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Keeping Primary Care Providers Informed about Detecting Skin Cancer in Young Adults

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KEEPING PRIMARY CARE PROVIDERS INFORMED ABOUT DETECTING SKIN CANCER IN YOUNG ADULTS

by

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DEDICATION

To my parents and siblings, I can't thank you enough for your unconditional love and support as I pursued a graduate degree. As the first person in the entire family to attend graduate school, you continued to encourage me despite any challenges that I encountered. Thank you for being my practice patients and for understanding the physical, social, and mental complexities associated with graduate school.

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ABSTRACT

Skin cancer is a common, life-threatening disease that affects anyone, regardless of age or skin color (American Cancer Society [ACS], 2020). The incidence of melanoma is on the rise for young adults, with an estimated 2,400 new cases for individuals aged 15 to 29 (ACS, 2020). Although skin cancer is highly preventable, clinical guidelines are inconsistent regarding skin cancer screening. The purpose of this evidence-based practice (EBP) project was to determine if the implementation of the INternet curriculum FOR Melanoma Early Detection (INFORMED) program would improve primary care providers' (PCPs') confidence about skin cancer and the number of completed and documented skin assessments for young adults. Three PCPs employed at a student health center in Northwest Indiana participated in the 12-week long EBP project. Providers were instructed to complete a demographic form, pre-survey, the INFORMED program, and a post-survey. A skin assessment policy was created which required PCPs to apply their knowledge and diagnostic skills in the primary care setting. Two major outcomes were evaluated: providers' confidence about skin cancer and the completion and documentation of a skin assessment. Providers' confidence levels were measured with a pre- and post-survey. A paired *t*-test was calculated to determine if providers' confidence about skin cancer improved after they completed the INFORMED program. Statistical significance was achieved for distinguishing benign lesions from malignant lesions (t (2) = -5.000, p = 0.038). A chi-square test of independence was calculated to compare the number of skin assessments completed and documented in 2019 and 2020. No significant relationship was found. Overall, providers were satisfied with the INFORMED program and felt that the program was valuable for their clinical practice. Results of this project could be used to encourage widespread dissemination of the INFORMED program in larger primary care settings in the United States.

CHAPTER 1

INTRODUCTION

Background

Skin cancer is characterized by an abnormal growth and spread of cells on the skin's outer layer (Indiana Cancer Consortium [ICC], 2015). From innermost to outermost, the skin is comprised of three layers including: (1) the hypodermis/subcutaneous tissue, (2) dermis, and (3) epidermis. The epidermis is made up of squamous cells, basal cells, and melanocytes (American Cancer Society [ACS], 2020). The type of cells affected give rise to the type of skin cancer. Skin cancer is classified into two categories – nonmelanoma skin cancer (NMSC) and melanoma (ACS, 2020). Nonmelanoma skin cancers are commonly known as basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). Eight out of ten skin cancers are BCC, while two out of ten are SCC (ACS, 2020). A careful skin examination is crucial, because 20%-30% of melanomas are found in existing moles, whereas 70%-80% of melanoma cases are found on normal-looking skin (Skin Cancer Foundation, 2019). Although melanoma is less common than NMSC, it is more dangerous and can be fatal. If left untreated, melanoma may spread to other organs causing irreversible damage (ACS, 2020).

Individuals of different ages, races, and ethnicities are at risk for developing skin cancer. Notable risk factors for skin cancer include: (a) age, (b) sex, (c) race, (d) fair to light skinned complexion, (e) natural blonde or red hair, (f) blue or green eyes, (g) multiple or atypical moles (more than 50), (h) family history, (i) excessive exposure to UV radiation from the sun and/or tanning beds, and (j) history of sunburn at an early age (ICC, 2015). Individuals who recognize changing, abnormal, or new skin lesions should be evaluated by a healthcare provider. All forms of skin cancer can be treated and may be cured if detected in early stages. Nonmelanoma skin cancers are removed by one of several methods: (a) surgical excision, (b) electrodesiccation and curettage, or (c) cryosurgery (Indiana State Department of Health [ISDH], 2020). The stage

of melanoma is determined by a sentinel lymph node biopsy; the results will indicate a treatment option. Treatment for early stages of melanoma (in situ or local) involves removal of the primary growth and surrounding tissue. In advanced cases with metastasis, the following options may be considered: (a) removal of lymph nodes, (b) palliative surgery, (c) immunotherapy drugs and chemotherapy, and/or (d) radiation therapy (ISDH, 2020).

If left untreated, skin cancer can significantly impact an individual's emotional, physical, and financial well-being. "Cancer is a dreaded word and carries with it a plethora of negative images and associations" (Fried, 2019, para. 3). If individuals are not properly informed about the type, treatment, and prognosis of skin cancer, they may develop feelings of anxiety, agitation, and depression (Fried, 2019). Basal cell carcinoma and SCC occur on frequent, sun exposed areas including: (a) the head, (b) face, (c) neck, (d) ears, (e) arms, (f) chest, and (g) legs (American Academy of Dermatology [AAD], 2020). The ability of skin cancer to spread and invade surrounding tissues may physically alter one's appearance. Extensive tissue involvement that requires surgical removal may result in permanent, visible scars. Skin cancer can also create a huge financial burden for both the affected individual and the U.S. economy. According to the AAD (2020), "the annual cost of treating nonmelanoma skin cancer in the U.S. is estimated at $4.8 billion, while the average annual cost of treating melanoma is estimated at $3.3 billion" (para. 6). Enhancing a provider's confidence about screening for skin cancer may ultimately reduce emotional, physical, and financial harms, thus, positively impacting a patient's quality of life.

Data from the Literature Supporting Need for the Project

Patients often seek initial management from a PCP regarding one or more health concerns. As of 2016, 54.5% of all patients had an encounter with a PCP (family practice and internists) (Centers for Disease Control and Prevention [CDC], 2016). In comparison, only 5.7% of patients had a visit with a dermatologist (CDC, 2016). Dermatology services are in-demand, but a shortage of dermatologists makes it difficult to address patient concerns and/or needs

(Rogers et al., 2016). A lack of dermatologists leads to increased wait times for patients. The average wait time for a dermatology appointment in a metropolitan and midsize city is 32 and 35 days (Greater Access for Patients Partnership [GAPP], n.d.). Prolonged wait times can (a) increase patient anxiety and feelings of self-consciousness, (b) cause skin issues to become worse, and (c) compel patients to treat the skin issue with costly, over-the-counter medications (GAPP, n.d.). Due to increased patient encounters and appointment availability, PCPs have an opportunity to detect new cases of skin cancer (Rogers et al., 2016). Despite the advantages of performing a skin assessment, evidence demonstrated that PCPs lack (a) proper training, (b) confidence, and (c) time (Jiang et. al., 2017). Evidence revealed effective interventions that PCPs can use to improve their confidence about detecting skin cancer. For this reason, a skin cancer screening should not be overlooked in a primary care setting.

Practice settings utilize evidence-based clinical guidelines to determine the type of service and how often it should be performed. Inconsistent guidelines regarding skin examinations challenge providers to determine the clinical significance of conducting a skin assessment. A recommendation provided by the United States Preventive Services Task Force (USPSTF) indicated, “the current evidence is insufficient to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adults” (2016, p. 429). Although the USPSTF (2016) does not recommend a skin examination, the task force advises PCPs to counsel patients between the ages of 10 and 24 about skin cancer risks and reducing exposure to ultraviolet (UV) radiation. Like the USPSTF, the National Cancer Institute ([NCI], 2020) claims evidence is inadequate to conclude the importance of performing a visual skin examination and whether it reduces mortality for melanoma and NMSC in asymptomatic patients. The ACS (2020) does not have a guideline, rather, instructs patients to consult with a provider about how often a skin exam should be performed. Because skin cancer can be easily prevented with a simple visual inspection, the lack of clinical guidelines should not discourage provider performance of skin examinations.

National Data

The alarming number of individuals affected by skin cancer by far exceeds those affected by lung, breast, and colon cancers combined (ICC, 2015). In the U.S., nearly 9,500 individuals each day are diagnosed with skin cancer, and approximately one in five Americans will develop skin cancer in their lifetime (AAD, 2020). Statistics about various forms of cancer are reported to and tracked by cancer registries. Although BCC and SCC are more common than melanoma, NMSC is not required to be reported to a cancer registry (ACS, 2020). As a result, it is difficult to determine an accurate, yearly number of individuals that were diagnosed or died from NMSC. According to the AAD (2020), it is estimated that NMSC affects more than 3 million Americans a year. Additionally, “it’s thought that about 2,000 people in the U.S. die each year from these cancers, and that this rate has been dropping in recent years” (ACS, 2020, para. 3). Between 1982 and 2011 melanoma rates doubled in the U.S. and remain on the rise (AAD, 2020). “In 2020, an estimated 100,350 new cases of melanoma will be diagnosed in the U.S. and 6,850 people will die from the disease” (ACS, 2020, p. 24).

The incidence of melanoma is largely affected by age, race, occupation, and exposure to UV radiation (ACS, 2020). In 2020, common cancer diagnoses for individuals aged 20 to 39 included (a) thyroid, (b) testicular germ cell tumors, and (c) melanoma of the skin (ACS, 2020). For 2020, estimates for new melanoma cases based on age groups are (a) 200 (15-19 years), (b) 2,200 (20-29 years), and (c) 5,500 (30-39 years) (ACS, 2020). Before the age of 50, women have a higher incidence rate than men. By the age of 65, men experience an incidence rate double that of women, and triple by age 80 (ACS, 2020). Non-Hispanic whites are commonly affected, and they have an annual rate of 28 cases per 100,000. American Indians/Alaska Natives are less likely to be affected because they have an annual rate of 7 cases per 100,000. The least affected are non-Hispanic blacks and Asians/Pacific Islanders who have 1 case per 100,000. Individuals that work in environments with increased sun-exposure and/or those who use tanning beds are at higher risk for developing skin cancer (ACS, 2020). Indoor tanning is a

huge risk factor for the development of melanoma for all ages, especially young adults. "Research indicates that more than half of indoor tanners (52.5 percent) start tanning before age 21, while nearly one-third (32.7 percent) start tanning before age 18" (AAD, 2020, para. 1).

State Data

Between 2011 and 2015, the average number of melanoma cases per year was 1,330 followed by 210 deaths (ISDH, 2020). Therefore, 18.6 individuals per 100,000 were diagnosed with melanoma. Per 100,000, 2.9 Indiana residents died from the disease. Data from 2015 indicated an increase in cases but a decrease in the number of deaths. Of the 1,521 cases in 2015, 20.7 residents per 100,000 were diagnosed with melanoma, while 203 cases or 2.7 residents died from melanoma. Seventy-seven percent of melanoma cases between 2011 and 2015 occurred among Indiana residents aged 50 and older. Within that age group, males experienced higher rates than females. In comparison, for Indiana residents between the ages 20 and 39, the incidence rate was higher for females than for males. A breakdown of age groups and incidence of melanoma per 100,000 for males versus females includes: 1.7 males and 5.1 females (20-24); 3.2 males and 9.3 females (25-29); 6.2 males and 13.7 females (30-34); and 8.8 males and 16.7 females (35-39) (ISDH, 2020). Statistics provided by the ISDH (2020) indicated that the risk of melanoma was almost 28 times higher for whites than for African Americans between 2011 and 2015. Despite the increased risks for separate races, each Indiana resident is at risk for developing melanoma.

Data from the Clinical Agency Supporting Need for the Project

The evidence-based practice (EBP) project site was a student health center associated with a university located in Northwest Indiana. The health center was committed to providing quality, patient-centered care for young adults who attend the university. Patients presented to the health center for various concerns including: (a) common health issues, (b) vaccinations, (c) general wellness exams that are required by the university for participation in athletics or health professional programs, or (d) a work physical.

A data audit containing the international classification of disease (ICD) codes 99382, 99385, and 99385 was performed to assess the number of wellness visits or physicals that the PCPs completed between August 17, 2019 and November 25, 2019. Between this time frame, 91 patient visits were reviewed to determine if they met the EBP project's inclusion and exclusion criteria. Twenty-three charts were excluded from review because they were outside the designated time frame and/or patients were 28 years of age or older. The remaining 68 charts reflected sick visits or physical exams to (a) travel outside the country, (b) participate in sports, (c) participate in a university health professional program, or (d) fulfill a job requirement. These charts contained patient information on males and females between 18 and 25 years of age.

Over the three-month period, one medical doctor (MD) and three nurse practitioners (NPs) evaluated young adults and documented a physical assessment within each patient's chart. The project facilitator thoroughly reviewed the charts to assess the extent and detail of providers' skin documentation. Chart audits revealed that providers were consistent in their skin documentation behaviors. For example, the MD encountered five patients. Of those encounters, three patient charts indicated that skin was not assessed, and two charts contained the following default skin documentation, "Normal tone, turgor, and texture. Temperature gradient within normal limits. Hair growth is normal. No edema, rashes, ulceration or varicosities." One NP assessed 55 patients and documented the default skin description for 46 patients; the default description plus a customized description for four patients; and skin was not assessed for five patients. The second NP assessed 7 patients and documented "normal temperature and dry" for each patient's skin. Lastly, the third NP recorded an abnormal skin assessment for one patient and documented the default skin description plus an abnormal description.

When completing the physical examination documentation, providers can select one of the following options for each body system: (a) normal, (b) abnormal, or (c) not assessed. If normal or abnormal is selected, the providers can insert a customized description or a default

description. The default description was widely used by the providers to document within the Integumentary system. Of the 68 charts reviewed, only one skin assessment was reported abnormal. The remaining 67 charts indicated that skin was either not assessed or normal. Within their documentation, none of the providers indicated any abnormal skin lesions. Additionally, lesion or nevi (mole) is not listed within the default skin description. This led the project facilitator to conclude the PCPs did not complete a thorough skin assessment between August and November 2019. Findings were reviewed with the health center director. A lack of providers' documentation demonstrated a need to implement an intervention that would enhance providers' confidence about performing a skin assessment to detect abnormal lesions in the young adult population and to increase the number of skin assessments completed and documented.

Purpose of the Evidence-Based Practice Project

The purpose of this EBP project was to enhance providers' confidence in performing skin cancer screenings for young adults who present for a wellness exam, and to increase the number of documented skin assessments performed at the site. A web-based curriculum, known as INFORMED (INternet curriculum FOR Melanoma Early Detection), was used to enhance providers' confidence. It was completed by the providers at the student health center. The INFORMED program was designed specifically for PCPs to gain a thorough understanding about the types of skin cancers (Jiang et al., 2017) and how to perform a full-body skin examination which could increase the providers' confidence and number of skin assessments they documented at the EBP site.

PICOT Question

This project addressed the following PICOT question: For primary care providers at a student health center in Northwest Indiana (P), does the implementation of a web-based program, INFORMED, which utilizes a skin assessment tool, (I) compared to no web-based

program (C), improve providers' confidence about skin cancer and the number of skin cancer screenings performed and documented for young adults (O) over a 12-week period (T)?

Significance of the EBP Project

Among young adults, skin cancer is recognized as the most prevalent cancer in the U.S., and it remains on the rise (AAD, 2020). If left untreated, it can inflict emotional, physical, and financial burdens on the affected individual. However, if NMSC is detected early and treated, it may be cured (AAD, 2020). Screening for skin cancer can be advantageous for both the patient and healthcare provider. Because individuals initially seek care from their PCP, this creates an increased inflow of patients at a primary care office. Primary care providers encounter many patients with skin concerns who are likely unable to schedule a visit with a dermatologist (Rogers et al., 2016). For each patient encounter at a primary care office, there is an opportunity for providers to detect abnormal skin lesions (Rogers et al., 2016). Providers that overlook the opportunity to perform a skin assessment may significantly impact a patient's quality of life and disease prognosis.

This EBP project sought to provide PCPs with a web-based educational intervention to improve their skin cancer detection confidence and improve the performance of skin assessments for young adults. The web-based curriculum, INFORMED, was a collaborative effort by a team of (a) dermatology specialists and primary care, (b) epidemiology, and (c) behavioral science researchers (Jiang et al., 2017). The curriculum was designed to improve PCPs' confidence and skills to detect skin cancer (Jiang et al., 2017). Providers at the student health center participated in the interactive, cost-effective, INFORMED program. The project facilitator informed providers that the curriculum was available online and could be accessed on an as needed basis. The project site was an effective implementation setting because the patient population consisted of young, at-risk adults. The results of this project may provide valuable information to (a) young adults, (b) PCPs, (c) healthcare administration, (d) universities, and (e) other primary care organizations. Successful implementation of the

intervention at this location that uses three providers, may provide the basis for implementation at other student health centers. Additionally, positive feedback and results from the INFORMED program may support widespread dissemination for PCPs practicing at larger healthcare organizations.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

Overview of EBP Model

The Iowa Model of Evidence-Based Practice to Promote Quality Care (Iowa Model) was selected as a framework to guide the development, implementation, and integration of this EBP project. The original model, known as the Iowa Model of Research-Based Practice to Promote Quality Care, was developed in 1994 by the University of Iowa Hospitals and Clinics (Titler et al., 2001). It emerged as an important guide for healthcare providers to disseminate research findings into practice to improve the delivery and quality of patient care (Titler et al., 2001). The original model was revised to embody advancements in the healthcare field, new terminology, and the evolution of EBP (Titler et al., 2001). Despite undergoing a revision, the model retained its purpose and motivates advanced practice registered nurses (APRNs) to use problem-focused triggers as a foundation to identify and facilitate new knowledge into practice (Titler et al., 2001).

The Iowa Model is comprised of the following steps: (a) identify a trigger, (b) state the question or purpose, (c) assemble a team, (d) gather, appraise, and synthesize evidence, (e) develop an evidence-based intervention, (g) implement the intervention, and (h) disseminate results (Iowa Model Collaborative, 2017). Since its development, the model has gained widespread application in both academic and clinical settings (Iowa Model Collaborative, 2017). In addition, it is used worldwide and has been translated into German, Japanese, and Portuguese language (Iowa Model Collaborative, 2017). The model's simplistic nature offers an easy-to-follow guide that promotes interprofessional collaboration (Iowa Model Collaborative, 2017). Given the model's widespread use, significant acceptance, and increased popularity over the course of two decades, it is an appropriate model to guide this EBP project.

Application of EBP Model to DNP Project

A problem-focused trigger was identified by the health center director and presented to the project facilitator. The health center director reported that providers tend to select a default skin description for patient wellness exams. While a default skin documentation was convenient for providers to use, it did not reflect an individualized patient skin exam. The health center director explained the need for an intervention that would improve providers' confidence and ability to perform a skin assessment and to encourage a more individualized skin documentation. A consensus among the providers at the project site took place to examine methods that would improve providers' confidence about their skin assessment skills. The topic was reviewed by the clinic director and identified as a high-priority topic that warranted a practice change.

A list of key stakeholders was established to aid in the development, implementation, and evaluation of the proposed practice change. The team of key stakeholders consisted of a doctoral student/project facilitator, the health center director, three NPs, a medical assistant (MA), a registered nurse (RN), clinic support staff, the project advisor, and the university associated with the clinic. Each team member encompassed valuable skills that were maximized throughout the entire EBP project design and implementation. Effective communication and collaboration were established, and the members were urged to provide project feedback when necessary.

Under the health sciences librarian's guidance, the project facilitator completed an exhaustive literature search to gather topic-specific evidence. Numerous databases were searched to compile sources of varying levels of evidence. Additionally, citation chasing from the reference list of relevant articles served as another method to gather evidence. The selected sources were reviewed and deemed appropriate by the faculty advisor. Pieces of evidence were appraised, graded, and synthesized to determine best practice for the project change. A review of evidence and current interventions were presented to key stakeholders to gauge readiness,

interest, appropriateness, and feasibility of a practice change that could be successfully implemented and maintained long term.

Key stakeholders' questions, concerns, and comments about probable interventions were addressed before a final intervention was determined. A description of the project change was provided in an outline format for all team members. Within the outline, roles were assigned, a budget was created, and the length of project implementation was established. The project was implemented between August and November 2020. To evaluate the effectiveness of the intervention, data were obtained from the prior year between the same three-month period to compare pre-intervention and post-intervention outcomes. Data analysis represented the overall impact the intervention had on providers' confidence and their performance and documentation of skin cancer screenings for young adults. Data analysis determined if the intervention produced clinically or statistically significant results. Based on the results, the project facilitator advised the EBP site to implement measures that would support long-term sustainability of the intervention.

Strengths and Limitations of EBP Model for DNP Project

Selection of the Iowa Model to guide this EBP project was based on several strengths including: (a) a detailed, systematic structure accompanied by feedback loops, (b) easy application to clinical settings, (c) collaborative effect among key stakeholders, and (d) translation of evidence into practice (Iowa Model Collaborative, 2017). The easy-to-reference flow chart allows the project facilitator to utilize a step-by-step approach while carrying out the entire EBP project. Strategically placed feedback loops in the model confirms the project facilitator's position throughout the project design, implementation, and probable, permanent integration at the project site. Prior research supported the model's use in both clinical and academic settings (Iowa Model Collaborative, 2017), therefore, demonstrating the effects of validity and reliability in a clinical setting. The model integrates involvement among all stakeholders, further increasing their knowledge of evidence-based practice. In effect, new

evidence presented to key stakeholders enhances their awareness and promotes the transition of a new change into practice.

The limitations of the model are reflected in its number of steps and lack of patient involvement. The inclusion of many steps may ultimately affect the time frame of the EBP project's implementation. Fortunately, the project facilitator had a designated time frame to implement the project, so this was not a huge barrier. While the model intends to impact patient outcomes, patients are not directly involved in the EBP project implementation. This serves as a significant limitation, because patients serve as a valuable resource to determine new practice changes that will directly impact their health outcomes. Considering the strengths of the model, these limitations did not have a significant impact on the EBP project.

Literature Search

Sources Examined for Relevant Evidence

A comprehensive search of several databases was conducted to gather evidence about strategies to increase providers' screening for skin cancer in young adults. An organized search strategy was developed and performed in the following databases: (a) the Cumulative Index to Nursing and Allied Health Literature (CINAHL), (b) Cochrane Library, (c) Joanna Briggs Institute (JBI), (d) MEDLINE with Full text, (e) Nursing and Allied Health, and (f) Turning Research Into Practice (TRIP). Meetings with the health sciences librarian refined the search strategy to include a list of consistent keywords and phrases. The incorporation of Boolean operators between key words and/or phrases, such as AND/OR, the careful placement of the truncation symbol (*), and the use of the medical subject heading (MeSH) terms system, served to expand the availability of relevant results. The final list of keywords and phrases included: "skin neoplasms" OR "skin neoplasm*" OR "skin cancer*" OR "skin cancer" AND Screen* OR Screening OR Prevent* OR Prevention OR Assess* OR "health promot*" AND "primary care" OR "primary healthcare" OR Provider* OR "nurse practitioner*". The literature search concluded after a careful hand search was performed of the reference lists from selected articles.

The following limiters were integrated into the literature search: (a) January 2015 to July 2020, (b) research article, (c) scholarly, peer-reviewed, (d) English language, and (e) abstract. Studies that matched the search limiters and focused on strategies to increase providers' screening for skin cancer were included in the EBP project. Additionally, one article was hand selected from a reference list, however, it exceeded the 5-year publication limit by two years. Except for one article, any study that did not meet the above criteria was excluded.

Every effort was made to perform consistent searches within the databases to generate relevant results. Limiters were applied individually based on the database's functionality. All limiters, except abstract, were applied to the first search in CINAHL. The search resulted in 46 articles with four duplicates, one of which being the only selected article. The chosen article was relevant because it evaluated skin cancer educational needs for NPs. The remaining articles were excluded for several reasons: (a) screening patients with comorbidities, (b) evaluating massage therapists' perceptions about skin cancer, or (c) evaluating prevention practices of farmers and nonfarmers.

The second search in the Cochrane database produced only six reviews and 178 trials. The database only allowed the date limiter to be applied, so the available reviews were published between 2015 and 2020. The abstract of one article was reviewed but discarded because it focused on the morbidity and mortality of screening for malignant melanoma, rather than interventions to improve providers' screening for skin cancer. The remaining reviews were not considered because they discussed using green tea or medications for cancer prevention.

The JBI database was searched using the 5-year publication limiter and English language. A simple search strategy containing five keywords was plugged into the multi-field search box. The search generated a total of three articles. This was not surprising, as JBI does not contain primary research/single studies. Of the three articles, two of the articles were the exact same. Because the two articles focused on preventive measures for patients, they were

excluded. The last article was also excluded because it evaluated the effectiveness of mohs micrographic surgery for nonmelanoma skin cancer.

Medline with Full text was the fourth database searched. All limiters except the research article and abstract option were applied and yielded 227 results. Six articles were selected for the EBP project and three were duplicates. After a discussion with the health sciences librarian, an attempt was made to utilize the same keywords from the CINAHL search within the Medline database. While this did narrow the results from 227 articles to 137, two important systematic reviews (SRs) were not available in the new search. The librarian advised me to use the first search, as SRs are considered a high level of evidence.

The Nursing and Allied Health database presented quite the challenge, because the first search used very few keywords to limit the number of articles. The 5-year publication limit, scholarly peer-reviewed, and English limiters were applied to the search. Under the librarian's guidance, a new search was developed that utilized the abstract limiter. The search produced 39 results with three duplicates. The article titles were scanned and considered irrelevant for this EBP project, because the articles did not reflect the purpose of this EBP project.

The TRIP medical database was searched last using the basic search engine. Within the search box, the keywords "skin cancer" AND screen* AND "primary care" produced 847 results. The search results were narrowed to 37 by selecting USA guidelines and refining the search since 2015. Of the 37 results generated, the third article on the list was specific to skin cancer screening provided by the USPSTF but was excluded because it did not discuss strategies to improve screening. Zero articles were selected from the TRIP medical database to be included in this EBP project.

The entire literature search yielded 361 results, but 10 pieces of evidence were duplicates. A hand search was performed for three articles and revealed three new pieces of evidence that were selected for inclusion. After a thorough literature and hand search, a total of 10 articles were selected for inclusion in this EBP project.

Table 2.1

Evidence Search Table

Database	Yielded	Duplicates	Accepted
CINAHL	46	4	1
Cochrane	6	0	0
JBI	3	0	0
Medline	227	3	6
Nursing & Allied Health	39	3	0
TRIP	37	0	0
Citation Chased	3	0	3
Total			10

Levels of Evidence

The Johns Hopkins Nursing and Evidence-Based Practice (JHNEBP) Evidence Level and Quality Guide was used to level 10 pieces of evidence obtained for this EBP project. The evidence level and quality guide is comprised of five levels: (Level I) experimental study, randomized controlled trial (RCT), SR of RCTs, with or without meta-analysis; (Level II) quasi-experimental (QE) study, SR of a combination of RCTs and QE, or QE studies only, with or without meta-analysis; (Level III) non-experimental study, SR of a combination of RCTS, QE and non-experimental studies, or non-experimental studies only, with or without meta-analysis, and/or qualitative study or SR with or without a meta-synthesis; (Level IV) opinion of respected authorities and/or expert committees such as clinical practice guidelines or consensus panels; (Level V) based on experiential or non-research evidence such as literature reviews, quality improvement, case reports, or the opinion of national recognized expert(s) based on experiential evidence.

The level and quality guide are used to rank the strength of evidence on a scale of high (Level I) or low (Level V). After reviewing each piece of evidence, the 10 selected articles were ranked as follows: one RCT (Level I), one meta-analysis (Level II); three SRs, one qualitative study, two cross-sectional studies, and one single descriptive study (Level III), and one quality improvement (QI) project (Level V). Most of the evidence is ranked as Level III and zero articles were ranked into Level IV. The QI project was selected because it was specifically designed to improve the number of patient skin inspections performed by PCPs. Practice implications discussed in the QI project recommended educational interventions for PCPs to improve skin assessments and documentation.

Appraisal of Relevant Evidence

The critical appraisal of evidence is a tremendous component of EBP. Qualitative and quantitative pieces of evidence for this EBP project were appraised using the JHNEBP Research and Non-Research Evidence Appraisal Tool. The quality of evidence is graded as A

(high), B (good), and C (low). Grade A evidence contains an adequate sample size, consistent results accompanied by recommendations based on a comprehensive literature review, and final conclusions with marked study limitations and direction(s) for future research (Dang & Dearholt, 2018). Grade B evidence is marked by a sufficient sample size that generated reasonably consistent results with a fair review of literature (Dang & Dearholt, 2018). Lastly, Grade C evidence is characterized by inconsistent evidence, sample size, and results, therefore, conclusions cannot be determined (Dang & Dearholt, 2018). Five pieces of evidence were Grade A (high), and the remaining five pieces were Grade B (good). All 10 pieces of evidence were categorized into an evidence table (Appendix A).

Level I Evidence

Robinson et al. (2018). A randomized educational trial was conducted to evaluate the efficacy of an online mastery learning (ML) course completed by PCPs at Northwestern Medicine. The ML course was implemented to improve providers' abilities to detect melanoma by unaided visual inspection and dermoscopy. "Dermoscopy, a noninvasive in vivo technique commonly used by dermatologists, provides greater discriminatory power than unaided visual inspection for the detection of melanoma" (p. 855). Primary care providers are not trained to use dermoscopy, however, the ML course provided education on performing an unaided visual inspection and dermoscopic assessment (Robinson et al., 2018).

The ML course trained participants to identify at-risk patients and suspicious lesions based on three units: (1) visual and dermoscopic assessment, (2) diagnosis and management, and (3) deliberate practice. To aid in the triage of lesions, participants were provided with a 3-point dermoscopic algorithm. For each unit, participants were required to achieve a minimum passing standard (MPS) of 85% and complete it within 3 weeks. If the unit was not completed within the time frame, the participant received an email reminder every two days for the next two weeks.

Participants were recruited at Northwestern Medicine between January and August 2016. Participant inclusion criteria consisted of those who practiced: (a) a minimum of 1 year, (b) at Northwestern Medicine, (c) at least 20 hours a week, (d) and had a patient panel with over 80% of non-Hispanic whites who are at greatest risk for melanoma. Compensation was provided to control group participants who completed the pre-test, baseline survey, and post-test. Additionally, participants in the intervention group received double the compensation following study completion. Randomization was determined by a random number sequence, and PCPs were grouped accordingly after the completion of a consent form, a 12-lesion pre-test, and baseline survey. After control group participants completed the pre-test and baseline survey, they were contacted 3-months later to complete the post-test. Participants in the intervention group received a link to access and begin the program. A unique identifier to track individual progress was assigned to participants in the intervention group.

The electronic medical record served as a primary source to gather outcomes related to each provider's number of patient referrals 3-months before and after study participation (Robinson et al., 2018). Patient referrals for a concerning lesion and the anatomical location(s) of the lesion(s) requested by PCPs to dermatology, surgical oncology, head and neck surgery, or plastic surgery were tracked. Additional outcomes measured included (a) participant demographics obtained from the baseline survey, (b) pre-test scores for 12 lesions, (c) post-test scores for 12 lesions, and (d) PCP performance compared to other PCPs (Robinson et al., 2018).

Various statistical analyses were conducted to determine the study sample, compare demographics between the control and intervention group, and assess the efficacy of the intervention (Robinson et al., 2018). A difference-in-difference approach evaluated the sample of PCPs and compared pre-test and post-tests (expected power of > 0.9) between the control and intervention group. For both groups, Robinson et al. (2018) used chi-square analysis to compare baseline demographics, practice information, and personal and family history of

melanoma. Two-sided *t*-tests evaluated PCPs prior melanoma training, patient care, willingness to learn about skin cancer, and personal skin cancer performance compared to other PCPs. Moreover, analysis of covariance (ANCOVA) was conducted to establish efficacy of the intervention, and a mixed analysis of variance (ANOVA) tested changes in the seven types of concerning lesions (Robinson et al., 2018).

Ninety PCPs were enrolled but 89 completed the entire study. Of the total sample (N = 89), 89.8% were internal medicine physicians and the remainder were physician assistants. Prior to practicing, all PCPs reported attending a lecture about melanoma, but none received dermoscopy training. There was a significant difference between years of experience for PCPs in the control (less than 5 years, n = 18) and intervention group (11 to 15 years, 26 to 30 years, or more than 31 years). There was no difference on pre-test scores for the intervention and control groups (t = -0.14, p = 0.910). Providers achieved greater post-test accuracy with visual inspection (85/135 correct) than with dermoscopy (52/135 correct). Unfortunately, four PCPs did not meet the MPS of 85%, because they were unable to identify color on inspection or distinguish between blue-black-gray-white colors on dermoscopy. Post-test diagnostic scores revealed a significant difference between both groups (ANCOVA, F[1,378] = 27.86, p < 0.001; $n\text{p}^2$ = 0.26). The control group answered less questions correctly on the post-test (M = 7.11, SE = 0.24) compared to the intervention group (M = 10.05, SE = 1.24). Furthermore, the post-test revealed no false-negative melanoma detections from the intervention group, and less false-positives (M = 1.09, SE = 0.20) than the control group (M = 3.1, SE = 0.23). More melanoma referrals were made by PCPs in the intervention group (F[1,79] = 24.38, p <0.001; $n\text{p}^2$ = 0.236) for lesions present on head and neck (55%), upper extremities (25%), back (15%), and chest (5%). Results of the study demonstrated an online ML course can improve providers' abilities to detect melanoma; however, barriers such as time and provider interest in completing the course may prevent successful implementation in other healthcare systems.

Level II Evidence

Rourke et al. (2015). A meta-analysis was completed to review educational practices that have been used to improve providers' abilities to recognize and classify skin lesions. Based on strict inclusion and exclusion criteria, two study investigators worked separately to narrow 2,758 search results to a final sample of 37 studies. The research design for selected studies were either a single group pre-post, RCT, or controlled trial. The type and frequency of study populations included in the review consisted of (a) medical students (f = 12), (b) primary care (f = 2), family (f = 2) or internal medicine (f = 3) residents, (c) PCPs (f = 10), or (d) laypersons (f = 9). Study tasks measured participants' abilities to identify, categorize, or identify and categorize skin lesions, and durations ranged from 5 minutes to 120 minutes, 1 hour to 240 hours, 10 days, 2 to 4 weeks, or 6 months. Nine studies failed to report a study duration.

Each study assessed one of various educational practices to determine if participants improved their ability to diagnose skin lesions (Rourke et al., 2015). From most frequent to least, the seven educational practices were (1) lecture (f = 13), (2) dermatology elective (f = 7), (3) pamphlet (f = 5), (4) multicomponent intervention (f = 5), (5) computer-based learning (f = 5), (6) audit and feedback (f = 2), and (7) moulage (f = 1). A dermatology lecture approach was used to provide participants with images of skin lesions. Elective courses in dermatology involved conferences, reading, and demonstrations which served as educational supplements for medical students or residents during their training. Laypersons primarily utilized a pamphlet that contained text, images, or both. A multicomponent intervention included select combinations of the practices listed above. Computer-based learning utilized technology to provide education on skin lesions and typically provided participants with opportunities for assessment, feedback, and/or practice. An audit and feedback provided a review of the participant's performance and recommendations to improve practice. Lastly, moulage provided a simulation-based training for participants by placing prosthetic mimics of lesions on standardized patients (Rourke et al., 2015).

The effect sizes of interventions varied, but overall was large: SMD = 1.06 (95% CI, 0.81-1.31). The effect sizes for individual educational practices presented from highest to lowest magnitude were multicomponent interventions, SMD = 2.07 (95% CI, 0.71-3.44); dermatology elective, SMD = 1.64 (95% CI, 1.17-2.11); computer-based learning, SMD = 0.64 (95% CI, 0.36-0.92); formal lecture, SMD = 0.59 (95% CI, 0.28-0.90); audit and feedback, SMD = 0.58 (95% CI, 0.10-1.07); pamphlet, SMD = 0.47 (95% CI, -0.11 to 1.05); and moulage, SMD = 0.15 (95% CI, -0.26 to 0.57) (Rourke et al., 2015). Large effects were evident for educational practices that had a longer duration and involved more than one intervention, whereas moderate effects occurred following computer-based learning, lectures, and pamphlets. Rourke et al. (2015) provides a variety of educational interventions, some more cost- and time-effective than others, that can be incorporated into providers' education to improve the number of skin cancer screenings in the clinical setting.

Level III Evidence

Seven pieces of level III evidence were selected for review and further classified into headings listed from oldest to most current.

Eide et al. (2013). A single, descriptive study evaluated the effects of a newly developed, self-paced, web-based course on providers' abilities to accurately diagnose and manage lesions suspicious for melanoma. The INFORMED program was developed by dermatologists, primary care clinicians, and medical educators to educate participants on the three most common skin cancers: melanoma, BCC, and SCC. The program allows participants to choose a traditional or case-based format that guides them through nine interactive educational modules. Each format contained nine topics: (1) melanoma "ABCD-E", (2) "ugly duckling", (3) benign lesions including seborrheic keratoses, (4) nodular subtype of melanoma, (5) additional melanoma subtypes, (6) melanoma risk factors, (7) BCC, (8) SCC, and (9) office-based policies for integrating skin examination into practice. The course contains approximately 450 dermatology approved and pathologically diagnosed skin lesions for participant viewing,

self-assessment quizzes with immediate feedback, and approved for two hours of continuing education credit (Eide et al., 2013).

Primary care providers practicing at two health care delivery systems, site A and B, voluntarily agreed to participate in the study (Eide et al., 2013). Site A recruited 25 participants from four practices and site B had 29 participants from five practices. In June 2011, 3-hour educational sessions were held at each site after clinical hours. The authors, however, did not explain how many sessions were held in June. Participants had access to individual computers, received a meal for participating, signed consent, filled out the INFORMED pre-test, completed the curriculum and the immediate post-test, and concluded the session with group feedback. In addition, participants were given a code to access the program after the study ended (Eide et al., 2013).

Outcomes of Eide et al. (2013) study focused on providers' competence diagnosing and managing lesions, performance, and changes in attitudes and confidence levels. Outcomes were measured with a pre-test, immediate post-test, and a post-test 6 months after the educational session. Each test individually displayed 25 lesions in which providers had to determine lesion management ("refer *or* biopsy" or "reassure") and diagnosis. Participants had to select one out of six potential diagnoses: (a) superficial spreading melanoma, nodular melanoma, (b) nodular, superficial, or pigmented BCC, (c) SCC, (d) seborrheic keratosis, (e) typical nevus (mole), (f) lentigo, (g) hemangioma, (h) dermatofibroma, (i) blue nevus, (j) actinic keratosis, (k) atypical (dysplastic) nevus, or (l) scar. Data were gathered 6-months after the course to determine the number of skin biopsies performed at both sites, assess referral rates (and reason(s) for referral) at site A, and calculate new and established dermatology patient visits at site B. Once collected, data were compared with the same 6-month period one year before the course (June 2010) (Eide et al., 2013).

Fifty-nine percent of participants reported skin cancer education during residency and 15% reported receiving education at the start of practice (Eide et al., 2013). Fourteen

participants opted for the traditional text-book format while 38 participants chose the case-based format. Between the two groups, the program was completed in 63 and 69 minutes. For average overall scores, average scores for correct diagnosis, and average scores for correct management, participants scored higher on the immediate post-test compared to the pre-test. On the pre-test (*n* = 54), participants correctly answered 9 out of 25 lesions (36.1%) and answered 46.7% of all lesions correctly on the immediate post-test (*n* = 54). Although not all participants completed the 6-month post-test (*n* = 48), the average score declined (41.3%) but remained higher than pre-test scores. Eide el al. (2013) clearly pointed out that participants who did not receive training during residency scored significantly higher (33.3% to 50.7%) than those who had prior education.

Data obtained from this study and compared to data one year prior revealed a decrease in dermatology referrals at site A (630 to 607) (Eide et al., 2013). A substantial decrease (727 to 266) in new patient dermatology visits occurred at site B. For both sites in 2010 and 2011, skin biopsy rates and skin cancer diagnoses were comparable. Primary care providers rated their confidence and attitudes on a 5-point Likert scale for six categories at pre-test, immediate post-test, and 6-month. Overall, providers reported a modest improvement in confidence and attitudes (Eide et al., 2013). The study highlights the effectiveness of a self-paced, web-based course that PCPs can utilize to gain a better understanding of skin cancer management, diagnosis, and referral. A lack of time to complete a lengthy educational course may prevent providers from receiving important educational information, so the INFORMED program may be a suitable option for providers with a limited amount of time.

Roebuck et al. (2015). A non-experimental, cross-sectional design that utilized a survey was conducted to gain a better understanding of NPs educational preferences and needs related to skin cancer prevention and identification. Roebuck et al. (2015) developed a tool to collect information directly from NPs about how education can be tailored to address skin cancer in the clinical setting. The Roebuck skin cancer assessment of needs (SCAN) tool is a

28-item survey that evaluated participants' demographic information, awareness of skin cancer prevention and detection, current practices, and learning method preferences. A team of professionals – two dermatologists, one doctor of nursing practice (DNP), one doctoral prepared health literacy expert, a statistical analyst, and 3 NPs specializing in dermatology – reviewed the tool's content validity to confirm it was appropriate to measure the desired outcomes. Once approved, an electronic invitation to participate in the survey was sent to 1,313 NPs who were associated with a professional state organization. Participants were given two weeks to complete the electronic survey, or they had the opportunity to complete a paper copy at the organization's annual conference.

Of the 1,313 individuals invited, the total sample was comprised of 272 participants. One hundred thirteen participants completed the online survey while 159 completed a hardcopy at the annual conference. Survey results revealed family practice was the most common practiced specialty (32%) with a patient population that consisted primarily of adults (91.5%). Participants reported an average of 9.22 years in practice (SD 8.07 years). Nearly half of participants (49%) reported screening patients for skin cancer and 51.8% of participants diagnosed a patient with skin cancer. Participants acknowledged the importance of screening patients but identified barriers to screening: (a) time limitation (46.3%), (b) lack of dermoscopy equipment (33.1%), (c) inappropriate setting (30.9%), and (d) inadequate skills (Roebuck et al., 2015).

Seventy-five percent of participants received advanced education specific to melanoma prevention and detection, but they (84.2%) explained that additional melanoma learning activities would be helpful, especially if continuing education unit credit was awarded for participating (91.1%) (Roebuck et al., 2015). Additionally, participants expressed a need for specific educational tools such as (a) pocket reference guide (52.2%), (b) online learning activities (46.3%), and (c) chapter meeting presentations (44.5%). Providers had an increased desire for content related to the ABCDE (asymmetry, border, color, diameter, evolving) mnemonic with early detection of melanoma pictures (83.1%) and the AWARE acronym for skin

cancer prevention (61.4%). On the other hand, dermoscopy for skin cancer detection was less desired (21%) by participants (Roebuck et al., 2015). Although the Roebuck SCAN tool captured providers' needs for additional skin cancer activities in receptive learning formats, further research should explore the educational needs of providers practicing in more than one state. By doing so, results may be combined to determine a generalizable educational activity for NPs practicing in the entire country.

Rogers et al. (2016). A cross-sectional, observational study was performed to determine the accuracy of participants using an algorithm to diagnose abnormal skin lesions and compare the diagnostic results to participants who have more and/or less training/experience. The triage amalgamated dermoscopic algorithm (TADA) was designed to assist providers in recognizing architectural abnormalities in pigmented and nonpigmented skin cancers, and it consists of three levels: (1) determine if the lesion is benign (angioma, dermatofibroma, or seborrheic keratosis), (2) assess for architectural disorders (disorganized or asymmetric distribution of colors and/or structures), and (3) evaluate for blue-black or gray color, white structures, negative network, ulcer/erosion, and/or vessels.

Study participants were recruited on the second day of a 3-day dermoscopy course (Rogers et al., 2016). Participants had already received one day of dermoscopy training, were given a brief presentation on proper usage of the TADA, and instructed on how to fill out the worksheet associated with the algorithm. Classroom sessions were held to educate participants about benign and malignant dermoscopic features, and participants were quizzed on proper lesion identification. Using the TADA, participants worked in a stepwise fashion evaluating each lesion and making the decision to refer, biopsy, or simply monitor the lesion. Completed worksheets were collected to determine sensitivities and specificities of using the TADA (Rogers et al., 2016).

Descriptive statistics were used to describe participants' demographics, lesions evaluated during the study, and dermoscopic features for each lesion (Rogers et al., 2016). One

hundred twenty individuals participated in the study with a great majority being dermatologists (*n* = 64) or PCPs (*n* = 41). Sixty-three participants received prior dermoscopy training while 52 participants reported no prior training. On average, each participant evaluated 47 lesions. For all study lesions, the sensitivity of TADA was 94.8% (95% CI, 93.9% - 95.5%) and a 72.3% specificity (95% CI, 70.5% - 74.0%). The algorithm's positive predictive value (PPV) was 79.9% (95% CI, 78.6% - 81.2%) and the negative predictive value (NPV) was 92.2% (95% CI, 91.0%-93.3%). Seventy-four percent of benign lesions were correctly identified by participants that reported no prior dermoscopy training. Conclusion of the study demonstrated that, even after one day of training, the TADA may be impactful for PCPs to use when detecting skin cancer. Effects of the study can be further enhanced by recruiting a larger sample size and randomizing participants into various training levels and durations to establish one effective method to teach all providers (Rogers et al., 2016).

Jiang et al. (2017). A single qualitative study evaluated participants' feedback following completion of a web-based curriculum that was designed to improve PCPs' abilities to detect skin cancer. Primary care providers practicing at two health maintenance organizations completed the INFORMED curriculum and participated in a 30-minute feedback session led by a focus group moderator and site investigator. Open-ended questions guided the feedback session that focused on four domains: (1) overall impressions of the curriculum, (2) recommendations for improvement, (3) current skin examination practices, and (4) suggestions for increasing skin screening by PCPs. Audio recordings were collected at each site, transcribed verbatim, and de-identified to reveal themes and associated subthemes. Between the two organizations, a total of 54 providers (53 physicians and one NP) completed the INFORMED curriculum and participated in the feedback session. Overall, the providers practiced internal medicine, geriatrics, or family medicine with an average of 10 to 19 years of experience.

Within domain one, overall impressions of the curriculum, providers expressed an interest in learning about various forms of skin cancer, not just melanoma (Jiang et al., 2017).

Furthermore, two subthemes – differentiating lesions and appreciation of review – emerged from domain one. Although melanoma can have significant health effects, the providers desired more educational content on cancers commonly seen in practice, such as BCC and SCC. Participants suggested having a summary table or pocket reference of melanoma, BCC, and SCC that could be used as a clinical aid in the practice setting. The providers appreciated the review for boosting their confidence in skin cancer detection and many hinted they would revisit the curriculum again in the future (Jiang et al., 2017).

Domain two, improving the curriculum, was further divided into two subthemes that discussed confidence regarding reassure versus refer and learning styles (Jiang et al., 2017). Although providers reported increased confidence when deciding what lesions warranted a dermatology referral, many wished they had more time with the curriculum to better distinguish between benign and malignant lesions. Providers felt uncomfortable making dermatology referrals that would be deemed clinically inappropriate by the dermatologist, but they felt the curriculum decreased this level of discomfort by recognizing suspicious lesions. The self-paced, interactive, 2-dimensional aspects of the curriculum were highly favored by participants. However, some felt that learning would be more effective if they could see the lesion on an actual patient rather than images of the lesion (Jiang et al., 2017).

The third domain, current skin practices, disclosed institutional and personal barriers encountered by providers when performing a skin examination (Jiang et al., 2017). The following barriers limited providers' abilities to perform a skin examination: (a) time, (b) workload, (c) role uncertainty, and (d) having patients undress. Time constraint was the most common barrier, especially when providers had increased patient workloads and shorter appointment times. Providers felt an opportunistic skin assessment, performed when assessing the lungs, would be more effective given the time constraints. In addition, patients would have to undress for an exam, some of which may not feel comfortable doing so. Providers expressed uncertainty when they considered referring for lesions not previously discovered by patients. As

a result, some providers preferred to continue referring patients to a dermatologist for proper diagnosis and management (Jiang et al., 2017).

Lastly, within domain four, intent and increasing frequency of skin screening in primary practice setting, providers explained their awareness about skin cancer was thoroughly heightened. They felt confident in their abilities to educate patients about skin cancer warning signs and proper skin protection (Jiang et al., 2017). Providers felt more inclined to question patients about a family history of skin cancer and focus on skin abnormalities. Providers indicated that increased support from clinical administration and staff would likely improve the number and quality of skin examinations performed in the clinical setting (Jiang et al., 2017). The feedback provided by PCPs in this qualitative study is pivotal to increase providers' awareness about skin cancer prevention, detection techniques, and how barriers must be combatted prior to adopting a new practice change.

Loescher et al. (2018). This SR updated a previously published review and evaluated advanced practice nurses' (a) knowledge and attitudes, (b) performance of and barriers to a clinical skin examination (CSE), (c) recognition of skin lesions, and (d) educational activities. Abstracts of 103 articles were eligible for selection, but a total of 12 articles met inclusion criteria. The 12 articles were represented as four case studies, two descriptive surveys, four single-subject experiments, one retrospective cross-sectional survey, and one mixed methods study. All but one study contained a full or partial sample of NPs. Additional sample characteristics included (a) average age of 41, (b) practicing for a minimum of two years to 16 years or more, (c) master's degree, and (d) practicing in an urban (n = 6) or rural area (n = 1).

In five studies, NPs knowledge about skin cancer detection was assessed on pre- and post-tests, which produced variable results. Nurse practitioners reported their knowledge as basic or minimal. Mild or no confidence affected the NPs abilities to perform a CSE. Six studies revealed NPs performance of CSEs, which positively impacted patient satisfaction and increased CSE documentation in patient medical records. The following barriers for performing

a CSE were (a) lack of time (46.3%), (b) lack of dermoscopy equipment (33.1%), (c) inappropriate setting (30.9%), and (d) inadequate skin assessment skills (24.6%). Four studies provided details about didactic training and training by experts, but both activities provided participants with dermatology feedback. Compared to the previous review published in 2011, Loescher et al. (2018) recognized a slight improvement in NPs knowledge, attitudes, and access to educational activities to perform CSEs. However, they emphasized the need for more experimental research to assess the most effective intervention(s) that will properly prepare NPs to screen for skin cancer.

Jones et al. (2019). A systematic literature review was completed to determine whether PCPs who are trained to use dermoscopy or dermoscopy-related technologies can identify abnormal skin lesions. The authors performed a comprehensive literature search that identified 837 studies. After thorough review, all but 23 studies were eliminated. Each study was reviewed using the Joanna Briggs Institute critical appraisal tools and ranged from low to high quality. The 23 studies consisted of (a) three RCTs, (b) two sequential intervention trials, (c) nine diagnostic accuracy studies, (d) two cohort studies, (e) two case series, (f) one case-control study, and (g) four PCP surveys. Sixteen studies involved PCPs, which established PCPs as the primary population assessed in the review. Five out of the 16 studies reported PCPs using dermoscopy for primary care patients. Outcome measures for each study were grouped into two categories – accuracy and reliability and implementation outcomes. Accuracy and reliability outcomes included (a) sensitivity and specificity (*n* = 12), (b) diagnostic accuracy/area under the curve (*n* = 8), (c) PPV and NVP (*n* = 5), (d) correctly diagnosed lesions (*n* = 14), (e) number needed to excise (*n* = 4), (f) biopsy rate (*n* = 5), (g) inter-observer agreement, (h) inter-instrument reliability, and (i) odds ratio/relative risk (p. 6). Implementation outcomes contained (a) survey/PCP opinion (*n* = 4), (b) cost-effective analysis (*n* = 3), (c) response time for Teledermoscopy (TDS) (*n* = 2), (d) patient satisfaction (*n* = 1), and (e) image quality for TDS (*n* = 2) (Jones et al., 2019).

According to Jones et al. (2019), PCPs who used dermoscopy had increased diagnostic accuracy compared to those with minimal training. Evidence revealed that performing a naked eye examination was equivalent to using dermoscopy without training. Studies demonstrated significant barriers and facilitators for using dermoscopy in practice. Barriers included (a) training requirements, (b) cost of equipment, and (c) time needed to perform dermoscopy. Facilitators identified were (a) reduced referrals, (b) early detection of melanoma, and (c) reduced patient and provider anxiety. Evidence from this review indicates moderate support from PCPs who are receptive to using dermoscopy in primary care to accurately diagnose abnormal skin lesions. Further research must be performed to examine training requirements and establish a competency level that providers must achieve prior to implementing dermoscopy in a primary care setting.

Stratton and Loescher (2020). A SR was performed to identify interventions that focused on CSE training for PCPs. A search within four databases generated a total of 3,702 articles. Based on the inclusion and exclusion criteria, 10 articles were selected, and the findings were incorporated into the SR. Data were obtained from two case studies, one pilot study, five QE studies, and two RCTs. All 10 articles described an activity to assess skin lesions, and 8 articles included a head-to-toe examination. The studies took place in clinical or academic settings and involved samples of NPs, general practitioners, medical students, physicians, PCPs, a nurse, and physician assistant (PA) students.

The interventions reviewed contained a didactic section, clinical portion, feedback from dermatology referrals, or a group discussion that involved scoring lesions. The ABCDE rule and ugly duckling sign was used to assess lesions. However, none of the studies described how participants were taught to perform a skin examination or risk assessment. The length of each intervention mostly occurred over one session with a maximum of three sessions. The shortest session lasted fourteen minutes and the longest lasted 6 months. Interventions were delivered most with observation by experts, face-to-face lectures, and videos. Three main outcomes were

drawn from the available evidence: (1) clinical skin examination, (2) risk assessment, and (3) skin lesion assessment. Two studies tested outcomes of the integrated skin examination (ISE) video. One study determined what accuracy the basic skin cancer triage (BSCT) curriculum had on PCPs' abilities to correctly triage skin lesions. Only two of the studies provided a link of the interventional video, which limited PCPs access to available interventions. Stratton and Loescher (2020) concluded that evidence related to CSE training is limited. Thus, they demonstrated the need to develop an intervention that would adequately prepare PCPs to detect melanoma.

Level V Evidence

Wheatley (2018) guided a QI project that sought to improve providers' performance of skin inspections, detection of abnormal lesions, and integumentary documentation. This QI project was important because Wheatley (2018) introduced the concept of patient gowning for wellness exams to increase the number of skin inspections. A lack of, or inadequate skin inspections demonstrated by providers prompted the inclusion of a gown during annual patient wellness exams.

The project implementation took place over a 3-month period at three primary care offices and included all patients scheduled for an annual wellness exam. To properly guide the project design and implementation, Wheatley adopted the Plan-Do-Study-Act (PDSA) cycle. The plan phase involved (a) gaining providers' acceptance for the intervention, (b) educating providers about performing a proper skin examination, and (c) explaining to providers how to document abnormal skin findings. Instead of a default skin description, providers relied on the ABCDE mnemonic to create a custom, individualized description of abnormal findings. The do phase was characterized by (a) providing educational in-services at each office about skin inspections and the effects of skin cancer, (b) hanging up patient gowning reminder posters in office exam rooms, and (c) developing custom sticky notes which were placed in patients' wellness visit charts. After the exam, the provider would circle on the sticky note if patients were

gowned and if a dermatology referral was ordered. Once completed, sticky notes were placed in a collection drop box. To ensure project compliance and address any concerns, Wheatley made office calls (weekly) and visits (once every two weeks). The study phase consisted of collecting and analyzing data from the sticky notes and electronic medical record (EMR); data were transferred from an excel spreadsheet into the form of a graph. Lastly, the act phase identified project changes, limitations, and recommendations for practice.

The primary outcome of Wheatley's (2018) QI project focused on increasing the number of skin inspections performed when patients wore gowns during a wellness exam. Secondary measures were reflected in improved skin documentation and dermatology referrals for patients with suspicious skin lesions. Pre-intervention data – number of wellness visits, detailed skin documentation, and dermatology referrals – were collected (between June and August 2016) and compared to data collected post-intervention (September to November 2016). Prior to the intervention, 24 of 60 patients were placed in gowns, whereas, post-intervention, 63 of 67 patients wore a gown during their wellness exam. By November, 100% of patients wore a gown for their wellness exam. It was determined that one dermatology referral was requested prior to the intervention. Over the course of 3 months, post-intervention data yielded an 8% increase in dermatology referral rates. Pre-intervention skin documentation revealed that 100% of providers utilized the default description of "clean, dry, intact, and no lesion of concern" (p. 23), but post-intervention, customized skin documentation did not increase (Wheatley, 2018).

Despite a lack of improved skin documentation, Wheatley (2018) successfully demonstrated the importance of providers performing a thorough skin inspection for gowned patients during a wellness exam. As a result, patients with concerning lesions were more likely to be referred to a dermatologist for proper diagnosis and management. Given the patient load, time management was a significant barrier encountered by providers and may have impacted the quality of skin documentation. Future implications to increase providers' screening for skin cancer may be addressed by (a) skin cancer educational interventions, (b) a standardized

screening guideline, and (c) providing check boxes within the skin documentation that align with the ABCDE criteria.

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

Research about strategies to improve providers' screening for skin cancer in young adults demonstrated several interventions that may be integrated into EBP. Evidence was synthesized according to virtual-based, physical-based, or multi-component interventions to determine what is best practice.

Virtual Interventions

Selected articles examined virtual or web-based interventions that provided PCPs with a link to access a program, presentation, or video which could be completed at their own pace (Jiang et al., 2017; Loescher et al., 2018; Robinson et al., 2018; Rourke et al., 2015; Stratton et al., 2019). In addition, study participants were encouraged to access web-based programs once the study ended (Eide et. al., 2013; Jiang et al., 2017). Virtual-based interventions focused on the INFORMED program (Eide et al., 2013; Jiang et al., 2017) a ML course (Robinson et al., 2018), and the ISE video or BSCT curriculum (Stratton et al., 2019). Two studies presented in Loescher et al. (2018) involved educational activities; one intervention was not described, and the second study involved a PowerPoint presentation (Loescher et al., 2018). The meta-analysis performed by Rourke et al. (2015) contained five studies that used computer-based learning activities, but activity details were not provided. Aspects of each intervention reflected variable study durations that ranged from 15 minutes (Loescher et al., 2018), 45 minutes (Rourke et al., 2015), 63 and 69 minutes (Eide et al., 2013), 3 weeks (Robinson et al., 2018) or were unreported (Jiang et al., 2017; Stratton et al., 2019).

Study outcomes were evaluated to determine the efficacy of virtual-based interventions to improve providers' knowledge about skin cancer and performance of a skin examination. Several studies disclosed providers' pre-test and post-test scores for properly identifying benign

and malignant lesions (Eide et al., 2013; Loescher et al. 2018; Robinson et al., 2018), or tracked dermatology referrals (Eide et al., 2013; Robinson et. al, 2018), new patient visits, and skin biopsies (Eide et al., 2013). Participants' confidence/attitude levels about skin cancer and performing a skin examination were also identified before and after the intervention (Eide et al., 2013; Jiang et al., 2017; Stratton et al., 2019). Compared to pre-test scores, there was an increase on the post-test scores in PCPs' abilities to correctly identify skin lesions (Eide et al., 2013; Loescher et al. 2018; Robinson et al., 2018). Primary care providers experienced modest (Eide et al., 2013) to increased confidence levels following the intervention (Jiang et al., 2017; Stratton et al., 2019), which resulted in decreased dermatology referrals (Eide et al., 2013; Robinson et. al, 2018) and new patient visits (Eide et al., 2013). Additionally, no difference in skin biopsy rates were reported (Eide et al., 2013). Despite evidence of improved abilities, participants described the following implementation barriers (a) confidence (Loescher et al. 2018), (b) lack of administrative or staff support (Jiang et al., 2017), (c) time (Jiang et al., 2017; Loescher et al. 2018), (d) lack of equipment (Loescher et al. 2018), and (e) role uncertainty (Jiang et al., 2017; Loescher et al. 2018),

Physical Interventions

The literature examined several physical interventions that providers used to screen patients for skin cancer. Physical interventions included (a) providers using an algorithm (Rogers et. al., 2016), (b) dermoscopy (Jones et al., 2019; Rogers et al., 2016), or (c) using wall posters and sticky notes to remind patients to wear a gown during their wellness exam (Wheatley, 2018). Although participants attended a 1-day training session to learn about the TADA, the duration of the session was not disclosed (Rogers et al., 2016). The number and length of training sessions desired for PCPs to achieve competency using dermoscopy were not described (Jones et al., 2019). Wheatley (2018) incorporated gowning patients during wellness exams over a 3-month period to evaluate the associated effects.

Between the three articles, the following outcomes were measured (a) excisions (Jones et al., 2019), (b) diagnostic accuracy (Rogers et. al., 2016), (c) dermatology referrals (Jones et al., 2019; Wheatley, 2018), (d) skin inspections, and (e) integumentary documentation (Wheatley, 2018). Providers using TADA correctly identified melanoma lesions 95% of the time, but had more difficulty identifying non-malignant lesions (Rogers et al., 2016). Jones et al. (2019) revealed that PCPs had positive perceptions about using dermoscopy, and with proper training, PCPs can incorporate dermoscopy into their daily practice. Overcoming barriers such as (a) training requirements, (b) cost of equipment, and (c) time may motivate more providers to use dermoscopy in the clinical setting (Jones et al., 2019). Studies assessed within the review, demonstrated the use of a dermoscopy led to reduced excisions and dermatology referrals (Jones et al., 2019). On the other hand, Wheatley (2018) reported an increase in dermatology referrals for total body skin examinations, increased patient gowning, and no change in providers' skin documentation.

Multi-component Interventions

Rourke et al. (2015) examined seven educational practices within the literature to determine which activities were most effective at improving participants' abilities to diagnose skin lesions. One practice was a multi-component intervention that was comprised of select combinations of six previously described practices. Details about combined interventions were not provided, but multi-component interventions and dermatology electives generated the greatest effect, followed by moderate effects from computer-based learning, lectures, and pamphlets (Rourke et al., 2015). The randomized trial of a ML course conducted by Robinson et al. (2018) combined a self-paced, web-based program with a 3-point algorithm that was available as a pop-up while participants completed the program. The researchers did not measure how many participants utilized the pop-up algorithm, but after the training PCPs answered more melanoma questions correctly, had less false positives, and no false negatives.

Best Practice Model Recommendation

Evidence demonstrated several interventions that can be implemented to improve providers' confidence and screening for skin cancer in young adults. The best practice model recommendation for this EBP project was established after a critical appraisal of the literature and review of best practice. Providers encountered numerous implementation barriers: (a) confidence (Loescher et al. 2018), (b) time (Jiang et al., 2017; Loescher et al. 2018), (c) training requirements (Jones et al., 2019), and (d) administrative/staff support (Jiang et al., 2017) which hindered their abilities to effectively screen patients for skin cancer. Qualitative and quantitative evidence (Jiang et al., 2017; Robinson et al., 2018) supported the use of a self-paced, cost and time-effective, web-based intervention that had a positive impact on providers' confidence and abilities performing a skin examination. Providers that can access and complete an educational, web-based program may be more inclined to participate in the intervention. Technological advancements have contributed significantly to the healthcare field by allowing providers access to resources at the touch of their fingertips. Implementation of a web-based program serves as a continued source of education and can be accessed at any time, as desired by each provider. In effect, a web-based intervention can combat barriers encountered by providers and seeks to improve providers' confidence and screening for skin cancer in young adults.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

The primary focus of this EBP project was to improve providers' confidence about skin cancer detection and improve the number of skin cancer screenings for young adults. The INFORMED program was the proposed practice change to increase providers' confidence about different types of skin cancer and to effectively perform and document a skin assessment. The goal of implementing the INFORMED program was to provide an intervention that was mindful of providers' time, educational needs, and project site costs. Internet curriculum for melanoma early detection could be accessed and completed by providers at their convenience. Furthermore, the web-based program could be completed in approximately two hours and was available online.

Participants and Setting

This EBP project was implemented at a student health center that is affiliated with a university located in Northwest Indiana. Five PCPs were employed at the health center. The provider breakdown included one MD and four doctoral prepared NPs. All five PCPs were eligible to participate, however, only three NPs agreed to participate in the project. The MD and one NP declined to participate. Reasons for declination to participate were not explored. Primary care providers were the leading participants involved in the practice change. However, students presenting to the health center were necessary for the practice change to take place.

Pre-Intervention Group Characteristics

Demographics for each provider were obtained before project implementation. All three participants were female NPs; two providers were White, and one provider was Asian. One provider worked full-time (40 hours/week), and the remaining two providers were employed on an as needed or pro re nata (PRN) basis. Providers were between the ages 35-64 and possessed various years of experience in the clinical setting. One provider had 1-4 years of

experience, whereas the most experienced provider had greater than 20 years of experience. All three providers denied a personal history of skin cancer. One provider reported a family history of skin cancer.

One purpose of the practice change was to improve providers' confidence to perform skin assessments for all patients, particularly young adults. Males and females between the ages of 18-27 who attended the university were the target population screened. The target population was narrowed further by screening young adults who presented for the following visits: a wellness exam or physical exam for (a) employment, (b) athletics, (c) travel outside the country, or (d) participation in a university health professional program.

Intervention

Prior to the implementation of the EBP project, the project facilitator was responsible for accomplishing a variety of tasks. First, the project facilitator devised several documents to obtain key information for the EBP project's outcomes. A demographic form (Appendix B) was created to gather important provider information. The project facilitator made a pre-survey form (Appendix C) the providers completed before they started the INFORMED program. The pre-survey form featured four, yes or no questions and a Likert scale (1-5) that evaluated providers' confidence performing eight skin cancer-related tasks. Next, a post-survey (Appendix D) was designed that contained the same first, two questions and Likert scale from the pre-survey. An additional Likert scale (1-5) was included on the post-survey to evaluate providers' perceptions of the INFORMED program. The project facilitator designed a data collection form (Appendix E) to create an organized, easy process for obtaining relevant data. Lastly, the project facilitator obtained permission to use the INFORMED program. Information about the group responsible for creating the program was located online. The project facilitator drafted and sent an email to the team leader, Dr. Martin Weinstock, which explained the purpose for requesting permission to use the program. Permission was granted and outlined in Appendix F.

After a discussion with the health center director, it was decided that the health center would benefit from a skin assessment policy. Providers were expected to abide by policies enforced at the health center, so the project facilitator created a skin assessment policy (Appendix G). The policy was created to match the original outline of current policies. The policy was comprised of various sections: (a) department affected, (b) scope of practice, (c) policy statement, (d) applicability, (e) equipment, (f) educational requirement, (g) procedure, (h) references, and (i) attachments. The applicability section detailed the young adult population that would be screened at the student health center. A description of the necessary equipment was listed in the equipment section. The project facilitator explained to the health center director the need for sleeveless patient gowns to allow for adequate skin inspection. Unfortunately, the coronavirus pandemic and the shortage of personal protective equipment caused a delay in receiving patient gowns. Within the attachment section of the skin assessment policy, an image was provided of the new skin documentation template. A new skin template was created for providers to easily document abnormal skin lesions or moles. As discussed in the INFORMED program, the ABCDE criteria for detecting abnormal lesions was integrated into the EMR. The project facilitator created a checkbox for each letter of the ABCDE criteria. Because not all lesions met each criterion outlined in the mnemonic, providers had the opportunity to check any box that described a patient's abnormal lesion(s) or mole(s). After the skin assessment policy was completed, the project facilitator created a list of inclusion and exclusion criteria.

Lastly, the project facilitator searched the internet for an educational handout. A bookmark was purchased from the AAD that described the ABCDE criteria and provided how-to instructions for performing a self-skin examination. On August 25, 2020, bookmarks were conveniently placed in each examination room next to educational patient handouts. This encouraged students to ask questions and served as a reminder for providers to educate students about skin cancer during their visit.

Comparison

A data analysis was performed between August and November 2019 to evaluate providers' completion of a skin assessment. It was apparent that all the providers who were audited conveniently utilized the default skin description, and it was uncommon for providers to insert a customized skin description. Additionally, the default description failed to include key words such as lesion or mole. Chart audits further demonstrated a lack of skin assessments because providers selected the "not assessed" option for skin documentation. Young adults possess many risk factors for developing skin cancer. A simple skin assessment performed by providers may ultimately reduce a patient's physical, emotional, and financial burdens. A lack of skin assessments at the EBP site supported the necessity for a practice change that would improve providers' confidence about skin cancer detection and performance of a skin assessment.

Outcomes

The primary outcome for this EBP project was assessing providers' confidence levels before completing the INFORMED program and after completing the program. Data for providers' confidence related to skin cancer were collected from the pre-survey and post-survey. The secondary outcome evaluated the number of skin assessments completed by PCPs over a three-month period in 2019 and selected data were compared to the number of skin assessments completed and documented during the same three-month period in 2020. The inclusion and exclusion criteria outlined by the project facilitator defined what was considered a true skin assessment. The project facilitator accessed the EMR to collect data. A pre-designed data collection form was used to organize and record data. A paired *t-test* was used to compare data from the two designated time frames. Descriptive statistics were used to describe providers' responses outlined on the demographic form. The statistical software, SPSS, was used to analyze the data.

Time

Implementation of the web-based intervention, the INFORMED program, occurred over the course of two weeks. An email that contained instructions about completing required documents and the INFORMED program was sent to all providers on August 25, 2020. One provider was employed full-time at the student health center, so she completed the demographic form, pre-survey, INFORMED program, and post-survey that same day. The two remaining providers worked PRN, so they were given two additional weeks to complete the program. This allowed the providers greater flexibility to create time within their current full-time positions to complete the program and required documents. To avoid skewing data collection, the two providers who worked PRN were advised to complete the program before they returned to work at the health center. Each provider returned, in paper or email format, the demographic form, pre-survey, and post-survey to the project facilitator. A draft of the skin assessment policy was also attached to each email and sent to all providers on August 25, 2020. Although the skin assessment policy was not yet approved by the health center director, it introduced providers to the new policy and skin documentation template.

The receptionist at the health center was responsible for checking in students. After students were checked in, the RN, MA, and PCP were advised to assess the reason for the student's visit. The RN or MA directed each student to an exam room. If the student presented for a wellness or physical exam, the RN or MA explained to the student that the provider would be performing a skin assessment to look for any abnormal skin lesions. The RN or MA encouraged students to wear a gown, but it was not required. Students who agreed to wear a gown were given privacy to change into the gown before the provider entered the room. The RN or MA informed the provider if the patient was or was not wearing a gown. After the provider entered the room, she had the opportunity to complete a thorough wellness or physical exam and address any patient concerns. After each patient encounter, the provider was expected to

document all patient findings obtained from the exam and skin assessment. Providers also had the chance to select if the patient wore a gown, did not wear a gown, or refused.

To ensure an adequate number of students would be screened, data collection began on August 26, 2020. Data were collected every two weeks between the last week of August through November 23, 2020. Because providers had the opportunity to screen young adults for an entire semester, this was an appropriate timeline to collect data. Also, for students to receive clinical clearance, they are often required to complete their physical exams at the beginning of the semester. Furthermore, a student may request a wellness examination at any point in time throughout the semester. Because wellness exams were ongoing, this also supported the EBP project's timeline.

Protection of Human Subjects

The protection of human subjects was further reinforced after the project facilitator completed the Collaborative Institutional Training Initiative (CITI) for principal investigators on March 30, 2020. On July 14, 2020, the project facilitator applied to the university's institutional review board (IRB). The project facilitator received IRB approval on July 20, 2020 and was granted an exempt review status. A username and password were created which allowed the project facilitator to access providers' documentation within the EMR. Computers were provided by the EBP site and kept in a drawer behind a locked door. All information obtained from the EMR was recorded on a paper copy of the data collection form. This document was placed in a folder, stored in a file cabinet, and locked in the health center director's office. The director was the only individual who had a key to access the computers and her office. The most important aspect of this EBP project was the minimal risks and harms experienced by the providers and young adults. The only identified risk associated with the project was students were asked to wear a gown during their examination. If the students were required to wear a gown, they could experience fear, anxiety, or embarrassment. As outlined in the skin assessment policy, students had the right to refuse to wear a gown. The providers were aware of the policy, and they

respected a student's wishes before proceeding with the scheduled visit and appropriate documentation. No additional risks or harms to the providers or students were identified throughout the EBP project.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to determine what effect an educational, web-based intervention, the INFORMED program, had on providers' confidence about skin cancer and improvement in the number of skin cancer screenings for young adults. The primary outcome was to determine if the INFORMED program improved providers' confidence about skin cancer. In effect, providers should feel confident about detecting skin cancer and performing more skin assessments. The EBP project was implemented over a 12-week period at a student health center in Northwest Indiana. A detailed data analysis was completed to determine what effect the INFORMED program had on providers' confidence about skin cancer and the completion and documentation of skin assessments for young adults.

Participants

Three providers participated in the EBP project. Prior to project implementation, two additional providers declined to participate. The participating providers were employed full-time or PRN at a student health center in Northwest Indiana. Also, the providers who participated in the EBP project were the same providers employed at the office in 2019. Young adults who attended the university and received care at the health center were necessary to measure the secondary outcome. The inclusion criteria for young adult participants included (a) males and females, (b) who attended the university, (c) between the ages of 18-27, and (d) presented for a wellness or physical exam for employment, athletics, travel outside the country, or participation in a university health professional program.

One hundred percent of PCPs who participated in the EBP project were female NPs. Thirty-three percent of the providers were Asian and 66% of the providers were White. Thirty-three percent of the providers were employed full-time at the health center, while 66% of the providers were employed on a PRN basis. Providers fell into three different age groups: 35-44

(33%), 45-54 (33%), and 55-64 (33%). For years of experience, providers had 1-4 years (33%), 10-15 years (33%), and greater than 20 years (33%). Sixty-six percent of providers reported training during school to detect skin cancer, whereas 33% of providers denied receiving skin cancer training during school. Thirty-three percent of providers reported using a web-based skin cancer program to learn about skin cancer and 66% had never used a web-based program to learn about skin cancer. One hundred percent of participants denied a personal history of skin cancer. However, a family history of skin cancer was reported in 33% of participants and 66% denied a family history.

Changes in Outcomes

This EBP project addressed the following PICOT question, "For primary care providers at a student health center in Northwest Indiana (P), does the implementation of a web-based program, INFORMED, which utilizes a skin assessment tool, (I) compared to no web-based program (C), improve providers' confidence about skin cancer and the number of skin cancer screenings performed and documented for young adults (O) over a 12-week period (T)?

Statistical Testing and Significance

The effectiveness that the INFORMED program had for providers' confidence and improving the number of skin assessment completed was measured using several statistical tests. The IBM Statistical software, SPSS, was used to conduct statistical tests and data analyses. A paired samples *t*-test was used to measure providers' confidence level before and after implementation of the INFORMED program. A single sample *t*-test was calculated to determine overall providers' satisfaction with the INFORMED program. A chi-square test was used to determine if providers were aware of the ABDCE rule and ugly duckling sign before and after the INFORMED program. A chi-square test of independence was calculated to compare the number of skin assessments completed and documented in 2019 and 2020. Data about the number of skin assessments completed and documented were collected over a 3-month period for 2019 and 2020. Additionally, a ratio was calculated for number of patients seen and number

of skin assessments completed for 2019 and 2020. Statistical significance for data analysis was established at $p < 0.05$.

Findings

Evidence-based practice findings were categorized based on the primary outcome: providers' confidence levels pre-and-post intervention, and the secondary outcome: number of skin assessments completed and documented in 2019 compared to 2020.

Primary Outcome

Providers' Confidence Levels. The primary outcome measured was providers' confidence levels about skin cancer pre-and-post intervention. Providers' confidence levels were measured on a Likert scale (1-5) before and after they completed the INFORMED program. Confidence was measured for eight separate questions that involved provider-related behaviors such as detecting, diagnosing, counseling, and managing skin cancer. Providers' confidence scores ranged from one to five. A score of one demonstrated no confidence; two demonstrated slight confidence; three indicated moderate confidence; four indicated fair confidence; and five revealed complete confidence. Data were computed and demonstrated statistical significance for distinguishing benign lesions from malignant lesions (t (2) = -5.000, p = 0.038). Diagnosing skin cancer (t (2) = -4.000, p = 0.057) and performing a skilled, complete skin examination (t (2) = -4.000, p = 0.057) were also relatively close to statistical significance. The remaining five questions that measured providers' confidence did not demonstrate statistical significance. See the pre-survey (Appendix B) for a list of the eight skin cancer-related behaviors measured by providers.

Additionally, items on the pre- and post-survey evaluated if providers had ever heard of the ABCDE rule and ugly duckling sign. Results from the Chi-square test revealed there was no change pre- and post-intervention for the ABCDE rule, because 100% of providers said yes to using the ABCDE rule. Post-intervention, 100% of providers were familiar with the ugly duckling sign, whereas pre-intervention, the majority (66%) had never heard of the ugly duckling sign.

Lastly, the post-survey evaluated providers' overall satisfaction with the INFORMED program. A Likert scale was used to measure how much providers liked the INFORMED program and how effective they found the INFORMED program for their practice. A single sample *t*-test was calculated for each question and demonstrated statistical significance (p = 0.005) for both questions. Overall, providers demonstrated satisfaction with the INFORMED program and felt that it was valuable for their clinical practice.

Secondary Outcome

Number of Skin Assessments Completed and Documented. Data were collected about the number of skin assessments performed and documented by providers over a three-month period for 2019 and 2020. A chi-square test of independence was calculated and compared the percentage of skin assessments completed and documented in 2019 and 2020. No significant relationship was found between the number of skin assessments completed during both time periods (χ^2 (1) = 80.760, p < 0.000). A ratio was also calculated and compared patients visits and number of skin assessments completed and documented for 2019 and 2020. For 2019, 43 patients were evaluated, and 33 skin assessments were completed. The ratio for 2019 was approximately 76%. In 2020, the number of patient visits significantly decreased, with only 26 patients evaluated and 19 skin assessments completed and documented. Overall, the ratio for 2020 was 73%, which was relatively close to the ratio for 2019.

CHAPTER 5

DISCUSSION

This EBP project served the purpose of answering the PICOT question, “For primary care providers at a student health center in Northwest Indiana (P), does the implementation of a web-based program, INFORMED, which utilizes a skin assessment tool, (I) compared to no web-based program (C), improve providers’ confidence about skin cancer and the number of skin cancer screenings performed and documented for young adults (O) over a 12-week period (T)? This chapter provides a comprehensive explanation of findings and discusses the strengths and weaknesses of the EBP project. Future implications will be outlined in terms of practice, research, education. Also, the applicability of the EBP model that served to guide this EBP project will evaluated.

Explanation of Findings

Prior to the implementation of this EBP project, the project facilitator performed chart audits and determined that PCPs were not completing a thorough skin assessment for young adults. This was evidenced by providers selecting “not assessed” for skin documentation or inserting a default skin description that lacked the word(s) nevi or mole and/or lesion. The project facilitator gathered best evidence to improve PCPs’ confidence about skin cancer and the performance and documentation of a skin assessment. In collaboration with key stakeholders at the project site, the project facilitator effectively implemented the INFORMED program and measured primary and secondary outcomes.

The primary outcome for this EBP project was designed to measure providers’ confidence about skin cancer pre- and post-implementation of the INFORMED program. The secondary outcome evaluated providers’ improved completion and documentation of a skin assessment. Data for the secondary outcome were collected over the same 3-month period for the years 2020 and 2019. Additional outcomes were obtained which reflected providers’

satisfaction with the INFORMED program and supported the need for an intervention to improve their confidence about skin cancer in the clinical setting.

Participant Findings

The information reported within the good to high quality, current literature, included PCPs as the main participants involved in web-based, skin cancer education and training programs. The literature demonstrated larger sample sizes of PCP participants who were employed at various institutions or offices and had varying years of experience. In comparison, the sample size for this EBP project was limited to one location and five providers, two of which declined participation. Of the three PCP participants, each participant possessed varying years of experience between 1-4 years, 10-15 years, and greater than 20 years of experience. The range of provider experience was consistent with the literature for practicing PCPs. The reviewed literature also evaluated provider age (range), race/ethnicity, employment status, and prior skin cancer training. Providers who participated in this EBP project were either full-time or PRN. Employment for providers on a PRN basis was not identified in the literature review. Within the literature, PCPs reported fluctuations in skin cancer training and whether they received training in medical/nursing school, residency, or a web-based course. For this project, providers were asked if they had skin cancer training during school and if they ever used a web-based program to learn about skin cancer. Most providers reported skin cancer training during school, but the majority had never used a web-based program to learn about skin cancer. This data further supported the implementation of the INFORMED program to enhance providers' confidence about skin cancer while using a web-based program to improve the number of skin cancer screenings performed and documented in the clinical setting. Personal and family history of skin cancer was evaluated for PCP participants within the literature and this EBP project. Only one provider who participated reported a family history of skin cancer. This is important to consider when measuring confidence levels, because this provider may have had increased

exposure to the family member affected by skin cancer, thus promoting the provider's confidence about skin cancer.

Providers were responsible for the completion and documentation of a skin assessment for young adults who presented to the student health center for a wellness or physical examination. Most of the reviewed literature did not evaluate improvements in skin cancer screenings, especially for young adults. However, a QI project measured the number of skin inspections performed for all patients gowned during their wellness exam (Wheatley, 2018). The EBP project inclusion criteria for young adults were (a) males and females, (b) who attended the university, (c) between the ages of 18-27, and (d) presented for a wellness or physical exam for employment, athletics, travel outside the country, or participation in a university health professional program. Because the ACS (2020) estimated 200 new melanoma cases for individuals between 15-19 years of age and 2,200 new cases for those between the age 20-29, the age range for this EBP project was appropriate for young adults to be screened for skin cancer.

Provider Confidence

The INFORMED program demonstrated statistical significance ($p < 0.05$) for one out of eight components listed on the pre- and post-survey, and for two components, significance was nearly achieved. Providers demonstrated statistical significance for distinguishing benign lesions from malignant lesions (t (2) = -5.000, p = 0.038). According to Eide et al. (2013), "the scores suggest that before taking the course, participants had most difficulty in distinguishing benign from malignant lesions and that the course improved this ability" (p. 655). The remaining seven components did not reach statistical significance but diagnosing skin cancer (t (2) = -4.000, p = 0.057) and performing a skilled, complete skin examination (t (2) = -4.000, p = 0.057) were relatively close to statistical significance. These findings were inconsistent with the literature, as the INFORMED program improved providers' confidence for all eight components (Eide et al.,

2013). It is important to note that if this EBP project contained a larger sample size, statistical significance may have been consistent with the literature.

The pre- and post-survey also evaluated if providers had ever heard of the ABCDE rule and the ugly duckling sign. Such questions and responses were not present in the literature but can contribute to providers' confidence about skin cancer and performing a skin assessment. Pre-intervention, 100% of participants were aware of the ABCDE rule, but 66% of participants were unfamiliar with the ugly duckling sign. Post-intervention, the INFORMED program successfully informed 100% of providers about the ugly duckling sign. Both tools can be used to identify and classify abnormal lesions to determine an appropriate plan of care. Providers who had experience with these tools compared to those who did not, may have demonstrated greater confidence about skin cancer and completion of a skin assessment.

Skin Cancer Screening

Prior to implementation of the intervention, the EBP project site did not follow specific guidelines for performing a skin assessment. This may be due to inconsistent skin cancer screening recommendations suggested by the USPSTF and ACS. To promote skin cancer screenings, a skin assessment policy was developed for the EBP project site. Additionally, the INFORMED program educated providers about using the ABCDE rule and ugly duckling sign to identify abnormal lesions. The program also provided recommendations for performing skin assessments in the office setting. Data collected over a three-month period in 2019 revealed that providers saw 43 patients, and based on provider documentation, they performed 33 skin assessments. Data were collected for the same time frame in 2020 and revealed that providers saw 26 patients and completed 19 skin assessments. A chi-square test of independence was calculated and compared the percentage of skin assessments completed and documented in 2019 and 2020. No significant relationship was found between the number of skin assessments completed during both time periods (χ^2 (1) = 80.760, p < 0.000). Completion and documentation of skin assessments appeared to be independent events. The COVID-19 pandemic limited the

number of patients evaluated at the health center. Despite this limitation, the percentage of providers' skin cancer screenings that were completed and documented were similar for 2020 compared to 2019.

Skin cancer screenings were not frequently evaluated in the literature, but the primary outcome for a QI project sought to increase the number skin inspections performed for all patients who wore a gown during their annual physical or wellness examination (Wheatley, 2018). Providers also received an educational in-service about the dangers of skin cancer and the importance of performing a skin inspection. A detailed description of what the in-service entailed was not described, but like this EBP project, providers within the QI project also used the ABCDE mnemonic to classify and document abnormal lesions. It was anticipated that providers would improve their skin documentation by using the ABCDE rule. The QI project found that by implementing gown usage for wellness visits, post-intervention 100% of patients wore gowns, but providers' skin documentation did not change from the default description. For this EBP project, gowns were available mid-way through the intervention to allow PCPs to adequately visualize patient skin. Patients were encouraged but not required to wear a gown. After implementation of the INFORMED program, providers used the default description less and documented terms consistent with skin abnormalities such as benign, malignant, lesion, and/or mole.

Strengths and Limitations of the DNP Project

The Iowa Model (Revised) served as the EBP model that guided this project. The model provided the project facilitator with an easy-to-follow framework which contributed to the effective implementation of the INFORMED program at the student health center. This EBP project demonstrated various strengths, as well as several limitations. The strengths and limitations will be discussed in relation to the project's evolution and can be used to support future related projects.

Strengths of EBP Framework

The Iowa Model (Revised) was a valuable EBP framework that guided the project facilitator through each of the model's basic steps. The validity and reliability of the model has been demonstrated in numerous clinical settings, including this EBP project. The steps of the model were strategically placed, and in collaboration with the health center director, an opportunity to improve providers' confidence about skin cancer and screening abilities was identified. The model led the project facilitator to design a PICOT question that measured providers' improved confidence about skin cancer and skin cancer screenings. The strength of the model was largely attributed to the formation of a team of key stakeholders. Feedback from key stakeholders at the project site was critical to the project design, implementation, outcome, and sustained practice change. The model helped guide the project facilitator through the search, collection, appraisal, and evidence synthesis processes to determine best practice strategies to improve provider's skin cancer screening skills. The Iowa Model provides the foundation for APRNs to implement a practice change based on the best available evidence (Titler et al., 2011). While the Iowa Model was an appropriate framework to guide this EBP project, future projects in academic and clinical settings can also adopt this model as guide.

Strengths of the Project

Several strengths of this EBP project were evident. One of the largest strengths was the receptiveness of the providers to complete the INFORMED program. Providers understood the importance of utilizing online resources to gain further education about skin cancer, a topic they were less confident about. For the intervention itself, the program was free to access online, so the health center was not responsible for purchasing the program. The web-based format allowed providers to complete the INFORMED program in a preferred location providing they had internet access. The intervention was time-effective and allowed providers to complete the program at their own pace or finish it entirely in less than two hours. The outcomes selected for this EBP project were straight forward and easy to measure. Providers who completed the

INFORMED program played a more active role in educating students about skin cancer and characteristics to look for in abnormal lesions. The project facilitator also interacted with several young adults and explained the purpose of the EBP project. Many young adults reported that they were not opposed to receiving a skin assessment. In fact, they expressed appreciation for the simple skin assessment. The primary outcome of this EBP project demonstrated providers' improved confidence post-intervention for distinguishing benign lesions from malignant lesions. Lastly, the EBP project was effective at promoting the implementation of a web-based skin cancer program, as 66% of providers reported never using a web-based program to learn about skin cancer.

Limitations

Despite the strengths of this project, there were several limitations worth mentioning. The most significant limitation of this EBP project was the COVID-19 pandemic. This EBP project took place during the height of the pandemic at a student health center. At the time, the university associated with the student health center enforced strict guidelines to prevent the transmission of the virus. Ultimately, these guidelines affected the (a) staff's attention to the EBP project, (b) staff's time, which was spent cleaning rooms in between patient visits, (c) number of students evaluated at the health center, and (d) number of skin assessments that providers completed and documented in the EMR. The results of the EBP project were also affected by the small sample size of providers and one project site location. Although not as significant, providers were unable to select which format, case-based or traditional, they wished to view the INFORMED program. Rather, the link provided to the participants for the INFORMED program reflected the traditional based format. Inability to select preferred learning format may or may not have affected providers' engagement with the program. One provider felt that an audio component within the INFORMED program would have been helpful.

Implications for the Future

This EBP project provided valuable insight regarding the use of the cost- and time-effective, web-based, INFORMED program to improve providers' confidence about skin cancer. Although statistically significant findings for skin cancer screenings were not found, this EBP project demonstrated the need for future practice, education, and research implications. Aspects for each implication were described and could be used as a guide to effectively implement evidence-based practice into clinical practice.

Practice

Based on the available evidence, the INFORMED program was determined best practice for improving providers' confidence about skin cancer and screenings. The INFORMED program was designed specifically for PCPs and aims to improve their confidence and skin cancer detection skills (Jiang et al., 2017). This EBP project was essential because it introduced PCPs to the INFORMED program. More importantly, most providers reported never using a web-based program to learn about skin cancer. Providers at the student health center were receptive to the web-based program and supported the EBP project intervention. This intervention truly enhanced providers' confidence about skin cancer and provided them with the necessary skills to perform a proper skin assessment. The INFORMED program is a valuable tool that can be utilized for any practice setting. The program was advantageous at this EBP project site because it was cost- and time-effective; it was freely available online and could be completed in any location if the provider had a computer with internet access. The skin assessment policy was created, and it reinforced continued use of the INFORMED program by making it an annual requirement. Therefore, providers can continue to utilize a resource that could positively impact their clinical practice.

For future EBP projects or related activities, several aspects must be considered. Future projects would benefit from a larger sample size for both providers and patients. Expanding the project site to more than one location would be helpful in recruiting more providers. By

increasing the number of providers, more patients would be available to be screened for skin cancer. Because skin cancer can affect anyone, the target population screened should not be limited to young adults. All patient populations, the young and old, should be considered for skin cancer screenings. Additional recommendations for future projects could involve comparing provider outcomes from the INFORMED program to other web-based, skin cancer educational programs.

EBP Model

Adoption of the Iowa Model for this EBP project provided the project facilitator with the fundamental guidance to successfully implement a practice change in the clinical setting. The model's simplistic diagram of steps makes it easy to be used in both academic and clinical environments (Iowa Model Collaborative, 2017). Given the model's widespread applicability, worldwide acceptance, and increased popularity, it was an appropriate model to guide this EBP project. Future EBP projects related to skin cancer education would benefit from the use of an EBP framework, such as the Iowa Model, to guide the development, implementation, and integration of new knowledge into practice. Not only does this model strategically outline critical steps, but it also integrates involvement among all stakeholders, further increasing their knowledge of EBP. In effect, new evidence presented to key stakeholders enhances their awareness about the issue, promotes the practice change, and contributes to the sustainability of the practice change.

Research

Further research is necessary to explore the effects that other web-based, physical-based, and multicomponent interventions have on improving providers' confidence about skin cancer and skin cancer screenings. Such interventions should be evaluated for their usefulness in clinical practice, and research needs to evaluate the minimum level of training necessary for providers to reach competency in skin cancer education. Research that involves providers' learning preferences would be beneficial to study and further tailor educational programs to

meet providers' needs. The integration of skin cancer training programs should be studied at the undergraduate and graduate level programs. Skin cancer education at these levels may better prepare students to practice competently and confidently during clinical practice. Lastly, further research needs to be done about incorporating regular skin cancer screenings in the primary care setting, especially for asymptomatic individuals.

Education

The APRN's commitment to lifelong learning represents his or her desire to remain informed about best practice interventions and resources. Continued education is significant to the APRN's confidence, knowledge, and growth as a provider. Providers who participated in this EBP project saw the INFORMED program as an opportunity to understand a topic that was less familiar to them and a topic that was less likely to be studied during their academic studies. Not only did the INFORMED program educate the providers, but it gave providers the confidence to counsel and educate young adults about the dangers of skin cancer and abnormal signs to watch out for.

Conclusion

This EBP project has provided valuable insight to the project facilitator, key stakeholders, PCP participants, and young adults regarding the use of the INFORMED program to improve providers' confidence about skin cancer and completion and documentation of skin assessments. The primary outcome was designed to measure providers' confidence pre- and post-intervention, while the secondary outcome measured the number of skin assessments completed and documented over a 3-month period for 2019 and 2020. The results of this project revealed that PCPs experienced improved confidence for distinguishing benign lesions from malignant lesions ($p = 0.038$), which is consistent with current literature. It is worth noting that statistical significance was nearly achieved for providers' confidence about diagnosing skin cancer ($p = 0.057$) and performing a skilled, complete skin examination ($p = 0.057$). Despite limited statistical significance, the clinical significance of this project is evident and would have

been more profound with a larger sample size. Unfortunately, the secondary outcome was significantly limited by the COVID-19 pandemic, and statistically significant results were not found for the number of skin assessments completed in 2020 and compared to 2019. Overall, providers were satisfied with the INFORMED program and recognized the true value that the program instilled within their daily practice. It is recommended that providers incorporate a web-based, skin cancer program into their routine practice requirements as a cost- and time-effective resource to enhance providers' confidence about skin cancer.

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BIOGRAPHICAL MATERIAL

Miss Spears attended Indiana University Bloomington and graduated in 2016 with a Bachelor of Science in Nursing (BSN) degree. She returned to her hometown in Northwest Indiana where she has spent the past five years working as a registered nurse in a medical-surgical and telemetry unit. She is currently a full-time student at Valparaiso University and will graduate in 2021 with a Doctor of Nursing Practice (DNP) degree. Miss Spears is a student member of the American Association of Nurse Practitioners (AANP) and Sigma Theta Tau International Honor Society of Nursing Zeta Epsilon chapter. On two separate occasions, she traveled abroad with Valparaiso University's College of Nursing and Health Professions. Those visits allowed Miss Spears to recognize cultural and international differences related to the delivery and accessibility of healthcare services in both Italy and Germany. Miss Spears has spent the last year working on the front-line providing care for hospitalized patients afflicted with the COVID-19 virus. As a future nurse practitioner, she is committed to serving the community by providing exceptional care and support.

ACRONYM LIST

AAD: American Academy of Dermatology

ABCDE: Asymmetry Border Color Diameter Evolving

ACS: American Cancer Society

ANCOVA: Analysis of Covariance

ANOVA: Analysis of Variance

APRN: Advanced Practice Registered Nurse

BCC: Basal Cell Carcinoma

BSCT: Basic Skin Cancer Triage

CDC: Centers for Disease Control and Prevention

CITI: Collaborative Institutional Training Initiative

CSE: Clinical Skin Examination

EBP: Evidence Based Practice

EMR: Electronic Medical Record

GAPP: Greater Access for Patient's Partnership

ICC: Indiana Cancer Consortium

ICD: International Classification of Disease

INFORMED: INternet curriculum FOR Melanoma Early Detection

IRB: Institutional Review Board

ISDH: Indiana State Department of Health

ISE: Integrated Skin Examination

JBI: Joanna Briggs Institute

JHNEBP: Johns Hopkins Nursing and Evidence Based Practice

MA: Medical Assistant

MD: Medical Doctor

ML: Mastery Learning

MPS: Minimum Passing Standard

NCI: National Cancer Institute

NMSC: Nonmelanoma Skin Cancer

NP: Nurse Practitioner

NPV: Negative Predictive Value

PA: Physician Assistant

PCP: Primary Care Provider

PPV: Positive Predictive Value

PRN: Pro Re Nata

QE: Quasi Experimental

QI: Quality Improvement

RCT: Randomized Controlled Trial

RN: Registered Nurse

SCAN: Skin Cancer Assessment of Needs

SCC: Squamous Cell Carcinoma

SR: Systematic Review

TADA: Triage Amalgamated Dermoscopic Algorithm

TDS: Teledermoscopy

USPSTF: United States Preventive Services Task Force

UV: Ultraviolet

APPENDIX A

Evidence Table

Citation (APA)	Purpose	Design	Setting/Sample	Measurement/ Outcomes	Results/Findings	Level/ Quality
Eide, M. J., Asgari, M. M., Fletcher, S. W., Geller, A. C., Halpern, A. C., Shaikh, W. R., Li, L., Alexander, G. L., Altschuler, A., Dusza, S. W., Marghoob, A. A., Quigley, E. A., & Weinstock, M. A. (2013). Effects on skills and practice from a web-based skin cancer course from primary care providers. *JABFM, 26*(6), 648-657. https://doi.org/10.3122/jabfm.2013.06.130108	To evaluate the effects of a newly developed, self-paced, web-based course on PCPs ability to accurately diagnose and manage lesions suspicious for melanoma.	Descriptive, before-and-after design	Two health maintenance organizations. *N* = 54 PCPs Site A: 4 practices *n* = 25 Site B: 5 practices *n* = 29	3-hour educational session at Site A and B Session included a meal, consent, pre-test and immediate post-test, and group feedback/course discussion. Option for traditional textbook format or cased-based format. 9 topic areas: 1. Melanoma "ABCD-E" 2. "Ugly duckling" sign for suspicious lesions 3. Benign lesions 4. Nodular subtype of melanoma 5. All other melanoma subtypes 6. Melanoma risk factors 7. BCC 8. SCC	Both groups spent approximately 1 hour on the program (63 and 69 minutes) Traditional: *n* = 14 Case-based: *n* = 38 *Pre-test Mean Score: n* = 54 36.1% for all lesions (9/25 lesions) *Immediate Post-test Mean Score: n* = 54 46.7% for all lesions (OR, 1.6; 95% CI, 1.4-1.9) *6-Month Post-test Score: n* = 48 Score dropped to 41.3% (OR, 1.3; CI, 1.1-1.5) for all lesions but remained higher than pre-test score. PCPs that reported no previous skin cancer training improved (33.3% to 50.7%) compared to PCPs who reported prior training. *Confidence/Attitude Categories About Skin Cancer at Pre-test; Immediate-Post-test; and 6-month Post-test had modest*	Level III, Quality A

				9. Office-based policies for integrating skin exams into practice **Outcomes:** <u>*Pre-test*</u> Images of 25 skin lesions Five-point Likert scale to measure confidence/attitudes about detecting skin cancer <u>*Immediate post-test*</u> Same 25 images as pre-test but in a different order Five-point Likert scale to measure confidence/attitudes <u>*6-month post-test*</u> Repeat same test Five-point Likert scale to measure confidence/attitudes <u>*Dermatology referrals or visits*</u> Site A: Referrals and reasons Site B: New and established dermatology visits	*improvement (*Mean scores +/- standard deviations) Diagnosing skin cancer 2.9(0.6); 3.1(0.7); and 3.2(0.8) Distinguishing benign from malignant lesions 3.0(0.8); 3.2(0.8); 3.3(0.7) Distinguishing benign pigmented lesions from melanoma 2.8(0.8); 3.1(0.8); 3.1(0.8) Providing appropriate initial management of skin lesions 3.2(0.9); 3.6(0.8); 3.8(0.9) Identifying patients at high risk for skin cancer 3.4(0.8); 4.1(0.8); 4.0(0.9) Performing a skilled, complete skin examination 3.6(1.1); 4.3(0.7); and 4.2(1.0) PCPs that reported no previous skin cancer training improved (33.3% to 50.7%) compared to PCPs who reported prior training. *Referrals or Visits* Site A: Decrease in dermatology referrals (630 to 607) 6 months following course as compared to the prior year	

				<u>*Skin biopsies*</u> Site A and B	Site B: Decrease in the number of new patients for dermatology (727 to 266) *Skin Biopsies* Site A and B: Skin biopsy rate and skin cancer diagnoses comparable in 2010 to 2011.	
Jiang, A. J., Eide, M. J., Alexander, G. L., Altschuler, A., Asgari, M. M., Geller, A. C., Fletcher, S. W., Halpern, A. C., & Weinstock, M. A. (2017). *Journal of Cancer Education, 32*, 272-279. https://doi.org/10.1007/s13187-015-0910-4	To review the efficacy and feasibility of PCPs implementing skin cancer screening into their practice after completing a web-based skin cancer detection curriculum.	Qualitative	Two health maintenance organizations *N* = 54	Participants completed the INFORMED (INternet curriculum FOR Melanoma Early Detection) web-based curriculum Following the training, a 30-min feedback session occurred. Session was led by a focus group moderator and site investigator. Semi-structured interview guide with open-ended questions focused on four domains with associated subthemes: 1. *Impression of curriculum* 2. *Suggestions to improve curriculum*	*n* = 53 physicians *n* = 1 NP <u>*Domain 1:*</u> <u>*Impression of Curriculum*</u> Acceptance and openness to completing the curriculum and improving their skills *Subtheme 1.1:* *Differentiating Lesions* ABCDE criteria was helpful. More information on commonly seen lesions, such as SCC and BCC, would be helpful. PCPs requested teaching aids, pocket references displaying all three types of cancers, and trademark findings that could be accessed easily. *Subtheme 1.2:* *Application of Review* Greater confidence post-training. <u>*Domain 2:*</u> <u>*Improving the Curriculum*</u> Providers felt comfortable about when to refer and when not to refer to a dermatologist.	Level III, Quality A

				3. *Current skin examination practices* 4. *Suggestions to increase PCP skin cancer screening* Discussions were audio-recorded transcribed verbatim, and de-identified.	More time to complete the curriculum. *Subtheme 2.1: Confidence Regarding Reassure vs Refer* Unsure of their role and the clinical appropriateness of referring to dermatology *Subtheme 2.2: Learning Styles* Prefer self-paced and self-evaluation aspects of the curriculum. PCPs would also like to see a lesion on a patient in-person. *Domain 3: Current Skin Practices* Systemic and personal barriers, such as time and uncertainty. Some PCPs prefer to continue referring for suspicious lesions *Domain 4: Intent to Increase Screening* PCPs plan to incorporate more patient guidance/counseling and screening into their daily practice. Increased confidence and ability to perform skin exams.	
Jones, O. T., Jurascheck, L. C., van Melle, M. A., Hickman, S., Burrows, N. P., Hall, P. N., Emery, J., & Walter, F. M. (2019). Dermoscopy for	To conclude whether PCPs who are trained to use dermoscopy or dermoscopy-related technologies	Systematic Review	*N* = 23 articles 3 RCTs 2 SITs 9 diagnostic accuracy studies	Accuracy and Reliability Implementation	Non-RCT diagnostic studies showed increased diagnostic accuracy using dermoscopy in primary care or in Teledermoscopy-based referral systems.	Level III, Quality B

melanoma detection and triage in primary care: A systematic review. *BMJ Open, 9*, 1-15. https://doi.org/10.1136/bmjopen-2018-027529	can identify abnormal skin lesions.		2 cohort studies 2 case series 1 case-control 4 PCP surveys		Dermoscopy training compared to minimal or no training improved diagnostic accuracy. Barriers to implementation include: training requirements, cost of equipment, and the time to perform dermoscopy. Facilitators to implementation include: reduced referrals, early detection of melanoma, and reduced physician and patient anxiety. PCPs support the use of dermoscopy in clinical practice, but further research should explore the extent of training to achieve competency.	
Loescher, L. J., Stratton, D., Slebodnik, M., & Goodman, H. (2018). Systematic review of advanced practice nurses' skin cancer detection knowledge and attitudes, clinical skin examination, lesion detection, and training. *Journal of the American Association of Nurse Practitioners, 30*(1), 43-58. https://doi.org/10.1097.JXX.0000000000000004	To update a previously published review and evaluate advanced practice nurses' (APNs) knowledge and attitudes, performance of and barriers to a clinical skin examination (CSE), recognition of skin lesions and educational activities.	Systematic Review	*N* = 12 studies 4 case studies 2 descriptive surveys 4 single-subject experiments 1 retrospective cross-sectional survey 1 mixed-methods study	*Sample characteristics* *Current knowledge and attitudes regarding the early detection of skin cancer* *Current state of APNs clinical skin examination and skin cancer detection* *Barriers to clinical skin examination* *Skin cancer detection training*	*Sample characteristics* • NPs comprised full or partial sample of studies • One study involved sample of NP students • 27-64 years old • Master's degree • 2-16+ years of practice • Urban and rural areas • National online surveys *Current knowledge and attitudes regarding the early detection of skin cancer* • Five studies reported on knowledge and detection • Knowledge improved from pre to post-test • Lack of confidence	Level III, Quality B

					Current state of APNs clinical skin examination and skin cancer detection
					• Six studies provided description of NPs performance of clinical skin exam (CSE)
					  • 45% to 55% reported performing CSE
					• Case studies reported skin lesion identification
					  • Naked-eye exam and dermoscopic exam
					  • Teledermoscopy versus face-to-face exam
					  • Skin cancer screening program
					
					Barriers to clinical skin examination
					• Two studies addressed barriers to performing CSE
					  • Highest barrier is no confidence
					  • Lack of time (46.3%)
					  • Lack of access to dermoscopy equipment (33.1%)
					  • Inappropriate setting (30.9%)
					  • Inadequate skin assessment skills (24.6%)
					  • No barriers (21%)
					
					Skin cancer detection training
					• Four studies described training activities with	

					significant improvement in skills and skin cancer detection; feedback provided with training • Formal didactic training • Training by experts • Online presentation about skin cancer	
Robinson, J. K., Jain, N., Marghoob, A. A., McGaghie, W., MacLean, M., Gerami, P., Hultgreen, B., Turrisi, R., Mallett, K., & Martin, G. J. (2018). A randomized trial on the efficacy of mastery learning for primary care provider melanoma opportunistic screening skills and practice. *Journal of General Internal Medicine, 33*(6), 855-862. https://doi.org/10.1007/s11606-018-4311-3	To evaluate the efficacy of a ML course completed by PCPs at Northwestern Medicine.	Randomized Educational Trial	Northwestern Medicine *N* = 90 PCPs Recruitment took place between January 2016 through August 2016 Assignment to control or intervention group was made after consent was signed; a baseline survey was completed; and a 12-lesion pretest was completed for six clinical and six dermoscopic images. *Control group* *n* = 45 Contacted 3 months later to	Intervention consisted of a ML course that was developed by a team of dermatologists, PCPs, and medical educators. Training, comprised of three units, was provided to PCPs on the identification of at-risk patients and lesions suspicious for melanoma *Unit 1:* Visual and dermoscopic assessment (border, color, diameter and asymmetry, network pattern, and blue-black-gray-white color) *Unit 2:* Diagnosis and management (reassure, refer)	*N* = 89 *Control Group: n* = 45 • More PCPs with less than 5 years of practice (*n* = 18) • PCPs reported family history of melanoma (*n* = 7) *Intervention Group: n* = 44 • PCPs with less than 5 years of practice (*n* = 6) • More PCPs with 11-15 years, 26-30 years, and 31+ years of practice. • PCPs with family history of melanoma (*n* = 1) • PCPs referred fewer benign lesions than control • Greater number of melanoma referrals following training (*F* [1.79] = 24.38, *p* <0.001; np^2 = 0.236) *Intervention and Control Group* • No difference on pre-test scores (*t* = -0.14, *p* = 0.910) • Significant difference between PCPs in control and intervention groups in post-test diagnosis scores	Level I, Quality A

			complete post-test *Intervention group* *n* = 45	*Unit 3:* Deliberate practice with feedback *Each unit* was completed within three weeks Email reminders sent every 2 days for the next 2 weeks for each PCP that failed to complete a unit. All three phases required a minimum passing standard (MPS) for each feature. Pass standard of 85% for the six features of visual inspection and dermoscopic assessment. **Outcomes:** *Demographics* Gender, age, race, ethnicity, years in practice (full/part-time), and personal or family history of melanoma. *Selection of pre/post-test cases*	(ANCOVA, $F[1,378] = 27.86$, $p < 0.001$; $np^2 = 0.26$) • PCPs in intervention group answered more correct questions on post-test (M = 10.05, SE = 1.24) than PCPs in control group (M = 7.11, SE = 0.24) • PCPs had no false-negative identifications of melanoma in post-test and fewer false-positives (M = 1.09, SE = 0.20) compared to PCPs in control group (M = 3.1, SE = 0.23)	

				Each test consisted of six clinical and six dermoscopic images of lesions with equal difficulty. *Pre- and post-tests* Twelve different pre-test images were paired with 12 post-test images of equal difficulty. *Performance compared to other PCPs* 10-point Likert scale *Clinical proficiency in referral of patients for concerning lesions* Percentages for each PCP that referred to dermatology, head and neck surgery, plastic surgery, and surgical oncology were obtained. Created for referrals made 3 months before and 3 months after the educational intervention.		
Roebuck, H., Moran, K., MacDonald, D. A., Shumer, S., & McCune, R. L.	Utilize a one-time, online or in-person survey to	Cross-sectional	Michigan	**Measurement:** Roebuck SCAN	*Demographic and Professional Characteristics*	Level III, Quality A

(2015). Assessing skin cancer prevention and detection educational needs: An andragogical approach. *The Journal for Nurse Practitioners, 11*(4), 409-416. http://dx.doi.org/10.1016/j.nurpra.2015.01.036	assess the learning and educational needs of Nurse Practitioners (NPs) who provide counseling to patients about skin cancer.		Annual conference or Online survey *N* = 272 NPs	(Skin Cancer Assessment of Needs) Tool 28 items: demographic data and questions related to the participants' knowledge of skin cancer prevention and detection, learning preference, and current practices. One-time survey 2-weeks to complete online survey	*n* = 159 completed a hardcopy of the survey at the annual conference. *n* = 113 participants completed the survey online. *Interactions with Patients About Skin Cancer* Participants screened patients for skin cancer 49% of the time. 51.8% reported diagnosing a patient with skin cancer. Topics discussed with patients: sunscreen usage, tanning beds, family/personal history of melanoma, history of severe sunburns, risks associated with an increased number of moles, and annual checkups. *Barriers to Performing Melanoma Assessments* Time limitation (46.3%) Lack of access to dermoscopy equipment (33.1%) Inappropriate setting (30.9%) Inadequate skills (24.6%) *Skin Cancer Educational Experiences* Advanced education curriculum (75%) Continuing education programs about melanoma (22.4%) 84.2% would like additional learning activities about melanoma • 91.1% expressed interest in the learning activity if continuing education unit credit was available.	

					Desired Educational Initiatives Pocket reference guide (52.2%) Online learning activities (46.3%) Chapter meeting presentations (44.5%) *Desired Content in Education* ABCDE and AWARE acronyms Resources to find free community skin cancer screenings FDA's newest recommendations related to sunscreen.	
Rogers, T., Marino, M. L., Dusza, S. W., Bajaj, S., Usatine, R. P., Marchetti, M. A., & Marghoob. A. A. (2016). A clinical aid for detecting skin cancer: The triage amalgamated dermoscopic algorithm (TADA). *Journal of the American Board of Family Medicine, 29*(6), 694-701. https://doi.org/10.3122/jabfm.2016.06.160079	Provide participants with an algorithm to diagnose abnormal skin lesions and compare the diagnostic results of participants who have more and/or less training/experience.	Cross-sectional, observational	*N* = 200 eligible attendees participating in a 3-day dermoscopy course Study took place on the second day of the course. Classroom sessions covering benign and malignant lesions and a tutorial on the TADA algorithm and worksheet.	**Measurement:** The triage amalgamated dermoscopic algorithm (TADA), included 3 levels designed to detect pigmented and non-pigmented skin cancers. *Level 1:* Determine if lesion was an unequivocal, benign lesion (angioma, dermatofibroma, or seborrheic keratosis). *Level 2:* Assess for presence of architectural disorder *Level 3:* Evaluate for remaining criteria	*N* = 120 attendees Female, *n* = 64 Medical specialties other than dermatology, *n* = 64 Family medicine, *n* = 41 >50 attendees (43.3%) reported no previous dermoscopy training TADA Sensitivity: 94.8% (95% CI, 93.9% - 95.5%) Melanoma sensitivity estimate: 94% TADA Specificity: 72.3% (95% CI, 70.5% - 74.0%) PPV for TADA: 79.9% (95% CI, 78.6% - 81.2%) NPV for TADA: 92.2% (95% CI, 91.0% - 93.3%) Diagnostic sensitivities achieved by individuals with and without previous dermoscopy training were 95.0% versus 93.3%	Level III, Quality B

				(blue-black or gray color, white structures, negative network, ulcer/erosion, and vessels). 50 study lesions were magnified at a factor of 10 (27 malignant and 23 benign lesions). Decision was made to biopsy lesion, refer to specialist, or monitor the lesion. **Outcome:** Completed worksheets were collected to determine sensitivities and specificities.	Participants with prior training had similar diagnostic specificity compared to those without training 76.4% versus 74.1%.	
Rourke, L., Oberholtzer, S., Chatterley, T., & Brassard, A. (2015). Learning to detect, categorize, and identify skin lesions: A meta-analysis. *JAMA Dermatology, 151*(3), 293-301. https://doi.org/10.1001/jamadermatol.2014.3300	Review educational practices that have been used to improve primary care physicians' abilities to effectively recognize and classify skin lesions.	Meta-Analysis	*N* = 37 studies Single group pre-post RCTs Controlled trials	*Population* *Effect of Interventions* Seven educational practices: 1. Lecture 2. Dermatology elective 3. Pamphlet 4. Multicomponent intervention 5. Computer-based learning	*Effect of Population* Four types of learners 1. Medical students; SMD = 1.31 (95% CI, 0.95-1.67) 2. Primary care providers; SMD = 0.45 (95% CI, 0.30-0.60) 3. Laypersons; SMD = 1.40 (95% CI, 0.36-2.45) 4. Residents (family medicine, primary care, and internal medicine); SMD = 0.64 (95% CI, 0.72-1.37)	Level II, Quality A

				6. Audit and feedback 7. Moulage	*Effect of Interventions* 1. Multicomponent interventions, SMD = 2.07 (95% CI, 0.71-3.44) 2. Dermatology elective, SMD = 1.64 (95% CI, 1.17-2.11) 3. Computer-based learning, SMD = 0.64 (95% CI, 0.36-0.92) 4. Formal lecture, SMD = 0.59 (95% CI, 0.28-0.90) 5. Audit and feedback, SMD = 0.58 (95% CI, 0.10-1.07) 6. Pamphlet, SMD = 0.47 (95% CI, -0.11 to 1.95) 7. Moulage, SMD = 0.15 (95% CI, -0.26 to 0.57) Larger effects associated with various interventions for longer durations. Larger effects for dermatology electives and multicomponent interventions. Moderate effects for computer-based learning, lectures, and pamphlets.	
Stratton, D. B., & Loescher, L. J. (2020). Educational interventions for primary care providers to improve clinical skin examination for skin cancer. *Journal of the American Association of Nurse Practitioners, 32*(5),	Review the literature to conclude existing interventions to conduct a clinical skin exam (CSE) that PCPs can implement in their daily practice.	Systematic Review	*N* = 10 articles 2 case studies 1 pilot study 5 QE studies 2 RCTs	<u>*Intervention goals*</u> <u>*Intervention component and activities*</u> <u>*Intervention dosing*</u> <u>*Intervention mode of delivery*</u> <u>*Efficacy and effectiveness*</u>	<u>*Intervention goals*</u> Varied Improve skills, confidence, attitude, and knowledge. Focus on early detection. <u>*Intervention components and activities*</u> Individual-specific activities All 10 interventions had a didactic portion.	Level III, Quality B

369-379. https://doi.org/10.1097/JXX.0000000000000235				CSE outcomes Risk assessment Skin lesion assessment	Four articles with a clinical portion. One article discussed feedback for the from a dermatologist following a referral. One article reviewed group discussion. Zero articles discussed how a head-to-toe skin exam should be completed. *Intervention dosing* Varied for each intervention Most sessions occurred one time. Education sessions ranged from one to three and length of each session ranged from 14 minutes to 6 months. Dosing was unclear for many studies. *Intervention mode of delivery* 7 articles reported face-to-face medium. 3 articles reported virtual medium (website). Observation by experts and face-to-face lectures most common format. Videos were second most common format. *Efficacy and Effectiveness* CSE outcomes • Integrated Skin Examination (ISE) video • Basic skin cancer triage (BSCT) curriculum Risk assessment • High risk groups	

					• Self-reported confidence and knowledge of risk assessment Skin lesion assessment • Sensitivity of detecting malignant melanoma (MM) for trained PCPs vs untrained. • Identification of MM increased after intervention with ABCDE rule	
Wheatley, B. (2018). Improving dermatological screening in primary care. *The Nurse Practitioner, 43*(4), 19-24. Https://doi.org/10.1097.01.NPR.0000531072.96311.44	To enhance providers' skin inspection, detection of abnormal lesions, and improve integumentary documentation for patients who wear a gown during their wellness exam.	QI Project	Three primary care offices located on the coast of Florida Project sample included all patients presenting for an annual/wellness exam.	Pre-intervention baseline data obtained between June and August 2016 Post-intervention data with the implementation of gowns took place between September to November 2016. **Outcomes:** *Skin exposure via patient gowning* *Dermatology referrals* *Skin documentation*	*N* = 67 patients *Skin Exposure via Patient Gowning* Pre-intervention: 24 of 60 place in gown (~39%) Post-intervention: 63/67 (~93%) • Significant increase; by November patient gowning for wellness exam was 100% *Dermatology Referrals* Pre-intervention: 1 referral between June and August. Post-intervention: 24% increase in September; 10% decrease in October; additional 6% decrease in November, but an overall 8% increase at project completion. *Skin Documentation* Pre-intervention: almost 100% via default description of clean, dry, intact, no lesion of concern. Post-intervention: no increase in custom documentation	Level V, Quality B

APPENDIX B

DEMOGRAPHIC FORM

Instructions: Please fill in the information and check the appropriate boxes. Once the form is completed, please return it to the health center director.

PROVIDER INFORMATION

Name: _____

Gender: □ Male □ Female

Age:

□ 18 – 24 □ 25 – 34 □ 35 – 44 □ 45 – 54 □ 55 – 64 □ 65 – 74

Race/Ethnicity:

□ American Indian/Alaska Native
□ Asian
□ Black or African American
□ Native Hawaiian or Other Pacific Islander
□ Hispanic or Latino
□ White
□ More than one race
□ Unknown

Years of Experience:

□ <1 □ 1 – 4 □ 5 – 9 □ 10 – 15 □ 16 – 20 □ >20

Employment Status:

□ Part-time (<40 hrs/wk) □ Full-time (40+ hrs/wk) □ PRN (as needed)

Personal History of Skin Cancer: □ Yes □ No

Family History of Skin Cancer: □ Yes □ No

APPENDIX C

PRE-SURVEY

Instructions: Please complete this survey prior to beginning the INFORMED program. Select the appropriate response for each question. For question 5, use the scale to rate your confidence level for the topics listed in the chart.

Name: _____

1. Did you have any training during school about detecting skin cancer?

☐ Yes ☐ No

2. Have you ever used a web-based program to learn about skin cancer?

☐ Yes ☐ No

3. Have you ever heard of the ABCDE rule?

☐ Yes ☐ No

4. Have you ever heard of the ugly duckling sign?

☐ Yes ☐ No

5. On a scale of 1 – 5 what is your level of confidence in:

(1= no confidence, 3= moderate, 5= complete confidence)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Diagnosing skin cancer					
Distinguishing benign lesions from malignant lesions					
Providing appropriate initial management (referral vs. reassurance) of skin lesions					
Identifying high risk patients for skin cancer					
Performing a skilled, complete skin exam (excluding genitalia/buttocks) for skin cancer screening					
Counseling patients on sun-protective behaviors					
Counseling patients on skin cancer warning signs					
Counseling patients on the risks of indoor tanning					

APPENDIX D

POST-SURVEY

Instructions: Please complete this survey after participating in the INFORMED program. Select the appropriate response for each question. For questions 3 and 4, use the scales provided to rate the topics listed in the chart.

Name: _____

1. Have you ever heard of the ABCDE rule?

☐ Yes ☐ No

2. Have you ever heard of the ugly duckling sign?

☐ Yes ☐ No

3. On a scale of 1 – 5, what is your confidence level (after the program) in:

(1= no confidence, 3= moderate, 5= complete confidence)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Diagnosing skin cancer					
Distinguishing benign lesions from malignant lesions					
Providing appropriate initial management (referral vs. reassurance) of skin lesions					
Identifying high risk patients for skin cancer					
Performing a skilled, complete skin exam (excluding genitalia/buttocks) for skin cancer screening					
Counseling patients on sun-protective behaviors					
Counseling patients on skin cancer warning signs					
Counseling patients on the risks of indoor tanning					

4. On a scale of 1 – 5, please rate the two questions below:

(1= not at all, 2= a little, 3= moderately, 4= very much 5= extremely)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
How much did you like the INFORMED program?					
For your practice, how effective did you find the INFORMED program?					

APPENDIX E

Data Collection Form

Date	Patient Gender	Patient Age	Reason for Visit	Provider	Description of Skin Assessment; Completion Yes/No

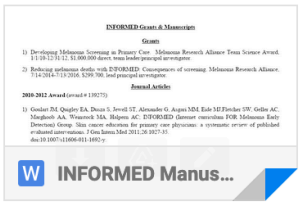
APPENDIX F

Permission to use INFORMED Program

Weinstock, Martin <martin_weinstock_md@brown.edu> Aug 5, 2020, 1:02 PM

to me

Yes, you can use the program as long as any publication or presentation cites the source, and you inform me of the ultimate results ofany evaluation you perform.
Best wishes.



APPENDIX G

Student Health Center Northwest Indiana	**Policy and Procedure**
Owner:	**Policy Origin Date:** 08/01/20
Function: Quality	**Effective Date:** 08/26/20
Department: Student Health Center	**Recommended By:** Health Center Director
Scope: Physician, Nurse Practitioner, Registered Nurse, & Medical Assistant	**Approved By:** Health Center Director
	Approval Date: 08/15/20

Performing a Skin Assessment

Department(s) Affected: Student Health Center

Scope of Practice: Physician, Nurse Practitioner, Registered Nurse, & Medical Assistant

Policy Statement: The performance of a skin assessment is a simple preventive measure that primary care providers (PCPs) can complete to detect abnormal skin lesions for the young adult population. Early detection is critical for PCPs to determine an appropriate diagnosis and management plan (*reassure* vs *refer OR biopsy*).

The INFORMED (INternet curriculum FOR Melanoma Early Detection) program was designed to improve providers' confidence and detection of skin cancers. Ultimately, the web-based, time-effective program seeks to engage participants, improve skin cancer screening, and reduce the mortality rate (Weinstock et al., 2012).

Applicability: A skin assessment will be completed for patients who present for the following purposes: (a) general wellness visit, (b) employment physical, (c) sports physical, or (d) physical examination required by the university for health professional programs.

Equipment:

1. Bright light source
2. Sleeveless patient gowns
3. *Optional:* magnifying glass, camera, dermascope

Educational Requirement:

1. Annual completion of the INFORMED program.
    a. Providers will provide documentation of program completion.
    b. Providers must achieve a minimum post-test passing rate of 90%.
    c. If unable to achieve passing rate, the provider will continue to take the post-test until a score of 90% or greater is achieved.

Procedure:

1. Plan

a. The office staff will receive a copy of the skin assessment policy.
b. The office staff will be supportive of the policy requirements.
c. Providers will complete the INFORMED curriculum.
d. Wall posters will be placed in exam rooms to remind the office staff to provide patients with a gown.
e. A new skin assessment template will be integrated into the electronic health record (EHR) to facilitate easier documentation.
f. The office staff will be informed and provided a handout about changes to the EHR (see attachments below).
g. The office staff will prepare patients for what to expect during their visit.

2. Explanation
    a. The office staff will explain to each patient the significance of receiving a skin assessment.
    b. The office staff will explain to each patient the purpose of wearing a gown during his or her visit.
    c. The office staff will appropriately address patient questions, concerns, or comments.
    d. The patient has a right to refuse a gown.

3. Preparation
    a. The office staff will prepare the examination room and gather necessary equipment prior to each patient's arrival.
    b. The office staff will verify the patient's reason for visit.
    c. Patients who present for the reasons listed above will be given a gown.
    d. The office staff will exit the examination room to allow the patient to undress and gown up.
    e. The office staff will inform the provider when the patient is ready.

4. Completion
    a. The provider will enter the room and complete the appropriate assessment(s).

5. Documentation
    a. The provider will accurately document the assessment.

References:

Weinstock, M. A., Asgari, M. M., Eide, M. J., Fletcher, S. W., Geller, A., Halpern, A., Shaikh, W. R., Marcolivio, K., Li, L., Alexander, G. L., Altschuler, A., Dusza, S., Goulart, J., Groesbeck, M., Landow, S., Marghoob. A. A., Quigley, E. A., Sokil, M., & Warton, E. M. (2012). *INFORMED (internet curriculum for melanoma early detection)*. VisualDx. http://www.skinsight.com/info/for_professionals/skin-cancer-detection-informed/skin-cancer-education

Attachments:

Skin documentation template in the EMR (below).

Skin:

Gown No Gown Patient Refusal

Normal Abnormal --

If applicable, use the ABCDE critiera.

Asymmetry

Border

Color

Diameter

Evolving