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Kristen Gourneau

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Best Practice for Preventing Relapse of Smoking Cessation

by

Kristen Gourneau, RN, FNP student

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College of Nursing and Professional Disciplines

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PERMISSION

Best Practice for Preventing Relapse of Smoking Cessation

Department Nursing

Degree Master of Science

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Abstract

Cigarette smoking is linked to negative health consequences in nearly every organ system in the body and has a huge economic burden worldwide (Tran, Ho, & Varghese Gupta, 2019). Smoking cessation should be a priority to all health care providers and patients. The case study focusses on smoking cessation for a 72-year-old woman with a 45-pack year history of cigarette smoking. Patient has attempted tobacco cessation but has been unsuccessful.

Smoking cessation interventions help with smoking cessation maintenance. Smoking cessation relapse is least likely when effective pharmacologic and cognitive interventions are used in combination. Health care providers should be promoting smoking cessation in all patient who currently smoke. They should also be supporting patients with their physical and psychological needs during the smoking cessation process and throughout their lifetime to prevent relapse. Pharmacological interventions include nicotine replacement therapies, varenicline, and bupropion

Background

Despite smoking related disease and risk being well known, smoking cigarettes remains a serious health epidemic. It is estimated that about one third of the world's adult population smokes (Claudio Pereira, Gritsch, Passos, & Furtado, 2018). Tobacco use is the leading preventable cause of cancer and cancer death. It is linked to many types of cancer including, oral cavity and pharynx, larynx, esophagus, lung, bronchus and trachea, stomach, kidney, pancreases, liver, urinary bladder, uterine, cervix, colon, and acute myeloid leukemia (Gallaway et al., 2019). Smoking accounts for 70% of lung cancers, 42% of chronic respiratory diseases, and 10% of cardiovascular (Claudio Pereira et al., 2018).

Smoking cessation can be very difficult for patients. A study showed that 70% of smokers have the desire to quit and 46% have attempted to quit. Over 50% of these smoking cessation attempts have relapsed in one year (Durmus Kocak et al., 2015). Forty-eight percent of smoking cessation relapse occurs in the first month (Durmus Kocak et al., 2015). There are pharmacologic, cognitive, and combination programs to assist with smoking cessation and preventing relapse. Each individual has their own motivation and journey to successful smoking cessation.

Case report includes a 72-year-old woman with a 45-pack year history of cigarette use. She has made multiple attempts of smoking cessation over the years but has not been successful long term. She currently has the desire to quit smoking and is seeking assistance from her primary care provider to help her be successful with smoking cessation.

Case Report

A 72-year-old Caucasian female presents to the clinic for follow up care after right hip fracture. Patient fell and broke her right hip. She had a right hip ORIF. She spent three days in the hospital without complications. She denies fever, chills, nausea, vomiting, and loss of

appetite. Denies redness, swelling, or warmth at the incision site. Denies numbness and tingling of lower extremities. Denies cough, shortness of breath, chest pain, and palpitations. She states her pain is well managed with Tylenol. She states she is capable of ambulating independently and has good movement of the hip. She is able to perform activities of daily living independently. She lives independently but has family in town that helps with household tasks. She reports a medical history of Chronic Obstructive Pulmonary Disease (COPD), anemia, hypertension, hypercholesterolemia, and smoker. She is a current every day smoker with a 45-pack year history. She has had unsuccessful attempts of quitting in the past. She currently has the desire to quit smoking and is wanting assistance. She desires to establish care with a primary care provider.

Patient medications include: Fluticasone propionate and salmeterol 250/50 1 puff BID, Prednisone taper for COPD exacerbation that was finished yesterday, Losartan 50mg PO daily, Metoprolol 50mg PO BID, Paroxetine 20mg PO daily, Quetiapine 200mg PO BID, Lipitor 20mg PO daily, Multivitamin 1 tablet PO daily, Iron sulfate 325mg PO BID. Patient has no known drug allergies.

Physical examination reveals her vitals are the following: BP 138/70, Pulse 72, Respiratory rate 18, O2 saturation 92%, and temperature 98.6. She is alert, oriented, and in no acute distress. Head is normocephalic without obvious abnormality, atraumatic. Eyes are conjunctivae/corneas clear. PERRL, EOM's intact. Ears have normal TM's and external ear canals clear. Nose include Nares normal. Septum midline. Mucosa normal. No drainage or sinus tenderness. Throat has oropharynx pink & moist without lesions or evidence of thrush and lips, mucosa, and tongue normal; teeth and gums normal. Neck is supple, symmetrical, trachea midline and no adenopathy. Lung sounds are clear with no increased work of breathing. COPD

is well managed at this time after recently being treated for an exacerbation. Heart is regular rate and rhythm without murmur. Abdomen is soft and non-tender. Bowel sounds active. No organomegaly felt. The incision on her right hip is healing well with no signs of infection. No edema to legs bilaterally. Patient has stable gait when ambulating in room. Good range of motion to hip/legs bilaterally.

Assessment for this patient includes status post right hip open reduction internal fixation, current smoker with desire to quit, screening for lung cancer, and need to establish primary care provider. The follow up plan was discussed with the patient and she is in agreement with the plan. Follow up with primary care provider or surgeon if right hip pain shows signs of infection developing such as increasing pain, swelling, drainage, redness, and warmth. Encouraged to do weight bearing exercises. Continue to increase activity as tolerated.

Smoking cessation is the patient's priority. Patient was instructed to choose a smoking quit date. Prescription for Nicotine 21mg patches given. Apply to clean, dry, hairless skin. Remove patch after 16-24 hours and place patch in new area. Do not use same area as old patch for at least one week. After 6 weeks decrease to 14mg patch than at week 9 decrease to 7mg patch and then wean off. Call ND Quit line at 1-800-QUITNOW for support and assistance with quitting. Will also consider referral to local tobacco cessation specialists. Will consider additional cessation medications if indicated by unsuccessful quit attempts or relapse. Recommended lung cancer screening with low dose CT scan due to smoking history. Patient in agreement. Will schedule with radiology department.

Set up appointment next week to establish care. We will do a yearly physical examination, labs, discuss preventative care (such as colonoscopy, and bone density scan) and evaluate management of chronic health conditions. Continue all current medications at this time.

Encouraged to increase calcium intake to 1200mg daily with dairy intake or supplements.

Questions answered and patient in agreement.

Literature Review

The patient in the case study has a female 45-pack year history of cigarette use with complications of COPD. She had admitted to multiple cessation attempts but was unable to successfully remain free of tobacco use. She currently has a desire to quit. She needs assistance with a smoking cessation plan that will make her smoking cessation successful long term.

Center for Disease Control and Prevention (2014) noted that Tobacco use is the leading cause of preventable disease and death in the United States and it is estimated that tobacco use cost \$300 billion annually.

Smoking cessation is a chronic process that can be divided into specific phases. Motivation is the period prior to a smoker being ready to make a quit attempt. Precessation is the period prior to a quit attempt after a smoker has committed to making a quit attempt. Cessation is the two-week period following and including a quit attempt. Maintenance is the time beyond the first two week of a quit attempt (Garey et al., 2018). Relapse prevention is interventions that focus on maintenance after acute treatment phase is completed (Livingstone-Banks, Norris, Hartmann-Boyce, West, Jarvis, & Hajeck, 2019). Health care providers can have an impact on each of these phases. This paper will focus on strategies to assist patients with the maintenance of smoking cessation. There are pharmacologic, cognitive, and combination programs to assist with smoking cessation and prevent relapse. Health care providers are given multiple opportunities for motivating and assist smokers to quit throughout the different phases of smoking cessation. Over 80% of smokers see a health care provider at some point each year, and most smokers desire and expect their provider to talk to them about quitting smoking and are open to their providers' advice (CDC, 2014).

Research is needed for finding the best strategies for the preventing relapse of smoking cessation. Research for this paper was completed using CINAHL and PubMed search engines. Search terms used a combination of “smoking cessation,” “preventing relapse,” “smoking cessation maintenance” “nicotine replacement therapy,” “bupropion,” “varenicline,” and “cognitive therapy.” Search was limited to articles less than five years old, English, and full text.

Success of smoking cessation maintenance can depend on age, motivation to quit smoking, number of past quit attempts, and smoking urges. Interventions can be focused on motivation and smoking urges. Assessment of these factors by a health care provider prior to a smoking cessation attempt can lead to increased quit success (Garey et al. (2019).

Pharmacological treatments

Pharmacological therapies approved by the United States Food and Drug Administration include varenicline, nicotine replacement therapy and bupropion. Varenicline agonizes and blocks alpha-4-beta-2 nicotinic acetylcholine receptors. It works for smoking cessation by decreasing tobacco withdrawal, smoking pleasure and cravings (Woo & Robinson, 2016). Nicotine replacement therapy is used in the forms of gum, patch, inhaler, nasal spray and lozenges. The nicotine replacement is used to decrease symptoms of nicotine withdrawal and cravings (Woo & Robinson, 2016). Bupropion is an antidepressant used to assist with smoking cessation and the exact action on smoking cessation is unknown (Woo & Robinson, 2016). The mechanism of actions is thought to be blockage of neurotransmitter reuptake at the synapse (Tran, Ho, & Varghese Gupta, 2019). The medications are often combined in hopes to increase the success of smoking cessation maintenance.

A study compared participants who had more neural response to pleasure or cigarette related pictures. It showed that for individuals who respond more to pleasure than cigarettes had

a greater chance of remain abstinence regardless of medications. In those that responded more to cigarette images had higher smoking cessation rates at three months with varenicline compared to bupropion (Cinciripini et al., 2017). Varenicline showed increased rates of smoking cessation at three months compared to nicotine replacement therapies (Rohsenow et al., 2017; Walker et al., 2018). Extended treatment longer than twenty-four weeks with varenicline helps to prevent relapse compared to shorter treatment courses of eight to twelve weeks (Livingstone-Banks et al., 2019). Varenicline alone is proven to be as effective as a combination of bupropion and varenicline for smoking abstinence rates (Tran, Ho, & Varghese Gupta, 2019).

Nicotine replacement therapies can be used to minimize the craving and withdrawal symptoms. Nicotine replacement therapies are designed to used for weeks and weaned down. When nicotine replacement is not adhered to for at least five weeks, there is a higher risk for relapse of smoking by six months (Raupach, Brown, Herbec, Brose, & West, 2014). Combining different methods of nicotine replacement therapies is more effective than a single method in smoking cessation maintenance. However additional research is needed to determine which combinations and doses provides the highest effectiveness (Tran, Ho, & Varghese Gupta, 2019). According to the Cochrane review there is not enough evidence to determine if extended use of nicotine replacement therapy for twenty-four or fifty-two weeks increases smoking cessation maintenance rates (Livingstone-Banks et al., 2019).

Bupropion was found to be effective for smoking cessation maintenance at one and two years compared to placebo (Livingstone-Banks et al., 2019). A study showed that higher doses of bupropion had higher rates of smoking cessation at six weeks but after one year the lower doses of had similar rates of smoking cessation maintenance rates (Tran, Ho, & Varghese Gupta, 2019). Bupropion use extended longer than twenty-four weeks did not increase rates of smoking

cessation maintenance (Livingstone-Banks et al., 2019). When nicotine replacement therapy was combined with bupropion it showed to be more effective than Nicotine replacement therapy or bupropion alone (Livingstone-Banks et al., 2019).

When comparing varenicline, nicotine replacement therapy, bupropion, and combination of nicotine replacement & bupropion to placebo, varenicline that the best rates of relapse prevention at one year (Livingstone-Banks et al., 2019). Due to showing the highest rates of preventing smoking cessation relapse especially when used for extended amounts of time of longer than twenty-four weeks, varenicline should be considered by health care providers for patients who desire smoking cessation.

Cognitive Treatments

Cognitive treatments are commonly used in smoking cessation treatment and maintenance. Cognitive therapy works on the mental ability to overcome nicotine addiction through using mindfulness, motivation, self-efficacy, and support.

One study looked a psychological factors that played a role in smoking cessation attempts and smoking cessation maintenance. Motivation which is defined as “an inner drive to behave or act in a certain manner” is needed for quit attempts. Smoking cessation maintenance requires both motivation and self-efficacy which is defined as “belief in one’s own ability to execute a particular behavioral sequence in order to achieve a goal or an outcome.” (Lee, Catley, & Harris, 2014). Both motivation and self-efficacy should be evaluated by health care providers to assists patients with smoking cessation maintenance.

Cognitive behavior therapy (CBT) is used for smoking cessation, but the length of therapy is controversial. A study indicated that extended cognitive behavior therapy as defined as therapy longer than twenty-six weeks did not increase success rates compared to therapy shorter

than twenty-six weeks (Laude et al., 2017). In the study, extended CBT group attendance rates were 65% for weeks one to twenty-six and rates dropped to 31% percent for weeks twenty-seven to forty-eight. Extended CBT treatment may cause fatigue and decreased rates of ongoing treatment (Laude et al., 2017).

Individuals with mental illness have a disproportionately higher rate of smoking. Having two or more lifetime mental illness decreased the rate of smoking cessation by 15% compared to an 11% percent decrease in smoking cessation in those with depression alone (Huffman, Bromberg, & Augustson, 2018). Having a mental illness is a risk factor for relapse even after a year of smoking cessation (Álvarez Gutiérrez et al., 2016). Teaching mindfulness to smokers can have a positive effect on mental health. Mindfulness can help patient with mental illness with smoking cessation maintenance. Mindfulness can have a positive impact on quality of life by increasing motivation to continue treatment and thus preventing relapse (De Souza et al., 2015). Mindfulness also makes an individual more aware of what their smoking triggers are and how to avoid them. Triggers may include alcohol, smoke exposure, and stress. Regular alcohol intake of up to one drink a day was associated with increased relapse rates of 31 % compared to 14% in those that did not consume alcohol (Durmus Kocak et al., 2015). Having exposure to other smokers increase the risk for relapse, especially having another smoker in the same household. (Durmus Kocak et al., 2015). Higher rate of relapse is associated with starting smoking at younger ages. (Durmus Kocak et al., 2015). Studies showed that mindfulness can have a reduction in stress, irritability, lack of concentration, depression, anxiety and other psychiatric symptoms. The reduction in negative psychological states increase adherence to abstinence from tobacco and other substances (De Souza et al., 2015). Individuals being mindful of stress

triggers, use of other substances, and smoke exposure can increase their likelihood of being successful with smoking cessation maintenance.

Smoking is higher in rural areas compared to urban areas. Rural areas have less access to cessation services (Noonan et al., 2018). Text and telephone based smoking cessation services can be used to reach individuals living in rural area and those who have difficulty attending smoking cessation programs in person. Quit lines are state based telephone services that provide callers with counseling information on how to quit, and medications for smoking cessation. A study showed that text-based schedule gradual reduction had higher rates of smoking cessation than text-based support messages alone. The schedule gradual reduction had participants smoke as usual the first week and send a message every time they smoked. The number of cigarettes was calculated and then the next week the number of cigarettes was cut by one-third and participants were asked only to smoke when messaged over the phone. Over the next couple weeks, the number of cigarettes was decreased. Participants were to respond to each message if they smoked or not. The study states that text-based messages are a feasible way to assist individuals with smoking cessation and maintenance (Noonan et al., 2018). The constant contact through the text messages helps with keep the individuals accountable and aware of the smoking triggers. Ease of access for the patient should be considered when deciding what type of support program to increase rates of successful completion.

Smoking rates are significantly higher in adults that live below the poverty line compared to the general public (Bailey, Heintzman, Jacob, Puro, & Marino. 2018). Cost estimator may be helpful for some patient's motivation if they see how much money they could save with smoking cessation. For example, a patient with a 45-pack year history and an average cost of \$3.15 per pack of cigarettes. This will cost this patient over \$51,000 over the 45 years. The upfront cost of

cigarette can be easily calculated but it is more difficult to estimate the secondary costs of increased health costs. Tobacco cessation treatments are very cost effective as they reduce health care costs, increase productivity, and reduce absenteeism (CDC, 2014). Showing a patient, the direct cost of cigarette use can be helpful in motivating them to prevent smoking cessation relapse.

Cognitive therapy should be provided to patient through face to face interaction, phone, or text-based resources depending on what the patient prefers and has access to. Therapy services work on increasing mindfulness, motivation, & self-efficacy while providing support throughout the smoking cessation process.

Conclusion

The act of smoking cessation is just the beginning of a journey. Smoking cessation has high rates of relapse. Health care providers can assist with prevention of relapse. Interventions include pharmacologic, cognitive and combinations of both. Healthcare providers and the patient need to work as a team to make smoking cessation a life long success.

Learning Points

- Readiness for smoking cessation and evaluation of smoking cessation maintenance should be addressed by health care providers at every visit.
- Smoking cessation pharmacological and psychological interventions should be used in combination for the highest cessation and maintenance rates.
- Varenicline is the most successful medication for preventing relapse of smoking cessation. Varenicline is most successful for long term smoking cessation when used for longer than 24 weeks.
- Combinations of nicotine replacement therapy and Bupropion increases the effectiveness of preventing relapse compared to single drug therapy.

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