change, especially if it is to be sustainable. Sustainability is necessary for long term changes.

Recruitment Methods

The following project is a QI initiative, requiring full participation of staff working in the clinic. The project lead received approval for this project from the administrator after a brief presentation. Project lead will be onsite to meet staff face to face. All staff will be trained by project lead in the implementation of the protocol. Information collected from staff will be kept confidential. Staff will select patients to participate in the study based on the pre-test for asthma screening. Inclusion criteria will be all staff at the clinic who will be trained to identify asthma triggers at the site and how to screen the patients and provide patient education on asthma control. There are no exclusion criteria based on the nature of the project.

Tools/Instruments

The instrumentations for this study will include the Asthma Control Test (See Appendix A). This tool has met both the reliability and validity criteria for projects of this type. There is also a demographic questionnaire (See Appendix B). Project lead has already contacted the developer of the tool to seek permission for use in project. The Asthma Protocol (Appendix C) is the new procedure (protocol) that staff will be utilizing during the 4-5 week implementation. The Staff Knowledge Questionnaire (Appendix D) will be utilized for pre and post-test of staff knowledge at beginning of training. A power point presentation is also part of Appendix D.

The Statistical Package for Social Sciences (SPSS) software program will be used for data analysis (Schmith & Brown, 2012). All data will be stored on a secure databased and protected by a password. The questionnaire developed by project lead will be audited to determine the staff's knowledge level on asthma screening protocols and prevention of asthma

exacerbations of adults residing in the shelter setting. The computer software program, Excel will be used.

Another tool to be used in the project is a power point presentation on teaching staff how to implement the project will be utilized. This is in keeping with one of the objectives of the project, which is to educate the staff to conduct the screening on the site. There will be an oral quiz at end of the training. In addition, staff will receive a post-implementation survey on the strengths and weaknesses of the asthma screening protocol. This tool will be developed by the project lead.

Data Collection

Data collection will occur once recruitment has been completed. The following procedures will be observed during the data collection phase. Project lead will collect all questionnaires used in surveys. Every effort will be made to protect the data collected while accounting for privacy and confidentiality issues (AHRQ, 2018).

A codebook will be created to document data in Excel worksheets. Each participant will be assigned a number and codes will be utilized for demographic data such as gender (M= male, F=female), education (EDU), age (intervals will be used (e.g. 18-25; 26-35), marital status (e.g. M= married, D= divorced, S= single). Data collected will be stored in a secured file cabinet with a key and only project lead will have access. Data collected and stored on the laptop will be password protected.

Knowledge Levels

The project lead will provide a questionnaire (See Appendix D) for staff (participants) on their level of knowledge on asthma screening, and how to prevent an exacerbation. The project lead will then collect the data and enter it into Excel spreadsheet. The project lead will then

present a 15-minute power point presentation to the staff on asthma, how to reduce exacerbations while patients are in the shelter setting. Project lead will also demonstrate how to use an asthma pump. Staff will practice. At the end of the two-day training, staff will be given a post-test to see if their knowledge level had changed or remained the same. The pre-test will determine staff knowledge levels and will meet the objective to train staff, so they can administer the screening protocol.

Protocol Compliance

Approval of project was provided by the review board of the university to ensure human and ethical treatment of all participants. According to Moran et al. (2013), all research must be approved by either the internal review board (IRB) or from the University's review board to ensure the project follows all federal laws. There was no conflict of interests reported and no financial contributions received or solicited.

Asthma Exacerbation

According to the Centers for Disease Control and Prevention (CDC) the best strategy for management of acute asthma exacerbations is early recognition and intervention. Early treatment of asthma exacerbations is the best strategy for management (CDC, 2017). Project lead will train staff to administer the new asthma screening protocol once the patient completes the asthma screening protocol, which includes demographic data . This project is designed with the staff at the shelter as the primary target population. This is to ensure sustainability after the asthma screening protocol innovation period has ended and evaluated. All staff will be trained to conduct the asthma screening, and in addition, two staff members will be selected to conduct training of new staff and conduct a refresher for the entire staff once every year. In the healthcare environment, there has been a major shift in ensuring that new innovations are not just

a one-time rapid cycle improvement, but that they become the norm over a period as sustainability becomes part of the long-term goals (Buffoli et al., 2014). That means it continues after the implementation period.

Sustainability must be considered at the beginning of the project so there will be a budget to keep the project going (Bal, Byrde, Fearon, & Ochieng, 2017). Costs-benefit analysis is important for sustainability. Preparing staff to teach others both help with keeping costs down and increases the chances of sustainability of the innovation. The project lead addressed sustainability with site director, and there are no concerns as far as budget.

There is no initial cost for the implementation phase of the project (Harris et al., 2017). Project lead will conduct chart audit of all the survey questionnaires after they have been administered by the staff. The project lead will check all questionnaires to ensure that there is a selection of asthma diagnosis, in addition to demographic data (age, gender, education, employment, marital status).

Financial Implications

There are no financial implications for this project. The practice site has all the tools and resources in place to implement the protocol. The project leader has been given access to the printers and computers, and file cabinets that are onsite. There is no conflict of interest between the project lead and the site or any other entity. In addition, participants are not being paid, and the patients who will be part of the project are patients already utilizing the services at the clinic. They will not be paid for their participation. No conflicts of interest are involved in this project on the part of the project lead.

Intervention /Project Timeline

The proposed timeline for the DNP project is as follows:

Week 1

The project leader will meet with the development team (Director of site, NP's, MDs, social workers, stakeholders) to implement the asthma screening protocol. Staff will receive protocol training (Appendix E). Some tasks are left undone because each staff member thought someone else was doing it (Hall, & Roussel, 2015). At the end of each day, the project leader will collect the data and input into Excel spreadsheet. While the staff is administering the protocol, project leader will be inputting the data, and conducting chart audits.

Weeks 2- 4

The project implementation phase continues at the practice site. The project lead will be onsite daily to answer any concerns, and to collect the data and input it into Excel spreadsheet for categorizing. During this time, project lead will meet with the staff who will be implementing the protocol. The purpose of this is to make sure there is clear and open communication on the activities for the day. This will ensure that all the staff members understand what to do. This briefing will not last more than five-minutes (it is also called a huddle), and at the end of each day for a quick debriefing. During these sessions, project lead will discuss progress and will receive feedback whether the protocol is going well, or whether there needs to be any changes.

Week 5

Project lead will provide staff with a post-intervention survey. Results will be tabulated and entered Excel. All efforts will be made to keep information private and confidential by utilizing color codes for demographic data, and numbers for each participant. The project lead will input data collected into the computer.

Week 6

The project lead will collect data and analyze project findings. The findings will be disseminated to stakeholders upon completion.

Ethics and Human Subjects Protection

Historically, there have been unethical practices that have resulted in the need to protect human subjects from more than minimal risks while participating in any human projects. Of paramount concern are the issues of ethics, privacy, confidentiality, and beneficence (Hardy, 2012). The Belmont Report (Department of Health and Human Services [DHSS], 2018) sets the precedent for the protection of human subjects in the United States. Ethics in relation to the protection of human subjects means that the human subjects are told the truth about the project, they are informed of the risks as well as the benefits. Ethics refers to the rightness or wrongness of an action when it comes to human subjects. Privacy refers to the protection of their identity. Confidentiality means that the project leader does not disclose information about the participants without their informed consent.

As the project leader, there is the responsibility to protect the identity of the participants and to keep their information safe. The practice project will be focused on the implementation of a quality improvement change at the health clinic within a homeless setting. Protecting the identity and keeping the data collected in a confidential manner are always parts of the ethical consideration. Protecting those aspects is a responsibility the project lead cannot afford to ignore.

During the data collection process, the participants should be provided as much privacy as possible to protect from tampering, being lost or stolen, or shared with others. The project will be conducted at a shelter for adults and families who are homeless. It is being conducted in New York City. Participants are not being asked for any identifiable information. The

demographic information will be anonymous by way of a numeric system and a number code. All data collected will be stored in a locked file cabinet onsite for three years. Only project leader will have access. In addition, all digital data will be encrypted and stored on a secure data base to protect the privacy and confidentiality of the participants. The computer will only be accessed by project lead. All files will be stored on site in a file cabinet which will be locked and only accessed by the project lead who has the keys. This is to protect the privacy and confidentiality of the participants while being engaged in the project.

Plan for Analysis/Evaluation

The data will be collected and entered Excel spreadsheet by project lead. It will then be exported into SPSS software. A t-test of differences will be run to determine if there are differences between pre-and post- implementation of the asthma screening protocol, with a significance set at $p<.05$. The t-test is used when the underlying assumptions of parametric tests are satisfied (Hazra & Gogtay, 2016). The tests are necessary to confirm whether the underlying assumption that participants will benefit from the protocol proved to be true or not. T-tests are also used when the sample size is small, for example ($n<30$), to accommodate for some deviation from the norm (Hazra & Gogtay, 2016).

Every day the project lead will collect all data from the asthma control questionnaires that will be completed by all patients seen by the providers that day. The purpose is to collect the demographic data that will be utilized in the analysis phase of project. Project lead has already received permission to access the EHR for the data. While identifiable information will be on the charts, the information will be redacted, even though it will not be used. All data will be stored into a computer which will be password protected and the data encrypted to prohibit unauthorized use and to guard the privacy and confidentiality of the participants. Files and all

data related to the project will remain on site for three years as is the recommendation from the DHHS (2018).

Statistical Analysis

The translation of clinical practice guidelines for asthma control resulted in a decrease in the number of asthma exacerbations at the practice site during the four-week implementation of the new screening protocol. Once identification for the at-risk adults was established, education and training were provided accordingly by the staff.

The participants engaged in their roles as educators, advocates, and leaders by educating the patients to use the asthma inhaler, identify their triggers and try to avoid them, and being taught how to care for themselves, reduced incidents at that site by 25% during week one and by an average of 80% over the duration of the project implementation phase. The shelter has a capacity for 200 people, however, as families and individuals are discharged to temporary housing, the numbers fluctuate between 160-200 people.

During the four-week implementation, the clinical staff served 180 new patients. Statistical analyses were performed utilizing the data analysis tool in Excel for t-tests, which were used to determine whether there were any significant differences between the baseline score for the number of acute asthma exacerbations prior to the implementation of the screening protocol compared with the post-implementation phase which was implemented over a four-week period. The pre-and port-test scores of the asthma control test for asthma exacerbations were analyzed using Excel's data analysis tool.

A two-tailed paired two-sample assuming equal variances was performed. The data showed significant difference between the level of asthma control and exacerbations at baseline (14.8) and post implementation (19.45) with p-value ($p<0.03$) (Figure 1). There was a

significantly high confidence that the scores were different. The results showed that asthma exacerbations were reduced thereby increasing the level of asthma control for the patients.

Figure 1.

t-Test: Two-Sample Assuming Equal Variances		
	PRE-	***POST***
Mean	14.8	19.47778
Variance	0.831285	1.625202
Observations	180	180
Pooled Variance	1.228243	
Hypothesized Mean Difference	0	
df	358	
t Stat	-40.0423	
P(T<=t) one-tail	1.4E-134	
t Critical one-tail	1.649121	
P(T<=t) two-tail	**2.8E-134**	
t Critical two-tail	1.966613	

Figure 1: *Results of the pre and post-asthma control test*

Race and ethnicity

The racial/ethnicity breakdown of the residents screened (Table 1) during the four-week implementation was made up of African Americans (70%), and Hispanics (26%), Caucasians (1%), and Asians (2%), Other 1%). There were 54 males and 126 females. These statistics were interesting because the number of males and females were very close. However, under the category of race and ethnicity, the numbers were quite alarming, which was consistent with data from current research.

Table 1. Showing race/ethnicity breakdown

Race/Ethnicity	**Number**	**Percentage)**
African Americans	126	70%
Hispanics	44	24%
Caucasians	6	2%
Asians	2	1%
Other	2	1%

Of that population, 40% of the African Americans were diagnosed with asthma, compared to 10 percent of Hispanics, and .5% of the other races. Of the more than 60% of adults that were screened and had a diagnosis of asthma, only 20% confirmed that they knew how to use an asthma pump. More than 50% had been to an emergency department on average of three times within a six-month period. Age and gender played an important role in determining the number of asthma exacerbations the adults had. Between the ages of 36-55 years of age, the male adults had more asthma exacerbations than females in similar age group (15 to 5 respectively). The over 65 age group had more ED visits accounting for 50% of the ED visits prior to implementation.

At baseline, 40 of the 180 adults had a visit to the emergency department during the past four weeks. During the implementation there were only 14 ED visits. This was a reduction of 35% in the number of asthma exacerbations that led to ED visits (Table 2). Of significance is that at baseline only 20% of adults knew how to use an asthma pump, however, after the

implementation the number increased to 80% based on the education provided by the providers. This education significantly decreased the number of asthma exacerbations.

Table 2. Summary of significant data

Variables	**Number**	**Percentage (%)**	**Total**
Asthma Diagnosis (Baseline)			
Gender			
Male	54	30%	
Female	126	70%	
Age			
			180
ED visits in last 4 weeks (Baseline)	40	11%	
ED Visits (During Implementation)	14	77.7%	180
Knew how to use Pump (Baseline)	36	20%	
Knew how to use Pump (Post-implementation)	144	80%	

Documentation increased significantly at the site, and staff was able to retrieve information on residents regarding asthma very quickly. At the site, which reported at least two ED visits by residents each week, there were no ED visits during the implementation period. Staff attributed this to the patient education, and the effort the site had made to have those with

an asthma diagnosis to be relocated to the newer section of the site, due to less dust and other possible environmental triggers.

By implementing the screening protocol and developing an Asthma Control Plan with each patient, the staff not only improved the health of the patients while they were at the site but provided the tools for the residents to continue with their self-care after they were transferred to permanent housing. The education was not just temporary, but a life transforming one for residents.

Discussion of Findings

Recommended evidence-based guidelines for the control of asthma, and the reduction of asthma exacerbations have always existed, but not practiced at the project site. By adopting the new asthma screening protocol, which identified residents who were already diagnosed with asthma, made it easier for the staff to take the additional steps to reduce the likelihood of asthma exacerbations. According to the CDC (2016), the best strategy for management of acute asthma exacerbations is early recognition and intervention.

When patients learned to identify their asthma triggers, they were better able to control their asthma exacerbations (Al-Jahdali et., 2013). For persons residing in shelters where the setting is highly contagious, there was positive feedback relating to the protocol. During site visits, participants provided specific feedback indicating that the protocol was very helpful to them because they learned how to identify triggers and avoid them. Furthermore, staff reported the feedback from patients who were screened thought it was a good thing because they had fewer acute asthma exacerbations, and they hoped the project would continue. By implementing the asthma screening protocol during each visit, staff became more engaged and invested in

practice changes because of the tremendous response and the improvement in the health of the population they screened. .

Significance/Implications for Nursing

The purpose of this DNP project was to implement a new asthma screening protocol in the shelter setting to reduce asthma exacerbations. The protocol was for medical staff to use in shelter settings for adults over 18 years of age in New York City. This project was significant to the nursing profession because it addressed the care of asthma among a vulnerable population. Shelter systems often lacked specific screening protocols for chronic conditions among the homeless population. This practice site took initiative to implement and sustain a vital aspect of healthcare to a vulnerable sector of the population.

Although the asthma screening tool was an existing innovation, it created a new standard of care for the shelter site clinic. This protocol has the potential of being duplicated in similar settings. The needs of the patients are always changing, and nurses have major roles to play in improving health outcomes for their patients through leadership, discovery, and disseminating new evidence-based practices.

The asthma protocol will impact the nursing profession because nurses are the backbone of the healthcare industry and they are poised to take on leadership roles and bring new innovations in a multitude of healthcare settings. This was just one small contribution to the larger public health issue of reducing asthma exacerbations in a vulnerable population.

The implications for the future practice are to sustain the screening protocol with the collaborative support of the key stakeholders at the project site. The implementation of evidence-based guidelines are important at shelter sites because it is one way of reaching an extremely vulnerable population, such as homeless adults with chronic asthma. The

implementation of the evidence-based guidelines is vital for decreasing the number of ED visits by residents of the shelter due to poorly controlled asthma and lack of education.

In addition, the significance of this project to the nursing profession and to healthcare outcomes will be impactful especially in settings such as shelters where the main goal is not health, but housing. Nonetheless, the chances of persons residing in the shelter setting with a diagnosis of asthma is possible. Furthermore, in settings where there is a clinic, such as the practice site, or in other shelter settings where a clinic does not exist, this protocol can be implemented as a prevention method. Severe asthma has major adverse effects on the quality of life, and overall healthcare costs (Holmes, 2017).

Acute asthma exacerbations can also be fatal, and deaths could be avoided if patients have the support, and the education to manage their symptoms (Holmes, 2017). The DNP prepared nurse's role as organizational leader can be utilized to implement an asthma screening protocol in settings where previously it would have not been considered as vital. Nurses in primary care settings such as shelters and community health clinics play an important role in ensuring that patients are educated on ways to manage their condition (Holmes, 2017). This is how far reaching this one small innovation potentially be.

Over two million New Yorkers currently have asthma (Health Equity Report, 2017). The adult prevalence rate for asthma is higher in New York than the national rate (10% compared to 7 % respectively). Consequently, reducing exposure to asthma triggers and providing preventive care and management are priorities of the New York agenda (CDC, 2016). Furthermore, visits to the ED and hospitalizations because of asthma exacerbations were much higher in New York than the national average. In New York, the cost of asthma treatment, hospitalizations, and loss of income amounted to $220 million annually, according to Health Equity Report (2017). By

implementing a screening protocol in an outpatient setting, it was possible to reduce the number of asthma exacerbations at the site, and that ultimately reduced the cost of ED visits during the implementation period. As leaders, DNP nurses have the education and competence to play the roles of advocates, educators, and clinicians capable of implementing new policies and programs that serve to improve healthcare outcomes. This can be duplicated in similar settings throughout the U.S.

Limitations of the Project

. Several limitations were identified in the development and completion of this QI initiative. Project limitations included the short time frame for implementation. There were only four weeks for implementation. At just about the time when the staff and the participants were becoming familiar with the tools and identifying triggers, evaluation of the objectives were initiated. A longer time period for implementation may have demonstrated increasing levels of competency exhibited by staff and would have provided a larger database from which to run more analyses.

Another limitation was the small sample size in the project. The setting is a homeless shelter with a health clinic that serves the approximately 200 residents at full capacity. During the project implementation, the sample in the project was 180 residents. A small sample size can limit the reliability and validity of the results as it might yield different results when used with larger sample size (Bemker, & Schreiner, 2016).

The project design was another limitation. The QI focus of this project restricted the data that could be collected to meet the requirements of a DNP project, which in turn restricted the types of analysis that could be used to measure outcomes (Bemker, & Schreiner, 2016).

Areas of Dissemination

Dissemination of findings is an important element of DNP projects. Dissemination should be completed internally as well as externally (Bemker & Schreiner, 2016). The project is a culmination of the hard work, the knowledge and competencies acquired over the period of time, and therefore, it should be disseminated professionally so that it can be utilized in clinical practice as a form of scholarship (Moran, Burson, & Conrad, 2017). Some areas for dissemination internally include, posters, slides, brochures, and manuals (Bemker, & Schreiner, 2016). Internally, the project will be disseminated in the form of a power point presentation, a workshop, and an executive summary.

External dissemination of the project may take the form of in-person presentations at professional organizations, conferences, and workshops. Dissemination of the project may also be submitted to scholarly and peer-reviewed journals. There are specific requirements for submission, and each journal has its submission requirements (Bemker, & Schreiner, 2016). Externally, this project will be disseminated to the Doctoral Project Repository (DPR). It is an online database with a unique webpage which can be shared with others. An abstract as well as the full scholarly project must be uploaded along with a one-time fee of $30.00. The DPR assists the DNP prepared nurse to expand and realize the opportunities of DNP practice. It also showcases the DNP prepared professional's impact on improving outcomes (Doctor of Nursing Repository, 2018).

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Appendix A

asthma.com

Name: _____ **Today's Date:** _____

ASTHMA CONTROL TEST™

Know your score.

The Asthma Control Test™ provides a numerical score to help you and your healthcare provider determine if your asthma symptoms are well controlled.

Take this test if you are 12 years or older. Share the score with your healthcare provider.

Step 1: Write the number of each answer in the score box provided.

Step 2: Add up each score box for the total.

Step 3: Take the completed test to your healthcare provider to talk about your score.

IF YOUR SCORE IS 19 OR LESS, **Your asthma symptoms may not be as well controlled as they could be. No matter what the score, bring this test to your healthcare provider to talk about the results.**

NOTE: If your score is 15 or less, your asthma may be very poorly controlled. Please contact your healthcare provider right away. There may be more you and your healthcare provider could do to help control your asthma symptoms.

					SCORE
1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?					
All of the time **[1]**	Most of the time **[2]**	Some of the time **[3]**	A little of the time **[4]**	None of the time **[5]**	.....
2. During the past 4 weeks, how often have you had shortness of breath?					
More than Once a day **[1]**	Once a day **[2]**	3 to 6 times a week **[3]**	Once or twice a week **[4]**	Not at all **[5]**	.....
3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?					
4 or more nights a week **[1]**	2 to 3 nights a week **[2]**	Once a week **[3]**	Once or twice **[4]**	Not at all **[5]**	.....
4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?					
3 or more times per day **[1]**	1 to 2 times per day **[2]**	2 or 3 times per week **[3]**	Once a week or less **[4]**	Not at all **[5]**	.....
5. How would you rate your asthma control during the past 4 weeks?					
Not Controlled at All **[1]**	Poorly Controlled **[2]**	Somewhat Controlled **[3]**	Well Controlled **[4]**	Completely Controlled **[5]**	.....

TOTAL: .....

Appendix B

Demographical Data

Please do not put your name. Answer all questions carefully.

1. What is your age range?
   1. Over 18 years of age
   2. 26-35 _____
   3. 36-45 _____
   4. 46-55 _____
   5. 56-65 _____
   6. 65 and over ____

2. **Wat is your gender?**

   1. Male
   2. Female

3. **What is your marital status?**

   1.Single___

   2.Married ____

   3.Divorced____

   4.Widowed___

   5.Separated_____

4. **What is your level of education?**

   1. High School _____

   2. Vocational _____

   3. College (2-year)_____

   4. College (4-year)

   5. Post -Graduate_____

5. **Are you currently employed?**
   1. Yes _____
   2. No _____

Appendix C

Asthma Protocol For Practice Site Staff

Care for the Homeless supports improved and expanded health care, human services, supportive housing and affordable housing for people experiencing homelessness or at risk of homelessness in New York City, and elsewhere, as part of our mission to ameliorate, prevent and end homelessness. We are committed to:

The following Asthma Protocol that will be utilized during the next 4-5 weeks.

1.	Provider must assess all patient at initial presentation by administering the Asthma Control Test.
2.	Provider must assess all patient at initial presentation by administering the Asthma Control Test. Based on the results of the assessment, patients are grouped according to the severity of the asthma.
3.	All patients who have at least one episode in the last 6 months must receive patient education. Based on the results of the assessment, patients are grouped according to the severity of the asthma. Provider will conduct patient education with patients in groups first. Patients will be educated on asthma control.
4.	Based on the results of the assessment, patients are grouped according to the severity of the asthma.
5.	Staff will demonstrate use, then ask for volunteers at first, then make sure everyone gets an opportunity to practice using the pump. Provider will chart which patients have a history of asthma, or who has had an asthma exacerbation in the last 3-12 months. Provider will meet with patients individually to collaborate on the development of their action plan.

Reference:

Care for the Homeless: Retrieved from https://www.careforthehomeless.org/index.cfm ?fuseaction=cms.page&id=1083.

Appendix D

Staff Knowledge Survey

This is a 15-item demographic/knowledge awareness of Asthma Control Survey. Please read each question carefully, and circle the appropriate response.

Demographic Section

1. What is your age?

1.18-25 years

2. 26- 35 years

3. 36-45 years

4. 46- 55 years

5. 56-65 years

6. ≥66 years

2. What is your gender?

1. Male

2. Female

3. What is your ethnicity?

1. African American/Black

2. Caucasian/White

3. Hispanic/Latino

4. Asian

5. Other

4. What type of provider are you?

1. Physician

2. Physician's Assistant

3. Advance Nurse Practitioner (DNP/PhD)

4. Nurse Practitioner (NP)

5. Registered Nurse

5. How many years have you practiced?

1. 0-5 years
2. 6-10 years
3. 11-15 years
4. 16-20 years
5. 21- 25 years
6. 26-30 years
7. ≥31 years

6. How many patients do you see weekly?

1. 0-19
2. 20-39
3. 40-59
4. 60-79
5. 80-99
6. ≥100

B. Staff Knowledge Awareness Section

7. Do you have previous/additional training in asthma screening?

a) Yes
b) No

8. **A 25-year-old female with mild persistent asthma presented to a health clinic for a follow-up visit. He was originally referred 6 months ago by her primary care provider after having an asthma exacerbation which required treatment in an emergency room. In the clinic, the spirometry is normal, and the patient wants to stop her inhaled steroid.**

Based on current evidence, which of the following would be the most appropriate recommendation regarding his asthma medication regimen?

a) Maintain current medication regimen; no adjustment is indicated.
b) Discontinue the inhaled corticosteroid
c) Decrease the inhaled corticosteroid to 1 puff daily.
d) Discontinue the inhaled corticosteroid; start low dose inhaled corticosteroid/long acting beta-agonist, 1 inhalation at bedtime.

Answer: d

Rationale: Inhaled corticosteroids are the preferred medicine for long-term control of asthma. They are the most effective option for long-term relief of the inflammation and swelling of the airways ((National Heart, Lung, and Blood Institute [NHLBI], 2018).

9. A **65 year-old male patient, entering the shelter setting for the first time. What is the first step the clinician should take?**

a) Conduct a physical examination
b) Confirm diagnosis by pulmonary function test
c) Administer the Asthma Control Test
d) Assess inhaler technique

Answer: c

Rationale: Quality asthma care involves not only initial diagnosis and treatment to achieve asthma control, but also long-term, regular follow-up care to maintain control. Asthma exacerbations affect the clinical course of the asthma patient whether it is mild, moderate, or severe (CDC, 2018). Diagnosing asthma is the first step, and this is done by administering the Asthma Control test (CDC, 2018).

10. You are examining a 20 year old male. His family was recently evicted and have been in the shelter setting for 14 days. He was referred to the clinic by the social worker because of excessive coughing. Which symptoms persuade you to suspect asthma?

a) Wheezing
b) Chronic cough
c) Dyspnea
d) Exercise intolerance

Answer: c

Rationale: Common symptoms of asthma include wheezing, coughing, shortness of breath, and chest tightness or pain (Centers for Disease Control and Prevention [CDC], 2018).

11**. Which of the following is not a differential diagnosis for asthma in adults?**

a) Seizures
b) Chronic obstructive pulmonary Disease (COPD)
c) Congestive Heart Failure (CHF)
d) Vocal Cord Dysfunction

Answer: a

Rationale: According to the CDC (2018), **c**hronic obstructive pulmonary disease, congestive heart failure, and vocal cord dysfunction are some of the differential diagnosis for asthma. Seizures is not a symptom of asthma.

12. **If a patient is suffering from asthma, and requires a rescue inhaler daily, his or her asthma severity is:**

a) Moderate or severe persistent with exacerbations
b) Severe persistent with exacerbations
c) Mild persistent
d) Mild intermittent

Answer: a

Rationale: In ICD-10, asthma is coded as intermittent or persistent and adds: mild, moderate, severe as descriptors. Asthma exacerbations affect the clinical course of the asthma patient whether it is mild, moderate, or severe. Inhaled short-acting beta2-agonists are the first choice for quick relief of moderate or severe persistent exacerbations (American Academy of Allergy and Asthma Immunology, 2018).

13. **Asthma is a long-term disease that has no cure. The goal of asthma treatment is to control the disease by reducing asthma exacerbations. Which of the following does not reduce exacerbations in patients?**

a) Education in self-management skills
b) Controlling asthma symptoms through medication adherence
c) Controlling asthma symptoms through self-management and assessment
d) Reducing exposure to environmental factors and triggers that worsen asthma

Answer: c

Rationale: Asthma is a common chronic disease without cure. According to the latest data, nearly 25 million people in the United States, including over 6 million children, have asthma. (NHBLI, 2018).

14. **How is Asthma diagnosed? Select the best answer.**

a) Physical examination only
b) Medical history, physical examination and diagnostic test.
c) Spirometry only
d) Medical history

Answer: b

Rationale: The first step in dealing with the asthma patient is to make sure it is asthma. Even though many cases of recurrent cough and wheezing in children and adults are due to asthma, other conditions are often misdiagnosed as asthma. A diagnosis of asthma should be made based on medical and family history, physical examination and tests NHBLI, 2018).

15. Long-term asthma control medications are the cornerstone of asthma treatment. Which medication is not recommended for treating asthma?

a) **Inhaled corticosteroids**
b) **Long-acting beta agonists**
c) Combination inhalers
d) Ibuprofen

Answer: d

Rationale: Ibuprofen belongs to a group of drugs known as non-steroidal anti-inflammatory drugs (NSAIDS), and are used mainly to treat pain and fever (National Heart, Lung, and Blood Institute [NHLBI], 2018). About 10-20% of

Content Validity Index Table

Item	Expert 1	Expert 2	Expert 3	Mean
1	2	3	4	2.33
2	4	4	4	4.0
3	4	3	4	3.67
4	4	4	4	4.0
5	4	4	4	4.0
6	4	4	4	4.0
7	4	4	4	4.0
8	3	4	4	3.67
9	4	4	4	4.0
10	4	4	4	4.0

The questionnaire was rated by a panel of three experts. The content validity index (CVI) for this questionnaire is ***0.97.***

Appendix D

Power Point Presentation for Staff Training (Included)

Asthma: A Presentation of Asthma Management and Prevention (Slide Presentation and Speaker Notes)

https://www.cdc.gov/asthma/speakit/default.htm