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### Optimizing Screening Mammography: Educating Underserved Individuals with Limited English Proficiency

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Optimizing Screening Mammography: Educating Underserved Individuals with Limited English

Proficiency

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### **Abstract**

**Problems:** Culture and language may create huge barriers to the delivery of high-quality care for patients with Limited English Proficiency (LEP) who are seeking breast cancer care, especially in a population that consists of a large proportion of disadvantaged, low income, low English literacy, and high-risk women over 45 years of age.

**Context:** LEP patients' inability to effectively communicate and inadequate knowledge about screening mammography have put them at great risk of receiving additional images during the exam, as well as brought a huge burden to technologists regarding breast positioning.

**Interventions:** A Doctor of Nursing Practice project was implemented to create culturally sensitive and language appropriate patient education materials on screening mammography. This material will benefit LEP patients by teaching enhanced breast positioning skills, body relaxation techniques, and general knowledge on screening mammography.

**Measures:** The metric included a pre-post online interventional participant survey that evaluated knowledge, confidence, readiness, and likelihood to participate in screening mammography in the future.

**Results:** A total of 60 Chinese women (aged 40-65) participated in the online survey. Data analysis demonstrated a 24.82% gain in their knowledge on screening mammography and a 46.82% gain in their understanding of breast positioning skills and body relaxation techniques. Forty-eight (80%) participants indicated the education material has enhanced their knowledge and they would like to use those tips in the future. Fifty-two participants (86.7%) suggested they would recommend the material to other patients.

***Conclusion:*** A culturally and linguistically appropriate patient education material is imperative in increasing the LEP population's knowledge of screening mammography and may promote their willingness to participate in screening programs.

*Keywords:* limited English proficiency, screening mammography, patient education, positioning, bilingual, Chinese

## Section II: Introduction

Cancer demographics in America are culturally diverse, with new immigrants from various cultural backgrounds. Particularly, except for skin cancers, breast cancer is the most common cancer in American women. The American Cancer Society (2020) predicted that in 2020 in the U.S. there will be an estimated 276,480 new cases of invasive breast cancer in women, and 42,170 women will die from breast cancer. Screening mammography is used as the primary procedure for early detection of breast cancer and secondary prevention (Coleman, 2017; Kaplan, Malmgren, Atwood, & Calip, 2015; Kolak et al., 2017). High-quality imaging is required to achieve acceptable images for interpretation by a radiologist and patient satisfaction with the exam. In 1992, The National Mammography Quality Standards Act (MQSA) was passed as a national quality standard for mammography (U.S. Food and Drug Administration [FDA], 1992). The MQSA includes standards relevant to image quality and qualifications of mammography technologists, radiologists, and facilities. These uniform standards assure that mammography performed in the U.S. is safe and reliable. In 2016, the FDA further proposed the Enhancing Quality Using the Inspection Program (EQUIP) initiative to enforce MQSA regulations on continuous review of clinical image quality (FDA, 2016). These criteria emphasize the importance of professional expertise and patient cooperation, which have significant implications for certified mammography facilities.

As ethnic, cultural, and language diversity in America has increased, the number of patients who have LEP has also increased, especially in the past few decades (Hurtig, Czerniejewski, Bohnenkamp, & Jiyoun, 2013). According to the US Census Bureau (2018), 67.3 million people in the United States—roughly 22% of the population—speak a language other than English at home. Patients' inability to communicate effectively can be important

challenges which prevent them from receiving preventive health services, collaborating with healthcare providers, and supporting themselves for better physical and psychosocial well-being (Fang-Yu, Lily, Jeannette, Grace, & Lei-Chun, 2016; Karliner, Hwang, Nickleach, & Kaplan, 2011). In the case of mammography, women from racial and ethnic minority groups who have a limited ability to understand English, are undergoing early cancer screening at disproportionately low rates and are found to have a higher risk of breast cancer (Ridgeway et al., 2020).

Communication barriers may also compromise mammographic image quality and the predictive value of mammography. Understated directions from the radiological technologists during a mammogram may increase the number of images to complete the exam. Additional images can waste resources, expose patients to unnecessary radiation, decrease patient satisfaction, and inhibit efficient workflow (Mercieca, Portelli, & Jadvapati, 2017). Pain, anxiety, and an uncomfortable experience will further affect patients' adherence to breast cancer screening programs (Whelehan, Evans, Wells, & MacGillivray, 2013).

### **Problem Description**

The site for this quality improvement (QI) project is an outpatient breast center that is part of a community safety-net hospital in the San Francisco Bay Area. The center provides breast cancer services for culturally diverse populations in San Francisco. Patients consist of a large proportion of disadvantaged, low income, low English proficiency, and high-risk women over the age of 45. The services provided at the main facility include screening, diagnostic x-ray exams, breast ultrasound, MRI, interventional imaging-guided biopsies, referral for genetic testing, treatment planning, rehabilitation, psychosocial support, and patient education. The center also operates a mobile mammography outreach "MammoVan" on behalf of breaking down the barriers of transportation, access, and health insurance for underserved populations in

its neighboring communities throughout San Francisco. In marginalized populations, it is worth noting that there are certain factors preventing them from participating in early cancer screening and receiving comprehensive breast care. These factors could be transportation problems, financial difficulties, health insurance, poor health literacy, limited language proficiency, or others (Hulme et al., 2016). Even though the “MammoVan” helps break some barriers, communication problems remain a predominant barrier between healthcare providers and the patients.

In a standard screening mammogram, four views are required which include the craniocaudal and mediolateral oblique views in each breast (FDA, 2002). Over six months, observations from the central breast center and its operational mobile mammography van reflected that five to eight views were taken during a routine mammogram in a subset of screening patients which is greater than the standard set of four views. Technologists were consulted and multiple factors were identified that contributed to inadequate screening exams including the patient, technologist, equipment, and physician-related activities and interventions. A cause and effect diagram (see Appendix A) was conducted to analyze the root causes of additional views during mammography. Radiologic technologists were further invited to participate in a survey to determine their reasons for additional views in screening mammography (see Appendix B). The results yielded that patient motion, artifacts, and positioning were the three main reasons for additional imaging in screening mammography. Body habitus of patients, poor visualization of posterior breast tissue, physically limited patient, and inability to adequately communicate with the patient were the top four reasons for sub-optimal image quality related to positioning. Specifically, when dealing with the LEP population, ineffective communication made it very difficult for technologists to position patients, minimize

patients' discomfort, and increase work efficiency during a mammogram.

### **Available Knowledge**

A review of the literature using several databases including the Cochrane Database of Systematic Reviews, CINAHL, PubMed, and ScienceDirect was conducted. To obtain the most current review of the evidence, the search focused on scholarly (peer-reviewed) journals published no earlier than 2013 and written in English. Search terms included the following: screening mammography, image quality, positioning, LEP, quality improvement, and education. The PICO strategy used to review literature was (a) P: Patients seeking screening mammography services, (b) I: LEP patient education packet, (c) C: Current state of practice, and (d) O: Increase patient knowledge and readiness for mammography. The search yielded a total of 64 articles and was narrowed down to 14 articles because they were specifically pertaining to patient quality outcomes and highlighted the significance of the implementation of this QI project. The themes that emerged from the analysis of the literature review were patient experience, image quality, inappropriate positioning, and patient education materials. The Johns Hopkins *Research Evidence Appraisal Tool* was utilized to critically appraise the five articles in this paper (see Appendix C).

**Screening mammography.** Breast cancer remains a critical public health challenge worldwide. Early detection and diagnosis are crucial to maintain a quality of life and to reduce complications in cancer patients. Originated from 1895, over the past hundred years, mammography has seen significant advances to an effective, practical, and reliable method to increase early breast cancer detection rates and reduce disease mortality (Coleman, 2017). It offers benefits for both women and men worldwide. Even though there are some controversies surrounding breast cancer screening programs, serial screening with mammography continues to

be supported by the ACR, which recommends women with average risk should start annual mammography screening at the age of 40 (Monticciolo et al., 2017). Women with higher risks should start mammographic screening even earlier and may benefit from supplemental screening modalities (Monticciolo et al., 2018)

**Patient experience.** Specifically, mammography is a procedure that requires adequate compression on each of the breasts to get qualified images for interpretation (Holland, Sechopoulos, Mann, Heeten, Gils, & Karssemeijer, 2017). Patients may experience pain, discomfort, radiation exposure, and even anxiety during that procedure. In 2015, Clark and Reeves conducted a literature review to explore women's experiences of mammography. The results yielded that except for the influence from pain, fear, waiting, and physical environment, the patient's experience was significantly dependent on the behavior, attitude, professionalism, and interpersonal skills of the technologists (Clark & Reeves, 2015). Whelehan et al. (2013) also reported that women who had a painful experience at a previous mammogram are more likely to fail to re-attend subsequent breast screening. Pain and discomfort can affect women's satisfaction, health outcomes, as well as their adherence to breast cancer screening programs. These studies highlight the necessity of reducing additional views during the screening mammography since those views will lead to the extra compression force, radiation dosage, and pain in patients.

**Image quality.** High image quality is critical in cancer screening and earlier stage diagnosis for patients. Rauscher, Conant, Khan, and Berbaum (2013) conducted a study to examine the potential role of mammogram image quality and its contributor to disparities in breast cancer diagnosis. A total of 494 mammographic images were examined for 268 patients. Results showed higher image quality for technologist-associated indicators was associated with



earlier stage at diagnosis. The considerable gains on image quality could be made through better positioning, compression, and sharpness, which would translate into an earlier stage at diagnosis for patients (Rauscher et al., 2013). Henderson et al. (2015) also reported that technologists and their images had a significant effect on the radiologist's recall rate, sensitivity, specificity, and cancer detection rate of screening mammography. These studies further validate the significance of developing an educational patient packet, by improving patient knowledge on screening mammography and enhancing patient-technologist collaboration, better image quality is expected.

**Inappropriate positioning.** Inappropriate breast positioning is one of the key factors that affect the quality and quantity of mammography images. Popli, Teotia, Narang, and Krishna (2014) conducted a retrospective study to evaluate the mistakes of improperly positioned mammograms that need to be avoided to ensure a high-quality mammogram. Breast images were taken in a total of 1,369 female participants. Results showed positioning is the most important factor affecting the resultant mammography image. Improper positioning of the nipple was the most common problem. Sabino et al. (2014) also conducted a retrospective research study to evaluate the clinical quality of 5,000 mammograms, which were taken along with the Clinical Quality Control Program based on the European Guidelines. Among the 105,000 evaluated quality items, 89% of the failures were associated with positioning. These studies support the need for education on LEP patients, enhancing their body relaxation techniques to achieve better positioning.

**Print material.** Print materials could be an effective way to increase the knowledge of breast cancer and promote mammography screening among patients. Fernández-Feito et al. (2015) conducted a study to explore whether receiving a protocolized nursing intervention can

reduce patient anxiety before breast cancer screening mammography. The protocol included general information on the screening program (e.g. objectives, benefits, procedure) and specific information on the mammography (e.g. length, position, feelings patients may experience). Results showed that providing information about the screening program before the mammography, as well as supporting women during the test, is significant in reducing pain and anxiety during mammography. Another randomized controlled trial study also supported this result by suggesting offering written information about mammography could lower the perceived pain the patient experienced during a mammogram (Alimoglu et. al, 2004).

**Video.** Digital media can serve as another powerful vehicle for communicating information to patients and increasing their knowledge in healthcare (Kotsenas et al., 2018). Goel and O’Conor (2016) tested the effects of a brief video developed for Latina women on breast cancer knowledge and attitudes toward screening mammography. Results showed a great improvement in patients with low baseline knowledge scores and negative/neutral baseline attitudes through utilizing this brief video. Another study was focusing on the Chinese American community (Maxwell et. al, 2010). The purpose of this study was to evaluate the feasibility and utility of education videos and lay health educators in breast cancer screening. Results suggest that the small-group video intervention increased knowledge and positively influenced patients’ cultural beliefs as well as utilization regarding mammography screening. These studies further support the significance of involving digital media such as videos in patient education.

Patient education materials offer many benefits for patients, providers, and payers as healthcare becomes more patient-centered, with patients moving from mere consumers of health services to active participants in their own care. Spoken advice from healthcare professionals can easily be forgotten or misinterpreted. But patient education materials can be accessed repeatedly,

as needed, so their messages are less likely to be forgotten or misunderstood (Kessels, 2003).

Overall, available knowledge validates the significance of creating a targeted educational packet for LEP individuals, by improving their knowledge and readiness for mammography, better image quality and patient experience are expected.

## **Rationale**

**Theoretical framework.** Leininger's culture care theory and Lewin's change management theory guided this evidence-based change of practice project. Originally developed in the 1970s (Leininger & McFarland, 2002), culture care theory is an established nursing theory that emphasizes culture and care as essential concepts in nursing. This theory is frequently used to discover diversities and universalities in human care as they relate to different components, and then provides culturally congruent care to human beings. Together with cultural care theory, Leininger developed the sunrise enabler (see Appendix D), which is used as a cognitive guidance for cultural and healthcare assessment and research. During macrosystem assessment, the sunrise enabler provided a framework for the Doctor of Nursing Practice (DNP) student to obtain new knowledge of the current healthcare expressions (patterns & practices), and the diverse group of LEP patients and multidisciplinary team members within various caring contexts. The outlined seven cultures (technological factors; religious & philosophical factors; kinship & social factors, cultural values, beliefs & lifeways; political & legal factors; economic factors; and educational factors) and social structural dimensions that influence care also helped in discovering variables among each patient/ staff and in identifying personalized learning needs.

Lewin's change management theory (1951) encompassed three distinct phases known as unfreezing, moving, and refreezing, which provide a high-level approach to change. The unfreezing stage involves examining status quo and increasing driving forces for change; the

moving stage involves taking actions and making changes; and the refreezing stages involves making changes as permanent and establishing new way of things (Mitchell, 2013). In the unfreezing stage, through macrosystem assessment, the leadership team identified the needs to increase image quality and optimize screening mammography. The moving phase may include planning, creating, and implementation of the targeted LEP patient educational packet through onsite staff education and outreach clinical partner cooperation. In the refreezing stage, it is significant to establish a feedback system to stabilize the changes in the culture. By developing a patient satisfaction survey and routine feedback from staff members, the central breast center can provide patient-centered care and optimize mammography services.

### **AIM Statement**

By August 2020, the development, implementation, and evaluation of a LEP patient education video will occur at the community safety-net hospital outpatient breast center. The DNP student, the leadership team, and the hospital affiliated educational department will create a culturally sensitive and linguistically appropriate patient education material about better positioning and patient relaxation techniques on screening mammography. This material will be readily available in the central breast center, the mobile mammography unit, the hospital's official YouTube channel, and MyChart Portal (an online and mobile-based patient health record system) to provide accessible information for LEP patients, increasing their knowledge and readiness to receive screening mammography. Two specific objectives are: 1) by August 2020, more than eighty percent of participated LEP women will indicate increased levels of knowledge and readiness regarding screening mammography; 2) by August 2020, more than eighty percent of participated LEP women will indicate the overall usefulness of the multi-lingual LEP patient education material.

### **Section III: Methods**

#### **Context**

In April 2018, a microsystem-based QI project was implemented in the outpatient breast center. A long-term teaching and learning plan was created to help technologists to identify their individual learning needs related to knowledge, skills, and challenges to improve competence and confidence in performing screening mammography. A tech-training packet was compiled and distributed to all participants during a consolidated interprofessional development mammography screening case review and feedback session. Radiologists and technologists provided positive feedback on that tech-training packet and suggested that an educational packet should be created for their patients. Patient navigators and unit support staff also provided constructive ideas about how patient experience might be improved during screening mammography by implementing culturally and linguistically appropriate educational materials.

Seven LEP patients were recruited at the outpatient breast center's waiting room to participate in a short verbal survey assessing their knowledge and learning needs on screening mammography. Sample open-ended questions being asked were: 1) have you ever had screening mammography before; 2) how about your experience on screening mammography; 3) can you fully understand and follow instructions from the technologist. In general, all of those patients had at least one mammogram in the past few years. Some patients had routine annual mammograms for the past two to three years. However, when questioned about general steps during a mammogram, none of these patients could give a clear answer. They claimed they had lots of difficulties in understanding and following the instructions from the technologists due to communication barriers. No one has ever told them or taught them what should they do or not do during the procedure. The only memory they had was that the technologists would manipulate

their breasts, which had created a lot of pain on the breasts. In many instances, they attempted to move their body and position the breasts on their own to help with the procedure. However, that made it even harder for the technologists to complete the procedure and achieve good images. Six of the seven patients claimed they were interested in receiving some education on proper positioning and communication techniques on screening mammography such as videos, brochures, or booklets. All stakeholders including the LEP patients, radiologists, technologists, patient navigators, unit support staff, and clinical partners were receptive to the development and implementation of an educational intervention about mammography.

### **Intervention**

**GAP analysis.** Culture and language diversity of the LEP patients made communication more difficult and created lots of barriers in offering high-quality breast cancer care for this population. With the absence of culturally sensitive and language appropriate recourses, LEP patients may have limited understanding of health information and limited engagement in health care. Healthcare professionals may also feel frustrated and unsupported by the organization. In response to those concerns, there is a necessity to create easy-access educational content to help LEP individuals and healthcare professionals with breast cancer screening (see Appendix E for Gap analysis).

**Planning the intervention.** In response to their requests, focus groups and other content development and multicultural resources were searched for in San Francisco Bay Area community hospitals, organizations, and patient advocacy or service groups. A culturally sensitive and language appropriate patient education video was considered to be designed for LEP patients about better positioning and relaxation techniques on screening mammography.

The DNP student was responsible for planning, engaging, cooperating, and disseminating the video inside the hospital and outside to the clinical partners in the San Francisco Bay Area.

Literature was searched on the filmmaking process. Tomaric (2008) developed a book that teaches readers about the entire filmmaking process from initial concept to a finished project, covering writing, pre-production planning, shooting, and post-production editing and effects. Based on its instruction, a comprehensive video production plan was created including purpose, audience, message, budget, timeline, distribution, concept, location, actors, equipment, and crew (see Appendix F). A storyboard of the video was also created for demonstration purposes (See Appendix G).

This DNP project was intended to be implemented in Summer 2019; however, the agency was introducing a new electronic health record (EHR) system and did not allow students to complete projects at the facility during that time. The DNP student initially contacted with the facility in August 2019, but the contact was delayed due to a change in leadership. The new director of the department was contacted in November 2019 and the DNP student and her DNP chair had an in-person meeting with the director at the agency on November 22<sup>nd</sup>. The new director showed a strong interest and was willing to support this DNP project's implementation. A summary report of the patient needs assessment and a literature review was generated and sent to the communications director of the facility to get additional approval for the implementation of the project.

Additionally, the DNP student had several contacts within the Media Service Department and Media Study Department at the University of San Francisco (USF) regarding assistance with creating a video for the project. An in-person meeting with a senior instructional technologist at USF's instructional technology and training department was conducted on September 19<sup>th</sup>, 2019

regarding collaboration in video production. During the meeting, the technologist indicated the Media Service Department could help with on-campus video shooting but usually not off-campus. They were able to offer students photography equipment such as video cameras or microphones to support self-shooting. He suggested it would be better to find a media student or ask for some support from the Media Study Department.

The DNP student then contacted the chair of the Media Studies Department and introduced the project and the idea of creating a patient education video. The chair referred the DNP student to the director of film studies and two other professors who were teaching service-learning courses this semester for video production assistance. A job description form was developed and distributed to media study students by one of the professors to seek volunteers who might be interested in this project. However, no students responded or were available to assist with video development during that time.

### **SWOT Analysis**

A SWOT analysis was conducted to explore potential areas of strengths, weaknesses, opportunities, and threats prior to project implementation (see Appendix H).

***Strengths.*** One of the main strengths of this project is that it satisfies immediate population needs. There are huge numbers of LEP patients in the San Francisco Bay Area to reach, while a program pertaining to this population does not exist at the community safety-net hospital outpatient breast center. Language barriers have created unique complexities for health professionals when communicating with LEP patients. There is a strong buy-in from frontline staff and the organization to cultivate a safe and culturally sensitive environment for this population. Improved patient education through this project could be a valuable means for LEP patients to obtain knowledge about screening mammography, as well as the health care system,



and the diversity of healthcare providers within various caring contexts. Once the education material is embedded in the mobile electronic health records (EHR) software, patients can access it anywhere in a 24/7 service and be more actively participating in their care. The benefits of this project at the central breast center could extend to the entire organization, which could have the potential to lead an overall improvement in care quality and safety.

***Weaknesses.*** The key weakness of the project is failing to recognize the significant impact that the patient's culture could have on efficiently progressing through the project's milestone. A lack of awareness about safety risks in healthcare, a lack of cultural competency, and a lack of trust in the organization are huge barriers for the successful implementation of the project. Due to the high volumes of patients at the breast center, there is little time for health professionals to utilize targeted LEP patient teaching and education.

***Opportunities.*** The most prominent opportunities resulting from the project involve creating regulations and guidelines to provide culturally congruent care to LEP patients. The outreach and collaboration with various clinics, the central breast center could bring those clinics into the partnership and support them in the local community for continuous quality control and improvement. The mobile mammography program provides an opportunity to extend convenient services into new markets and serve more geographic regions. Underserved LEP patients will have a chance to fully engage in care, as well as have a better experience of breast care. Moreover, mobile technology offers medical practices new flexibility. In the future, once the video is created and upload to the hospital's official YouTube channel, millions of people can review and get benefit from it.

***Threats.*** Likewise, one of the biggest threats to successfully attaining the goals outlined by strategic initiatives is the lack of community participation. San Francisco is a highly diverse

city where each community retains its uniqueness and develops awareness of its own cultural perspective. There is variation in the proportion of consumers and community members that are willing to comprehend LEP patients and enroll in this project. Cultural conflicts and cultural misidentification within different communities would further exacerbate this situation. On the other hand, without appropriate funding in place, there is a risk that the project may not be able to continue.

**Project implementation.** The DNP student was able to access the breast center in January 2020. The intervention arm of this project first started with an informal discussion on the video context with three technologists. Based on this discussion, the DNP student created the very first video script mainly confined to four aspects: 1) General introduction of the hospital and screening mammography (Introduction); 2) How to prepare for screening mammography (Preparation); 3) What to expect once you arrive at the breast center (Arrival); 4) What will happen during the procedure (During the Procedure); and 4) What you should know after the procedure (After the Procedure). This script was reviewed and revised four times with each technologist and finally confirmed by the charge technologist and the director. Particularly, to protect the privacy and facilitate video shooting, the leadership team decided to use a “mock patient” from their own staff instead of recruiting a real patient. After discussion, one of the technologists volunteered to be the “patient” and the charge technologist committed to be the “technologist” in the video.

In addition, in February 2020, through the introduction and referral by the director, the DNP student did a site visit at the North East Medical Services’ accredited radiology department. The radiology department has created a multilingual (English, Mandarin, and Cantonese) mammography screening education video that is readily available in a handheld iPad. Patients

can borrow this iPad and watch these videos while waiting if they did not previously experience a mammogram. This trip provided valuable experience and gave fresh ideas to the DNP student about how to design and create a culturally sensitive and linguistically appropriate patient education video.

With the absence of a response from the Media Study Department and the media study student at USF, the DNP student searched for support and resources inside the organization. The DNP student contacted the hospital IT administrator who is responsible for simulation training programs, video & media productions, and learning center IT support. The IT administrator and the education coordinator, who is in charge of patient education and health literacy, were very interested in the project and met with the DNP student to discuss the feasibility and usability of this project. In compliance with the hospital's vision, mission, and values to provide the best care for patients, the Department of Education and Training committed to support this project. The IT administrator suggested creating three videos separately in English, Chinese, and Spanish to satisfy more population needs. The video script confirmed by the outpatient breast center was further edited by the Department of Education and Training to adjust the appropriate language and literacy level for the patients (see Appendix I). After revision, the final script was sent to a collaborative language translation agency and translated into Chinese and Spanish. The DNP student reviewed the Chinese script with a native Chinese speaking woman and made some edits on the translation to improve its coherence. Please see Appendix J for the translated script in Chinese.

Due to the COVID-19 pandemic, on March 10<sup>th</sup>, the hospital decided to halt all nursing and nursing allied health student placements on their campus in order to allocate their resources. The DNP student was informed by the director not to report to the breast center starting on

March 11<sup>th</sup> 2020. After discussion with the DNP chair, the DNP student negotiated with the leadership team and they consented to complete the video during this special time while the DNP student was unable to be physically present. However, the schedule has been delayed multiple times either due to time conflicts or unavailability of hospital staff. According to the director, through April to May 2020, most schedules for screening mammography were canceled at the outpatient breast center and 80% of the technologists were re-assigned to the main hospital. Following social distancing guidelines, it was not really possible for the video shoot to occur. In June 2020, the DNP student did another follow up with the director when the student was informed that the technologists returned to work at the breast center. The director and the charge technologist had a discussion and were still concerned about the exposure risk to both the camera crew and the local staff as they were limiting visitors onsite. For safety reasons, the DNP student and the leadership team decided to hold the video shoot until the pandemic is over and guidelines are relaxed.

To complete the project, the alternative solution was to create a pictorial instructional patient education brochure (Appendix K) based on the finished script instead of creating a video. For project evaluation, the DNP student proposed to recruit some “potential patients” from China and test the effectiveness of the brochure by utilizing an online survey. In compliance with the American College of Radiology’s guidelines that annual screening mammography for women should start at the age of 40 (American College of Radiology [ACR], 2020), the inclusion age range for recruited participants was expected from 40 to 65. After a discussion with a key informant who was a member of the Ningxia Cheongsam Association, the association’s members were determined to meet the criteria and would be invited to participate in the review of the patient education brochure. The Institutional Review Board (IRB) exemption was obtained in

July 2020 for the recruitment of participants and the questionnaire used for participants to review the patient education brochure (Appendix L).

The Cheongsam, also known as the Qipao, is a type of feminine body-hugging dress with distinctive Chinese features of Manchu origin (see Appendix M for Cheongsam examples). In China, Cheongsam is a symbol of the elegance and beauty of women in China and favored by Chinese people. The Ningxia Cheongsam Association aims to study, explore, preserve, and promote China's traditional clothes culture, provide qipao enthusiasts with a communication platform, and revive women's culture. Every week, they offer different activities such as cheongsam runway walk, body shaping, Chinese etiquette training, flower arranging, etc. According to the key informant, an associator at the Ningxia Cheongsam Association, most of their members are middle-aged and senior women who are over the age of 50.

In China, most people only communicate through the WeChat app when messaging, making calls, planning events, or organizing groups. It combines Facebook and WhatsApp into one app but offers more features such as QR coding and capture, gaming, geolocation searching, blog posts (Moments), brand channels, mobile commerce, and much more. The Ningxia Cheongsam Association also uses WeChat groups to send messages, publish newsletters, and arrange activities. The platform could be easily used for the DNP student to disseminate the online patient education survey to targeted populations at the association through the WeChat app.

### **Project Timeline**

The timeline for this DNP project extended from September 2018 to August 2020. In September 2018, the new project idea was developed and approved by the project committee chair and members. The DNP student met with the main stakeholders at the outpatient breast

center and identified goals and objectives to team members in December 2018. Due to leadership change, the DNP student was unable to connect with the breast center until Fall 2019. In November 2019, the DNP student and DNP chair met with the new director in person and had her support to implement the project at the outpatient breast center. In January 2020, informational interviews were conducted with all technologists and several patient navigators. An initial video script was created, reviewed with each technologist, and confirmed by the charge technologist and director. The project plan and the video script were discussed with the Department of Education and Training to seek budget and support for a 5-minute multi-language patient education video about screening mammography. Upon approval, the script was further revised and adjusted to the appropriate language and literacy level for patients by the Department of Education and Training, and then translated into Chinese and Spanish. Due to the COVID-19, the video shooting was canceled from March to May 2020. The leadership team decided to hold the shooting until the pandemic is over based on a discussion in June. As an alternative, the DNP student created a pictorial instructional patient education brochure based on the translated script instead of the video. In July, an online pre and post evaluation survey embedded with a pictorial instructional patient education brochure on screening mammography was designed and disseminated to a cohort of recruited participants from China. Survey results were collected and analyzed in July. Final findings and recommendations were presented to the committee members and the USF in August 2020. The detailed chronology for milestone completion (GANTT chart) was listed in Appendix N. The work breakdown structure was demonstrated in Appendix O.

### **Communication Plan**

Recognizing and understanding differences in patients and team members and using the appropriate communication methods are key to achieving success in this project. Face-to-face

communication was the most utilized method which minimized the risk of misunderstanding and built rapport among project team members. The DNP student had regular site visits at the outpatient breast center twice a week starting in January 2020. Face-to-face communication with each technologist was the key component in gathering their ideas and continually promoting this project. Given the diversity of the project team members, emails were the secondary utilized method in sending important messages and updating project progress with all stakeholders. The phone conversation was widely used in discussing project difficulties and reporting project progress to the DNP chair. Please see Appendix P for the communication plan matrix.

### **Project Budget.**

The associated expenditures of designing, implementing and evaluating this DNP project was mainly related to human resource costs. The project budget was interpreted based on the initial optimum plan (creating the multi-lingual patient education video) as a reference for other organizations that want to implement a similar project. *Cost.* Resources required included a dedicated number of hours for the team identifying and developing the content of the video, time for staff meetings and communication, time for videotaping and production of the multi-lingual patient education video, and time for dissemination and evaluation of the video. The total proposed budget was \$15,227 as outlined in Appendix Q. The DNP student was responsible for leading and managing the project in all phases, which requires 135 hours of volunteering time. To make a reference for other organizations that want to replicate this project, the 135 hours were multiplied to a nurse practitioner's hourly salary rate of \$95.46 (San Francisco Department of Human Resource, 2020) and totals to \$12,887. Similarly, the average hourly wage for the supervisor (2470 Diagnostic Imaging Technologist IV), technologist (2467 Diagnostic Imaging Technologist I), patient navigator (2303 Patient Care Assistant), IT administrator (1095 IT

Operations Support Administrator V), and education coordinator (2593 Health Program Coordinator III) approximates to \$61.58/hour, \$54.93/hour, \$32.64/hour, \$59.39/hour, and \$54.16 separately (San Francisco Department of Human Resources, 2020). Video production could cost about 10 hours, which includes 2 hours' videotaping in the outpatient breast center and 8 hours' editing by the IT administrator. After all the three videos (English, Chinese, and Spanish Version) are finished, the Department of Education and Training will upload the video packet to its official YouTube Channel, embed it to MyChart Portal, burn it into DVDs (which can be played in the patient waiting room and on the mobile MammoVan) and print its QR code with patient reminder letter, ensuring all patients and healthcare providers can easily access to the information. **Benefits.** By increasing patient knowledge and readiness on screening mammography, this project has the potential to decrease unnecessary images and increase workflow. Currently, the center provides approximately 3,000 on-site 2D screening breast-imaging studies annually. Most of the patients are low-income women over the age of 45 who are covered by the Medicare program. According to GE Healthcare (2019), the hospital outpatient reimbursement for a 2D screening mammogram, bilateral is \$94.47 under the Medicare Physician Fee Schedule (reflects national rates, unadjusted for locality). The loss of revenue from four additional views (equals one standard screening mammography) every day will amount to approximately \$2,834 per month or \$34,008 annually. On the other hand, the average time for a technologist to perform a screening mammogram has been estimated to 15 minutes. As discussed, the average hourly wage for a Diagnostic Imaging Technologist is \$54.93 per hour. The time wasted by the technologists in producing four additional views every day could be estimated to approximately \$412 per month or \$4,944 annually fiscal waste. By improving patient experience and understanding, this project has the potential to improve breast



cancer screening rates in vulnerable populations throughout the San Francisco Bay Area. Taking advantage of the “MammoVan”, the outpatient breast center will further increase its revenue, patient volume, and capacity. More importantly, this project can affect society at the macro level by improving the general public’s knowledge and awareness on screening mammography. Just by one-click, people can share this education video with their friends and families anywhere in the world.

### **Ethical Considerations**

The American Nurses Association (2015), Code of Ethics, which includes the ethical principles of autonomy, beneficence, non-maleficence, and justice, guided the author through the development and implementation of this project. The IRB at USF provided an exemption for the project. Since this was a QI project utilizing an online patient education brochure and questionnaire to aid LEP patients and healthcare professions in achieving better image quality and optimizing screening mammography, there were no physically invasive procedures or ethical concerns surrounding the protection of participants or their physical and psychological well-being. Participation is completely voluntary. Neither the name nor any other identifying information was collected or associated with the survey results and the date they provided were anonymous. In addition, readable informed consent wrote in Chinese (see Appendix R) was provided at the beginning of the online survey which included a detailed description of the research procedures and a full explanation of the rights as a research participant. Data was kept securely in the online survey company and no one could access it except for the researcher.

### **Study of the Intervention**

The principal aim of this project is to optimize and increase the positive predictive values of screening mammography. However, this is a long-term consequence and cannot be measured

at this point. Instead, the selected short-term goal was to increase LEP patients' knowledge and readiness on screening mammography through an education brochure teaching enhanced breast positioning skills, body relaxation techniques, and general knowledge on screening mammography. Specifically, a simple demographic survey, a pre-post screening mammography survey, and a separate brochure survey were selected as the method of data collection (see Appendix S for whole surveys). Demographic data (age, mammography experience) of the women participating in the survey was collected which helped in presenting a picture of the participants and their perception on attending a screening mammogram. Quantitative data was collected to gain a complete understanding of the effectiveness of the intervention. In particular, Likert-type scales were used in designing the pre-post questionnaire since this method is frequently used in medical education research to assess the performance after an intervention (Sullivan & Artino, 2013). However, Likert-type scalar data does not involve parametric statistics but relies instead on the ordinal nature of the data. To present data efficiently, values were assigned to each response in the survey, allowing the researcher to report a single average response for each category. When numerical values were assigned, descriptive statistics could also include a mode or median for central tendency or frequencies for variability. Converting the data to a single number made it much easier to draw comparisons and contrasts across the different categories.

### **Measures**

**Demographic survey.** The survey was created online through a questionnaire platform operated by Tencent (also the parent company of WeChat app, survey link: <https://wj.qq.com/s2/6623903/e649/>). The first question was the readable research informed consent with two selective answers: "I consent" and "I do not consent". This question was made

as a required response so participants could not move to the survey without answering this consent question. However, if someone completed the survey but answered “I do not consent” to the first question, the results were considered invalid and would not be analyzed. The second question collected age information and responses were categorized into four age groups (<20, 20-39, 40-65,  $\geq$  66). As discussed above, based on the ACR’s guideline, the inclusion age range for recruited participants was expected from 40 to 65. Therefore, only the survey results from this age group were collected and analyzed. An advantage of the Tencent questionnaire platform was, it assigned each participant an un-repeated personal number (as 1, 2, 3, 4, 5, 6...) but did not contain information to identify them. The researcher was able to go through each completed survey separately and exclude those surveys that did not meet the above criteria. Lastly, the third question in the survey asked about mammography experience with a possible answer of “Yes”, “No”, and “Don’t know”.

**Pre and post-screening mammography survey.** This metric assessed knowledge and readiness in LEP populations regarding screening mammography. Questions were designed into five categories: 1) Knowledge on screening mammography; 2) Before the procedure; 3) During the procedure; 4) After the mammogram; and 5) Confidence or readiness for screening mammography. These questions were graded on a 5- point Likert-type scale with a rank order of: not at all (1 point), little (2 points), somewhat (3 points), much (4 points), and a great deal (5 points). Participants were able to review the pictorial patient education brochure after the pre-survey and re-fill the same questions (post-survey) after their review. This repeated-measures design made the associated statistical analyses more powerful and required considerably smaller sample sizes than other types of analyses. A comment section was provided after the post-survey

plus one more question seeking their likelihood to participate in screening mammography in the future.

**Brochure survey.** The second metric assessed whether the participants liked the pictorial education brochure and felt it was useful. A total of five questions were asked and graded on a 5-point Likert-type scale with a rank order of strongly disagree (1 point), disagree (2 points), neutral (3 points), agree (4 points), and strongly agree (5 points). A comment section was also provided after this brochure rating survey for additional feedback.

### **Analysis**

The online survey was distributed to the Ningxia Cheongsam Association's WeChat group with the help of the key informant and automatedly collected by the Tencent online questionnaire platform. In particular, the platform offered statistical charts and graphs to view results including the subtotal and percentage for each response. It made it easier for the researcher to visualize and compare each single repeated question in the pre and post-survey. However, the platform did not offer a calculation for the mean response values and present change graded on the Likert-type scale. Therefore, survey data were exported to Microsoft Excel and the mean scores were calculated in addition to the percent change in each survey item to reflect the impact of the intervention. Column charts were used to display both pre and post-survey mean responses to facility visualization of the captured data. Written answers were manually transcribed for the comment area.

### **Section IV: Results**

A total of 81 surveys were collected online through the Tencent questionnaire platform from July 18<sup>th</sup> to July 21<sup>st</sup>. All participants completed the entire survey and agreed on the first

informed consent question. Therefore, all results were considered valid and used for data analysis.

**Demographic survey.** The first demographic survey showed 21 participants (25.9%) between the ages of 20-39 years and 60 participants (74.1%) 40-65 years old. Overall, 63 women (77.8%) had previous experience with mammography; 16 women (19.8%) did not have any experience, and two women (2.5%) indicated that they didn't know about their past experience. In particular, for participants aged between 40-65 years of age, 50 (83.3%) had related mammography experience and nine (15%) had no experience.

**Pre and post-screening mammography survey.** As discussed, the inclusion age range for recruited participants was from 40 to 65. Therefore, only 60 participants' responses were used for pre and post-intervention evaluation. Please refer to Appendix T for a detailed distribution and comparison pie chart for each response in the pre and post questions. Mean scores and percent change were calculated based on the Likert-type scale and displayed in the following Table.

Table 1

*Mean Scores and Percent Change for Each Question in the Pre-Post Screening Mammography Survey*

Category	Basic Knowledge			Before	During the Procedure			After	Readiness
	Q 4/14	Q 5/15	Q 6/16	Q 7/17	Q 8/18	Q 9/19	Q 10/20	Q 11/21	Q 12/22
Pre Avg	2.117	2.017	1.717	1.700	1.433	1.700	1.667	1.617	2.933
Post Avg	2.367	2.517	2.367	2.383	2.283	2.400	2.333	2.367	3.100
Percent Change	↑11.81%	↑24.79%	↑37.86%	↑40.18%	↑59.32%	↑41.18%	↑39.95%	↑46.38%	↑5.69%
	Avg ↑ 24.82%				Avg ↑ 46.82%				

In general, all questions had an increase in the mean score which demonstrated improved knowledge and readiness for screening mammography from “not at all” to “a great deal”.

Question 8/18, inquiring how many images the technologists usually took on each of the breasts, showed the greatest percent increase (59.32%) pre to post-survey from 1.433 to 2.283 in the mean score. Question 12/22 showed the smallest percent change which inquired the participants about their readiness/ confidence in receiving screening mammography. Specifically, 37 (61.6%) participants in the pre-survey and 41 (68.3%) participants in the post-survey indicated they have more than moderate's confidence/readiness in attending screening mammography. A total of 57 (95%) participants suggested they plan or probably plan to participate in a screening mammography program in the future. Only two participants (3.3%) claimed they will not take part in the screening program and one participant (1.7%) said she was not sure about attending or not.

**Brochure survey.** The brochure survey data evaluation revealed participants responded most positively to the survey questions. In particular, 46 participants (76.6%) agreed or strongly agreed that the brochure concepts were clearly explained and easy to understand (Mean = 3.883 SD = 0.825). Forty-eight (80%) participants claimed the education brochure has enhanced their knowledge on screening mammography (Mean = 3.950, SD = 0.699) and they would like to use those tips in the future (Mean = 3.883, SD = 0.715). Forty-seven (78.4%) participants indicated the brochure might help release their anxiety during the exam (Mean = 3.933, SD = 0.660) and 52 participants (86.7%) participants suggested they would like to recommend the brochure to other patients who will experience a screening mammogram (Mean = 4.017, SD = 0.596). Please refer to the column charts (Appendix U) for response distribution in each question.

**Additional feedback.** In the pre-intervention survey, three collected comments were, "It's important to care about our own body", "This is a good survey, it should be further popularized", and "There is no consistent healthcare provider I could see, I just check my breast

once every few years”. Several participants included comments in the post-survey and brochure survey. One participant stated, “Through those pictures, I got to know the start age and methods to do screening mammography”. Two participants commented “nice” to the brochure survey; one participant suggested the brochure could have more details and be easier to understand; one participant proposed to strengthen the publicity of the brochure to improve more women’s awareness, and another two participants commented that the brochure was very meaningful and practical to use.

## **Section V: Discussion**

### **Summary**

While there was some variance amongst the participants, overall, results indicated that this culturally sensitive and language appropriate patient education material does increase women’s knowledge and readiness on screening mammography. Specifically, data analysis demonstrated a 24.82% gain on screening mammography knowledge, a 40.18% gain on the capacity to prepare for an exam, a 46.82% gain in understanding breast positioning skills and body relaxation techniques, and a 46.38% gain in perception on follow up mammography. Most participants provided positive feedback on the education brochure and indicated they would like to use those tips during their exams and recommended the brochure to other patients who will experience a screening mammogram.

Interestingly, when analyzing each survey, the DNP student found some participants gave the same answers for the same questions located in the pre and post-survey. For example, the question below (Table 2) asked the participants if they knew what screening mammography was. In the pre-survey, 20% of participants indicated they knew nothing about screening mammography. However, after reviewing the education brochure, there were still 18.3% of

participants that indicated they knew nothing about screening mammography in the post-survey.

Possible reasons for this situation could be:

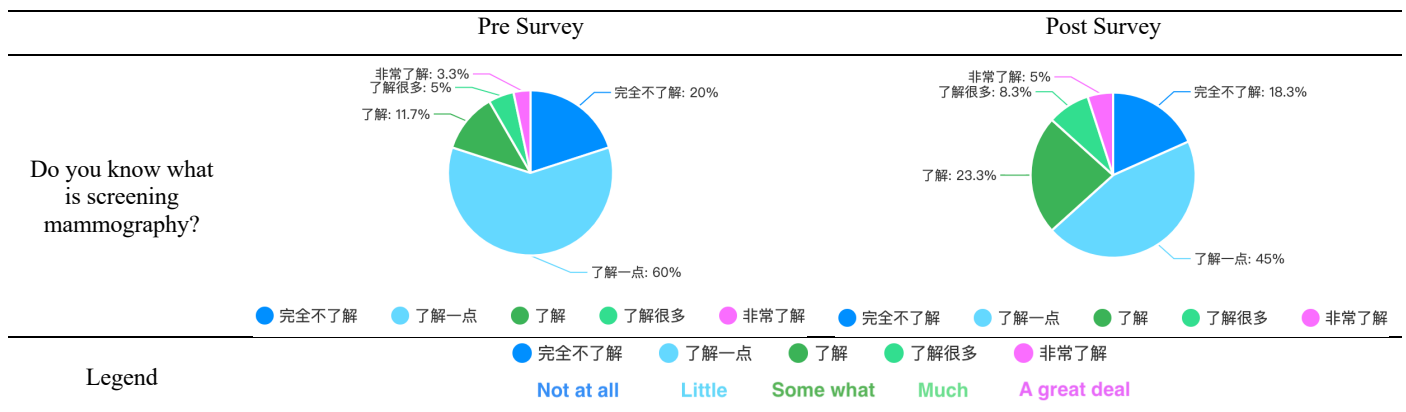
1) the participants did not understand how the pre and post-survey worked or got confused when the same questions appeared again. They repeated the choices from the pre-survey and ignored the information they gained from the brochure;

2) the participants did not carefully look through the brochure, skipped the brochure, or even randomly chose the answer in order to fill out the survey rapidly. To avoid misunderstanding, the DNP student fully explained the general steps and survey methods in the informed consent form under “What we will ask you to do”. After the education brochure but before the post-survey, there was also a text box stating, “You will be asked to re-fill the same questions you answered before to capture your knowledge gained and the impact of the intervention through the pre and post comparison”.

3) some survey participants may not have read the informed consent form but directly go to the “I consent” checkbox. Therefore, ignoring the consent form would be another underlying factor that led to the above situation.

Table 2

*Pre and Post-Survey Results Comparison on the First Question*



**Interpretation**



Overall, this project has achieved its key objectives and is considered to be practical and sustainable. Through observation on the mobile mammography van, review of the literature, interviews with important stakeholders, surveys of onsite LEP patients, and collaborating with affiliated departments and using outside resources, the DNP student was able to design culturally sensitive and language appropriate patient education material for the outpatient breast center. A report including a feasibility analysis summary, recommendations, and next steps for future implementation was sent to the breast center and the Department of Education and Training in August 2020. Due to the COVID-19, the initial optimal plan in creating a multi-lingual patient education video was not able to be carried out. However, the leadership team can understand the positive value from the report and decide when to move forward with the video production. The DNP student will follow up with the breast center periodically until the video is completed.

In the feasibility analysis, recommendations were drawn from local and broader contexts. Within the organization, this targeted patient education material has several benefits in addressing LEP patients' concerns that keep them from getting regular mammograms and unfavorable experiences during that exam. The implementation of this project is a valuable tool for local staff members to obtain new knowledge about their patients who come from diverse cultures and integrate the best available evidence, including research findings, into practice decisions. In a broader context, as the prevalence of the foreign-born and immigrant population in America increases, it is becoming more commonplace for healthcare providers to encounter a large number of LEP patients. Clinicians should realize that the quality and safety of breast cancer care are compromised in this population due to cultural and language barriers, which has created unique complexities when communicating with LEP patients. Compared with English-speaking patients, LEP patients are more likely to experience compromised health care and

safety events caused by insufficient communication (Wasserman et al., 2014). This is especially critical in breast screening facilities that serve populations where culture and language are barriers to optimal breast screening and thus early detection and prevention of breast cancer. Targeted outreach and individualized education need to be designed to improve patient understanding of screening mammography, improve communication between patients and healthcare providers, and involve the patients in decision-making related to their breast care. The creator must be creative, flexible, and sensitive in the use of language, images, and video graphic design to address the variety of audiences and uses of such patient material.

### **Limitations**

This study has some limitations. Firstly, all participants were recruited from China but not America. Different from the United States, in China, people do not have their own family doctors and used to seek healthcare services as needed. There is also no national screening program or national screening guidelines on mammography. Women might never have a screening mammogram or have a chance to know screening mammography in their whole life. However, in America, especially in the outpatient breast center, most patients were covered by the Medicaid or Medicaid and were qualified for free screening mammography services annually or biennially. They probably had more experience or knowledge on screening mammography than women from China. Therefore, the generalizability of our findings may be limited and may not represent the reality at the breast center. In addition, due to COVID- 19, the initial optimal video plan was alternated by a pictorial education brochure. According to Edgar Dale's Cone of Experience (Dale, 1969), after two weeks of learning, we can remember 10% of what we read (e.g., reading a brochure); 20% of what we hear; 50% of what we see and hear (e.g., watching a video); 70% of what we say (e.g., getting involved in discussion); and 90% of what we say and

do (see Appendix V). Therefore, using a brochure may not be as favorable as a video in learning and may compromise the survey results.

### **Conclusion**

Breast cancer care requires an interprofessional approach with highly knowledgeable and skilled team members (Sorace, Harvey, Syed, & Yankeelov, 2017). Early detection and diagnosis are crucial to obtain cures, quality of life, and to reduce complications in cancer patients. The proposed targeted patient education material will benefit patients by teaching enhanced body awareness and patient positioning techniques to provide a better radiological image, increase the positive predictive value of mammography, and improve patient satisfaction. Ultimately the goal of increased mammography screening rates in LEP patients should be achievable to save lives and to decrease disparities in care for underserved women.

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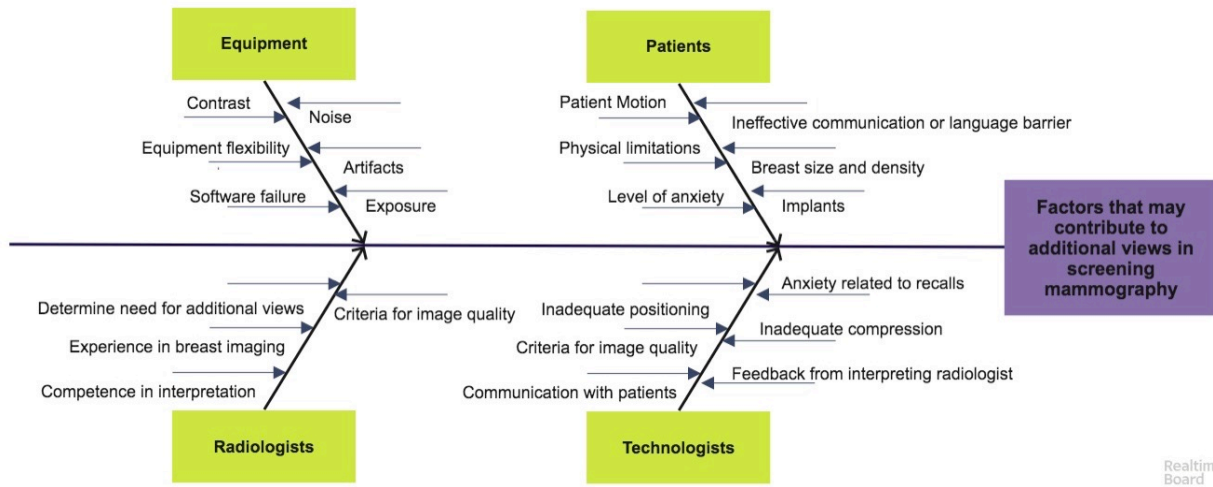
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## VII. Appendices

### Appendix A

#### Root Cause and Effect Diagram



## Appendix B

**Technologist Learning Needs Assessment Survey — Page 1**

**Technologist Learning Needs Assessment — Screening Mammography**  
 (The purpose of this survey is to support technologist education in the breast center)

1. Are you interested in learning more about the technologist role in screening mammography?

Yes (What are your priority learning needs?) \_\_\_\_\_

\_\_\_\_\_

No \_\_\_\_\_

2. How do you prefer to learn?  
 (Please rank preferred method from 1-5, 1-most preferred, 5-least preferred)

a. Self-study

1. book 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

2. video 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

3. social media 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

4. phone apps 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

5. other \_\_\_\_\_

- b. One-to-one feedback from a mammography positioning subject matter expert technologist

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

- c. One-to-one feedback from a breast radiologist

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

- d. Attend class on mammography positioning

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_

- e. Other \_\_\_\_\_

3. Based on your past positioning experience, please circle 3 main reasons for repeated images in a screening mammogram:

a. Patient motion    b. Exposure    c. Sharpness    d. Contrast    e. Artifacts

## Appendix B (continued)

**Technologist Learning Needs Assessment Survey — Page 2**

- f. Positioning      g. Noise      f. Incorrect labels      g. Equipment failure  
 h. Other \_\_\_\_\_

4. Regarding mammographic positioning for a routine 4 view screening mammogram, please rate the reasons for sub-optimal image quality related to positioning: **(Please rank the top 5 reasons with 1 being the most important reason in your opinion)**

- a. \_\_\_\_ Poor visualization of posterior tissue  
 b. \_\_\_\_ Portion of breast not present on the film  
 c. \_\_\_\_ Sagging breast (cutoff bottom of breast on film for RT MLO)  
 d. \_\_\_\_ Inadequate amount of pectoralis major muscle on image  
 e. \_\_\_\_ Excessive exaggeration on the craniocaudal view  
 f. \_\_\_\_ Skin folds  
 g. \_\_\_\_ Nipple not in profile  
 h. \_\_\_\_ Height differences between the patients and the technologist  
 i. \_\_\_\_ Body habitus of patient  
 j. \_\_\_\_ Physical disability patient (special needs patient)  
 k. \_\_\_\_ Inability to adequately communicate with the patient (language barrier, mental status, etc)  
 l. \_\_\_\_ Large breasts  
 m. \_\_\_\_ Small breasts  
 n. \_\_\_\_ Inadequate compression  
 o. Other \_\_\_\_\_

5. Please share one request or personal learning need that you have related to screening mammography education for technologists.

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Name: Optional \_\_\_\_\_

Thank you  
 Yao Luo  
 Nurse practitioner student, USF School of Nursing and Health Professions

Appendix C

**JHNEBP Research Evidence Appraisal Tool**

STRENGTH of the Evidence	
<b>Level I</b>	Experimental study/randomized controlled trial (RCT) or meta analysis of RCT
<b>Level II</b>	Quasi-experimental study
<b>Level III</b>	Non-experimental study, qualitative study, or meta-synthesis.
<b>Level IV</b>	Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)
<b>Level V</b>	Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

QUALITY of the Evidence		
<b>A High</b>	Research	consistent results with sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.
	Summative reviews	well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions.
	Organizational	well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable <b>and</b> valid measures
	Expert Opinion	expertise is clearly evident
<b>B Good</b>	Research	reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
	Summative reviews	reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions.
	Organizational	Well-defined methods; reasonably consistent results with sufficient numbers; use of <b>reliable and valid</b> measures; reasonably consistent recommendations
	Expert Opinion	expertise appears to be credible.
<b>C Low quality or major flaws</b>	Research	little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn
	Summative reviews	undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn
	Organizational	Undefined, or poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity
	Expert Opinion	expertise is not discernable or is dubious.

*\*A study rated an A would be of high quality, whereas, a study rated a C would have major flaws that raise serious questions about the believability of the findings and should be automatically eliminated from consideration.*

Newhouse R, Dearholt S, Poe S, Pugh LC, White K. The Johns Hopkins Nursing Evidence-based Practice Rating Scale. 2005. Baltimore, MD, The Johns Hopkins Hospital; Johns Hopkins University School of Nursing.

## Appendix C (continued)

Evaluation Table

Citation	Frame work	Design/ Method	Sample/ Setting	Variabl es Studied and Their Definiti ons	Measure ment	Data Analy sis	Findings	Apprais al: Worth to Practice
Popli, M. B., Teotia, R., Narang, M., & Krishna, H. (2014). Breast positioning during mammography: mistakes to be avoided. <i>Breast Cancer: Basic and Clinical Research</i> , 8. doi:10.4137/bcbr.s17617	None	Retrospective study  <u>Purpose</u> : evaluate the mistakes of improperly positioned mammograms that need to be avoided to ensure a high-quality mammogram	A total of 1369 female patients, who underwent mammography between January 2011 and December 2013  Department of Radiological Imaging, Institute of Nuclear Medicine and Allied Sciences, Delhi, India.	Mistake s in improperly positioned mammogram were assessed in a total of 2691 CC and an equal number of MLO views	Proper visualization of the nipple, the position of the pectoralis major, pectoral-nipple distance (PND), inframmary fold, and adequate coverage of all breast quadrants	Mammographic views were reviewed side by side. A note was made of the nipple profile and if all the quadrants of the breast were adequately visualized. PND was measu	Positioning is the most important factor affecting the resultant mammography image.  Improper positioning of the nipple was the commonest problem, seen in 3.827% of mammograms.	<b>Strengths:</b> sufficient sample size; provide additional evidence in a specific field  <b>Limitations:</b> data analysis tool was not clearly explained  <b>Critical Appraisal Tool &amp; Rating:</b>  JHNEBP L: III, Q: B

						red on both the views		
<p>Fernández-Feito, A., Lana, A., Cabello-Gutiérrez, L., Franco-Correia, S., Baldonado-Cernuda, R., &amp; Mosteiro-Díaz, P. (2015). Original article: Face-to-face information and emotional support from trained nurses reduce pain during screening mammography: Results from a randomized controlled trial. <i>Pain Management Nursing</i>, 16, 862-870. doi:10.1016/j.pmn.2015.07.008</p>	None	<p>Randomized Controlled Trial</p> <p><u>Purpose</u>: to determine whether a nursing intervention protocol that provides verbal information and support to women could reduce pain during mammography</p>	<p>436 Spanish women aged 50-69 who attended a breast screening program</p> <p>Two public hospitals in the north of Spain</p>	<p>Pain Level immediately after the test and 10 minutes later</p> <p>Anxiety before mammography</p> <p>Several potential confounders or mediators of the study association</p> <p>Women's satisfaction with the attention received</p>	<p>A visual analogue scale was used to assess pain level</p> <p>Validated Spanish version of the State-Trait Anxiety Inventory (STAI) by Spielberg</p> <p>A single question with five response options, which ranged from</p>	<p>Qualitative &amp; quantitative variables: Percentages and means (standard deviation [SD]), respectively.</p> <p>Feature comparison of both study groups: Pearson's <math>\chi^2</math> test.</p> <p>The effect</p>	<p>Providing verbal information, as well as supporting the women during the test, is a simple and achievable intervention for nurses and can help to reduce pain during screening mammography</p>	<p><b>Strengths:</b> Robustness findings by using both logistic and linear regression analyses</p> <p><b>Limitations:</b> Great variability regarding the Instruments used to measure pain, which makes it difficult to compare results.</p> <p><b>Critical Apprais</b></p>



					“not satisfied at all” to “very satisfied.”	of the nursing intervention on pain: logistic regressions		<b>al Tool &amp; Rating:</b> JHNEBP L: I, Q: A
Goel, M. S., & O’Conor, R. (2016). Increasing screening mammography among predominantly Spanish speakers at a federally qualified health center using a brief previsit video. <i>Patient Education and Counseling</i> , 99(3), 408-413. doi:10.1016/j.pec.2015.09.007	Assignment video: incorporate the framework of social cognitive theory	<b>Pilot study</b>  <u>Purpose</u> : assess the impact of a 5 min video on screening mammogram referrals and completion	Women ages 40 years or older without a current mammogram  At a federally qualified community health center (FQHC).	Breast cancer knowledge and patient activation, at baseline (prior to any intervention) and after their primary care appointment	Two telephone interviews  Breast cancer knowledge: a 10-item measure in five domains using True/False responses  Patient activation: measured as a continuous score using the 13-Item Patient Activation Measure (PAM)	Descriptive statistics  Chi-square statistics and t-tests  Wilcoxon Rank Sum tests	A brief, pre-visit video significantly increased screening mammography referrals and completion in this mostly Spanish-speaking FQHC population	<b>Strengths:</b> provide additional evidence; consisted of recommendations based on sufficient literature review  <b>Limitations:</b> young sample age; limitation in generalizability; limited in the nature of qualitative data  <b>Critical Appraisal Tool</b>

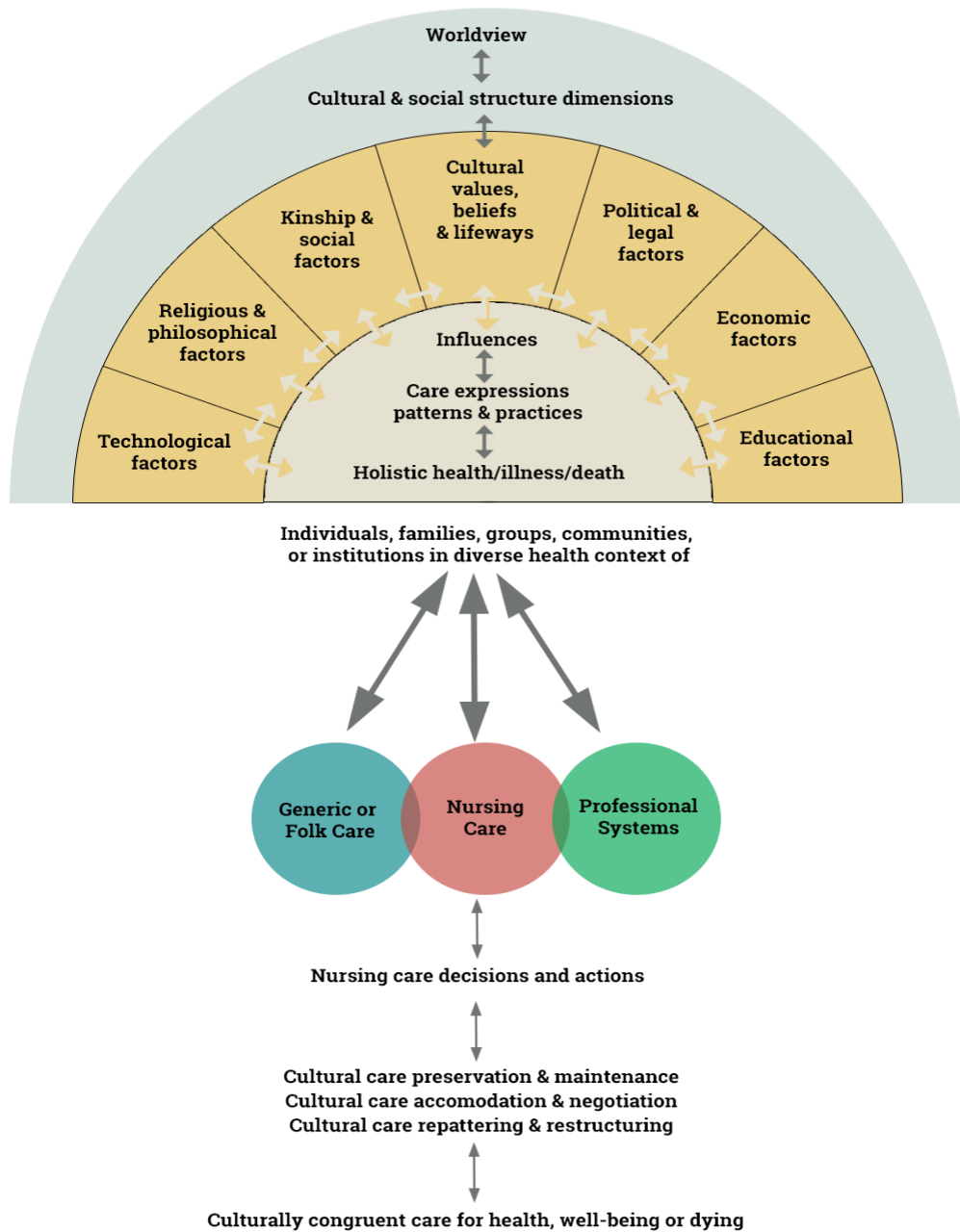
								<b>&amp; Rating:</b> JHNEBP L: III, Q: A
Maxwell, A. E., Wang, J. H., Young, L., Crespi, C. M., Mistry, R., Sudan, M., & Bastani, R. (2010). Pilot test of a peer-led small-group video intervention to promote mammography screening among Chinese American immigrants. <i>Health Promotion Practice, 12</i> (6), 887-899. doi:10.1177/1524839909355550	None	Pilot study  <u>Purpose</u> : Evaluate the feasibility, acceptability and potential effect of a small-group video intervention led by trained Chinese American lay educators	Women who attended a group educational session organized by trained educators  Churches, community-based organizations, and private residences	Knowledge of breast cancer and screening guidelines; perceived susceptibility; barriers to screening; cultural views of cancer and health care; and intentions to obtain a mammogram in the next three months	A short survey immediately before and after the session (using six items selected from a previous study)	McNemar's test for binary measures  Paired t-tests for continuous measures,  Bowker's test for ordinal categorical data	The small-group video intervention increased knowledge and positively influenced patients' cultural beliefs as well as utilization regarding mammography screening	<b>Strengths:</b> consistent with prior literature; provide additional evidence  <b>Limitations:</b> did not include a control or comparison; a selected sample of volunteers  <b>Critical Appraisal Tool &amp; Rating:</b> JHNEBP L: III, Q: A
Fang-Yu, C., Lily Y, K., Jeannette, L., Grace J, Y., & Lei-Chun, F. (2016).	None	Qualitative study  <u>Purpose</u> :	7 HCPs and 16 female LEP cancer survivors	HCPs and LEP cancer survivors'	A web-based questionnaire (Qualtrics) and	Qualitative data analyzed by	The bilingual self-management handbook is	<b>Strengths:</b> provide additional evidence;

<p>Challenges in cancer self-management of patients with limited English proficiency. <i>Asia-Pacific Journal of Oncology Nursing</i>, 3, (3), 259-265 (2016), (3), 259. doi:10.4103/2347-5625.189815</p>		<p>validating the impact of a self-management intervention handbook on LEP cancer patients</p>	<p>HCPs from four different medical facilities; LEP patients from community support groups in San Francisco</p>	<p>feedback about a self-management intervention handbook</p>	<p>paper-based survey/interview</p>	<p>content analysis method</p>	<p>feasible and useful; LEP cancer patients need detailed written instructions</p>	<p>consisted of recommendations based on sufficient literature review</p> <p><b>Limitations:</b> Small sample size; limitation in generalizability; limited in the nature of qualitative data</p> <p><b>Critical Appraisal Tool &amp; Rating:</b> JHNEBP L: III, Q: B</p>
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Appendix D

Leininger's Sunrise Enabler

**Madeleine Leininger's Transcultural Nursing**  
**The Sunrise Enabler to**  
**Discover Culture Care Sunrise Model**



↔  
Influencers

## Appendix E

**Gap Analysis**

<b>GAP ANALYSIS</b>		
<b>DESIRED SITUATION</b>	<b>CURRENT SITUATION</b>	<b>ACTION PLAN</b>
<ul style="list-style-type: none"> <li>• Optimize the best practice in screening mammography in underserved individuals with Limited English Proficiency (LEP).</li> <li>• Healthcare providers know well about their patients who come from diverse cultures and can integrate the best available evidence, including research findings, into practice decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Culture and language has created lot of barriers to the delivery of high-quality care for LEP patients who are seeking breast cancer care.</li> <li>• Currently, there is an absence of culturally sensitive and language appropriate recourses for LEP populations.</li> <li>• LEP patients have limited understanding of health information and limited engagement in health care.</li> <li>• Healthcare professions felt frustrated and unsupported by the organization.</li> </ul>	<ul style="list-style-type: none"> <li>• Targeted outreach and individualized education need to be designed to improve patient understanding of screening mammography, improve communication between patients and healthcare providers, and involve the patients in decision-making related to their breast</li> <li>• The creation of a culturally sensitive and language appropriate patient education material on screening mammography will benefit LEP patients by teaching enhanced breast positioning skills, body relaxation techniques, and general knowledge on screening mammography.</li> </ul>

## Appendix F

## Video Production Plan

SCREENING MAMMOGRAPHY EDUCATIONAL VIDEO < PRODUCTION PLAN >	
<b>1. PURPOSE</b>	<i>Why am I creating this video? What should this video achieve? Is a video the best way to achieve this purpose?</i>
<ul style="list-style-type: none"> <li>● This culturally sensitive and language appropriate patient educational video is on behalf of breaking down the barriers of language, communication, and knowledge for limited English proficiency (LEP) patients receiving screening mammography.</li> <li>● This video will benefit women by teaching enhanced patient positioning/relaxation techniques and knowledge on mammography which will provide better images, increase the positive predictive value of mammography, enhancing clinical workflow, and improve patient satisfaction.</li> <li>● Compared with spoken advice from healthcare professionals or written materials, a video enables convenient access and sharing. It gives patients clear concept clarity, as everything can be visualized and explained in detail. The use of video can be particularly helpful in communicating health information with patients who have limited literacy skills.</li> </ul>	
<b>2. AUDIENCE</b>	<i>Who should this video target? What are the demographics of my target audience? How should my video appeal to this audience?</i>
<ul style="list-style-type: none"> <li>● The Avon Breast Center and its operational mobile “MammoVan” is on behalf of breaking down the barriers of transportation for underserved populations in its neighboring communities. Since AVON started a collaboration with the CPHC (Chinatown Public Health Center) in April 2016, the CPHC quickly became the busiest clinical site that has the largest patient volume and the highest patient show-up rate which serves thousands of LEP patients.</li> <li>● The audiences of this video consist of a large proportion of disadvantaged, low income, low English proficiency, and high-risk women over the age of 45. Most of them are foreign-born immigrants who are not fluent in English and have a limited ability to understand English. Some patients also have inadequate literacy and cannot understand or act on health information designed for the general public.</li> <li>● Targeted outreach and individualized education need to be designed to improve patient understanding of screening mammography, improve communication between patients and healthcare providers, and involve the patients in decision-making related to their breast care.</li> </ul>	
<b>3. MESSAGE</b>	<i>What should viewers learn, think, or feel after watching this video? What message am I trying to send? It is appropriate for my target audience?</i>

## Appendix F (continued)

- Patients can review this video before their appointment day. This kind of preparation video can help outpatients as they prepare for their procedures from how to prepare for a mammogram and what's involved in the procedure, to what should happen after they have their breast images. This video will also cover pain management issues by providing information on better breast positioning and body relaxation techniques. Some common positioning mistakes and how to avoid them will be demonstrated in the video for patients' referrals.
- In the past few semesters, I have been voluntarily rotated in the mobile mammography unit to different clinics to help Chinese patients through translation and navigation. Lots of patients have struggled in positioning when they wanted to collaborate with the technologists. They did not understand when, what, and how to move their bodies to satisfy the position needs and achieve appropriate breast images. This video would be a great help for these LEP patients.

**4. BUDGET**

*What is my budget? What should this budget cover?*

- This is a non-sponsored project. The student is responsible for finding adequate support through internal and external sources.
- Currently, we are coordinating with the USF Media Service Department and Media Study Department. The Media Service Department can help with on-campus shooting or loan equipment to students but we still need to coordinate with the off-campus shooting. On the other hand, the director of the Media Study Department just distributed our recruitment messages to their students. A media study student is expected to help with the shooting. If none of these works, I will recruit people from a commercial video production company.

**5. TIMELINE**

*What is my timeline? How long do I have for shooting? How long for editing and distribution? What are some checkpoints?*

- Once permitted by AVON, before shooting the video, the student will do several days' residence first. A learning needs assessment survey will be designed and distributed to some LEP patients to explore their learning needs about screening mammography. Local staff and leadership teams will also be interviewed about what content they think should be covered in the video.
- The actual shooting is expected to happen in November or December. The shooting time is estimated no longer than a half-day. This could happen after work or on the weekend in order not to affect the normal working flow or disturb routine patients.
- Editing will be finished within 1-2 weeks including dubbing and subtitles. Once finished, the student will hand the video to Avon and SFGH, obtaining their permission to distribute this video to their patients.

## Appendix F (continued)

<b>6. DISTRIBUTION</b>	<i>How will I share or distribute my video to my target audience? Will I burn DVDs or share online like on YouTube?</i>
<ul style="list-style-type: none"> <li>● Once permitted, this video could be placed at the main outpatient breast center, the mobile mammography unit, and all the clinical partners in the geographic catchment area throughout the Bay Area. Family doctors could offer this video when they order or refer their patients for a screening mammogram at AVON. Clinical partners could also provide this video to their patients along with the reminder letter before their appointment. Patients are able to review this video in advance, improving their readiness and knowledge about a mammogram.</li> <li>● The video needs to be burned to a playable DVD to be placed on the dressing/waiting room at the main breast center and the “MammoVan”.</li> <li>● Once uploaded online such as YouTube, a shareable link of the video can be generated as a QR code. Simply print out the QR code in a paper, cut and paste it into the reminder letter, and patients can access the video by just scanning the QR code.</li> </ul>	
<b>7. CONCEPT</b>	<i>What is the concept, subject, or theme of this video? How will I portray my message to my audience with my allotted budget and timeline? How long should the video be?</i>
<ul style="list-style-type: none"> <li>● General concept is illustrated as a Storyboard following this table.</li> <li>● Final video is expected to be no longer than 5 minutes.</li> </ul>	
<b>8. LOCATION</b>	<i>In what location(s) will I be shooting my video? When is my location most busy? Do I need to scout these locations or get permits or permission? Have I accounted for lighting and time of day for shooting?</i>
<ul style="list-style-type: none"> <li>● The shooting location will be at the Avon breast center. Since the location is busy during working time, we prefer to shoot this video after work or during a weekend.</li> <li>● We need to get permits from Avon and SFGH. We will coordinate with the team members to finalize our plan for this shooting.</li> <li>● Since the shooting will happen inside the building, there is no big interruption of the weather/light outside.</li> </ul>	
<b>9. ACTORS</b>	<i>Who will be featured in my video? Can they work with my timeline? Do they need to be compensated? Do I have their permission to shoot and distribute their image?</i>
<ul style="list-style-type: none"> <li>● Four featured “actors” are essential in this video including one patient, one patient registrar, one patient navigator, and one radiologic technologist.</li> <li>● Since this is a non-sponsored patient educational video for the facility, staff will not be compensated.</li> </ul>	



## Appendix F (continued)

We will seek volunteers and get their permission to shoot and distribute their images.	
<b>10. EQUIPMENT</b>	<i>What equipment will I need? How many cameras will I be using to shoot?</i>
<ul style="list-style-type: none"> <li>● The USF Media Service Department can loan students the necessary equipment. The Media Study Department also offers a very compressive room for its students to edit video segments.</li> </ul>	
<b>11. CREW</b>	<i>Who will be assisting with my video? Will I have multiple camera operators? Do I need someone to hold a mic or adjust a tripod?</i>
<ul style="list-style-type: none"> <li>● This student and the videographer are responsible for planning, negotiating, coordinating, shooting, editing, and generating the final video. I can dub the video with my voice in Mandarin, but may still need a Cantonese speaking staff to dub her voice in Cantonese.</li> <li>● Since the video is not so complicated, only one camera is needed during the shooting. No mic or tripod needed.</li> </ul>	

Appendix G

Video Storyboard

STORYBOARD OF THE VIDEO



BRIFE INTRODUCTION OF SFGH AND THE AVON BREAST CENTER



WEL COMED AND REGISTERED AT THE FRONT DESK



SIT AND FILL OUT THE QUESTIONNAIRE



NAVIGATED TO THE DRESSING ROOM, LOCK STUFF, REMOVE DEODORANT

- TIPS:
1. KEEP GOWN OPEN IN THE FRONT
  2. DON'T NEED TO REMOVE PANT OR SKIRT
  3. TIE THE HAIR UP IF WITH LONG HAIR



CALLED BY A TECHNOLOGIST, NAVIGATED TO THE OPERATIONAL ROOM

- TIPS:
1. SHE MAY ASK YOU QUESTIONS ABOUT PAST MEDICAL HISTORY OR CURRENT HEALTH STATUS



BREAST POSITIONING AND COMPRESSION

- TIPS:
1. TYPICALLY INVOLVES TAKING TWO VIEWS OF THE BREAST (AN ABOVE VIEW AN ANGLED VIEW)
  2. ADEQUATE POSITIONING AND COMPRESSION ARE REQUIRED
  3. PAIN AND UNCOMFORTABLE USUALLY PRESENT
  4. ADDITIONAL VIEWS MAY BE NECESSARY



BETTER POSITIONING AND BODY RELAXATION TECHNIQUES

- TIPS:
1. WILL DEMONSTRATE COMMON MIS TAKES DURING POSITIONING E.G. SHOULDER, ARM, BREATH, MOVEMENT
  2. HOW TO AVOID THEM TO EASE PAIN AND IMPROVE COLLABORATION



HOW WILL YOU GET YOUR RESULT

- TIPS:
1. RECALL MAY HAPPEN
  2. DIAGNOSTIC MAMMOGRAPHY MAY BE ORDERED

## Appendix H

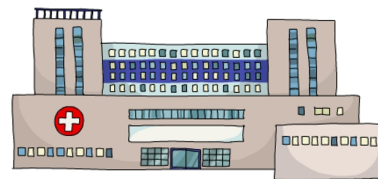
**SWOT Analysis**

<p><b>STRENGTHS</b></p> <ol style="list-style-type: none"> <li>1. Satisfies immediate population needs</li> <li>2. Strong buy-in from frontline staff and the organization</li> <li>3. Overall improvement in knowledge and readiness in LEP patients regarding screening mammography</li> <li>4. Supporting and providing qualified mammographic images in a consistent manner</li> </ol>	<p><b>WEAKNESSES</b></p> <ol style="list-style-type: none"> <li>1. Employee disengagement</li> <li>2. Patient disengagement</li> <li>3. Lack of cultural competency and cultural sensitivity</li> <li>4. Lack of trust in the organization</li> <li>5. Time restriction and work burden</li> <li>6. Procedural difficulties and latency</li> </ol>	<p><b>INTERNAL</b></p> <p><b>EXTERNAL</b></p>
<p><b>OPPORTUNITIES</b></p> <ol style="list-style-type: none"> <li>1. Outreaching collaboration with various communities</li> <li>2. Expand mobile practices to other areas</li> <li>3. Quality control and improvement</li> <li>4. Increase patient experience and satisfaction</li> <li>5. Expand benefits to the entire organization</li> </ol>	<p><b>THREATS</b></p> <ol style="list-style-type: none"> <li>1. Funding</li> <li>2. Overcoming technical barriers</li> <li>3. Lack of community participation</li> </ol>	

## Appendix I

## Final Script in English

## STORYBOARD OF THE VIDEO



BRIEF INTRODUCTION OF SFGH AND THE AVON BREAST CENTER



WELCOMED AND REGISTERED AT THE FRONT DESK

## INTRODUCTION

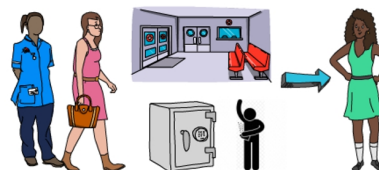
1. Welcome to AVON Comprehensive Breast Center at Zuckerberg San Francisco General Hospital, located in building 4. The Avon program is committed to providing state-of-the-art breast cancer services for diverse people in the San Francisco Bay Area with compassion and respect.
2. Screening mammography is an x-ray of the breast tissue. The American College of Radiology recommends annual screening mammography for women, starting at age 40. This is important because early screening lowers the chance of advanced disease at point of diagnosis. Additionally, when breast cancer is discovered early the treatment options are less extensive.

## PREPARATION

1. If you are very sensitive and haven't gone through menopause, you may want to schedule your mammogram appointment during the week after your menstrual period when your breasts are least likely to be tender.
2. You will receive a reminder call from AVON the day before your mammogram appointment. Be sure to wear a two-piece outfit so you can undress from the waist up for your exam. We will provide additional exam preparation tips when we call you.
3. Avoid using deodorants, powders, lotions, or perfumes under your arms, breasts and chest as these may interfere with the procedure or image quality.
4. Please don't wear large jewelry especially earrings and necklaces. If you have long hair, please tie it back away from your face.



SIT AND FILL OUT THE QUESTIONNAIRE



NAVIGATED TO THE DRESSING ROOM, LOCK STUFF, REMOVE DEODORANT

- TIPS:
1. KEEP GOWN OPEN IN THE FRONT
  2. DON'T NEED TO REMOVE PANT OR SKIRT
  3. TIE THE HAIR UP IF WITH LONG HAIR

## ARRIVAL

## Appendix I (continued)

1. Once you arrive at AVON, you will be welcomed and registered at the front desk. The front desk worker will confirm your appointment, eligibility coverage, and may ask for any information needed to complete your Medical Record. Please remember to bring an official photo ID and hospital card with you.
2. A navigator will verify your identity and put a patient ID bracelet on your wrist. You will be asked to fill out a Breast Health History Questionnaire. Please let the navigator know if you have any pertinent medical history or if you need help filling out the form.
3. Once you complete the form, you will be guided to dressing room. We will provide a small locker for storing your belongings. The navigator will teach you how to use the locker and set up a 4-digit locker security code.
4. Then you will be asked to change into a gown and remove any deodorant if you are wearing it. Please keep the gown's opening in the front and only remove your clothing from the waist up.



CALLED BY A TECHNOLOGIST, NAVIGATED TO THE OPERATIONAL ROOM

## TIPS:

1. SHE MAY ASK YOU QUESTIONS ABOUT PAST MEDICAL HISTORY OR CURRENT HEALTH STATUS



BREAST POSITIONING AND COMPRESSION

## TIPS:

1. TYPICALLY INVOLVES TAKING TWO VIEWS OF THE BREAST (AN ABOVE VIEW AN ANGLED VIEW)
2. ADEQUATE POSITIONING AND COMPRESSION ARE REQUIRED
3. PAIN AND UNCOMFORTABLE USUALLY PRESENT
4. ADDITIONAL VIEWS MAY BE NECESSARY

**DURING THE PROCEDURE**

1. After dressing, please sit in the waiting room and wait to be called by the technologist. Restrooms and water are available inside the room.
2. Your technologist will double-check your name and date of birth before taking you to the "Mammo Room". At this time, please let them know if you have any current or past problems with your breast.
3. A screening mammogram consists of at least two views of each breast: one view in which the breast is compressed from top to bottom (called craniocaudal) and one view in which the breast is compressed at an oblique angle (called mediolateral oblique).
4. Correct positioning and compression are necessary to achieve quality images and detect breast disease. You may experience pressure and discomfort during the procedure, but it only lasts for

## Appendix I (continued)

few seconds. Your cooperation will help us capture the best image for detecting breast cancer.



**BETTER POSITIONING AND BODY RELAXATION TECHNIQUES**

**TIPS:**  
 1. WILL DEMONSTRATE COMMON MISTAKES DURING POSITIONING  
 E.G. SHOULDER, ARM, BREATH, MOVEMENT  
 2. HOW TO AVOID THEM TO EASE PAIN AND IMPROVE COLLABORATION



**HOW WILL YOU GET YOUR RESULT**

**TIPS:**  
 1. RECALL MAY HAPPEN  
 2. DIAGNOSTIC MAMMOGRAPHY MAY BE ORDERED

**1. Here are some tips for a more comfortable mammogram:**

- Allow the technologist to guide you and position your body. Stay still, unless the technologist asks you to move. Any movement while the image is being taken can cause a blurring of the image
- Stand straight, hold still and relax. Don't lean forward, backward, sideways, shrug your shoulders or bend your knee. To keep your balance, make sure that your feet are shoulder length apart with your toes pointing forward.
- During the exam, you may gently lean your arm on the machine. Do not grab the machine tightly since this will tense your body and may tighten the muscle.
- Hold your breath for a few seconds when the technologist asks you to, so that they can take the image. There is no need to take a deep breath before the image is taken, just hold your breath when the technologist asks.

**AFTER THE PROCEDURE**

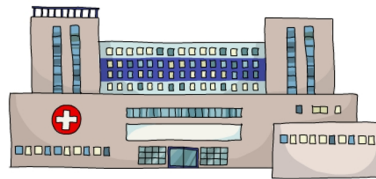
1. When the mammogram is complete, you will go back to the dressing room to change back into your clothes. Please leave your gown in the blue bag located inside the dressing room.
2. A radiologist will review your images and you will get your results by mail about 2 weeks after we do the exam. If you have any questions, please contact your referring doctor.
3. If we need more images, we will notify your referring doctor, and call you to make another appointment. Don't be afraid if we call you, sometimes the doctors just need more information or a better picture of your breast.
4. If you have any questions, please contact us at 628-206 4965. We are dedicated to our patients and we hope you will have a wonderful experience at AVON Comprehensive Breast Center at Zuckerberg San Francisco General Hospital.



## Appendix J

## Translated Script in Chinese

## 视频图解脚本



扎克伯格旧金山综合医院和 AVON 乳腺中心简介



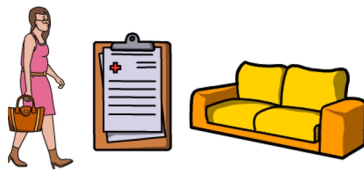
前台接待并做好登记

## 简介

1. 欢迎光临扎克伯格旧金山综合医院 4 号楼的 AVON 乳腺中心。AVON 项目致力于为旧金山湾区的各类人群提供最先进的乳腺癌医疗服务，以关心、尊重的态度服务每一位就诊者。
2. 乳腺 X 线摄影筛查是指利用 X 射线检查乳房组织。美国放射学会建议女性从 40 岁开始，每年都要进行乳腺 X 线摄影筛查。这样做的重要性在于，尽早的筛查有助于降低在诊断时发现晚期疾病的几率。此外，乳腺癌发现越早，越有利于治疗方案的制定。

## 事先准备

1. 如果您非常敏感，而且还没有绝经，建议您在经期结束后一周内预约进行乳腺 X 线摄影筛查，因为在那一时间段您的乳房最不容易疼痛。
2. 在预约日的前一天，您会接到 AVON 乳腺中心的预约提醒电话。请穿着上下装分离的衣服，以方便您在检查时脱下腰部以上的衣物。我们会在电话中向您提供更多有关检查准备的建议。
3. 请勿在腋下、乳房和胸部涂抹香体剂、爽身粉、润肤乳或香水，因为这些物质可能会影响检查过程或者影像质量。
4. 请勿佩戴大件首饰，尤其是耳环和项链。如果您留有长发，请把头发扎在脑后。



稍坐片刻并填写调查问卷



跟随导诊员前往更衣室，存放个人物品，擦除香体剂

提示：

1. 检查袍的开口应在胸前
2. 不需要脱下裤子或裙子
3. 如果是长发，请把头发扎好

## 到达之后

1. 抵达 AVON 乳腺中心后，前台会接待您并为您做好登记。前台工作人员将确认您的预约，核实您是否符合检查条件，并可能询问其他信息，以便填写您的电子病历。请务必携带带有照片的正式身份证件和本院诊疗卡。
2. 导诊员将核实您的身份，并为您戴上患者身份识别手环。您还需要填写一份乳腺病史调查问卷。请告知导诊员您是否患有相关疾病，如填表时遇到任何问题，请咨询导诊员。

## Appendix J (continued)

3. 填写表格后，导诊员将带您前往更衣室。更衣室内有小型储物柜，供您存放个人物品。导诊员将教您如何使用储物柜，以及设置 4 位数的储物柜安全密码。
4. 之后，您需要换上检查袍，如果您涂抹了香体剂，则需要擦除干净。请保持检查袍的开口在前面，并且仅需脱去腰部以上的衣物。



等待放射技师叫您的名字，引导您进入影像室

- 提示：
1. 她可能会向您询问关于过往病史或目前健康状况的问题



乳房摆位和压紧

- 提示：
1. 通常每侧乳房需要拍摄两张 X 光片（垂直视图和侧方视图）
  2. 正确的摆位和压紧必不可少
  3. 通常会出现疼痛和不适感
  4. 可能需要拍摄额外视图

### 检查过程

1. 更衣后，请在候诊室等待放射技师叫您的名字。候诊室内有洗手间并提供饮用水。
2. 在带您进入影像室之前，放射技师会再次核对您的姓名和出生日期。如果您现在或过去有任何乳房相关的疾病，请在此时告知放射技师。
3. 乳腺 X 线摄影筛查至少会对每一侧乳房拍摄两张 X 光片：一张是垂直位，从上向下压紧乳房，另一张是侧斜位，以倾斜角度压紧乳房。
4. 正确的摆位和压紧对于高质量成像和发现乳腺疾病至关重要。在检查过程中，您可能会感受到压迫和不适，但这只会持续几秒钟。您的配合将有助于我们拍摄到最佳影像来筛查乳腺癌症。



更好摆位和让身体放松的技巧

- 提示：
1. 放射技师会向您展示一些摆位时的常见错误做法，例如，耸肩、呼吸、移动
  2. 如何避免这些错误以更好地配合检查，并减轻疼痛



如何获取检查结果

- 提示：
1. 我们可能会再次给您打电话
  2. 可能需要进行诊断性乳腺 X 线摄影检查

1. 为使 乳腺 X 线摄影检查更加舒适，请遵循以下建议：
  - 听从放射技师的指导，配合调整体位。保持不动，直到放射技师让您移动。拍摄瞬间的任何移动都可能导致影像模糊。
  - 站直、保持固定并且放松。请不要向前、向后、向两侧倾斜，也不要耸肩或弯曲膝盖。为了保持平衡，站立时请将脚尖朝前，双脚间距与肩同宽。
  - 在检查期间，您可以把手臂轻靠在仪器上。请勿用力抓握仪器，因为这样做会使您的身体紧绷，可能导致肌肉僵硬。



## Appendix J (continued)

- 放射技师在拍摄影像时会要求您屏气几秒钟。您无需在拍摄之前做深呼吸，只需在放射技师要求屏气时屏住呼吸即可。

**检查之后**

1. 在完成检查后，请返回更衣室，换上您自己的衣服。请把检查袍放在更衣室内的蓝色袋子里。
2. 放射科医生会查看您的 X 光片，我们将在检查后的大约两周内向您邮寄检查结果。如有任何问题，请联系您的转诊医生。
3. 如果我们需要额外的影像，我们会通知您的转诊医生，并致电给您再次进行预约。接到我们的来电请不必担心，有时医生只是需要补充一些信息，或者需要更清晰的乳房 X 光片影像。
4. 如果您有任何问题，请电话联系我们：628-206 4965。我们将全心全意为患者提供服务，希望您在扎克伯格旧金山综合医院的 AVON 乳腺中心能够获得愉快的检查体验。

## Appendix K

## Pictorial Patient Education Brochure on Screening Mammography

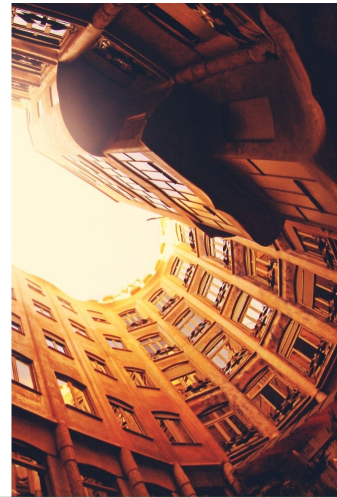
## 联系方式

1001 Potrero Avenue, Building 4  
San Francisco, CA 94110.

Phone: (415) 206-4965

[www.zuckerbergsanfranciscogeneral.org](http://www.zuckerbergsanfranciscogeneral.org)

扎克伯格旧金山综合医院  
AVON乳腺中心



乳腺X线摄影筛查  
病人教育手册



## 简介

▲什么是乳腺X线摄影筛查？

乳腺X线摄影筛查是指利用X射线检查乳房组织。

▲美国放射学会建议：

美国放射学会建议女性从40岁开始，每年都要进行乳腺X线摄影筛查。

▲早期筛查的优点：

这样做的重要性在于，最早的筛查有助于降低在诊断时发现晚期疾病的几率。

此外，乳腺癌发现越早，越有利于治疗方案的制定。

## AVON乳腺中心

欢迎光临扎克伯格旧金山综合医院4号楼的AVON乳腺中心。

AVON项目致力于为旧金山湾区的各类人群提供最先进的乳腺癌医疗服务，以关心、尊重的态度服务每一位就诊者。

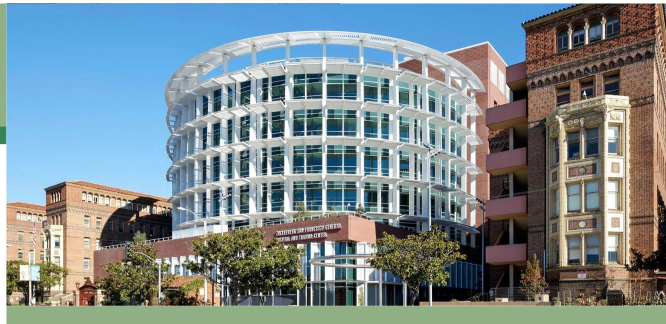


## Appendix K (continued)

## 事先准备

## ▲最佳时间

如果您非常敏感，而且还没有绝经，建议您在经期结束后一周内预约进行乳腺 X 线摄影筛查，因为在那一时间段您的乳房最不容易疼痛。



## ▲电话提醒

在预约日的前一天，您会接到AVON乳腺中心的预约提醒电话。

请穿着上下装分离的衣服，以方便您在检查时脱下腰部以上的衣物。我们会在电话中向您提供更多有关检查准备的建议。

## ▲注意事项

请勿在腋下、乳房和胸部涂抹香体剂、爽身粉、润肤乳或香水，因为这些物质可能会影响检查过程或者影像质量。

请勿佩戴大件首饰，尤其是耳环和项链。如果您留有长发，请把头发扎在脑后。



## 到达之后

## ▲存放物品

填写表格后，导诊员将带您前往更衣室。更衣室内有小型储物柜，供您存放个人物品。导诊员将教您如何使用储物柜，以及设置 4 位数的储物柜安全密码。

## ▲更换服装

之后，您需要换上检查袍，如果您涂抹了香体剂，则需要擦除干净。请保持检查袍的开口在前面，并且仅需脱去腰部以上的衣物。

## ▲前台登记

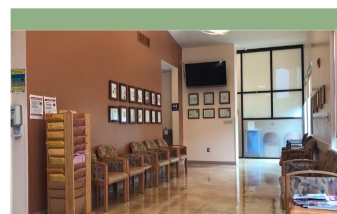
抵达AVON乳腺中心后，前台会接待您并为您做好登记。前台工作人员将确认您的预约，核实您是否符合检查条件，并可能询问其他信息，以便填写您的电子病历。

请务必携带带有照片的正式身份证件和本院诊疗卡。

## ▲填写问卷

导诊员将核实您的身份，并为您戴上患者身份识别手环。

您还需要填写一份乳腺病史调查问卷。请告知导诊员您是否患有相关疾病，如填表时遇到任何问题，请咨询导诊员。



## Appendix K (continued)

## 检查过程

## ▲耐心等待

更衣后，请在候诊室等待放射技师叫您的名字。候诊室内有洗手间并提供饮用水。

在带您进入影像室之前，放射技师会再次核对您的姓名和出生日期。如果您现在或过去有任何乳房相关的疾病，请在此时告知放射技师。



## ▲拍摄方法

乳腺 X 线摄影筛查至少会对每一侧乳房拍摄两张 X 光片：

一张是垂直位，从上向下压紧乳房；另一张是侧斜位，以倾斜角度压紧乳房。

## ▲积极配合

正确的摆位和压紧对于高质量成像和发现乳腺疾病至关重要。

在检查过程中，您可能会感受到压迫和不适，但这只会持续几秒钟。您的配合将有助于我们拍摄到最佳影像来筛查乳腺癌症。



## ▲听从指导

听从放射技师的指导，配合调整体位。保持不动，直到放射技师让您移动。拍摄瞬间的任何移动都可能导致影像模糊。

## ▲正确体态

站直、保持固定并且放松。请不要向前、向后、向两侧倾斜，也不要耸肩或弯曲膝盖。为了保持平衡，站立时请将脚尖朝前，双脚间距与肩同宽。



## 提醒事项

为使乳腺X线摄影检查更加舒适，请遵循以下建议

## ▲保持放松

在检查期间，您可以把手臂轻靠在仪器上。请勿用力抓握仪器，因为这样做会使您的身体紧绷，可能导致肌肉僵硬。

## ▲屏住呼吸

放射技师在拍摄影像时会要求您屏气几秒钟。您无需在拍摄之前做深呼吸，只需在放射技师要求屏气时屏住呼吸即可。



## Appendix K (continued)

## 检查之后

## ▲ 更换服装

在完成检查后，请返回更衣室，换上您自己的衣服。请把检查袍放在更衣室内的蓝色袋子里。



## ▲ 检查结果

放射科医生会查看您的 X 光片，我们将在检查后的大约两周内向您邮寄检查结果。如有任何问题，请联系您的转诊医生。

## ▲ 额外影像

如果我们需要额外的影像，我们会通知您的转诊医生，并致电给您再次进行预约。接到我们的来电请不必担心，有时医生只是需要补充一些信息，或者需要更清晰的乳房 X 光片影像。

## ▲ 联系方式

如果您有任何问题，请电话联系我们：628-206 4965

我们将全心全意为患者提供服务，希望您在扎克伯格旧金山综合医院的 AVON 乳腺中心能够获得愉快的检查体验。



## Appendix L

**IRB Approval Form****Attachments:**

- Exemption Notification - IRB ID: 1423.pdf

*Protocol Exemption Notification*

To: Yao Luo  
From: Richard Gregory Johnson III, IRB Chair  
Subject: Protocol #1423  
Date: 07/14/2020

The Institutional Review Board for the Protection of Human Subjects (IRBPHS) at the University of San Francisco (USF) has reviewed your request for human subjects approval regarding your study.

Your project (IRB Protocol #1423) with the title **Optimizing Screening Mammography: Educating Underserved Individuals with Limited English Proficiency** has been approved by the University of San Francisco IRBPHS as **Exempt** according to 45CFR46.101(b). Your application for exemption has been verified because your project involves minimal risk to subjects as reviewed by the IRB on 07/14/2020.

Please note that changes to your protocol may affect its exempt status. Please submit a modification application within ten working days, indicating any changes to your research. Please include the Protocol number assigned to your application in your correspondence.

On behalf of the IRBPHS committee, I wish you much success in your endeavors.

Sincerely,

Dr. Richard Gregory Johnson III  
Professor & Chair, Institutional Review Board for the Protection of Human Subjects  
University of San Francisco  
irbphs@usfca.edu  
[IRBPHS Website](#)

Appendix M

Cheongsam Examples



Ningxia Cheongsam Association Logo



Annual Meeting



Cheongsam Runway Walk Class

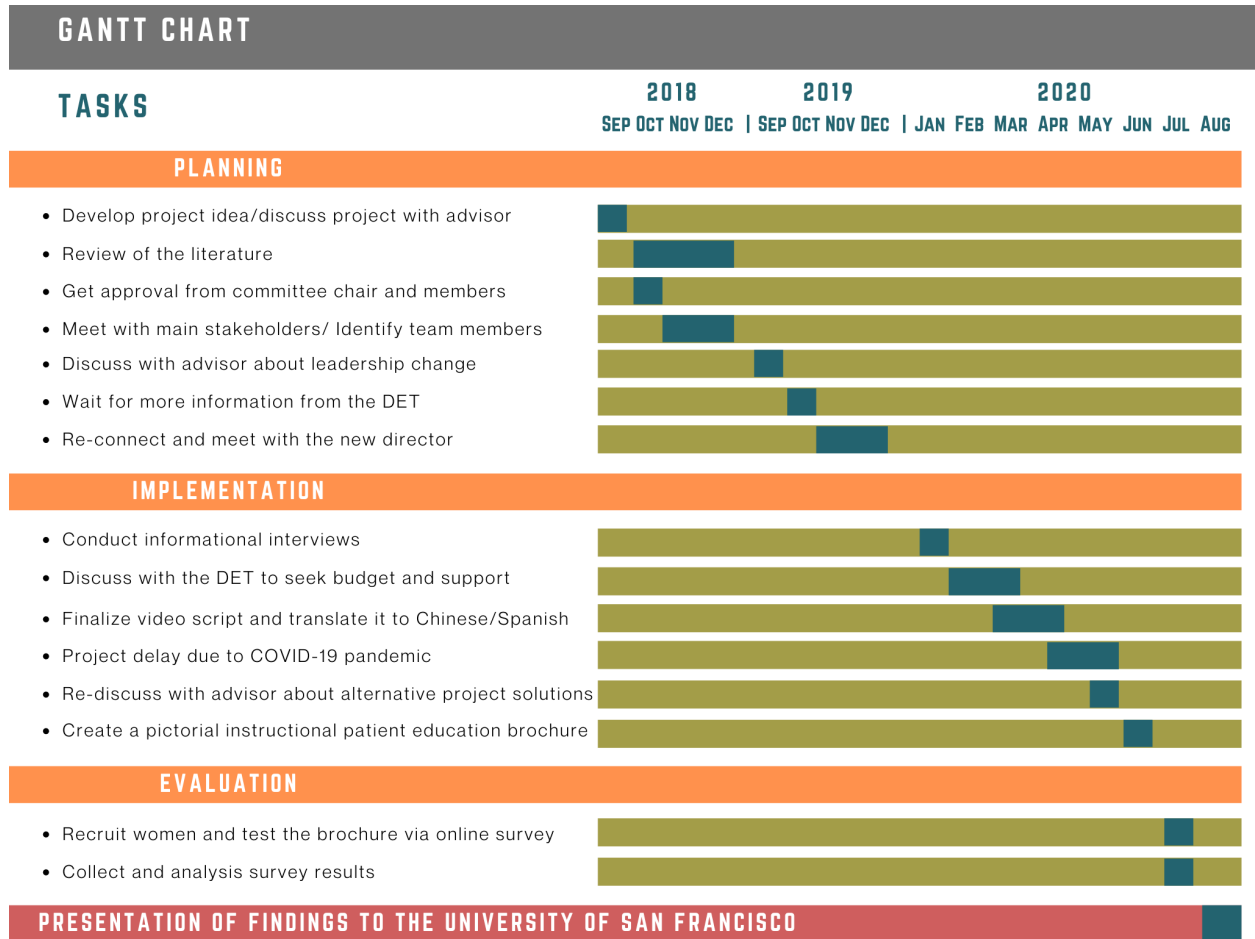


Member Show



Appendix N

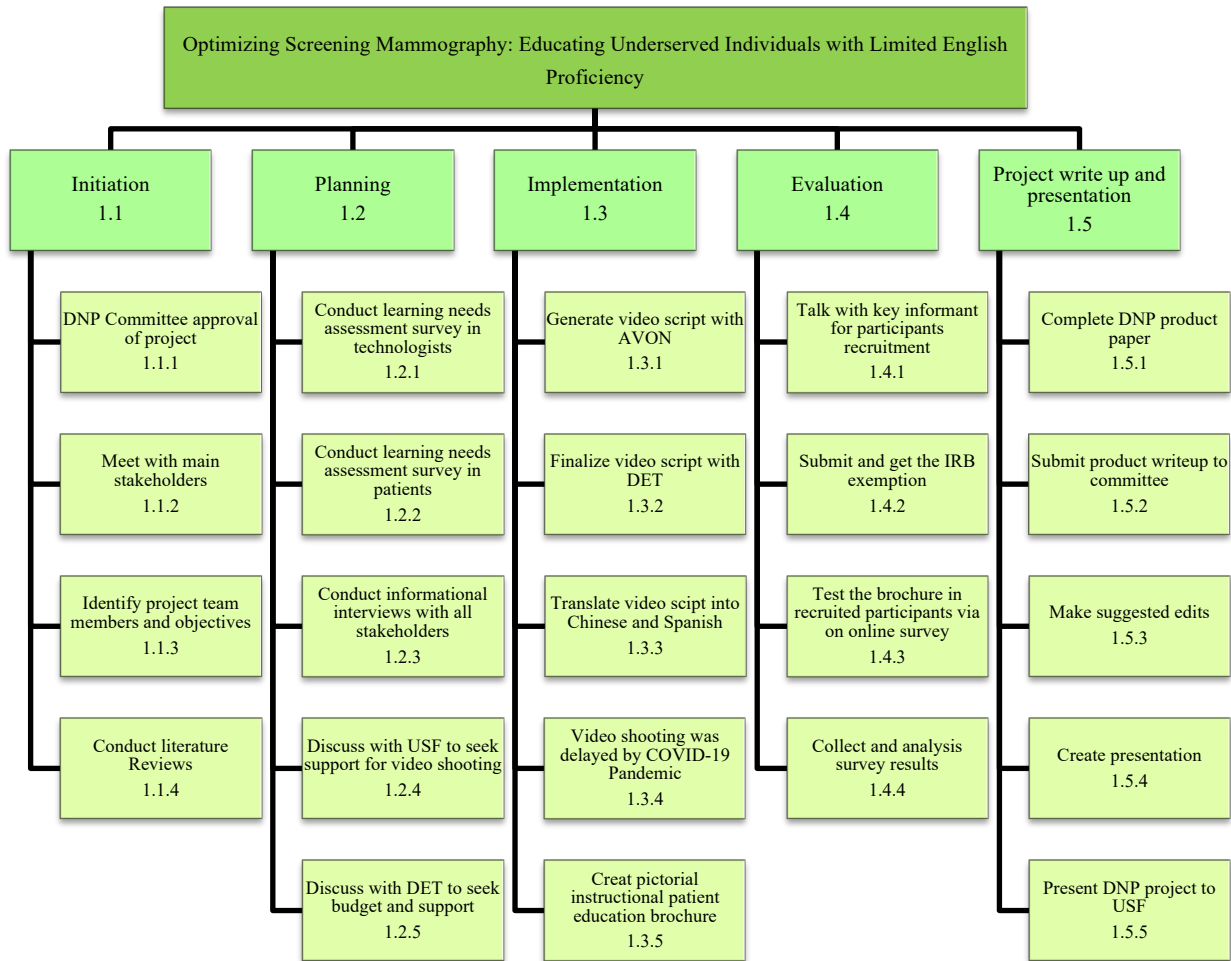
Gantt Chart





Appendix O

**Work Breakdown Structure**



## Appendix P

**Communication Plan Matrix**

<b>COMMUNICATION PLAN MATRIX</b>		
<b>INDIVIDUALS</b>	<b>FREQUENCY</b>	<b>ROUTE</b>
Advisor/Chair	Biweekly	Face-to-Face, Email, Phone
Director of the Breast Center	Weekly	Face-to-Face and Email
Charge Technologist	Weekly	Face-to-Face and Email
Onsite Technologists	Five Times	Face-to-Face
Patient Navigators	Five Times	Face-to-Face
IT Administrator	Biweekly	Email
Education Coordinator	Biweekly	Email

## Appendix Q

## Budget

CONTENT	HOURS	COST
• DNP student (project manager) (\$95.46/hr)	135 Hours	\$12,887
<b>TEAM MEETING AND DISCUSSION TIME</b>		
• Director at Outpatient Breast Center (\$61.58/hr)	5 Hours	\$308
• Technologist representatives (\$54.93/hr)	5 Hours	\$275
• Patient navigator representative (\$32.64/hr)	2 Hours	\$65
• IT Administrator of the Hospital (\$59.39/hr)	5 Hours	\$297
• Education Coordinator of the Hospital (\$54.16/hr)	5 Hours	\$271
<b>VIDEO PRODUCTION COST</b>		
• Video Script Translation Service	---	\$300
• Videotaping		
1) IT Administrator (\$59.39/hr)	2 Hours	\$119
2) Two Acting Technologists (\$54.93/hr)	5 Hours	\$220
• Video Editing by IT Administrator (\$59.39/hr)	8 Hours	\$475
<b>VIDEO DISSEMINATION</b>		
• Uploaded to YouTube Channel	---	Free
• Embedded to MyChart Portal	---	Free
• Burned to DVDs	---	\$10
• Printed Video QR Code in Patient Reminder Letter	---	Free
<b>TOTAL PROJECT COST</b>	---	<b>\$ 15,227</b>
<b>REVENUE LOSS FROM 4 ADDITIONAL VIEWS EVERYDAY</b>	<b>MONTHLY</b>	<b>ANNUALLY</b>
• From Medicare Reimbursement	• \$2,834	• \$34,008
• From Staff Salary	• \$412	• \$4,944
<b>TOTAL REVENUE LOSS</b>	<b>\$ 3,246</b>	<b>\$ 38,952</b>

## Appendix R

**Research Informed Consent in English****CONSENT TO PARTICIPATE IN A RESEARCH STUDY**

Below is a description of the research procedures and an explanation of your rights as a research participant. You should read this information carefully.

You have been asked to participate in a research study entitled Optimizing Screening Mammography: Educating Underserved Individuals with Limited English Proficiency conducted by Yao Luo, a student in the School of Nursing and Health Professions at the University of San Francisco.

1. **WHAT THE STUDY IS ABOUT:** The purpose of this research study is to create and test the effectiveness of a patient education brochure on screening mammography.
2. **WHAT WE WILL ASK YOU TO DO:**

During this study, you will be asked to fill out an online survey distributed via WeChat app. In the survey, the first two questions are asking general questions about your age and past experience on mammography. Secondly, you will be asked to fill out nine questions assessing your baseline knowledge and overall readiness on screening mammography. Responses are categorized in a 5-point Likert scale which have a rank order from "not at all" to "a great deal". Please choose one statement that mostly meets you.

After that, you will be able to review the patient education brochure about screening mammography. The brochure was categorized into five parts: Introduction; Preparation; Arrival; During the Procedure and After the Procedure. Importantly, you will be asked to re-fill the same nine questions you answered before after your review of the brochure. This pre and post-survey will capture your knowledge gaining and the impact of the intervention. The last part of this survey is 5 questions to collect your feedback on the education brochure.

3. **DURATION AND LOCATION OF THE STUDY:** Your participation in this study will involve one online session that lasts about 10 minutes.
4. **POTENTIAL RISKS AND DISCOMFORTS:** We do not anticipate any risks or discomforts to you from participating in this research. If you wish, you may choose to withdraw your consent and discontinue your participation at any time during the study without penalty.
5. **BENEFITS:** This study will benefit Limited English Proficiency patients by teaching enhanced breast positioning skills, body relaxation techniques, and general knowledge on screening mammography which will increase patient knowledge, readiness, satisfaction, and the positive predictive value of screening mammography.
6. **PRIVACY/CONFIDENTIALITY:** Because you will not be providing any information that can uniquely identify you (such as your name or personal ID number), the data you provide will be anonymous.
7. **COMPENSATION/PAYMENT FOR PARTICIPATION:** There is no payment or other form of compensation for your participation in this study.
8. **VOLUNTARY NATURE OF THE STUDY:** Your participation is voluntary, and you may refuse to participate without penalty or loss of benefits. Furthermore, you may skip any questions or tasks that make you uncomfortable and may discontinue your participation at any time without penalty or loss of benefits.
9. **OFFER TO ANSWER QUESTIONS:** If you have questions, you should contact the principal investigator: Yao Luo at yluo32@dons.usfca.edu. If you have questions or concerns about your rights as a participant in this study, you may contact the University of San Francisco Institutional Review Board at IRBPHS@usfca.edu.

Click the "I consent" box below to indicate that you are 18 years of age or older, you have read and understood your rights, and that you consent to participate in this online research study.

I Consent

## Appendix R (continued)

## Translated Research Informed Consent in Chinese

## Translated version in Chinese

## 研究知情同意书

下面是关于此次调查研究的介绍，以及对您作为研究参与者权利的解释说明。请您仔细阅读以下信息。

您被邀请参加由旧金山大学护理与卫生专业学院崔瑶同学进行的名为“优化乳腺 X 线摄影筛查：对英语水平有限人群的教导”的研究。

1. **研究内容：**这项研究的目的是创造和检测患者乳腺 X 线摄影筛查教育手册的有效性
2. **我们需要您做什么：**

在这项研究中，您将填写一份通过微信应用程序分发的在线调查问卷。前两个基础问题有关于您的年龄和过去乳房 X 线摄影的经验。其次，您将填写 9 个问题来评估您对乳腺 X 线摄影筛查的基础知识和心理准备程度。答案选项按照 5 点量表进行分类，等级从“一点也不”到“非常多”。请选择最符合您实际情况的选项。

之后，您将能够查看乳腺 X 线摄影筛查患者教育手册。手册一共分为五个部分：简介、事先准备、到达之后、检查过程、检查之后。重要的是，在您阅读完教育手册后，系统会要求您再次回答与之前相同的 9 个问题。通过前后问卷的对比来评估知识的增长以及干预的效果。问卷最后的 5 个问题用来收集您对教育手册的反馈。

3. **研究的持续时间和地点：**此研究通过在线问卷进行，大约需要 10 分钟。
4. **潜在的风险和不适：**我们预计参与此项研究不会给您带来任何风险或不适。如果您需要，您可以选择撤回您的知情同意并且在任何时间中止参与研究，同时不会受到任何处罚。
5. **优点：**这项研究通过教导乳房摆位，身体放松技巧和有关乳腺 X 线摄影筛查的知识，从而提高英语水平有限患者的知识、心理准备程度、满意度以及乳腺 X 线摄影筛查线摄影的积极预测价值。
6. **隐私/机密性：**您将不会被要求提供任何能够识别您的个人信息（例如您的姓名或身份证号），您提供的数据将会是匿名的。
7. **参与补偿/支付：**您参与的这项研究没有任何奖金或其他形式的奖赏。
8. **研究的自愿性质：**您的参加是自愿的，您可以拒绝参加且不会受到处罚或利益损失。此外，您可以跳过任何让您感到不适的问题或任务，并可以随时中止参与调查且不会受到任何处罚或利益损失。
9. **提供回答：**如果您有任何疑问，请联系主要研究人员：Yao Luo，邮箱 yluo32@dons.usfca.edu。如果您对参加本研究的权利有疑问或顾虑，您可以通过 IRBPHS@usfca.edu 与旧金山大学机构审查委员会联系。

点击下面的“我同意”选框，以表明您已年满 18 岁，您已阅读理解自己的权利，并同意参加此在线研究。

我同意

## Appendix S

## Survey on Screening Mammography

## Part 1. Demographic Survey (统计学问卷)

Questions 问题	Selective Answers 可选答案			
1. Research Informed Consent 研究知情同意书	A. I consent A. 我同意		B. I do not Consent B. 我不同意	
2. What is your age? 您的年龄区间是?	A. Under 20 A. 20 岁以下	B. 20-39 B. 20-39 岁	C. 40-65 C. 40-65 岁	D. Over 66 D. 66 岁及以上
3. Have you EVER had any type of mammogram before? 您曾经做过任意种类的乳腺 X 光线摄影吗?	A. Yes A. 有过	B. No B. 没有	C. Don't know C. 不知道	

## Part 2. Pre and Post Screening Mammography Survey (乳腺 X 光线摄影筛查前后问卷)

Rating Questions 评分问题	1	2	3	4	5
	Not at all 完全不 了解	Little 了解 一点	Some what 了解	Much 了解 很多	A great deal 非常了 解
<b>Knowledge on Screening Mammography</b>					
4. Do you know what is screening mammography? 您知道什么是乳腺 X 光线摄影筛查吗?					
5. Do you know at which age women should start breast cancer screening? 您知道女性从多大年级应该开始进行乳腺癌的筛查吗?					
6. Do you know at which frequency women should have a screening mammogram? 您知道女性进行乳腺 X 光线摄影筛查的频率是多少吗?					
<b>Before the Procedure</b>					
7. Do you know how to prepare for a screening mammogram? 您知道怎么准备乳腺 X 光线摄影筛查吗?					
<b>During the Procedure</b>					
8. Do you know at least how many images the technologists will take on each of your breasts? 您知道放射技师至少会对每一侧乳腺拍摄几张 X 光片吗?					
9. Do you know on which directions the technologists will compress your breasts? 您知道放射技师会从哪些角度挤压您的乳腺吗?					
10. Do you know how to relax your body to facilitate breast positioning and achieve better mammography images during the procedure? 您知道在拍摄中如何放松身体来促进乳腺摆位并获得更好的乳腺摄影成像吗?					
<b>After the Mammogram</b>					
11. Do you know why you may be recalled for another mammography exam? 您知道为什么您可能会再次被召回进行另外的乳腺 X 光线检查吗?					
<b>Confidence or Readiness</b>					
12. What is your overall confidence or readiness for a screening mammogram? 您在进行乳腺 X 光线摄影筛查的总体信心或心理准备程度是什么?					
<b>Comments Area</b>					
13. Any other comments? 您有其它评论吗?					
<b>Plan for Future</b>					
If you have a chance, will you plan to participate in the screening mammography program? 如果有机会, 您会计划参加乳腺 X 光线摄影筛查吗?					

**Part 3. Patient Education Brochure Survey (病人教育手册评分)**

Rating Questions 评分问题	1	2	3	4	5
	Strongly Disagree 完全不同意	Disagree 不同意	Neutral 一般	Agree 同意	Strongly Agree 完全同意
25. Brochure concepts were clearly explained and easy to understand 这个宣传册内容清楚且易于理解					
26. This brochure has enhanced my knowledge on screening mammography 这个宣传册增强了我对乳腺 X 光线摄影筛查的知识					
27. This brochure taught me some tips that I would like to use during my screening mammography in the future 这个宣传册教了我一些将来在乳腺 X 光线摄影筛查中可能用到的技巧					
28. This brochure gave me some preparation and release my anxiety during my exam in the future 这个宣传册在将来有助于我准备检查并缓解我的焦虑					
29. I would recommend this brochure to other patients who will experience a screening mammogram 我会把这个宣传册推荐给需要进行乳腺 X 光线摄影筛查的其它患者					
30. Any other comments or suggestions on this education brochure? 您对这个教育宣传册有其它评论或建议吗?					

Appendix T

Pre-Post Survey Results Comparison in Pie Charts

Legend	<span style="color: blue;">●</span> 完全不了解 <span style="color: lightblue;">●</span> 了解一点 <span style="color: green;">●</span> 了解 <span style="color: darkgreen;">●</span> 了解很多 <span style="color: magenta;">●</span> 非常了解 Not at all    Little    Some what    Much    A great deal
--------	--

Question No. Rating Questions	Pre-Survey Results	Post-Survey Results
<b>Knowledge on Screening Mammography</b>		
<p><u>Pre 4 — Post 14</u> Do you know what is screening mammography?</p>	<p>非常了解: 3.3% 了解很多: 5% 了解: 11.7% 完全不了解: 20% 了解一点: 60%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>	<p>非常了解: 5% 了解很多: 8.3% 了解: 23.3% 完全不了解: 18.3% 了解一点: 45%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>
<p><u>Pre 5 — Post 15</u> Do you know at which age women should start breast cancer screening?</p>	<p>非常了解: 1.7% 了解很多: 3.3% 了解: 16.7% 完全不了解: 26.7% 了解一点: 51.7%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>	<p>非常了解: 10% 了解很多: 5% 了解: 28.3% 完全不了解: 16.7% 了解一点: 40%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>
<p><u>Pre 6 — Post 16</u> Do you know at which frequency women should have a screening mammogram?</p>	<p>非常了解: 1.7% 了解很多: 3.3% 了解: 5% 完全不了解: 45% 了解一点: 45%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>	<p>非常了解: 10% 了解很多: 5% 了解: 23.3% 完全不了解: 26.7% 了解一点: 35%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>
<b>Before the Procedure</b>		
<p><u>Pre 7 — Post 17</u> Do you know how to prepare for a screening mammogram?</p>	<p>非常了解: 1.7% 了解很多: 3.3% 了解: 10% 完全不了解: 51.7% 了解一点: 33.3%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>	<p>非常了解: 6.7% 了解很多: 8.3% 了解: 26.7% 完全不了解: 25% 了解一点: 33.3%</p> <p>● 完全不了解    ● 了解一点    ● 了解    ● 了解很多    ● 非常了解</p>



During the Procedure		
<p><b>Pre 8 — Post 18</b> Do you know at least how many images the technologists will take on each of your breasts?</p>	<p>非常了解: 1.7% 了解很多: 1.7% 了解: 6.7% 了解一点: 18.3% 完全不了解: 71.7%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>	<p>非常了解: 8.3% 了解很多: 5% 了解: 26.7% 了解一点: 26.7% 完全不了解: 33.3%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>
<p><b>Pre 9 — Post 19</b> Do you know on which directions the technologists will compress your breasts?</p>	<p>非常了解: 1.7% 了解很多: 1.7% 了解: 8.3% 了解一点: 41.7% 完全不了解: 46.7%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>	<p>非常了解: 8.3% 了解很多: 6.7% 了解: 26.7% 了解一点: 33.3% 完全不了解: 25%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>
<p><b>Pre 10 — Post 20</b> Do you know how to relax your body to facilitate breast positioning and achieve better mammography images during the procedure?</p>	<p>非常了解: 1.7% 了解很多: 1.7% 了解: 10% 了解一点: 35% 完全不了解: 51.7%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>	<p>非常了解: 5% 了解很多: 8.3% 了解: 30% 了解一点: 28.3% 完全不了解: 28.3%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>
After the Mammogram		
<p><b>Pre 11 — Post 21</b> Do you know why you may be recalled for another mammography exam?</p>	<p>非常了解: 3.3% 了解很多: 1.7% 了解: 6.7% 了解一点: 30% 完全不了解: 58.3%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>	<p>非常了解: 6.7% 了解很多: 8.3% 了解: 23.3% 了解一点: 38.3% 完全不了解: 23.3%</p> <p>● 完全不了解 ● 了解一点 ● 了解 ● 了解很多 ● 非常了解</p>
Confidence or Readiness		
<p><b>Pre 12 — Post 22</b> What is your overall confidence or readiness for screening mammography?</p>	<p>特别有信心: 3.3% 完全没信心: 8.3% 一点信心: 30% 中等程度: 25% 有信心: 33.3%</p> <p>● 完全没信心 ● 一点信心 ● 中等程度 ● 有信心 ● 特别有信心</p>	<p>特别有信心: 8.3% 完全没信心: 10% 一点信心: 21.7% 中等程度: 25% 有信心: 35%</p> <p>● 完全没信心 ● 一点信心 ● 中等程度 ● 有信心 ● 特别有信心</p>
Comments Area		
<p><b>Pre 13 — Post 23</b> Any other comments?</p>	<p>1. It's important to care about our own bodies. 2. This is a good survey; it should be further popularized.</p>	<p>1. Through those pictures, I got to know the age and methods to do a screening mammogram.</p>

	3. There is no consistent healthcare provider I could see; I just check my breast once every few years.	
--	---	--

**Plan for Future**

<p><u>Post 24</u> If you have a chance, will you plan to participate in the screening mammography program?</p>	<p>A pie chart illustrating the distribution of responses to the question 'If you have a chance, will you plan to participate in the screening mammography program?'. The chart is divided into five segments: a large blue segment for '会' (83.3%), a light blue segment for '可能会' (11.7%), a small green segment for '不知道' (1.7%), a very small green segment for '可能不会' (3.3%), and a very small pink segment for '不会' (1.7%). A legend below the chart identifies each category with a colored dot.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>会</td> <td>83.3%</td> </tr> <tr> <td>可能会</td> <td>11.7%</td> </tr> <tr> <td>不知道</td> <td>1.7%</td> </tr> <tr> <td>可能不会</td> <td>3.3%</td> </tr> <tr> <td>不会</td> <td>1.7%</td> </tr> </tbody> </table>	Response	Percentage	会	83.3%	可能会	11.7%	不知道	1.7%	可能不会	3.3%	不会	1.7%
Response	Percentage												
会	83.3%												
可能会	11.7%												
不知道	1.7%												
可能不会	3.3%												
不会	1.7%												

Appendix U

**Patient Education Brochure Survey**

Rating Questions	1	2	3	4	5												
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree												
25. Brochure concepts were clearly explained and easy to understand	<table border="1"> <caption>Data for Question 25</caption> <thead> <tr> <th>Rating</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1 (Strongly Disagree)</td> <td>3.3%</td> </tr> <tr> <td>2 (Disagree)</td> <td>0%</td> </tr> <tr> <td>3 (Neutral)</td> <td>20%</td> </tr> <tr> <td>4 (Agree)</td> <td>58.3%</td> </tr> <tr> <td>5 (Strongly Agree)</td> <td>18.3%</td> </tr> </tbody> </table>					Rating	Percentage	1 (Strongly Disagree)	3.3%	2 (Disagree)	0%	3 (Neutral)	20%	4 (Agree)	58.3%	5 (Strongly Agree)	18.3%
Rating	Percentage																
1 (Strongly Disagree)	3.3%																
2 (Disagree)	0%																
3 (Neutral)	20%																
4 (Agree)	58.3%																
5 (Strongly Agree)	18.3%																
26. This brochure has enhanced my knowledge on screening mammography	<table border="1"> <caption>Data for Question 26</caption> <thead> <tr> <th>Rating</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1 (Strongly Disagree)</td> <td>0%</td> </tr> <tr> <td>2 (Disagree)</td> <td>3.3%</td> </tr> <tr> <td>3 (Neutral)</td> <td>16.7%</td> </tr> <tr> <td>4 (Agree)</td> <td>61.7%</td> </tr> <tr> <td>5 (Strongly Agree)</td> <td>18.3%</td> </tr> </tbody> </table>					Rating	Percentage	1 (Strongly Disagree)	0%	2 (Disagree)	3.3%	3 (Neutral)	16.7%	4 (Agree)	61.7%	5 (Strongly Agree)	18.3%
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4 (Agree)	61.7%																
5 (Strongly Agree)	18.3%																
27. This brochure taught me some tips that I would like to use during my screening mammography in the future	<table border="1"> <caption>Data for Question 27</caption> <thead> <tr> <th>Rating</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1 (Strongly Disagree)</td> <td>1.7%</td> </tr> <tr> <td>2 (Disagree)</td> <td>1.7%</td> </tr> <tr> <td>3 (Neutral)</td> <td>16.7%</td> </tr> <tr> <td>4 (Agree)</td> <td>66.7%</td> </tr> <tr> <td>5 (Strongly Agree)</td> <td>13.3%</td> </tr> </tbody> </table>					Rating	Percentage	1 (Strongly Disagree)	1.7%	2 (Disagree)	1.7%	3 (Neutral)	16.7%	4 (Agree)	66.7%	5 (Strongly Agree)	13.3%
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5 (Strongly Agree)	13.3%																

<p>28. This brochure gave me some preparation and release my anxiety during my exam in the future</p>	<table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>完全不同意</td> <td>0%</td> </tr> <tr> <td>不同意</td> <td>1.7%</td> </tr> <tr> <td>一般</td> <td>20%</td> </tr> <tr> <td>同意</td> <td>61.7%</td> </tr> <tr> <td>完全同意</td> <td>16.7%</td> </tr> </tbody> </table>	Response	Percentage	完全不同意	0%	不同意	1.7%	一般	20%	同意	61.7%	完全同意	16.7%
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一般	20%												
同意	61.7%												
完全同意	16.7%												
<p>29. I would recommend this brochure to other patients who will experience a screening mammogram</p>	<table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>完全不同意</td> <td>0%</td> </tr> <tr> <td>不同意</td> <td>1.7%</td> </tr> <tr> <td>一般</td> <td>11.7%</td> </tr> <tr> <td>同意</td> <td>70%</td> </tr> <tr> <td>完全同意</td> <td>16.7%</td> </tr> </tbody> </table>	Response	Percentage	完全不同意	0%	不同意	1.7%	一般	11.7%	同意	70%	完全同意	16.7%
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<p>30. Any other comments or suggestions on this education brochure? 您对这个教育宣传册有其它评论或建议吗?</p>													
<ol style="list-style-type: none"> <li>1. Nice (2 participants)</li> <li>2. Could have more details and be easier to understand</li> <li>3. Strengthen the publicity of the brochure to improve more women's awareness.</li> <li>4. Very meaningful and practical to use (2 participants)</li> </ol>													

Appendix V

Edgar Dale's Cone of Experience

