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Access to high quality and timely health care leads to optimal health outcomes. This access, however, is difficult to obtain for individuals with insufficient or no insurance coverage (IOM, 2011). Providing high quality health care can be achieved by expanding access through the use of health care providers acting in roles outside of the acute care setting such as primary care, transitional care, and community-based care (IOM, 2011). Faith community clinics offer holistic, community-based care focused on mind, body, and spirit to communities, often benefiting underserved populations (Shillam, Orton, Waring, & Madsen, 2013). Finding solutions in the community to provide screenings, education, and chronic illness management for populations with limited access to healthcare can improve health outcomes. Community resources can reduce costs by limiting the need for expensive acute and emergency care services (Schroepfer, 2016).

Background

Faith communities have cared for the sick throughout history, and currently there are over 17,000 practicing faith community nurses in the U.S. (Cooper & Zimmerman, 2017). Early healthcare addressed physical and spiritual needs simultaneously, with Florence Nightingale emphasizing the need to honor both the psychological and spiritual aspects of patient care in order to promote health. However, as scientific knowledge increased, the focus of healthcare shifted to curing disease, with nurses' primary role identified as providing medically prescribed treatments (King & Pappas-Rogich, 2011; Pappas-Rogich & King, 2014). Care for the spirit, and the relationship between health and spirituality became less important, until recently.

Partnerships between faith communities and healthcare organizations are now considered a potential solution to providing timely, quality, and cost-effective care to certain populations.

Multiple studies support the positive impact faith communities have on the health of individuals with hypertension (HTN) (Baig, Mangione, Sorrell-Thompson, & Miranda, 2009; Bangurah, Vardaman, & Cleveland, 2017; Cooper & Zimmerman, 2015; Cooper & Zimmerman, 2017; Whisenant, Cortes, & Hill, 2015), diabetes (Austin, Brennan-Jordan, Frenn, Kelman, Sheehan, & Scotti, 2013), older adults (King & Pappas-Rogich, 2011; Pappas-Rogich & King, 2014; Rydholm, Moone, Thornquist, Alexander, Gustafson, & Speece, 2008; Shillam, Orton, Waring, & Madsen, 2008), weight management (Kelley, 2018) and vulnerable populations (Baig et al., 2010; Bangurah, Vardaman, & Cleveland, 2018; Callaghan, 2016; Cooper & Zimmerman, 2015; Koenig, Nelson, Shaw, Saxena, & Cohen, 2016; Monay et al., 2010; Whisenant, Cortes, & Hill, 2014); however, many of the studies are qualitative and statistical significance on the outcomes is not determined. Electronic medical records can collect the data that is needed to synthesize high quality research to support the use of faith institutions to impact the health of their communities.

Electronic medical records (EMR) first appeared in the 1960's. Open Source Electronic Health Record projects became popular following the Health Information Technology for Economic & Clinical Health (HITECH) Act of 2009. This act is part of the American Recovery and Reinvestment Act and created incentives related to health care information technology. The Act offers incentives for the use of EMRs and expands the scope of privacy and security protections under the Health Insurance Portability and Accountability Act (Douglas, Dawes, Holden, & Mack, 2015). Non-profit organizations do not receive these same incentives and therefore have not been as motivated to adopt health care information technology.

Although the benefits of EMRs are vast, there are still many barriers to the adoption of EMRs such as cost, complexity, interoperability, provider acceptance and consumer acceptance (Safadi, Chan, Dawes, Roper, & Faraj, 2014). The use of open source software as an EMR system instead of a traditional proprietary system may help resolve some of the dilemmas facing healthcare organizations by offering a more affordable, modifiable documentation option. Previous studies have demonstrated positive findings with the adoption of an open source system with common themes including low cost of acquisition and maintenance as well as availability of templates for customization by organizations. The average cost of a proprietary system is between $15,000 and $50,000 per provider; however, the cost of an open source system in one study was under $9,000 (Safadi, Chan, Dawes, Roper, & Faraj, 2014). Challenges that have been identified include the system's inability to integrate with larger hospital EMRs and a lack of provider familiarity with open source systems, creating a steep learning curve during initial implementation (source).

Studies have shown that EMRs have the potential to improve healthcare quality, efficiency, and safety. EMRs can decrease medical errors and encourage patient involvement. An EMR can show and support the value of services rendered, provide supportive data, increase patient access to their medical records and history, improve efficiency, and eliminate unnecessary and repetitive tests or labs (Department of Health & Human Services, 2012).

Patients benefit from the implementation of an open source EMR by potentially experiencing more efficient care, having the opportunity to gain access to their own online patient records, and having follow-up appointments where their health care providers can see previous health history and treatment plans. Patients also experience a more efficient clinic visit because of the enhanced coordination of care that comes from implementing an EMR, including

improved interdisciplinary care (Ziebarth, 2016). Each member of the disciplinary team has access to the documentation in the patient's EMR. Chart summaries, medical notes, and recommended treatments are legible and accessible to everyone on the healthcare team.

In communities, EMRs allow for data-driven initiatives by local churches. For example, one study found that in certain impoverished neighborhoods, individuals were more likely to have higher hemoglobin A1C measurements. A church in this neighborhood could use these data and provide programs and screenings aimed at diabetes diagnosis and management (Dixon, Zou, Comer, Rosenman, Craig, & Gibson, 2016). A retrospective observational analyis study examined clinical performance measures including HgbA1c, blood pressure, low-density lipoprotein cholesterol and smoking re-aggregated to patient home zip codes. The analysis of the population using EMR records noted correlations among attainment of performance measures in particular zip codes with household income, educational attainment, and insurance coverage (Gabert, Thomson, Gakidou, & Roth, 2016). Neighborhoods can benefit from the ability of the EMR data to allow an organization to identify trends related to diseases and health outcomes specific to the community and its relationship to a populations' social determinants of health. By determining specific needs for communities and meeting those needs through screenings and programs, there is potential for improved population health outcomes (Dixon, Zou, Comer, Rosenman, Craig, & Gibson, 2016; Gabert, Thomson, Gakidou, & Roth, 2016; Ndabarora, Chipps, & Uys, 2014).

Organizations can utilize open source EMRs to provide specific programs and screenings based on the community's need. Volunteers experience more efficient clinics and easier access to patient records. Ideally, organizations will also have access to more grant opportunities by supporting their mission with statistical evidence. EMRs allow the organization to better cost-

evaluate their services based on number of patients and services rendered. Also, an EMR can give credibility to the specialty by offering quantitative data to determine the clinic's impact on the health of individuals (Holroyd-Ledu, Lorenzetti, Straus, Sykes, & Quan, 2011; Lou, Price, Boyd, Partridge, Bell, & Raworth, 2012; Menachemi & Collum, 2011;Sulmasy, Lopez, & Horwitch, 2017) and communities (Dixon, Zou, Comer, Rosenman, Craig, & Gibson, 2016; Gabert, Thomson, Gakidou, & Roth, 2016; Ndabarora, Chipps, & Uys, 2014).

Project Purpose

The purpose of this evidence-based Doctor of Nursing Practice project was to implement and evaluate an innovative use of technology in a clinical setting using an open source EMR at a free faith-based clinic hosted by a local church. This project offered the opportunity to continue the historic tradition of faith communities caring for the sick, while aligning with new trends in healthcare by adopting an EMR for patient records. Often EMRs are too costly for smaller organizations; however, open source systems have made EMRs more popular, modifiable, and affordable. This project implementated New Open Source Health Charting System (NOSH), an open source medical record system, at a faith based free clinic in an effort to improve patient care and community health outcomes.

Review of Literature

The purpose of this literature review was to explore the implications of implementing an EMR system. The literature search was performed using EBSCOhost, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and ProQuest. Keywords used in the search included *electronic medical record*, *health outcomes*, and *population health*. Inclusion criteria included peer-reviewed sources, articles pertaining to the research question, resources written in the English language, and publication dates within 10 years. Duplicate articles were discarded,

and articles were reviewed for relevance to the topic. Ninteen articles were selected and appraised for rigor and evidence. This literature review revealed that EMRs can positively impact health outcomes of organizations, patients, and communities. Positive outcomes support the EMR adoption at faith-based health clinics, bridging the gap of access to healthcare by providing patients with free, quality care.

Healthcare Organizations

Multiple studies demonstrated that EMRs improved health care provider satisfaction, and showed that both providers and nurses were willing to adopt EMRs due to the potential benefits they provide. Provider satisfaction was highest when they had a scribe present. In one study, providers with a scribe accepted the EMR and satisfaction rates were 93%; compared to providers without a scribe who reported a satisfaction rate of 87% (Koshy, Feustel, Hong, & Kogan, 2010). Scribes allow the communication between provider and patient to occur without the interruption of typing (Wolf, Chisolm & Bohsali, 2018; Sulmasy, Lopez, & Horwitch, 2017).

In a qualitative study focused on nurses' perceptions of EMRs prior to implementation, O'Mahony, Wright, Yogeswaran, and Govere (2014) interviewed 33 nurses at a community health center to learn about their knowledge and attitudes regarding EMRs. This study found that the nurses knew the benefits of an EMR, such as error reduction, increased access to information, and faster work. The top concerns of the nurses were security and confidentiality; however, the benefits outweighed the potential challenges in their opinion.

A systematic review including 27 controlled studies and 16 descriptive studies examined the EMR's impact on prescription support, preventative care, and patient physician communication. This review showed that in 51% of studies, EMR's improved office practices, made no impact 30% of the studies, and had a negative impact on office practices for 19% of the

studies (Lou et al., 2012). EMRs made improvements in preventative care (66.7%), work practice (64.3%), and disease management (57.1%), with clinical documentation showing the least improvement (16.7%) (Lou et al., 2012). Another study conducted 54 semi-structured interviews with stakeholders involved in an open system EMR adoption within their organization. The respondents reported positively regarding the systems customization ability and low acquisition and maintenance costs (Safadi, Chan, Dawes, Roper & Faraj, 2014).

Two systematic reviews showed that initially EMRs cause higher documentation times for nurses and providers in hospital settings (Baumann, Baker, & Elshaug, 2017) and primary care settings (Holroyd-Ledus, Lorenzetti, Straus, Sykes, & Quan, 2011). Baumann, Baker, and Elshaug found that prior to EMR implementation nurses spent 9% of their work time documenting on patients and providers 16% (2018). Initially following EMR implementation, nurses spent 14% more time documenting and providers spent 12% more time documenting ($p<0.05$) (Baumann, Baker, & Elshaug, 2018). Organizations may be concerned that the initial increase in clinic time may deter patients; however, Holroyd-Leduc, Lorenzetti, Straus, Sykes, and Quan (2011) found that documentation times decreases over time 68-78%.

Patients

Many patients benefit from the implementation of an EMR in their health care system. One of the most mentioned benefits of EMR adoption is the inclusion of clinical guidelines within the system, reminding providers of evidenced based practice and timely preventative care (Lou et al. , 2012; Menachemi & Collum, 2011;Sulmasy, Lopez, & Horwitch, 2017). Prior to EMRs, patients received guideline-directed care only 50% of the time. A systematic review of 578 studies found that EMRs helped providers follow guidelines and improve patient outcomes (Wolfe, Chisolm, & Bohsali, 2018). When looking at preventative measures, one systematic

review found that prior to implementation of an EMR, preventative health measures in adults occurred only 28-64% of the time, and after implementation rose to 47-80%. Similarly, in a pediatric setting prior to implementation preventative measures occurred only 30-39% of the time and increased to 47-56% post intervention (Holroyd-Ledu et al., 2011). A study investigated the care provided at 412 primary care practices and performed a cross-sectional analysis to measure physician performance on commonly used quality measures including screenings, diabetes, depression, and overuse. This study found a statistically significant positive association between EMRs and the number of breast and colon screenings and sexually transmitted disease screenings, with EMR use increasing usage between 1.9 and 2.2 percentage points (Friedberg et al., 2009). In patients with diabetes, EMRs improved nephropathy and vision screening, with EMR use increasing 2.3-3.1% (Friedberg et al., 2009). A systematic review by Ndabarora, Chipps, and Uys also showed improved safety and up to 92% fewer systematic errors in three studies conducted on systems in South Africa, Rwanda, and Haiti (2014).

Clinical guidelines and improved preventative care are not the only factors leading to better patient health outcomes. EMRs are improving care by making it safer through medication and allergy alerts (Sulmasy, Lopez, & Howitch, 2017; Menachemi & Collum, 2011). In two studies, computerized physician order entry (CPOE) with decision support decreased medication errors by 55-83% (Agrawal, 2009; Holroyd-Leduc et al., 2011). Improved safety may be attribed to CPOE requiring prescribers to enter complete prescription and improving legibility. CPOEs can also alert providers of patient allergies and potential drug interaction. A qualitative exploratory study explored the effect of EHRs on patient safety by interviewing 17 nurses using semi-structured questions. The responses were analyzed thematically and resulted in benefits and concerns that EMRs have made to patient safety (Tubaishat, 2019). The positive themes

identified were decreased medication errors, improved documentation of data, more complete data documentation, and improved sustainability of data (Tubaishat, 2019). The negatives outcomes were likely due to poor system design or user error and included; technical problems, minimal alerts, and poor use of system communication channels (Tubaishat, 2019).

According to a study of over 1,000 adults, 78% favored EMRs because of their belief that the EMR improves care and saves money. Individuals with higher income and more familiarity with technology generally had a positive perception of EMRs. (Gaylin, Moiduddin, Mohamoud, Lundeen & Kelly, 2011). This same study found that 64% of participants felt that the benefit of EMRs outweigh the risk of privacy breaches, and it appears they are correct according to a number of studies examining the impact of EMRs on patient well-being (Holroyd-Ledu et al., 2011; Lou et al., 2012; Menachemi & Collum, 2011;Sulmasy, Lopez, & Horwitch, 2017).

Patients tend to benefit the most when EMRs allow them to access to their health information as compared to when patients are given no access. Although many agree that access to health information is an ethical and legal right of the patient, prior to EMRs the process to obtain health information was often complicated and timely. Sulmasy, Lopez, and Horwitch (2017) found that when patients have access to their information, their engagement in their health care decisions increases. Although a majority of patients will benefit from EMR, Wolfe, Chisolm, and Bohsali (2018) found that non-native language speakers and individuals with low health literacy may not have as many positive benefits because they may be unfamiliar with the use of medical terminology by providers.

Although EMR adoption can make communication challenging between patient and provider, it can also improve the interaction. Wolfe, Chisolm, and Bohsali (2018) found that

EMRs can make patient provider appointments more meaningful, personal, and efficient if the provider can access the patient chart prior to the face-to-face encounter.

Multiple studies found that EMRs can improve management of patient's chronic illness (Wolfe, Chisolm, & Bohsali, 2018; Lou et al., 2012). One systematic review analyzed 27 quantitative and qualitative studies and concluded that improvements were evident post-EMR implementation 37% of the time. The most improvement was seen in medication adherence, disease awareness, self-management of chronic illness, and decreased office visits (Kruse, Bolton, & Freriks 2015).

Communities

Large volumes of quality data from EMR integration can help identify trends related to population health (Wolfe, Chisolm, & Bohsali, 2018; Menachemi & Collum, 2011). When examing the quality of health data and best practices at community levels in low- and middle-income countries, a systematic review containing 38 studies concluded that EMRs improve data quality. This improved data quality positively impacts the quality of services provided and improves efficiency in care for communities. An advantage of EMR is that it may improve the quality of data. One study found that paper forms produce low quality data. Improving data quality can assist policy makers in decision making regarding health care and allow providers to plan community-based interventions using credible evidence (Ndabarora, Chipps, & Uys, 2014).

Collecting data via EMR may also assist in evaluating a community's health. For example, public health agencies generally only receive information related to infectious diseases. EMR integration can create data sets to help understand the prevalence of certain diseases and chronic disease management at the local level. One study found that the use of EMRs can provide more accurate identification of health disparities. For example, populations in poverty

had more cases of uncontrolled diabetes (Dixon et al., 2016). However, data extracted from EMRs presents challenges such as biases in that it only captures information from individuals who have sought health care. Nevertheless, there is still potential for EMRs to help assess and treat communities based on their residents' health information.

A retrospective observational analysis of EMRs in relationship to the patient performance measures (hemoglobin A1C, blood pressure, low density lipoprotein cholesterol, and smoking) found that a person's attainment of performance was correlated with his/her household income, educational level, and insurance level (Gabert, Thomson, Gakidou, & Roth, 2016). This study shows that an EMR's can identify social determinants of health, and their impact on the health of individuals. Adoption of EMRs and consolidation of data allows researchers to create reports related to chronic illness and identify areas in need for specific screenings and educational programs.

EMR Implementation

Although there are much evidence to the benefits of EMR use, barriers to implementation are still a factor, particularly in outpatient office settings. To address these barriers, a qualitative study conducted 43 interviews and six physician focus groups to determine the role of cognitive and learning theories which support successful EMR implementation (McAlearney, Robbins, Kowalczyk, Chisolm, & Song, 2012). The authors supported the inclusion of social and cultural factors when training users of EMRs to increase the likelihood of successful implementation. This study found that all interviewed groups strongly supported incorporating active learning in EMR training programs. Scenario-based learning and on-site user support during implementation were two of the most common active learning and observational learning experiences (Kushinka, 2010; McAlearney et al., 2012).

The same study found that in 4 out of 6 practice groups, positive role models contributed to better learning outcomes (McAlearney et al., 2012). Positive role models included clinical leaders serving as resources for their peers (Kushinka, 2010; McAlearney et al., 2012). Training programs focused on groups of people in similar roles and knowledge also improved learning outcomes of trainees. Smaller communities, such as registration staff, physicians, and nurses made learning more meaningful and beneficial, allowing training to meet the user's specific needs (Kushinka, 2010; McAlearney et al., 2012). This study's results support the use of clinicians as trainers for improved implementation (McAlearney et al., 2012).

Theoretical Model

Mattingly and Main (2015) found a lack of acceptance and use of EMRs amongst faith community nurses, with implementation failure rates of 50%. With such high failure rates, using evidence-based tools for the implementation of health information technology is essential and a theory will help guide the project. Davis' Technology Acceptance Model examines the user's attitude toward the technology. An individual's eagerness to adapt a new technology is determined by whether that person perceives the technology as easy to learn and use, and whether it is useful. If these two perceptions are met, the individual is more likely to accepts and use the technology (Davis, Bagozzi, & Warshaw, 1989). This theory prioritizes the EMR's ease of use and education of the volunteers regarding its value to the patient, community, and organization.

Perceived usefulness is an individual's belief that the technological system will enhance a his/her job performance. The theory suggests that a person will adapt to technology more willingly when they anticipate the technology will improve their job performance, productivity, and efficiency. To help with the implementation of an EMR, education on the EMR's potential

to improve job performance will help improve provider's willingness to adopt this new technology. Perceived ease of use is the degree of effort an individual believes the technology will require to use it. This is the most impactful aspect of an individual's intent to use the technology (Pai & Huang, 2011).

Using Davis' theory to guide the project required that an EMR with a simple, intuitive interface be selected, and that modifications were simple to understand. The workflow of the clinic was assessed and translated to the EMR operations. As Davis' theory suggests, the EMR users had sufficient information available during implementation, such as on-site support and training materials such as pamphlets and videos to improve the user's perception of the technological adoption (Pai & Huang, 2011).

Methods and Procedures

Setting

The partnering organization is a state-certified charitable medical service provider that collaborates with local churches, businesses, and governmental institutions to meet community needs. Their mission is to help neighborhoods address social issues related to health, education, and employment. This organization's focus is to "make whole-person health possible by sorting out all the organizational, operational and strategic problems keeping the local church from being an effective change agent in their neighborhood" (Seed to Oaks, 2018). The organization has four guided social initiatives to offer; neighborhood assessments, Job One, Whole Health, and Oaks Learning. The Whole Health sector seeks to help churches and health professionals work together to host clinics to address the health needs of their surrounding community. Hundreds of health care professionals, such as medical doctors, nurse practitioners, physician assistants,

registered nurses, dentists, and dental hygienists have served close to 1,000 individuals, providing nearly $200,000 in care during the 2018 year.

The hosting church is centrally located in an urban neighborhood and provides health clinics for its surrounding community. The clinics held at this church serve an average of 100 patients per biannual clinic. The church is located in a neighborhood with higher mortality and lower health outcomes as compared to city, state, and national measures. This community has higher rates of death due to stroke, diabetes, and heart disease (Louisville Metro Health Report, 2017). This zip code area has the third highest rate for age-adjusted death rates due to heart disease and is 14th for age-adjusted stroke death rates as compared to surrounding neighborhoods in the city. Individuals with HTN in this community are predominantly black (44%), followed by white (32%), and Hispanic (11%). This community also has a much higher age-adjusted death rate per 100,000 people related to diabetes, with a rate of 43.62-66.05 compared to the city's rate of 25.16 (Louisville Metro Health, 2017). Early diagnosis and chronic disease management education through community screenings may lead to early recognition, intervention and improvements the health of individual in this community.

This community has an alcohol- and drug-related age-adjusted death rate per 100,000 of 48.77-75.57 as compared to the city's rate of 34.56 (Louisville Metro Health, 2017). Over 50% of residents live below the federal poverty line and between only 10-20% of residents have a bachelor's degree or higher level of education. According to a recent census, 38% of households in this community do not own a vehicle (Kentucky State Data Center, 2017). The high prevalence of addiction, poverty, low education levels, and limited access to transportation make this community an ideal population for the partnering organization to provide education and

resources. Education and resources guided by data gathered from the EMR may lead to improved health outcomes for the community.

Key Personnel

Key personnel involved in this project included the Whole Health program manager, software developer and statistician, the Doctor of Nursing Practice (DNP) student and lead registration, nursing, and medical volunteers. The program manager, program developer, and DNP student developed the EMR based on clinic needs and work flows and ensured software security. This team met with stakeholders throughout the project. The DNP student created training materials, including videos and manuals, and assisted in the training of volunteers prior to the implementation of the EMR system. The DNP student initiated a community needs assessment and analyzed clinic data that had been collected on paper forms in previous clinics to compare to data collected after implementation. The program manager coordinated the clinic, recruited volunteers, and organized weekly clinic meetings one month prior to the clinic date. At the conclusion of the project evaluation, analysis and interpretation of the data was performed by the team. The Gantt chart in Appendix A illustrates the project's timeline.

Stakeholders

Identified stakeholders of the program included the hosting community church and the community it serves. This church has hosted clinics for the past decade and has built rapport with the surrounding community. The implementation of an EMR had the potential to impact that relationship. The organization was also a stakeholder because of their monetary and time investment. The volunteers were also stakeholders in the program, as they are the ones implementing and sustaining the project in the long-term. The residents of Shelby Park are stakeholders in the program, as they are the community in which the clinic serves, and ideally

data collected from this project will allow for data-driven programs and screenings to be provided to this community.

Intervention

Previous process. Prior to implementation of the EMR, clinicians documented patient visits on paper charts. Patietn registration and patient demographics were recorded on a paper intake form. The time of each visit was noted, and a medical record number assigned. After registration, the patient saw a registered nurse who obtained the patients' past medical history, chief complaint, vital signs, labs, and findings which were documented on the same intake form. The patient could then be assessed, diagnosed, and treated by a medical provider and receive dental cleanings and care from a dental hygienist and dentist. Each provider charted their assessment findings on a paper chart. For returning patients, providers were unable to access past records, making it impossible to compare their previous assessment to their current findings. This lack of information made it difficult to determine whether or not an individual was managing his/her disease effectively.

After the patient received care from the primary care provider and/or dentist, the patient had the opportunity see other wellness services, such as massage therapy and other specialty volunteers based on availability. These additional services were not recorded on the patient chart. At the conclusion of each visit the patient was offered a meal and a brief survey. The patient exit survey (Appendix B) collected data on how the patient learned about the clinic, their level of education, chronic diseases, and what makes it difficult for them to obtain and manage their health. Upon exit, the patient's form was collected and the time of the visit conclusion documented.

After the clinic day, a volunteer spent approximately eight hours inputting patient data into an Excel spreadsheet and transfering the data via graphs and short paragraphs onto a paper document. The paper charts were stored under lock and key and disposed of after five years. These data collected was helpful in identifying common ICD 10 codes, analyzing descriptive statistics regarding demographic information, and determining an approximate cost valuation of services rendered, but they were not specific enough to apply for grants and other funding opportunities. Although the cost of the previous system only involved the cost of printing, there were missed opportunities in external funding that could provide additional resources to improve patient and community health. The paper forms also resulted in the inability to track patient data and outcomes over time. Based on this process, the clinic manager consulted with the DNP student, a volunteer software developer, and statitician to improve the data collection process.

Project Design. This project documented the implemention of a clinical practice change using an open source EMR and the collection of post intervention data and patient demographics. Using an EMR system, specifically open source software, was a cost-effective option with low acquisition, installation and ownership costs. This software system was easily modified, specified for the organization, and gathered valuable information to improve processes and outcomes of individuals and communities (Alsaffar, Yellowlees, Odor & Hogarth, 2017).

The EMR system used was New Open Source Health Record (NOSH) and is part of Amazon web services. NOSH was founded in October 2012 by Michael Chen, MD, a family physician in Portland, Oregon. NOSH ChartingSystem (1.6.9) is currently used in primary care, pharmacies, mental health, and physical therapy (Chen, 2018). NOSH can be a computer-based program or installed in the cloud and works with many computer systems and web browsers. NOSH is compliant with the Health Insurance Portability and Accountability Act (HIPAA)

(Chen, 2018) and has a two factor authentication as part of its free application, Google Authenticator.

In preparation for this project the program manager and data analyst determined that NOSH was the most appropriate open system EMR based on its cost, open application programing interface (API), and the ability to be replicated for use in different clinics. The open API allows the organization access to all of the data collected during the clinics, unlike closed API systems which only allow patient-specific data to be viewed.

A volunteer programmer was consulted to modify the EMR to meet the unique needs of the clinic. After the system was programmed, five volunteers, the DNP student, the software developer, medical lead, nursing lead, and dental lead were trained by the DNP student to act as support during the next two clinics. The first of these two clinics served as a pilot for the implementation process. Training included screen recorded video that instructed the volunteers on how to document the patient encounter. Every volunteer registrar, registered nurse, and provider had the ability to witness documentation on NOSH using a simulated patient scenario. Also, paper training documents were developed for the dental providers that consisted of similar information to that provided to the registrars, registered nurses, and providers. The manuals were available for reference during the clinic, including screenshots and step by step instructions for documenting using NOSH (Appendices C, D, E). A minimum of 12 computers or tablets were purchased for clinic use. Full implementation of the EMR occurred at the clinic on February 23, 2019.

Prior to the clinic's start, each volunteer created a log-in for both the organization's website and NOSH. Afterward, each volunteer logged into the organization's website, entered the code generated by Google Authenticator, logged into NOSH and began documenting patient

visits. This process was done individually, and with the exception of the registration volunteers who were given general log-ins, each user created their own username and password.

The registration volunteers were the first to enter patient information into NOSH. The volunteer asked patients to provide basic demographic information including the patient's name, age, date of birth, and gender. An electronic form within NOSH was included asking the patient's insurance status, veteran status, religious preference, and if they claim a house of worship. After registration, the patient saw a registered nurse who initiated the healthcare delivery porton of the patient encounter. After identifying the patient and verifying their name and date of birth the nurse entered the patient's allergy information followed by the chief complaint, history of present illness, and review of systems. NOSH provided templates allowing the nurse to click positive and negative findings and copy that information into the appropriate spaces. Next, assessment findings, including vital signs, and labs (e.g., blood glucose and pregnancy test results) were entered into the system. Nurses were expected to obtain the following vital signs and document their findings; weight, height, temperature, blood pressure, pulse, and respiration. NOSH automatically calculated the patient's body mass index. Four forms (Appendix F) were created to be completed by the nurses: Surgical History, Family History, Healthy Days, and Patient History. Each of these forms allowed the nurse to acquire subjective information for the provider. After the nurse's assessment and documentation of findings, the patient was seen by the healthcare and or dental provider.

Medical providers were expected to document an objective assessment of the patient, provide an appropriate International Classification of Diseases 10 (ICD 10) code, patient recommendations, including prescriptions, and a plan of care. NOSH provided a list of ICD 10 codes for providers to choose from. During this clinic the provider was unable to electronically

send prescriptions to the pharmacy for the patient so paper prescriptions were provided and documented. Each provider concluded the patient's visit by electronically signing their note.

The patient could also be assessed and treated by a dentist and receive oral care from a dental hygienist. Based on the dentist's recommendations the patients' dental care could including oral hygiene instructions, cleanings, teeth extractions, and/or radiological imagings. This information was entered into the EMR. After their visit, the patient was offered a meal and could visit other services such as audiology or an over-the-counter pharmacy. At the conclusion of the clinic, data were collected immediately and made available for analysis by the organization and student.

Budget. Upfront costs associated with the EMR included 15 Chromebooks, which were purchased for clinic use, costing $3,675. Nosh is free; however, Amazon Web Services charges a $2.00 monthly fee on non-clinic months, and approximately $30.00 fee on months with clinic dates. Two Universal Resource Locators (URLs) were purchased, costing a total of $50.00 annually. There were minimal costs associated with the programming of the software or the training of volunteers. Both the programmer and DNP student were volunteers, so there was no cost to the organization.

Cost Analysis	Units	Cost/Unit	Total Cost
Chromebooks	15	$250	$3,675
Open Source EMR: NOSH		$0	$0
Paper training manuals	15	$3	$45
Programming hours	250	$0	$0
Website URL for NOSH and WholeHealth		$50	$50
Two-factor authentication		$0	$0

application-Google Authenticator			
Amazon Web Services	Variable	$2	$80
Annual Total			$3,850

Process Evaluation

Data collection via electronic medical record.

Data collection involved gathering information to evaluate the previous paper-based recording process with the new EMR system. This project helped to determine the impact of the EMR on clinic nurses' documentation thoroughness and adherence to clinical guidelines and collected data on demographics and other patient healthcare data.

Instruments. One instrument used to assess the success of the EMR implementation was the Davis' Percieved Ease of Use Questionnaire. This questionnaire probes a user's willingness to adapt a new technology based on its perceived ease of use and usefulness. The questionnaire included seven questions to be answered using a Likert scale. This is a highly reliable instrument with a Chronbach alpha of .98 (Davis, 1989).

The Centers for Disease Control and Preventions' Healthy Days measures were also integrated into the EMR for data collection. These measures have been valuable in identifying health disparities, determining health related quality of life for groups of people, and tracking trends (CDC, 2019). This questionnaire consists of four core questions related to a person's self-reported quality of life, both physically and mentally. The questionnaire requires the individual to recall the past 30 days and rate their overall health as *poor*, *fair*, *good*, *very good*, or *excellent*. The patients then report their number of mentally healthy days, physically unhealthy days, and days unable to perform activities of daily living. This tool is for individuals over the age of 18.

This is a reliable instrument with a Chronbach alpha of .76 (Yin, Njai, Barker, Siegel & Liao, 2016).

Ethical considerations. The primary ethical considerations were security, confidentiality, and the potential for the EMR to negatively impact the quality of patient care provided. To ensure that patient information was secure and confidential, an open source EMR was used. NOSH is compliant with the provisions of the Health Insurance Portability and Accountability Act (HIPAA) of 1996 for safeguarding medical information. For an added security measure, the users were required to sign in using two-factor authentication. Two-factor authentication confirmed a user's identity by using a log-in password and something they have, in this case, their phone with the Google Authenticator application downloaded. Google Authenticator linked to NOSH using a quick response code (QR code) and generated a four digit numeric code for the user to enter after logging in with their email and password. Data is now stored in cloud-based storage using Amazon Web Services that is protected and HIPAA compliant.

This project was submitted to the university's Institutional Review Board which reviewed the institutional, legal, scientific, and social implications of this project and approved its implementation.

Results

Documentation Thoroughness

Documentation thoroughness with paper charting was compared to the EMR. Specifically, we performed a chart review on 135 patients who attended the February 2018 clinic at the same location to assess the paper charts for thoroughness in nurses' documentation of vital signs. Patients missing more than three vital signs out of six were considered incomplete. An

analysis was also performed on the patient documents recorded with the EMR. A comparison of documentation thoroughness in paper charts and the electronic medical record is shown in Table 1.

Table 1

Documentation Thoroughness

	Paper Documentation	Electronic Medical Record
Percent of records missing data	31.9%	19.4%
Documentation improvement	12.5%	

Adherence to Clinical Guidelines

Adherence to clinical guidelines was assessed by determining whether benchmark measures, and evidence-based clinical guidelines for individuals with elevated blood pressures were being met and documented on by nurses. A patient record with HTN as a primary diagnosis, history of HTN, or an elevated blood pressure was reviewed for completeness of documentation on the following measures: weight, heart rate, and body mass index (BMI). Weight, heart rate, and BMI are all assessment findings that can help a provider determine how well the patient's chronic illness is being managed. Recorded adherence to clinical guidelines in paper charts for a patient with high blood pressure was compared to adherence to the same guidelines in the electronic medical record and shown in Table 2.

Table 2

Adherence to Clinical Guidelines Comparison

	Paper Records	Electronic Medical Record
Patients with elevated blood pressure	23%	23.6%

Weight documentation	54.8%	35.3%
HR documentation	100%	100%
BMI documentation	0%	29.4%*
*Note. * indicates improvement*		

These numbers show poor documentation compliance with both the paper charting system and EMR. Improvements in BMI recordings were attributed to the automatic calculation by NOSH when a patient's weight and height are entered. Ideally, improved adherence to recommended clinical guidelines at subsequent clinics will allow providers to build upon prior visits with repeat patients. Clinical guideline measures will be available to help assess the quality and continuum of care provided to the patient.

Participant Demographics

Participants included patients at the clinic recieving free medical, nursing and dental care. Aggregate data collected from the patient population included number of patients, demographics, and diagnoses. The patient population consisted of 72 adults. Sixty-four percent were 20-60 years of age and approximately 15% were under the age of 12. Gender was evenly distributed between male (48%) and female (52%); however, there were more female patients in the 30-50 age range and more male patients in the 20-30 age range. Approximately 25% of the 51 households served were families with more than one patient. Preferred languages spoken were English (39%), Spanish (45%), Mongolian, Arabic, French, and Chinese. The reported race or ethnicity of the patients was also collected, and 43% or patients identified as Hispanic or Latino, 24% black or African American, 14% Caucasian, 13% other or declined, and 7% Asian.

Thirty-seven percent of patients reported that they had medical insurance, and 18% reported having dental insurance. Approximately 60% of the patient population indicated a religious preference; 20% reported *no religious preference*, 30% reported *Catholic*, 28% other 8% *Baptist*, and 2% *Methodist*. Close to 30% of patients lived in a surrounding zipcode to the hosting church.

Twenty-five patients saw a healthcare provider and either reported no history of chronic illness (7), one chronic illness (9), two chronic illnesses (6) or three chronic illnesses (3). Among the 18 patients with chronic conditions recorded, HTN (5), high cholesterol (4), chronic pain issues (4) and signs/symptoms of respiratory issues (3) were the most common diagnoses categories recorded. Fifteen patients reported an acute condition, most commonly being pain or cough. Forty-six patients received dental care at the clinic with the most common dental chief complaints being *check-up*, *tooth pain*, or *bad/broken tooth*.

There were 46 medical volunteers who participated at this clinic. Seventy-eight percent were female and 22% were male. The average age of volunteers was 44 years, ranging from 22 to 71 years. Thirty-one medical volunteers had a professional license (RNs, dentists, providers, or dental hygeinists) and resported *less than 3 years of experience* (n=12), *3-10 years of experience* (n=11), *11-20 years of experience* (n=1), or *greater than 20 years of experience* (n=7).

Volunteeer participants included 10 registrars who started the patients' encounters by entering patient demographics. Eighteen registered nurses (RN) began the health care delivery portion of the patient visit. Five providers assessed and diagnosed patients at this clinic, including medical doctors (2), one physician assistant, and nurse practitioners (2). Seven medical students acted as scribes for the providers. Dental hygienists and dentists also provided

oral care to patients. This clinic had six dentists, eight dental students acting as scribes, and two dental hygienists.

Percieved Ease of Use Questionnaire

Immediately after the clinic, registrars, nurses, and scribes for both providers and dentists were asked to anonymously answer a brief questionnaire using Google Forms. The questionnaire was emailed to volunteers one day after the clinic and again one week later. The questionnaire had a 29% response rate. The responsdents were either registrars or nurses. While not every group was represented in these findings, the results were useful in determining which aspects of the EMR were easy to use and understand, and which aspects of the EMR could be improved or clarified. The responses ranged from 1-10 with 1 indicating that the volunteer agreed with the statement, meaning the lower the number, the more agreeance expressed by the user at the technology's ease of use and usefulness. The mean score for the questions are shown in Table 3.

Table 3

Volunteer Responses to the Percieved Ease of Use Questionnaire

Percieved Ease of Use Question	Mean Volunteer Response
Learning to operate the EMR was easy for me	3.1
I found it easy to get the EMR to do what I wanted it to do	2.5
My interaction with the EMR was clear and understandable	2.5
I found the EMR to be flexible to interact with	2.7
It was easy for me to become skillful at using the EMR	2.3

Healthy Days Measures

Patients' health related quality of life was measured using the Healthy Days measures, information collected by registered nurses. There were 54 adult patients at the clinic, thirty-seven were asked the questions on the survey, a 68.5% report rate. Patient responses were collected and analyzed, 14 reported no mental or physical unhealthy days and self-rated overall health was recorded as *excellent* (5), *very good* (4), *good* (17), *fair* (11), and *poor* (0).

Discussion

Barriers to Implementation

Cost and time. The top two barriers to EMR use among providers are cost and usability, and modifiability (Vishwanath & Scamurra, 2007), with the average cost of a proprietary system being $120,000 per physician in the first year after implementation with annual recurring costs of $30,000 (Alsaffar, Yellowlees, Odor & Hogarth, 2017). Open source EMRs cut costs and improve flexibility because the software is offered at a low cost and can be freely modified. Ideally, after the initial upfront costs of the tablets, the EMR have the potential for generating revenue by providing data to be used in grant applications. An example would be the inclusion of the Health Days form. This form determines how many mentally and physically unhealthy days a person experiences in a month. Mental health is often difficult to measure at a population health level. This form was added to the EMR and aggregate data will allow organizations to measure how many individuals report greater than 14 days of unhealthy days. These data will help further support the need for more mental health screenings and programs for this community, potentially providing more support for grants.

For length of visit, the best data available are the patient flow graphs created by the individual analyzing the paper charts prior to implementation, and the EMR data following the implementation. However, data at the November and February clinics using the EMR was missed and would not be considered a reliable comparison. Patient wait times to be seen, the length of time for their visit and the amount of time they spent with other services could not be documented by the EMR.

Based on findings from a study which showed a significant increase in provider and nurse documentation times, providers' time increased from 16% to 28% and nurses' time increased from 9% to 23% (Baumann, Baker, Elshaug, 2017) this clinic had extra support available to help with the expected delays. The patients at this clinic did not have appointment times and were treated in order of arrival. Local medical and dental students acted as scribes to help with the anticipated longer visits and four volunteers were trained prior to the clinic to serve as experts to help others during their first few experiences with the new EMR system.

Technology adaptation and acceptance. Several factors impact EMR user satisfaction, such as the logical and efficient flow of tasks, the ability of the user to complete tasks, the ease of correcting documentation mistakes, the training support available to users prior to and during the implementation phase (Kushinka, 2010; McAlearney, Robbins, Kowalczyk, Chisolm, & Song, 2012), and the perceived impact on the quality of care provided to the patient (Pai & Huang, 2011). To improve the likelihood of adoption, the users were provided paper and computer-based training, user support prior to and during EMR implementation, and an intuitive, simple to use system. Training materials were provided prior to the clinic implementation and were available during the clinic for reference. Examples of the training manuals are provided in Appendices B, C, D. Based on the feedback from the clinic, checklists have been made, listing

each item expected to be documented by each area of the clinic. These checklists have been laminated and can be checked off with each patient until the volunteer is comfortable using the EMR.

Recommendations

In an effort to improve the health outcomes of the people in their community, this clinic partnered with a DNP student and volunteer systems developer to implement an EMR to help improve quality and quantity of documention and better analysis of collected data. Initial results confirm that data collection became more thorough. Results also showed a improved adherence to clinical guidelines with the EMR for individuals with eleveated blood pressure, with more emphasis needed on the importance of obtaining weights on this patient population. The collected data can be used to drive future program planning, improve the health of patients and communities, give value to services provided by the clinic, and improve the quality of care provided by the volunteer providers. By using an open source EMR, the costs were minimal and the EMR was modified to fit the unique needs of the clinic. Training included video screenshots of a simulated patient scenario, printed manuals for reference, and clinic leaders trained on the EMR acting as first line resources for their peers during the clinic.

EMR implementation is sustainable because of its low costs and minimal efforts needed to maintain the EMR on a long-term basis. The leadership team is in the process of recruiting volunteers to help learn the system, extract data, and make updates in the future when needed. In the future, churches collaborating with the organization will have the option to use the Chromebooks to access the EMR and collect data on the communites served. Data collected from this project can serve as a benchmark for the organization to be compared to future clinics assessing for trends and forecasting needs, as well as provide valuable information to assist the

organization when applying for grants and funding. EMR implementation was a minimal financial risk to the organization and has great potential for improved organizational workflow, while improving patient and community health outcomes.

Faith-based nursing and healthcare is increasingly gaining popularity as the industry looks to minimize costs and improve health outcomes. Historically, qualitative studies have not shown the extent to which individuals and communities are impacted by health initiatives initiated by faith institutions. Healthcare technology can help support the specialty by providing increased quantity and quality data to analyze. Traditional, proprietary EMRs are too costly; however, open source systems offer a low cost, and easily modifiable option to non-profit, or smaller organizations. The data collected by an open source system allows organizations to improve the care that patients receive, and helps guide screening and preventative health efforts, contributing to the quantitative research available to show the impact of faith based healthcare on patients and communities.

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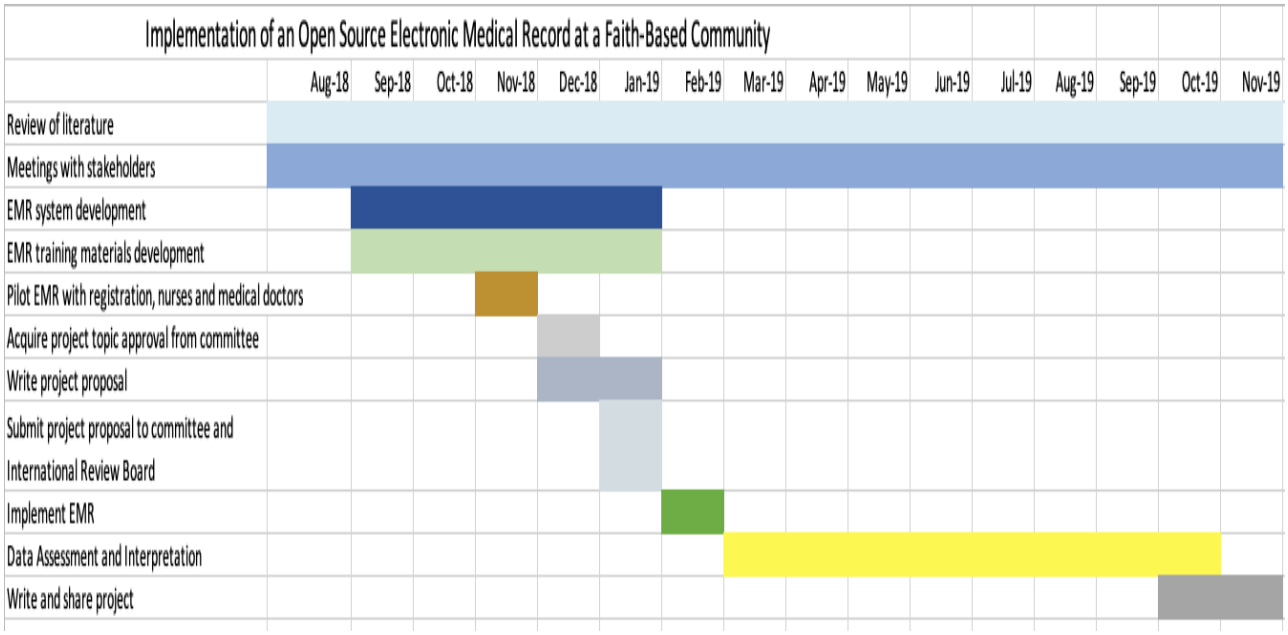
Appendix A
Project Timeline



Appendix B
Patient Exit Survey

4

Exit Survey

SOJOURN CHURCH MIDTOWN

We would like to know if our neighbors are interested in having a personal assistance program to help them gain better access to healthcare and promote healthy living. Will you please take a moment to complete this survey? Thank you for your time!

Wristband #: _____

How did you hear about today's clinic? *Please circle one*

Flyer Friend/Family Sign Outside Sojourn Yard Sign Social Media Other: _____

What is the highest degree or level of school that you have completed? *Please circle one*

8th grade or less | Some high school (no diploma) | High school diploma or GED

Some college (no degree) | Trade/tech./vocational training | Associates Degree

College degree or higher

Do you have any of these health conditions? *Please circle all that apply*

Asthma COPD Diabetes High Blood Pressure High Cholesterol Obesity HIV/Aids

Stroke Cancer Anxiety/Depression Other: _____

What makes it difficult for you to get medical care and/or manage your health? *Please circle all that apply*

Lack of Transportation | Lack of child or elder care | I do not speak English fluently

Cultural issues | I do not have health insurance | I cannot afford it

Can't take time off work | I do not have a primary doctor | Concerns about immigration status

Do you have a family member or friend who can assist you with these difficulties? Yes No

In the future would you be interested in being paired with a volunteer who could help you identify resources and overcome some of these difficulties? *(Please circle one)*

Yes, definitely | Probably | Probably not | No, definitely not

Aside from today's health clinic, what community resources do you use now or would like to use in the future?
Please check all that apply

Community Health Services	Now	Future		Community Health Services	Now	Future
Food Assistance Program				Exercise, Weight Loss, & Nutrition Program		
Mental Health Program				English Learning Program		
Healthy Lifestyle Program				Legal Assistance		
English Learning Program				Hospice/End of Life Care		
Drug/Alcohol Addiction Recovery Program				Smoking Cessation Program		
Transportation Assistance				Prescription (Medication) Assistance		
Child or Elder Care				Affordable Housing Program		
Job Training Program				Medicare/Medicaid		

Appendix C
Registration Training Manual

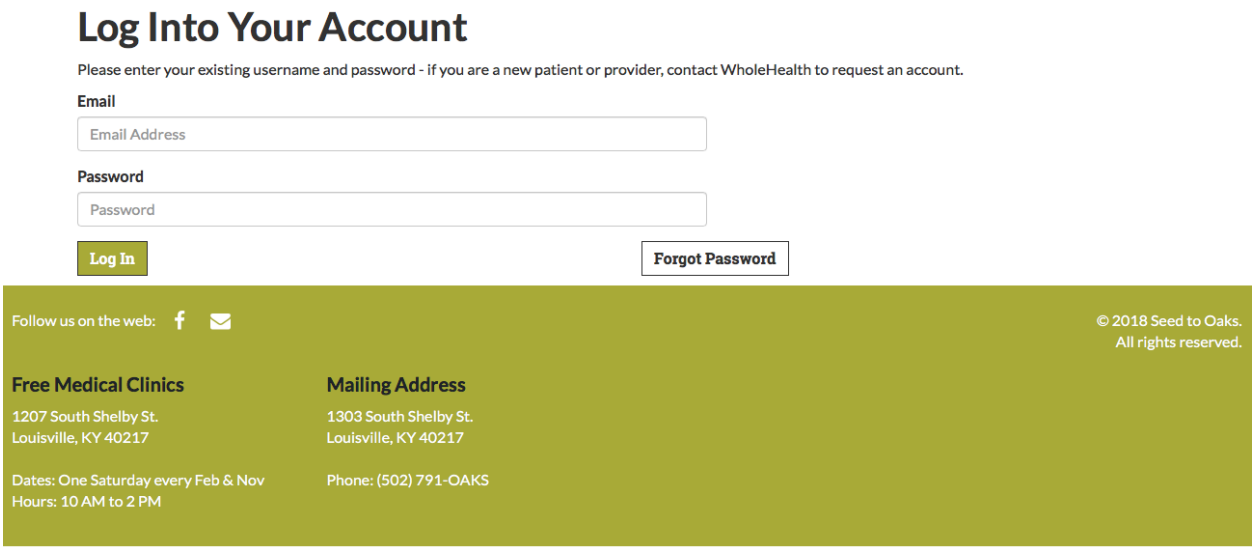
Nosh

A New Open Source Health Charting System

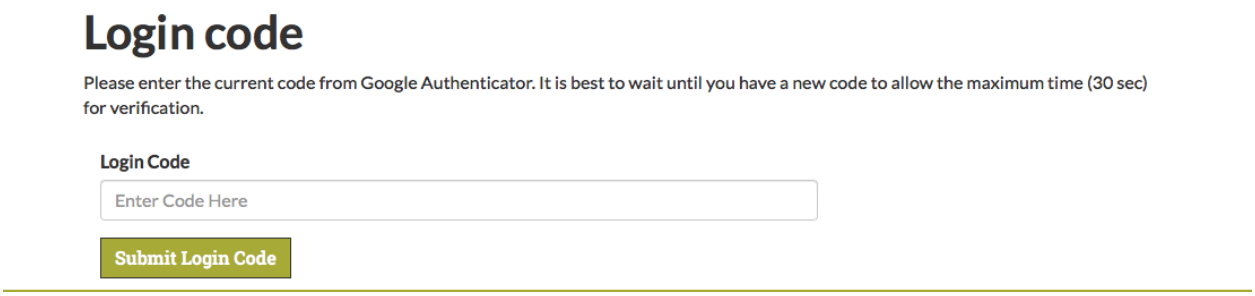
Instructions for Registration

Step 1. Go to https://wholehealthehr.org

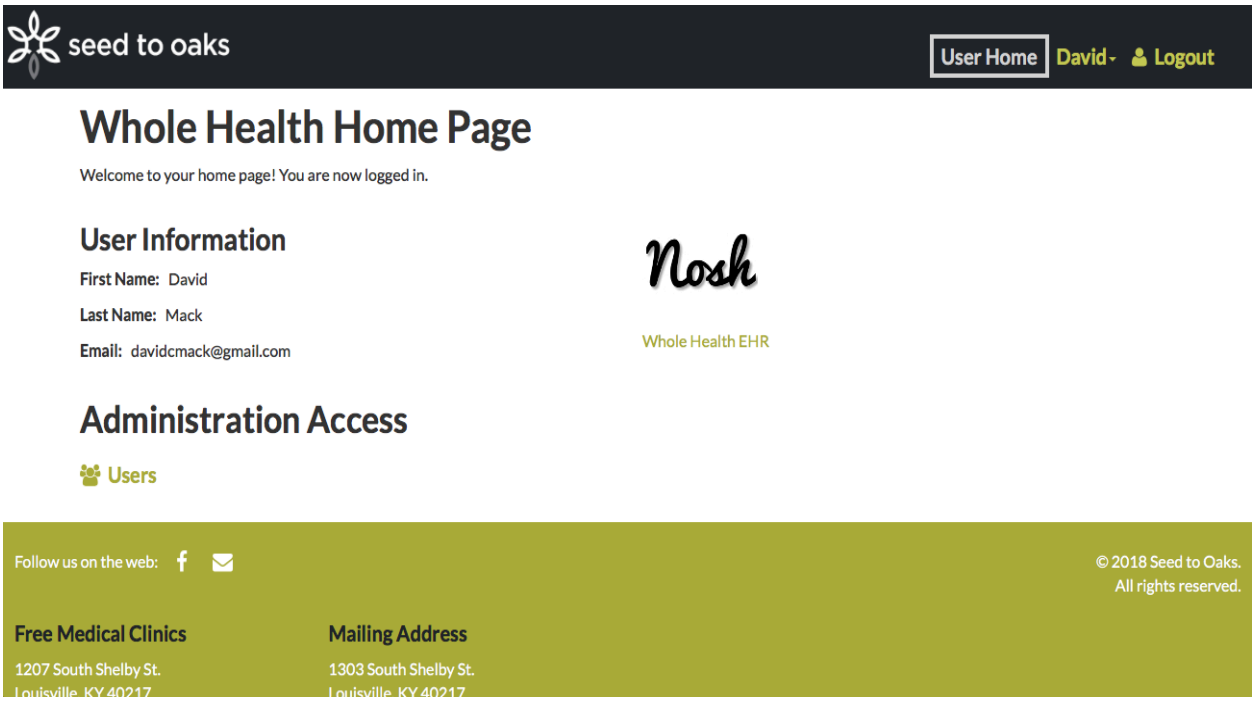
Step 2. Login to your account by entering your given password



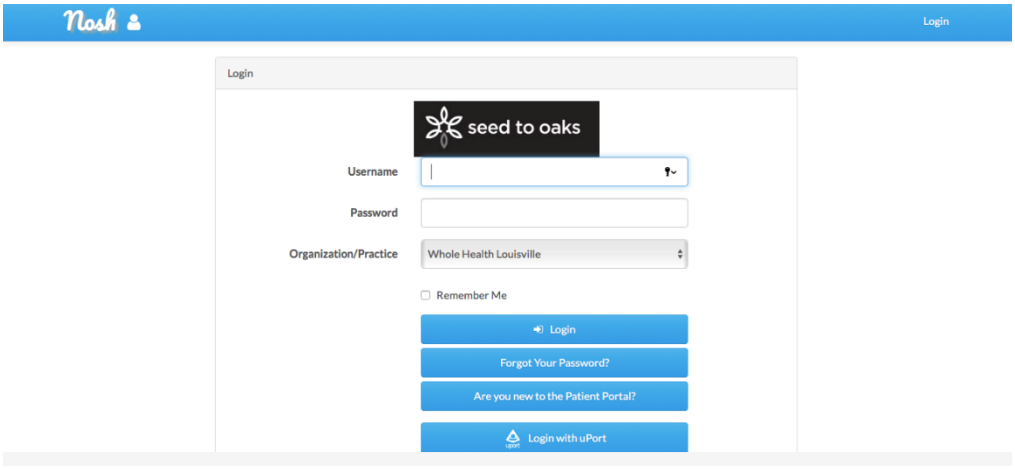
2 Factor Authentication:
The registration lead will provide a code from Google Authenticator for you to enter now, this code will allow you to stay logged in for the remainder of the clinic.



Step 3. Click Whole Health EHR

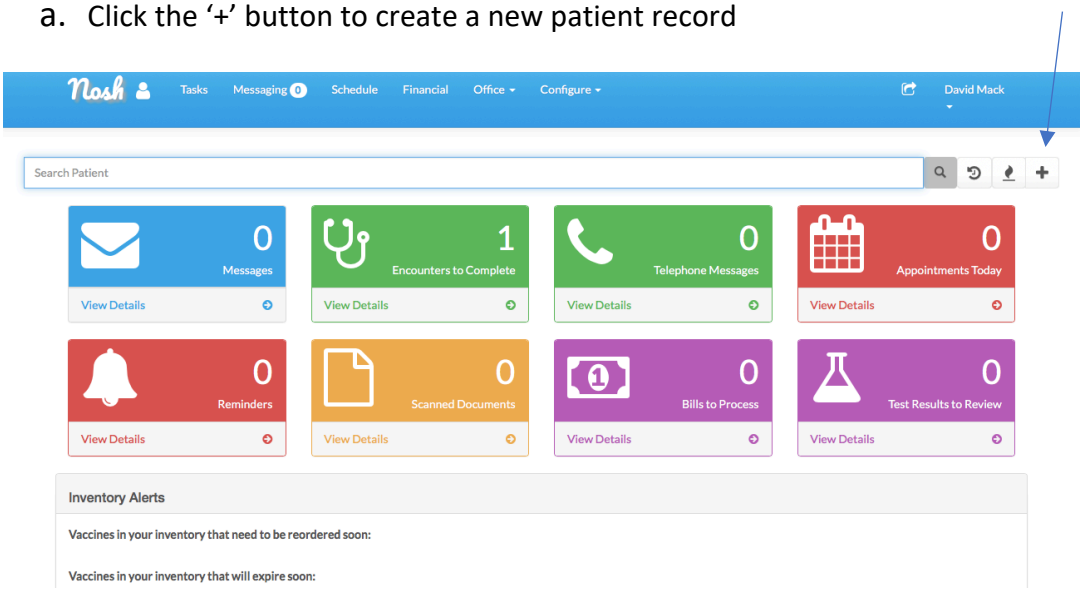


Step 4. Log into Nosh (separate username and password provided to you)

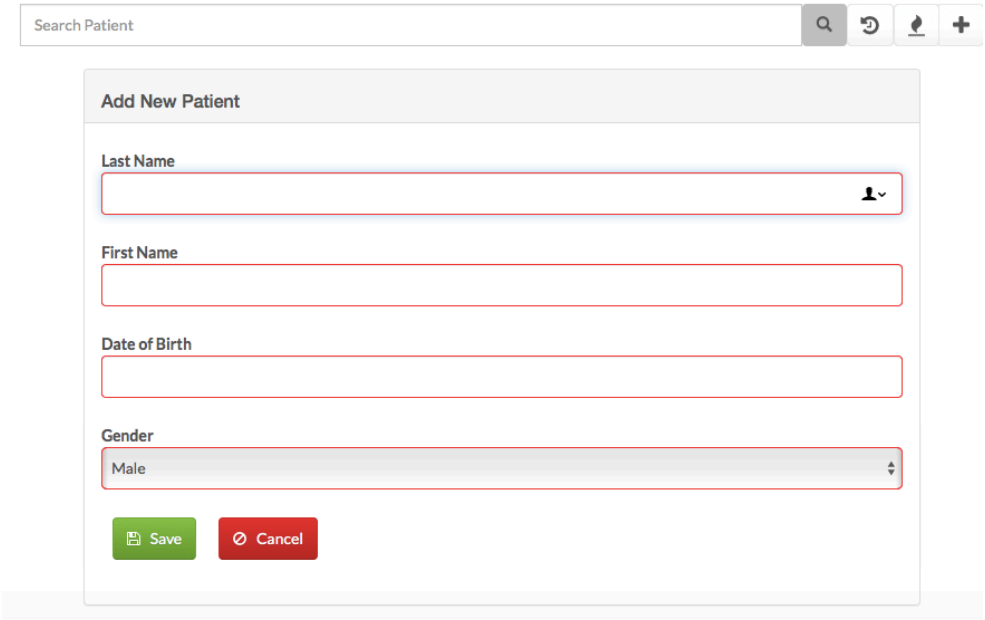


To add a new patient

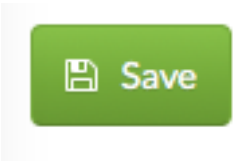
a. Click the '+' button to create a new patient record



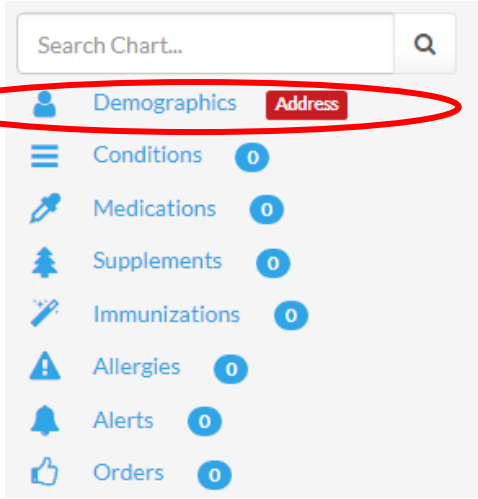
b. Enter basic patient information



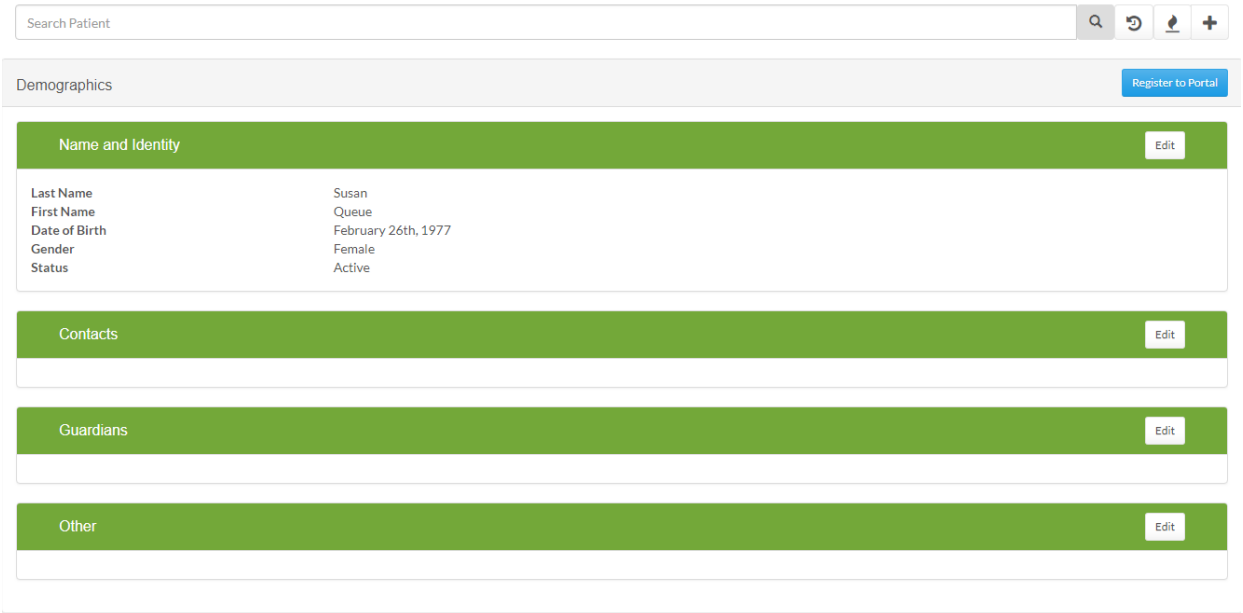
c. Save information by clicking



d. Go to “Demographics” on the left-hand column



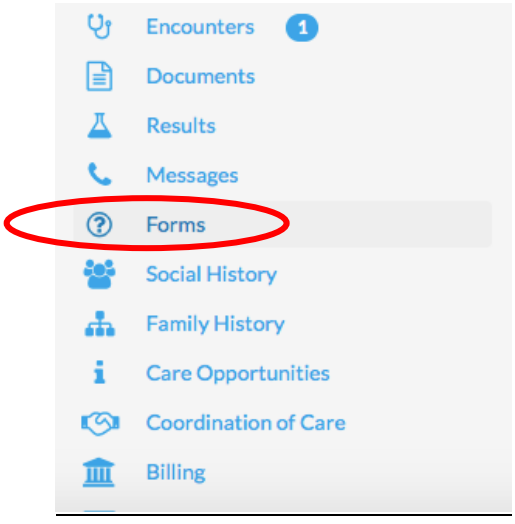
Click “Edit” in the bar for each of the four sections to get to the fields required – be sure to click “Save” after you have entered the info in each section.



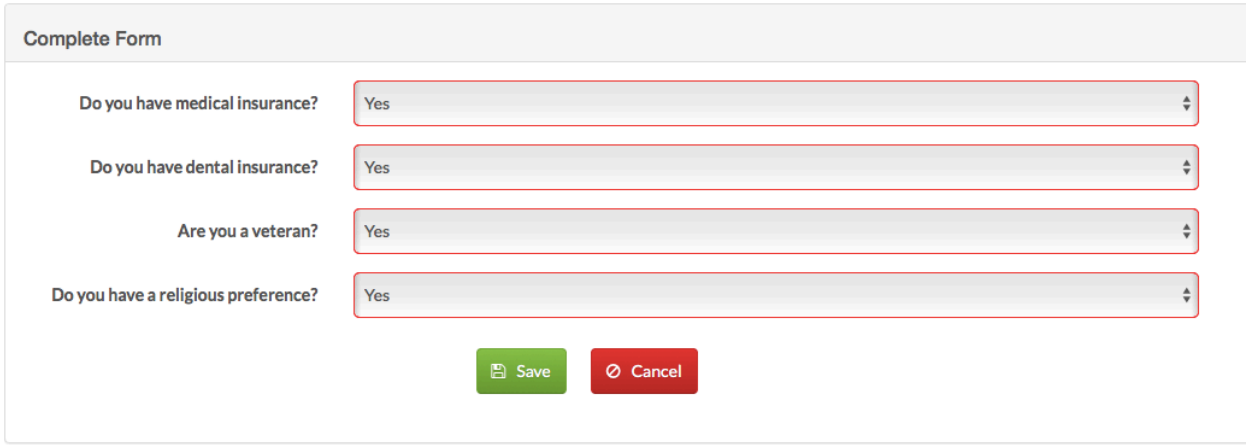
Fields to fill in for each section
****Only fill out the fields listed below in each of the four sections**

1st Section	Patient ID → 2-digit year + 2-digit month + wristband number (e.g. 1811-001) Race (Make choice from dropdown) Marital Status (Make choice from dropdown) Spouse/Partner Name (If applicable) Ethnicity (Make choice from dropdown) Referred By (How did they hear about the clinic – e.g. flyer, announcement, etc.) Preferred Language
2nd Section	Address, City, State, Zip, Email, Home Phone, Mobile, Emergency Contact
3rd Section	Only if child accompanied by guardian – all relevant fields
4th Section	Preferred Provider (e.g. other clinic they regularly visit)

e. Go to "Forms" on the left-hand column

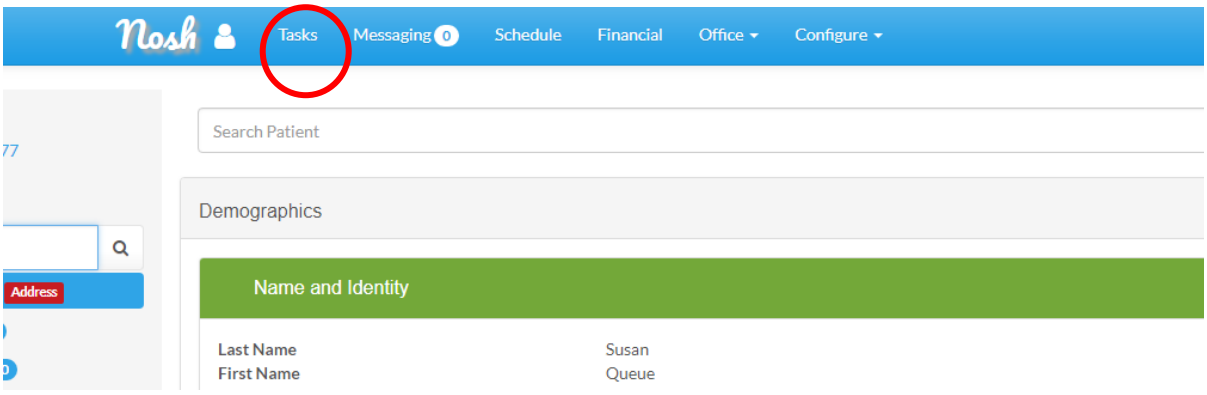


f. Click the "WholeHealth Registration" form and enter the patient's responses



g. Click “Save” after completing the required info

h. Click on “Tasks” to return to the main screen so you are ready for the next patient



Appendix D
Registered Nurse Training Manual

Nosh

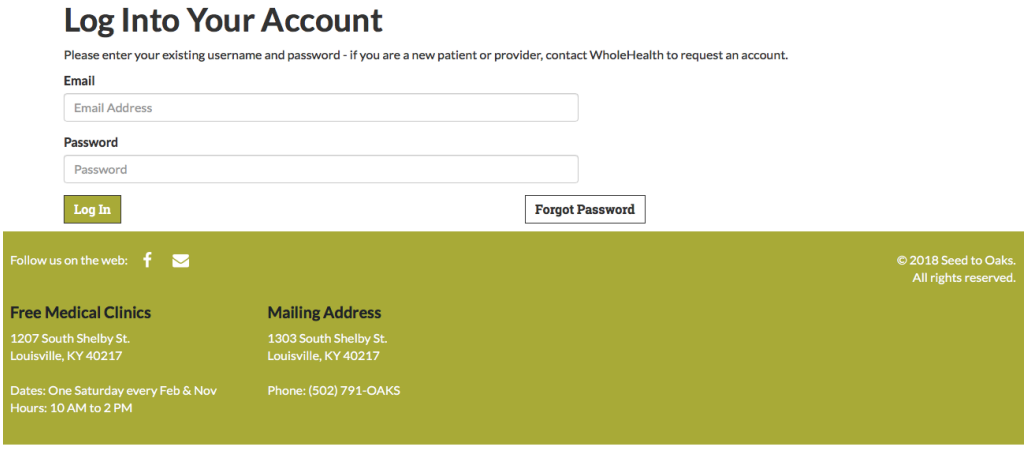
A New Open Source Health Charting System

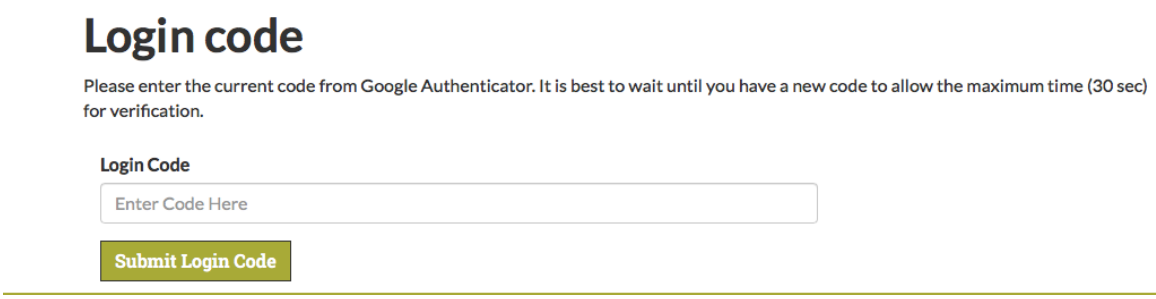
Instructions for Nurses creating an encounter

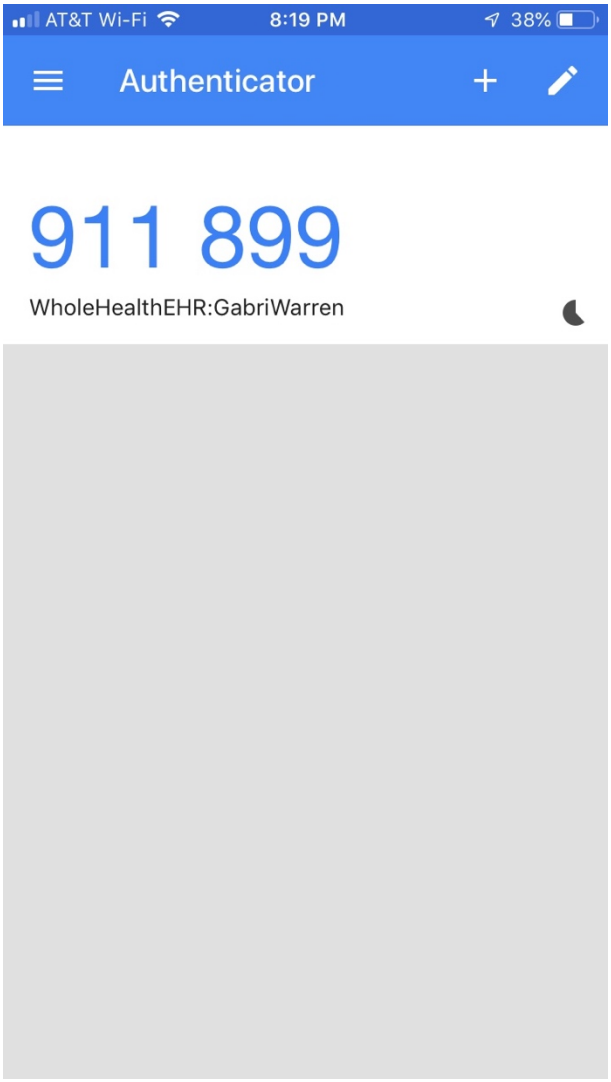
Step 1. Go to https://wholehealthehr.org

Step 2. Login to your account by entering your password and the code provided by Google Authenticator (see an administrator if your account has not yet been setup).

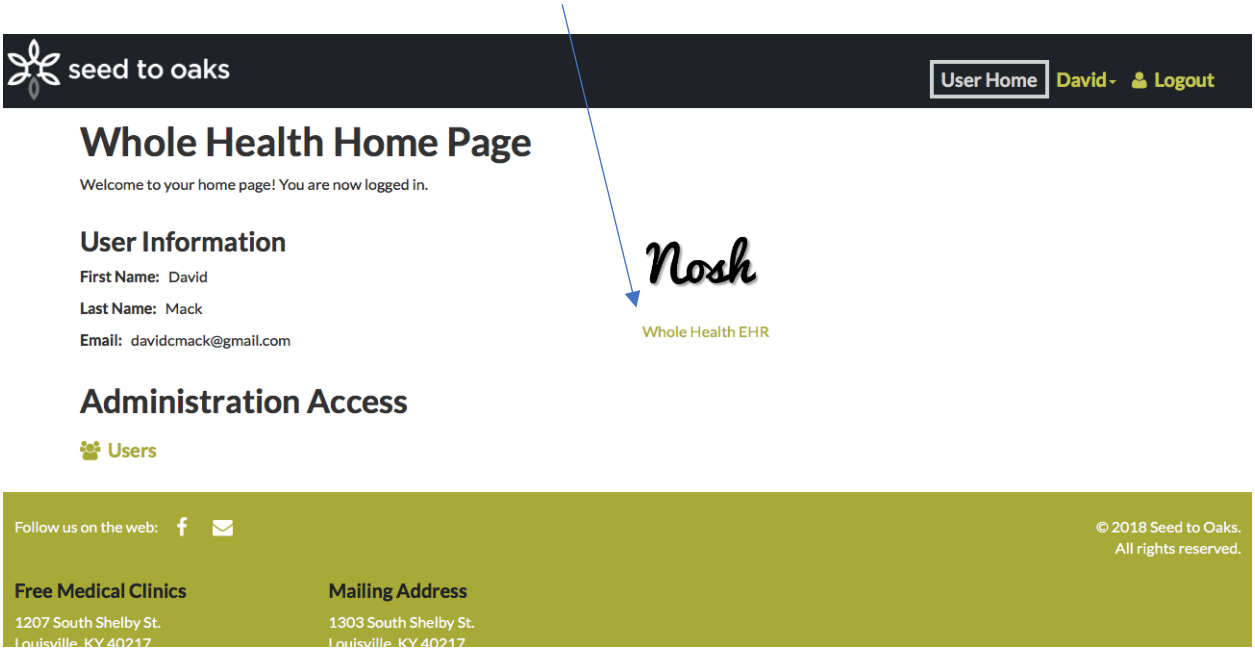
**Note: The number changes every 30 seconds. Be sure you have enough time to enter your number before it changes.



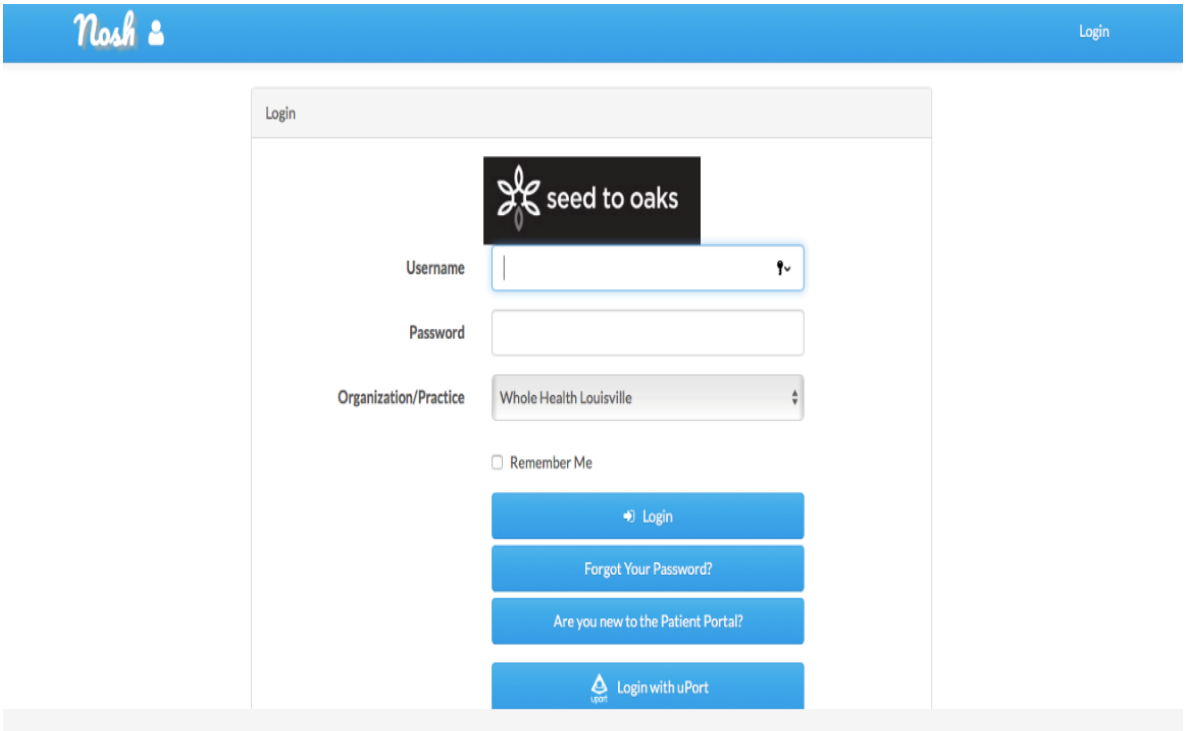

Login code
Please enter the current code from Google Authenticator. It is best to wait until you have a new code to allow the maximum time (30 sec) for verification.
Login Code
Enter Code Here
Submit Login Code


AT&T Wi-Fi
8:19 PM
38%
Authenticator
911 899
WholeHealthEHR:GabriWarren

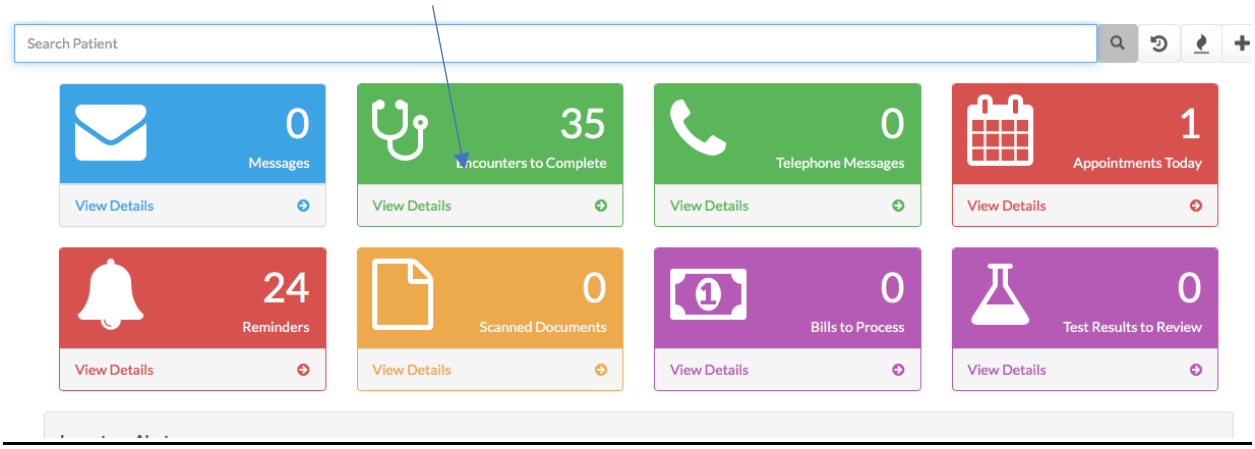
Step 3. Click Whole Health EHR



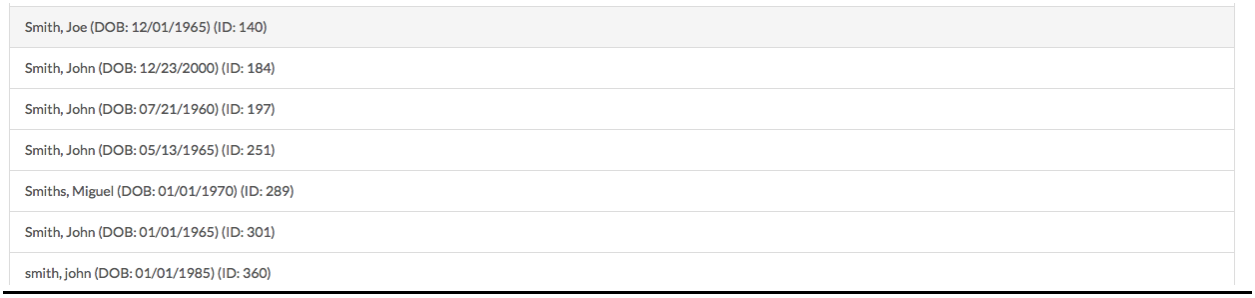
Step 4. Log into Nosh



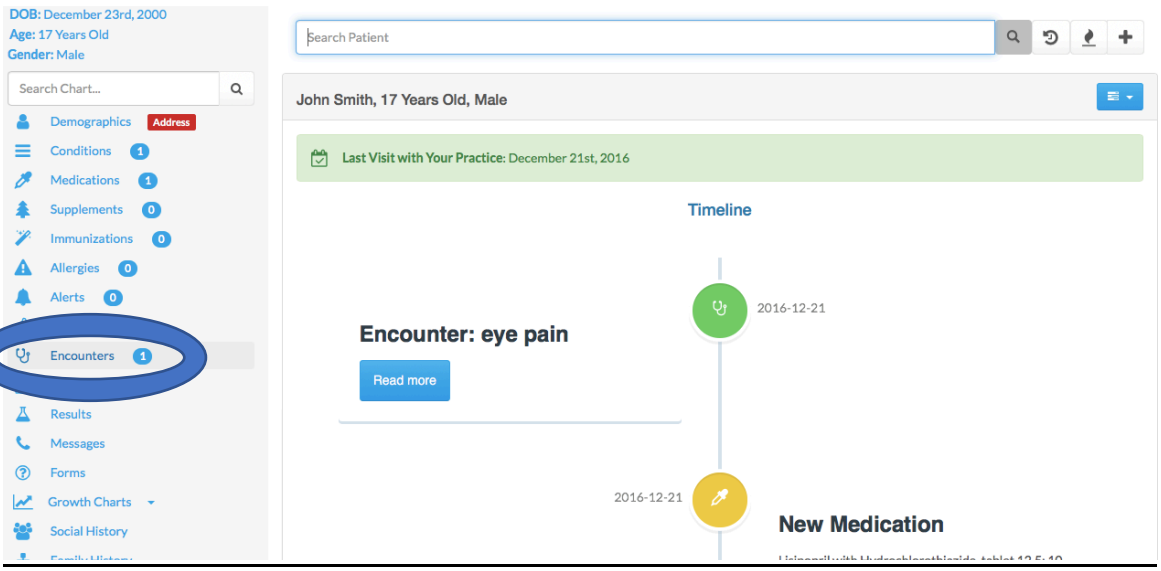
Step 5. Enter the patient's last name in the search bar



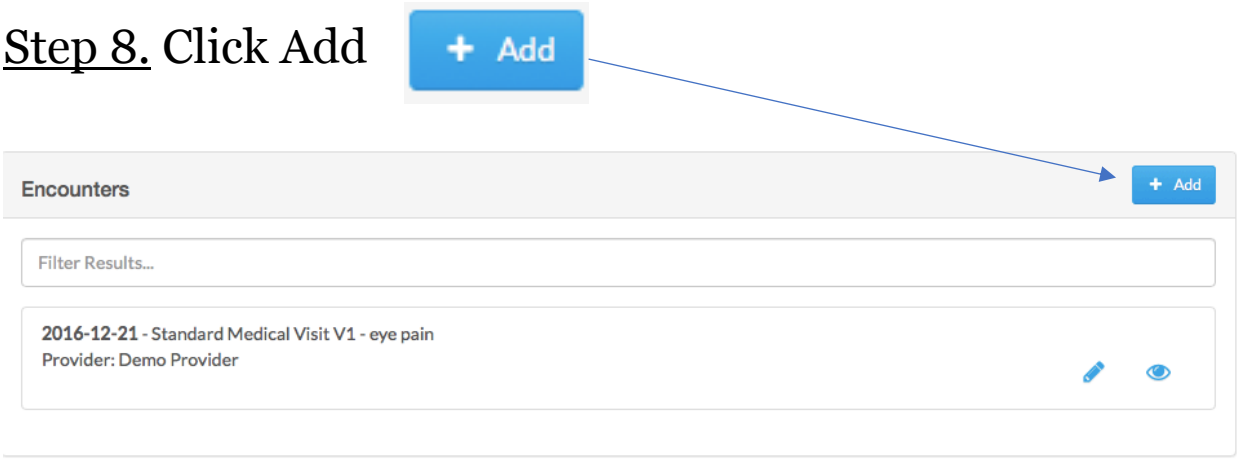
Step 6. Find your patient, verifying their name and date of birth. Click the patient's name once confirmed.



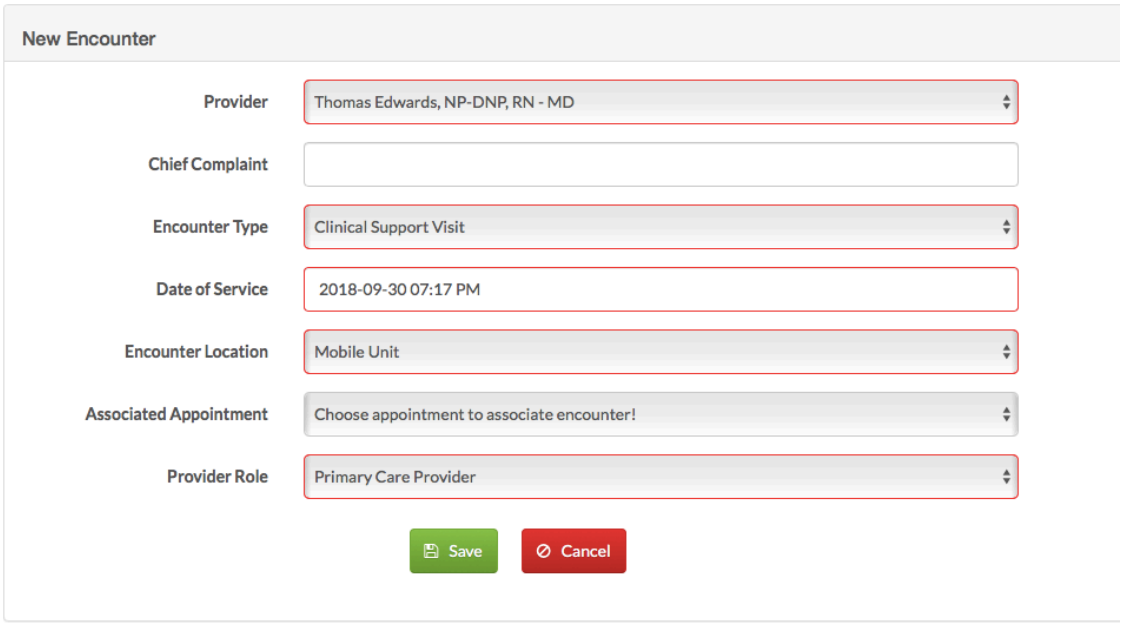
Step 7. On the left-hand column click "Encounters"



Step 8. Click Add



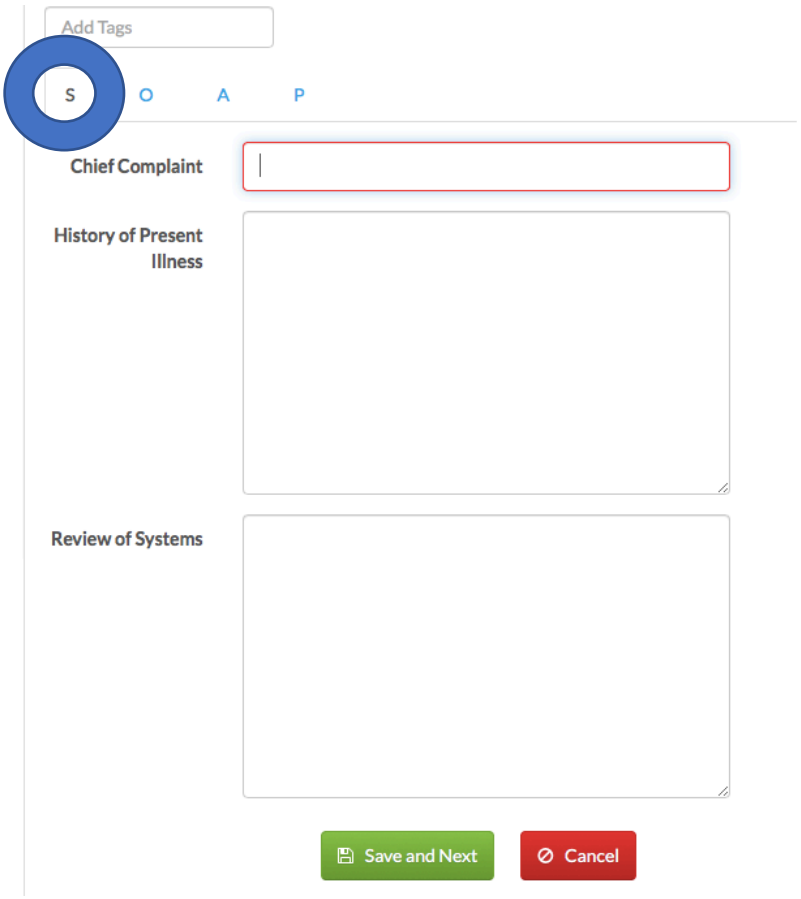
Step 9. Enter the required information and click "Save"



Nurses are required to chart the patient's:

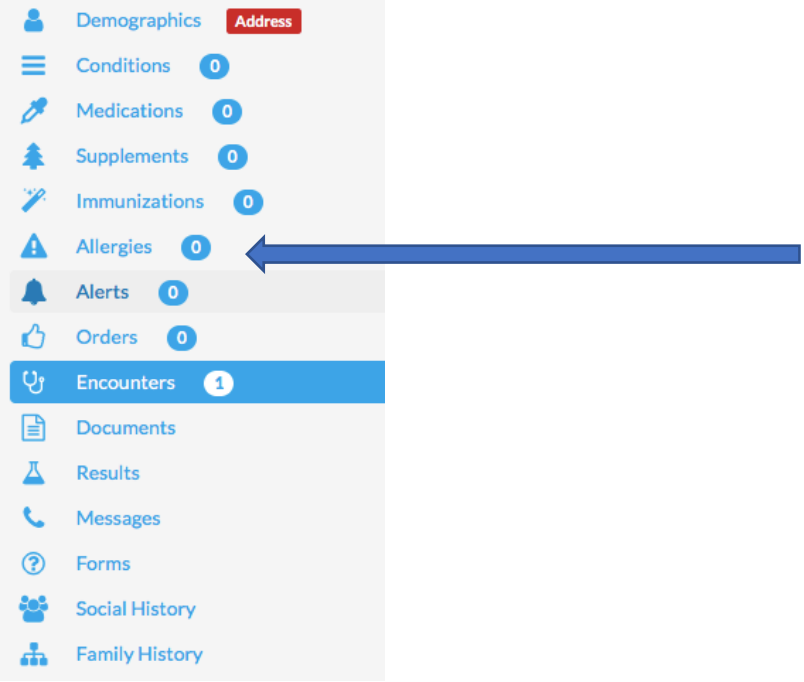
- Chief complaint
- History of present illness
- Allergies
- Medications
- Family History
- Healthy Days
- Vital Signs
- Lab Results
    - Put lab results in the objective portion of the SOAP note (glucose and pregnancy test)

Step 10. Click the 'S' to document the patient's subjective assessment findings including chief complaint and history of present illness

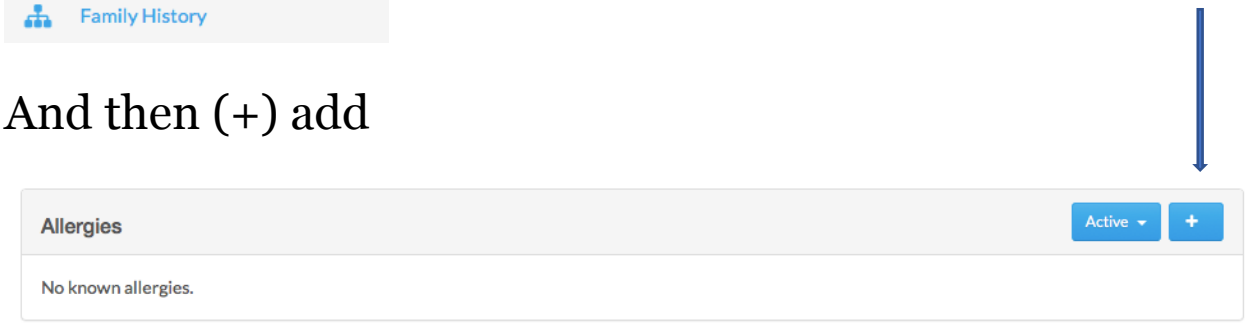


Having trouble adding HPI

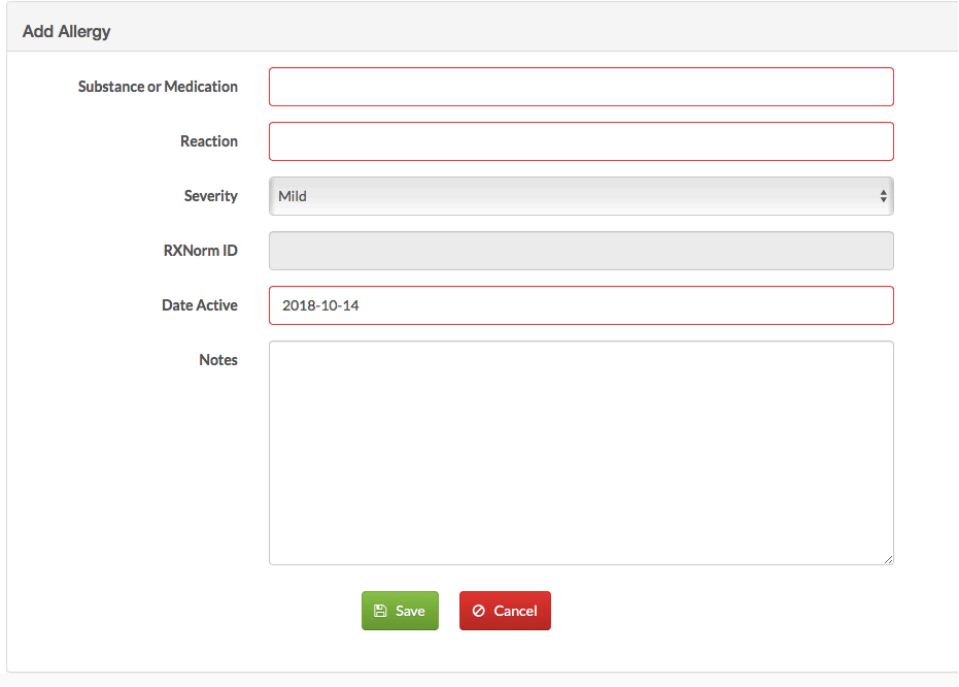
Step 11. Click “Allergies” on the left-hand column



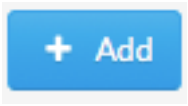
And then (+) add

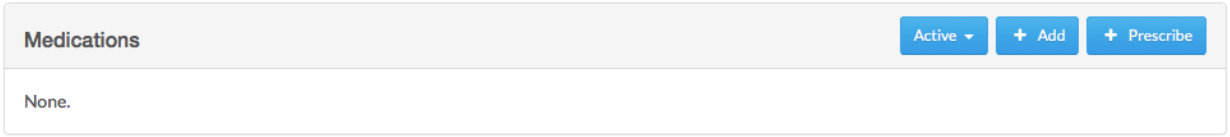


Step 12. Enter allergy information; note that all red highlighted boxes must be charted on. Afterwards click "Save"

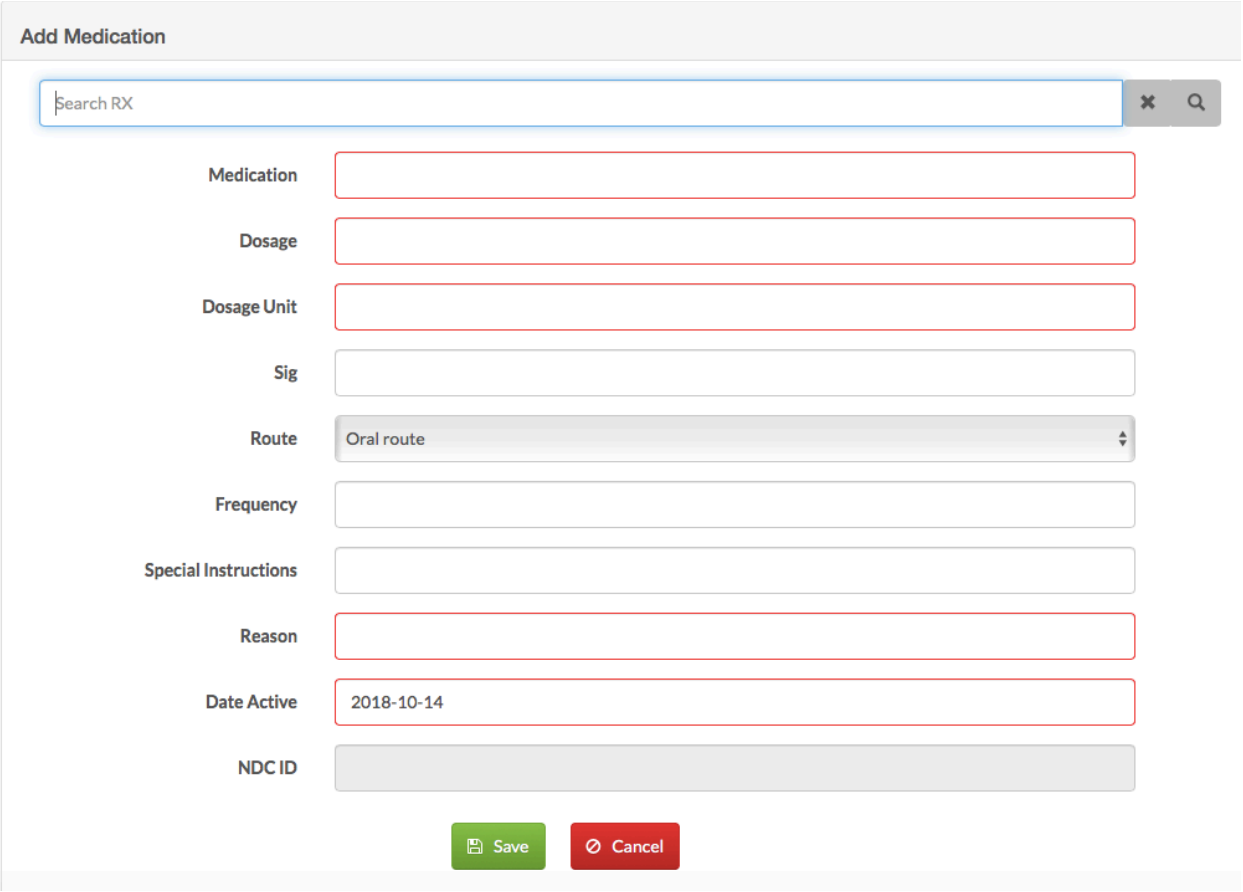


Step 13. Click "Medications" on the left-hand column

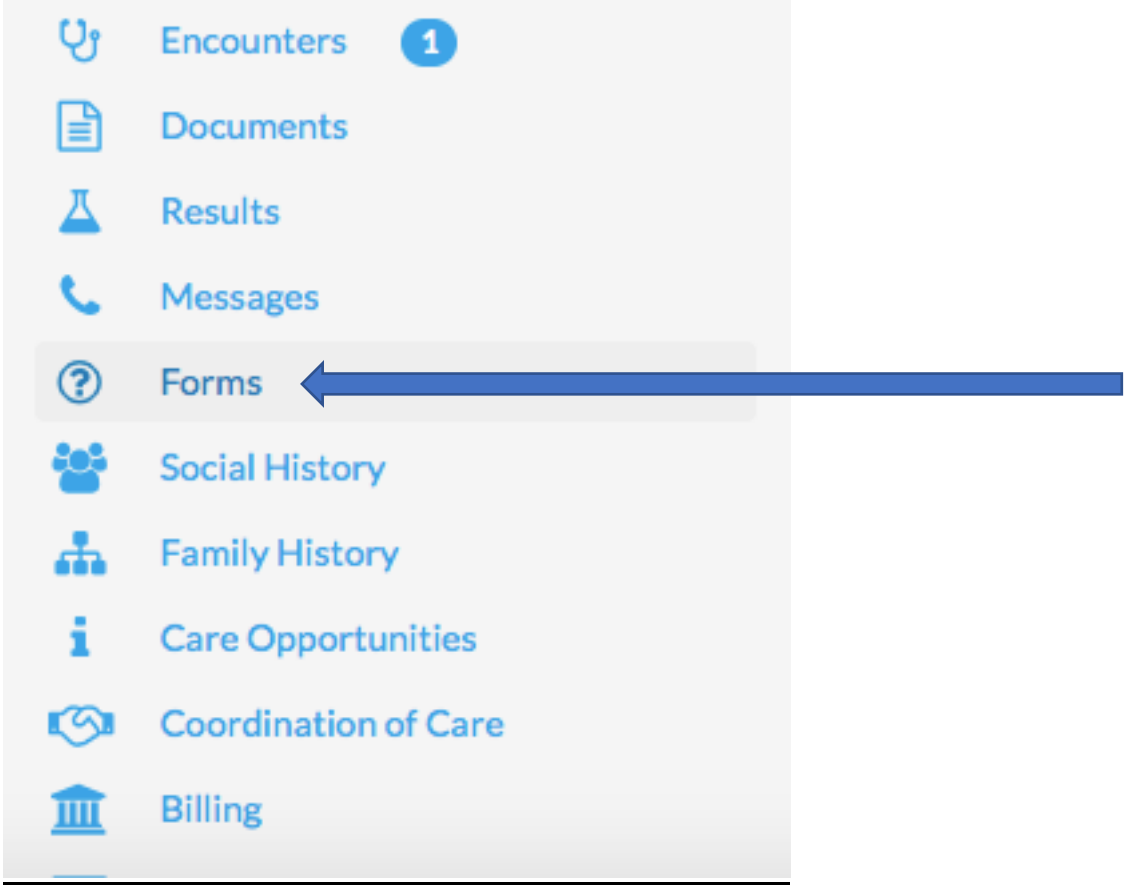
Step 14. Click 



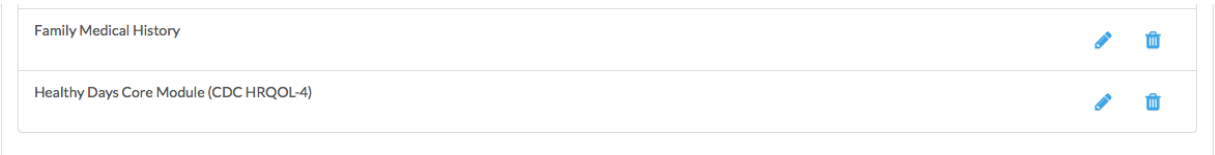
Step 15. Enter medications; note that every red highlighted box must be charted on.



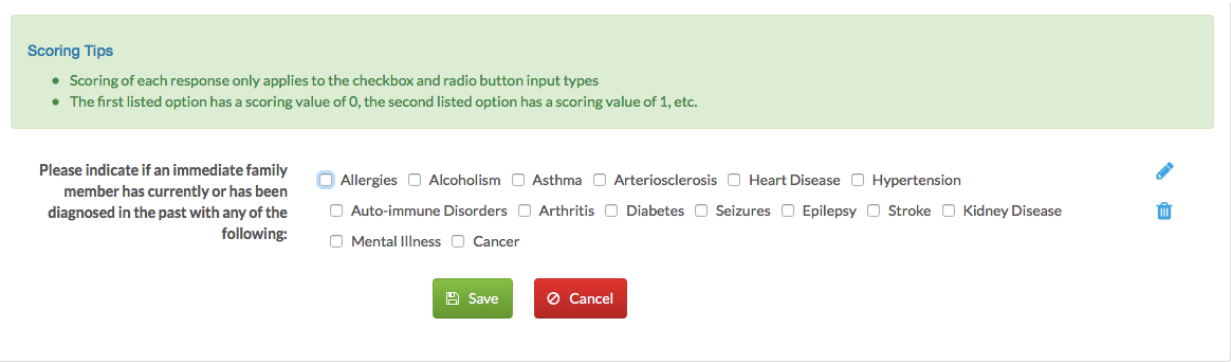
Step 15. To chart on family history and Healthy Days click "Forms" on the left-hand column



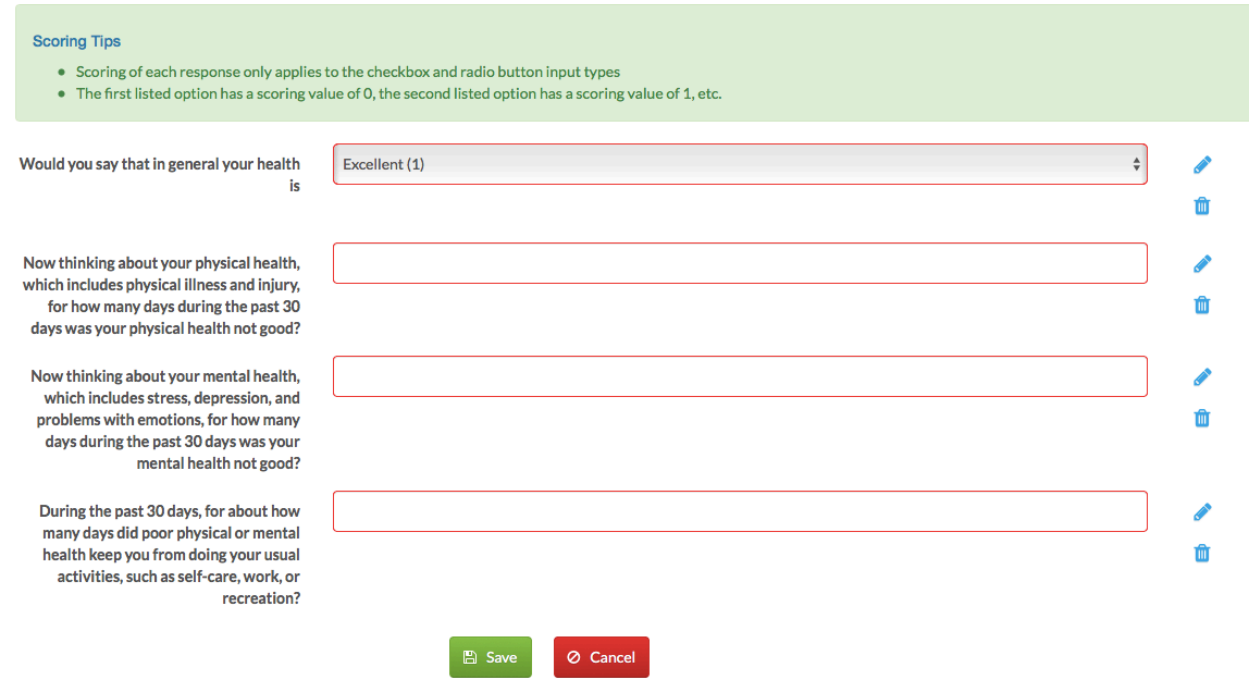
Step 16. Chart on two forms "Family Medical History" and "Healthy Days Core Module" by clicking the by each. Save after the form has been completed. Answers will be either text entries, click boxes, or drop-down answers.



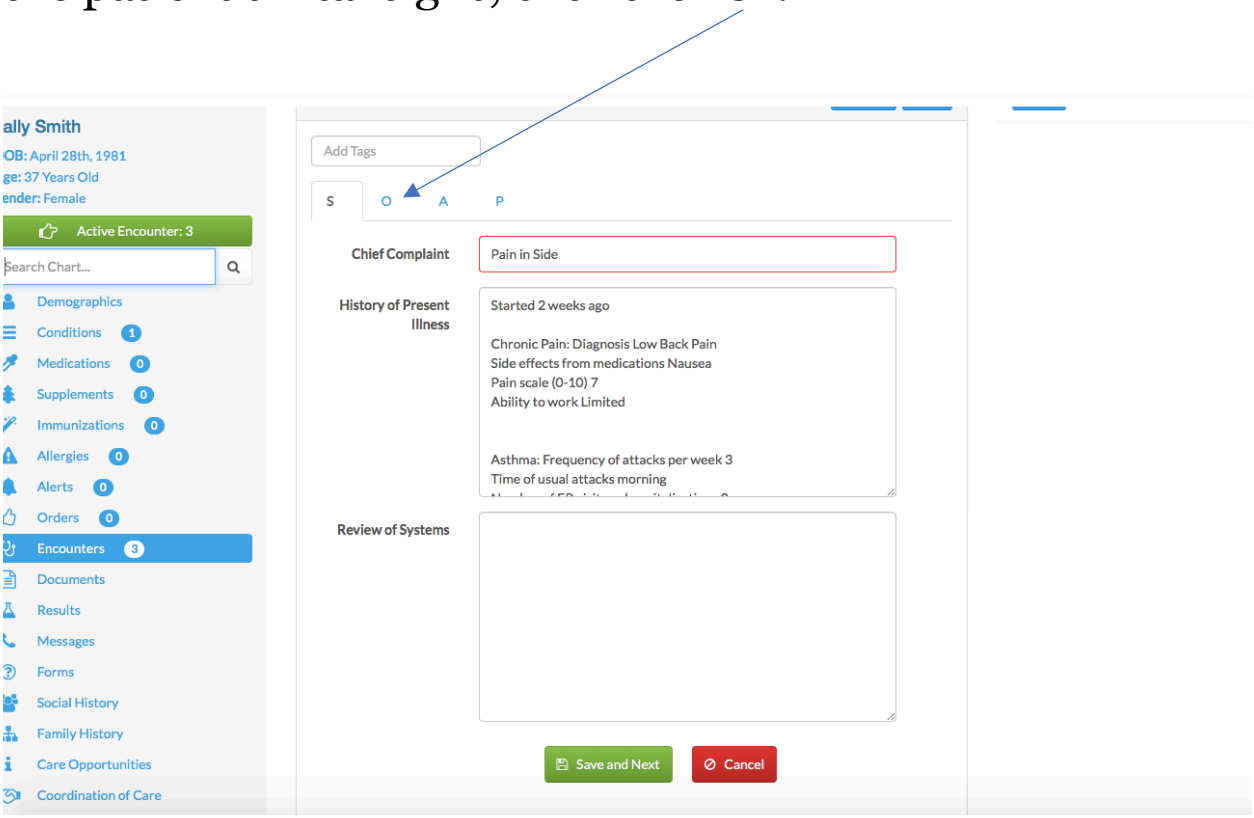
Family Medical History Form: Click boxes



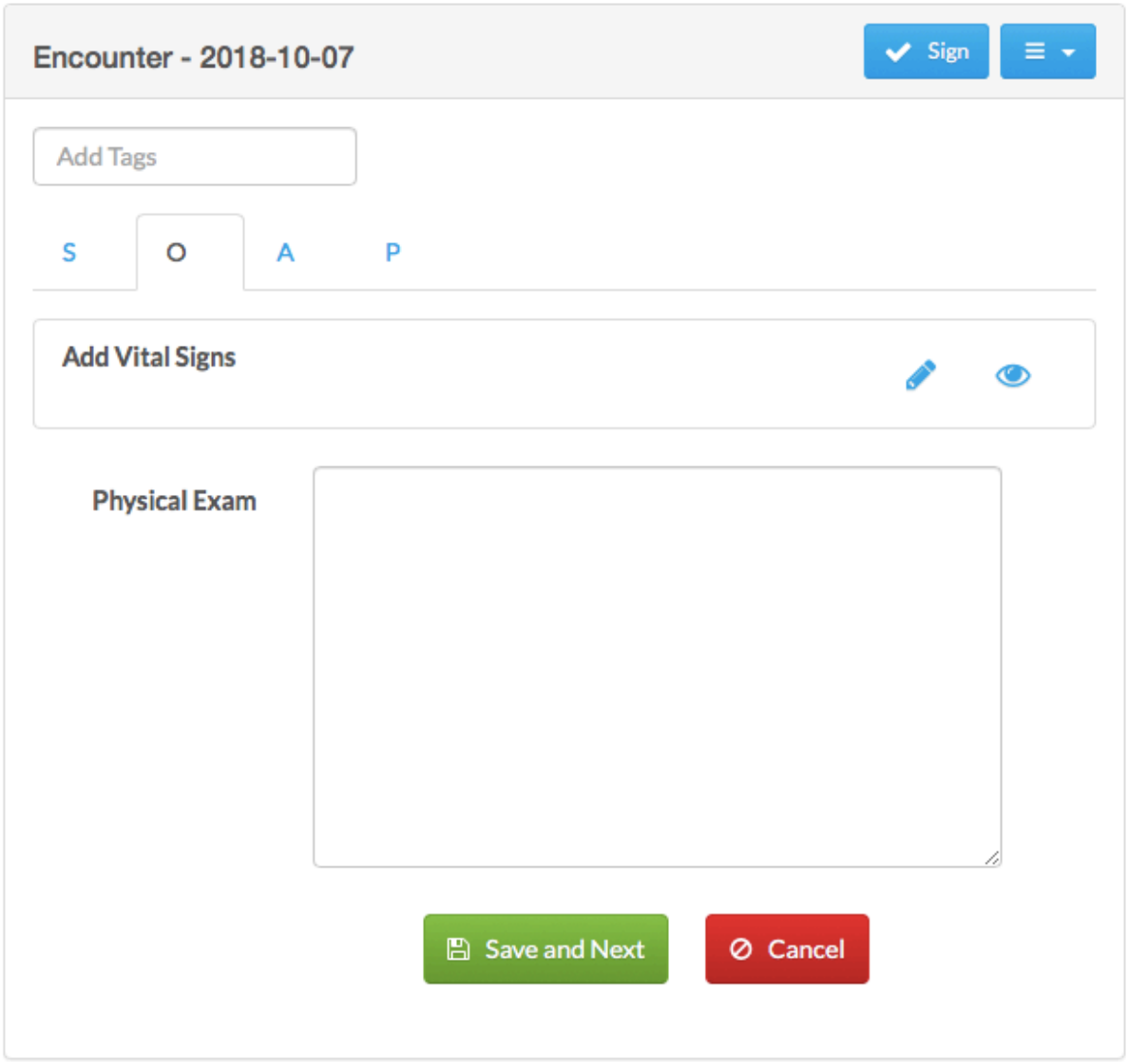
Health Days Form: Drop down for first question and free text for following questions



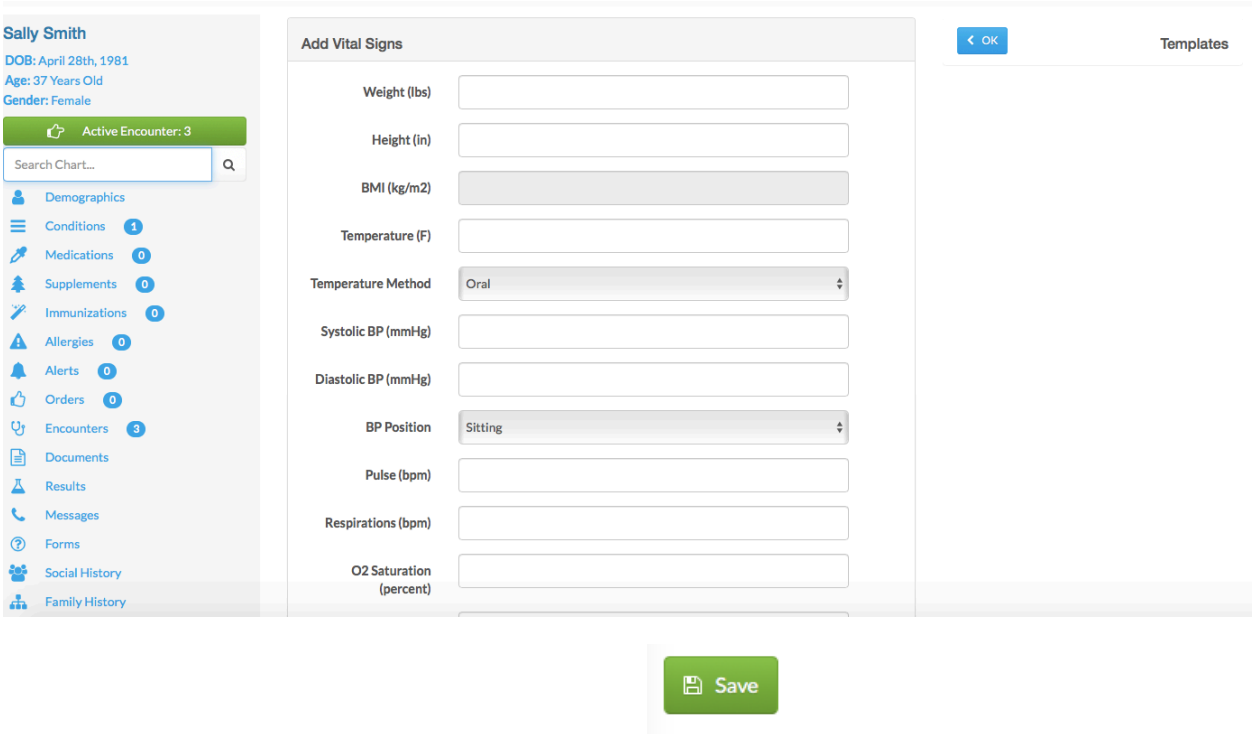
Step 17. Now you can view the SOAP note. To document the patient's vital signs, click the "O".



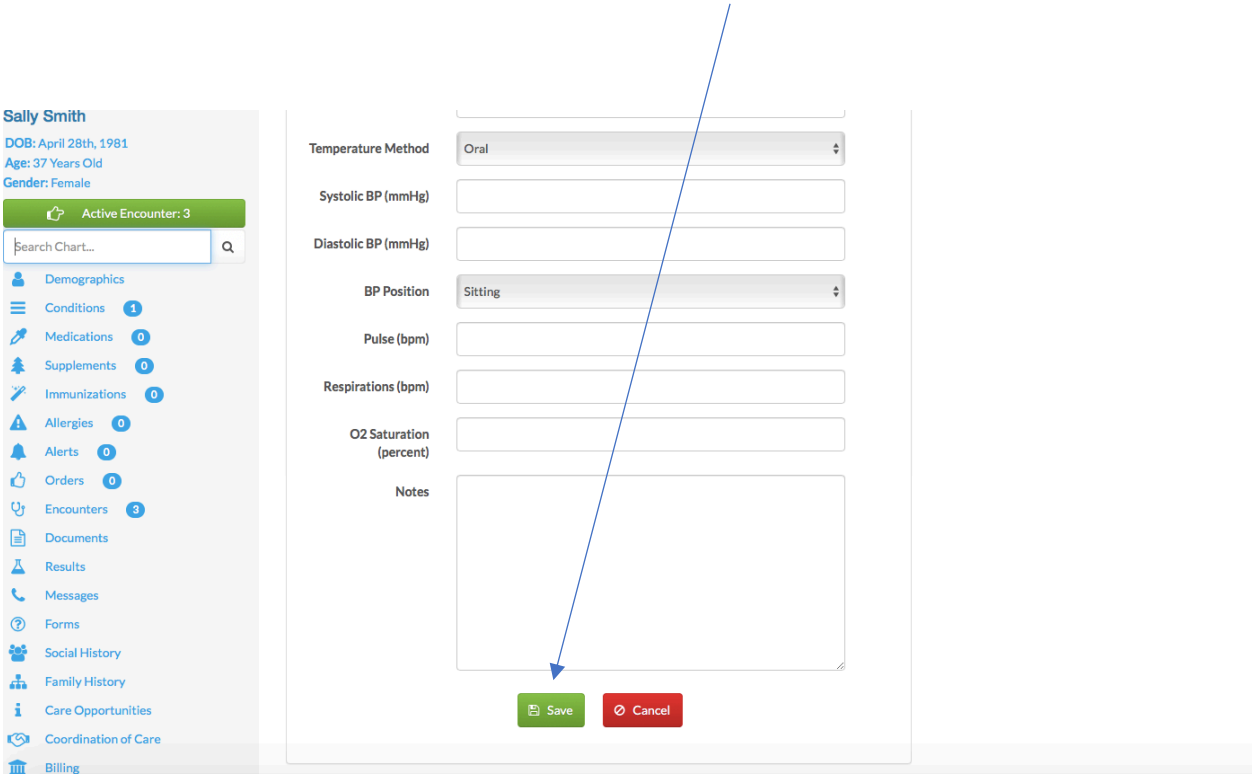
Step 18. Input your vital signs by clicking by Add Vital Signs.



Step 19. Input your findings into the appropriate boxes.



Step 20. Save your work by clicking



Appendix E
Medical Doctor and Nurse Practitioner Training Manual

Nosh

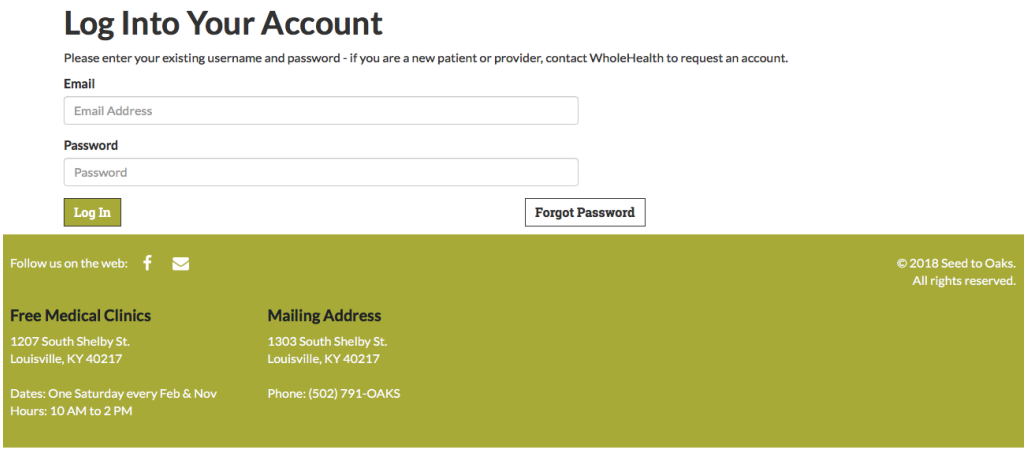
A New Open Source Health Charting System

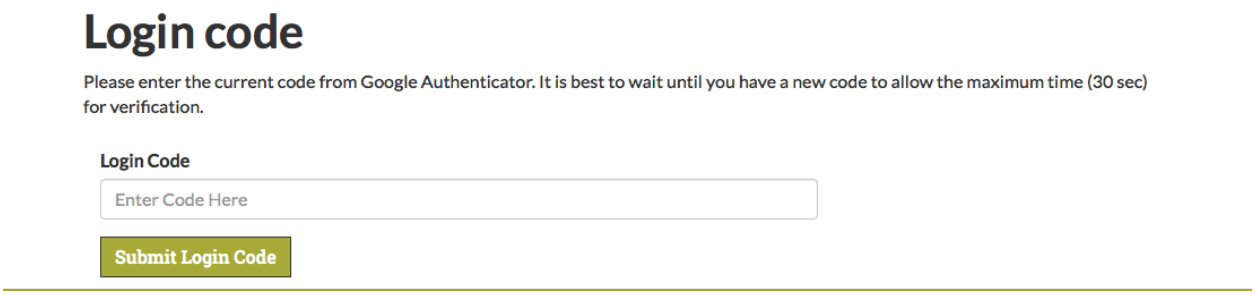
Instructions for MDs and NPs

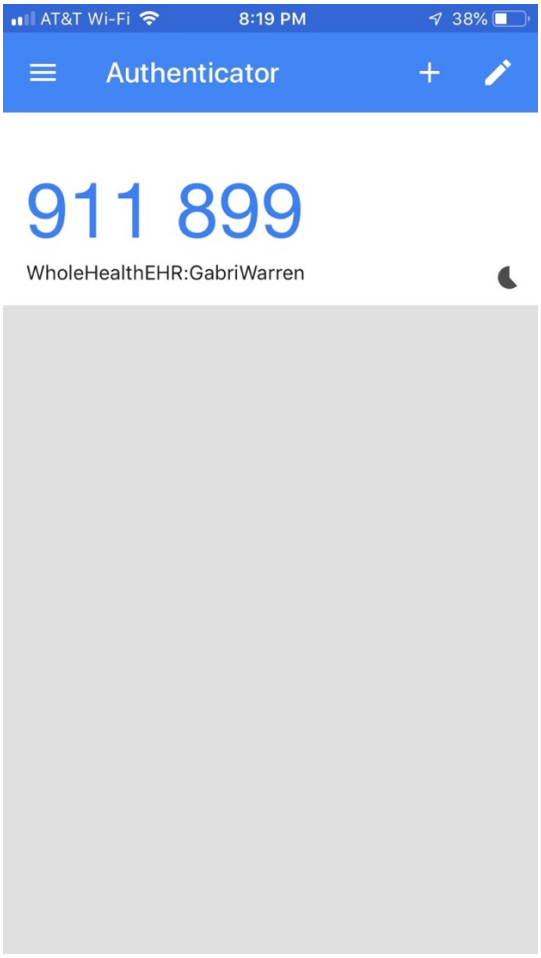
Step 1. Go to https://wholehealthehr.org

Step 2. Login to your account by entering your password and the code provided by Google Authenticator (see an administrator if your account has not yet been setup).

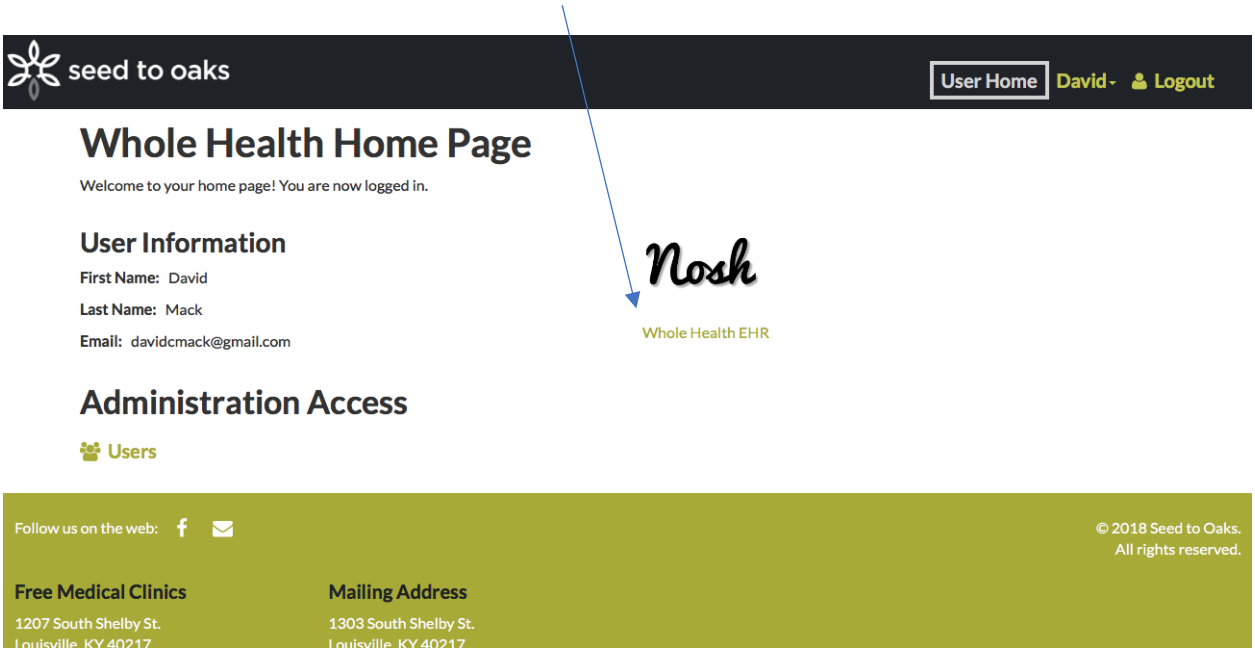
**Note: The number changes every 30 seconds. Be sure you have enough time to enter your number before it changes.



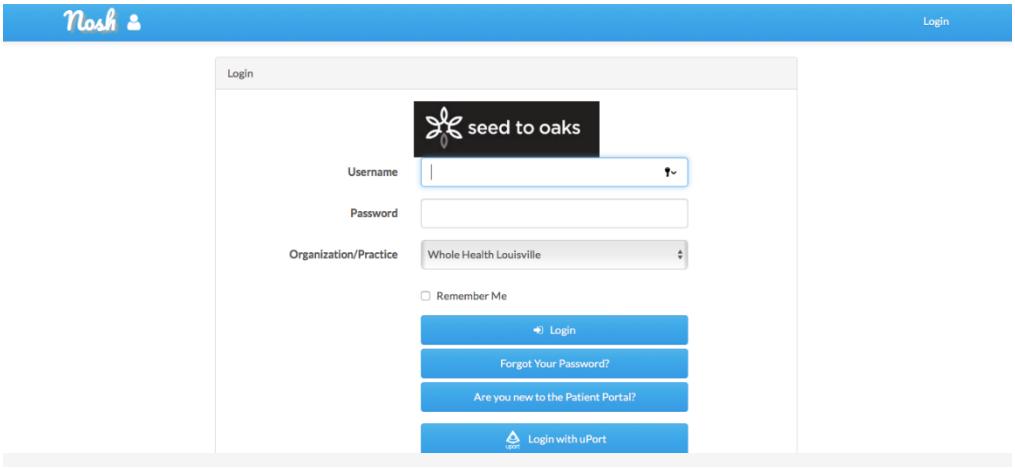

Login code
Please enter the current code from Google Authenticator. It is best to wait until you have a new code to allow the maximum time (30 sec) for verification.
Login Code
Enter Code Here
Submit Login Code


AT&T Wi-Fi
8:19 PM
38%
Authenticator
911 899
WholeHealthEHR:GabriWarren

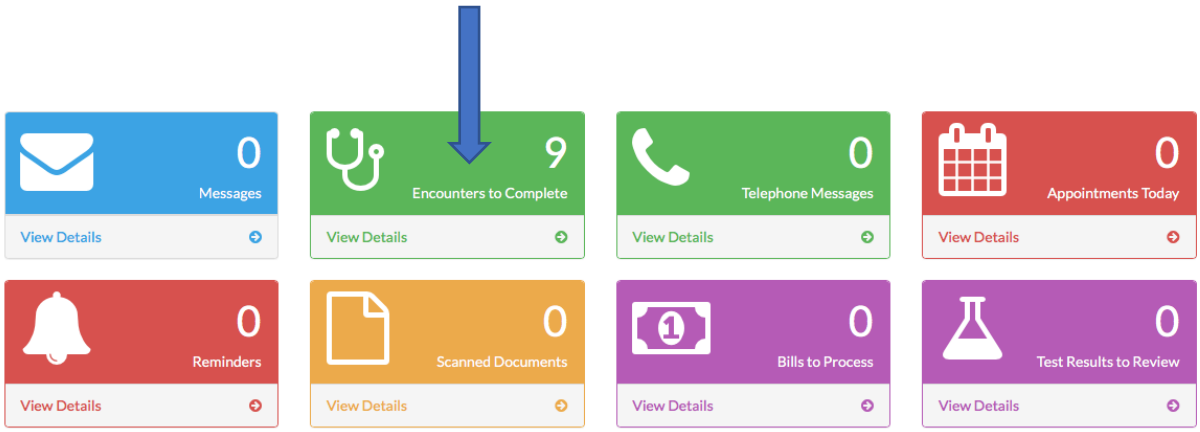
Step 3. Click Whole Health EHR



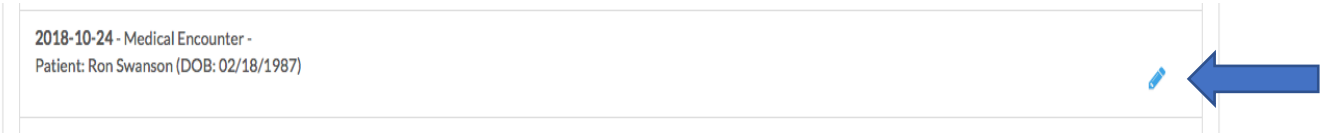
Step 4. Log into Nosh (using separate username/password)



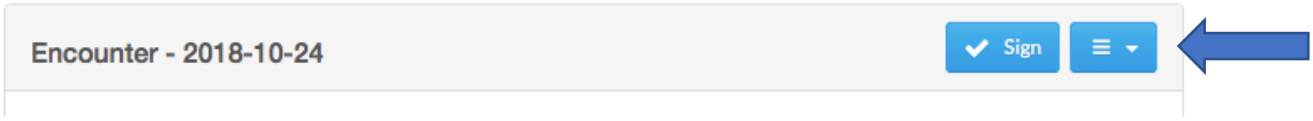
Step 5. Click Encounters to Complete

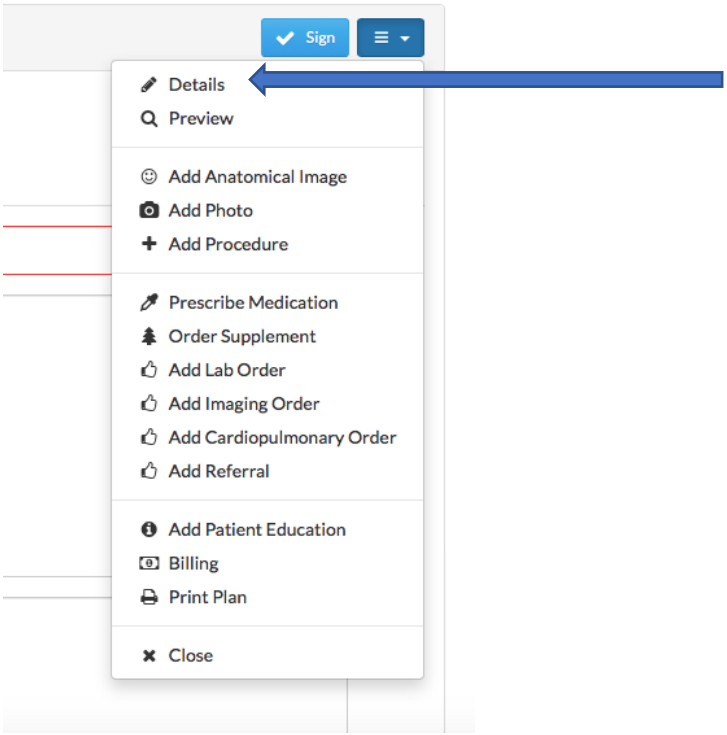


Step 6. Select your patient, verifying name and date of birth; click on the pencil next to the correct patient's name

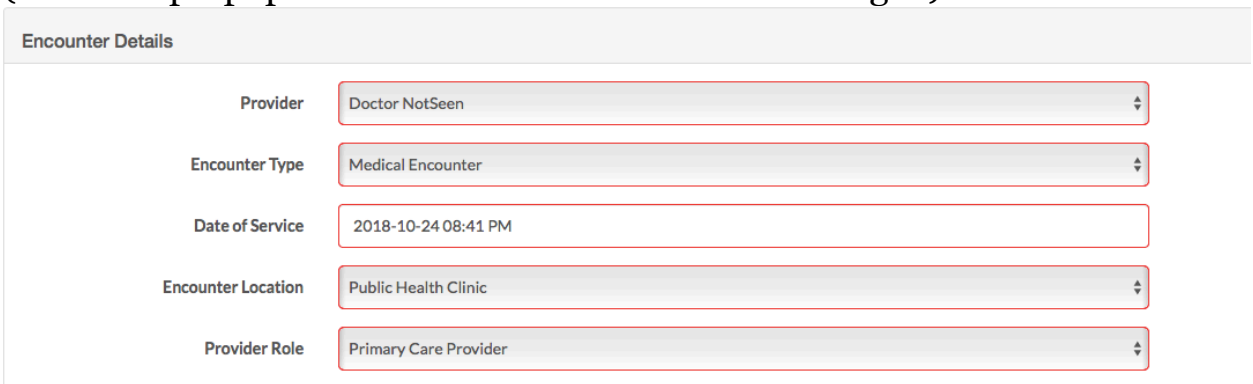


Step 7. Assign the encounter to yourself by clicking the "hamburger icon" and "Details".





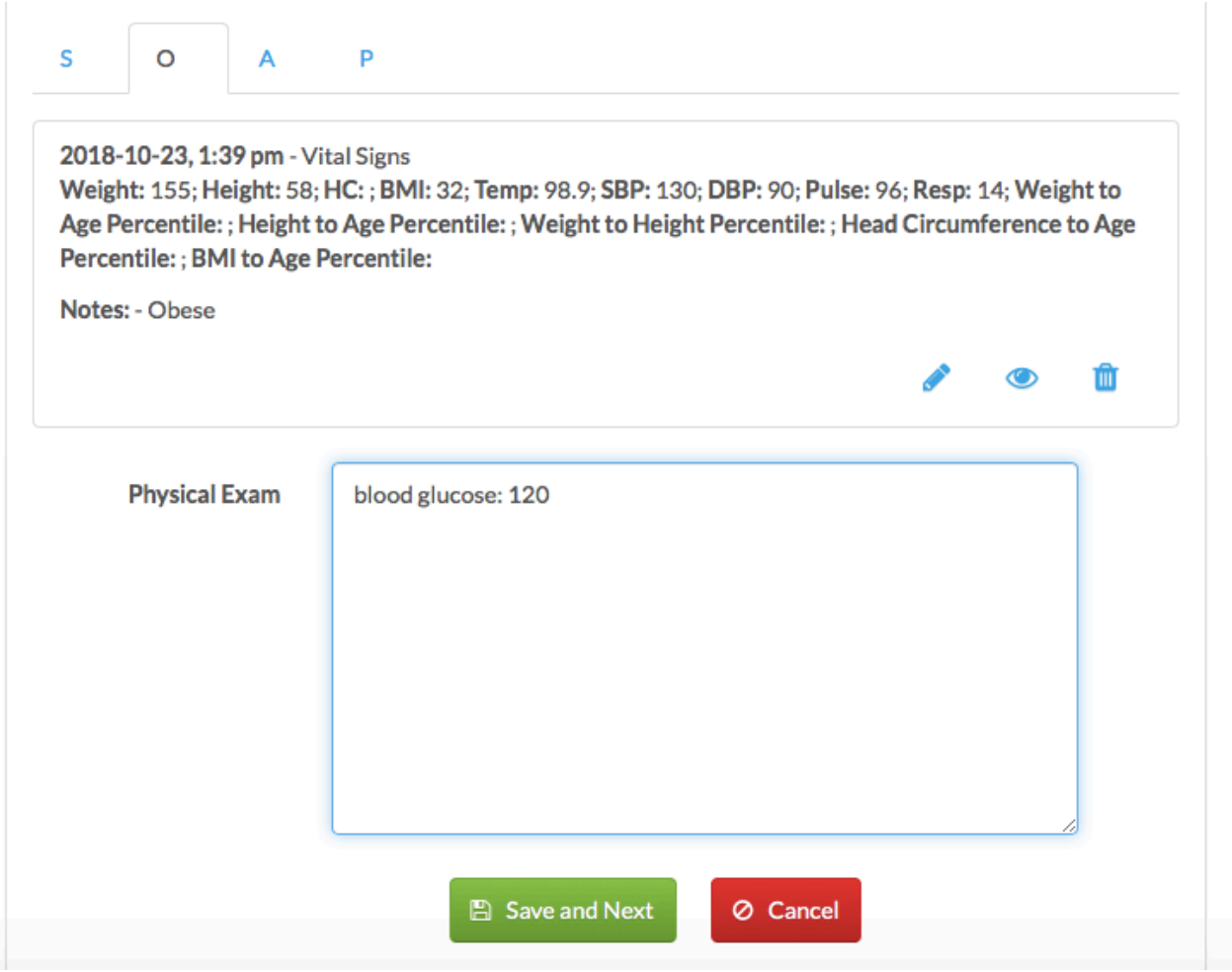
Select yourself as the provider and click "Save" at the bottom of the page. (All other prepopulated fields do not need to be changed)



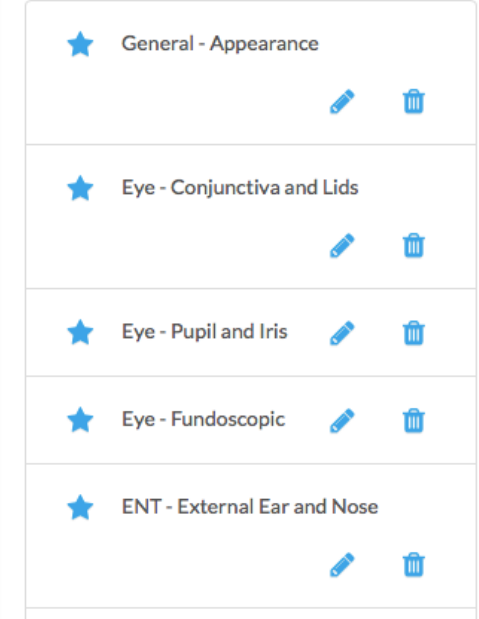
Step 8. Complete the SOAP note. Nurses are responsible for the subjective portion of the note (S) including the Chief Complaint and Review of Systems.

1. Under the objective portion of the SOAP note (O) please chart your physical exam using either free text or the templates on the right-hand column.

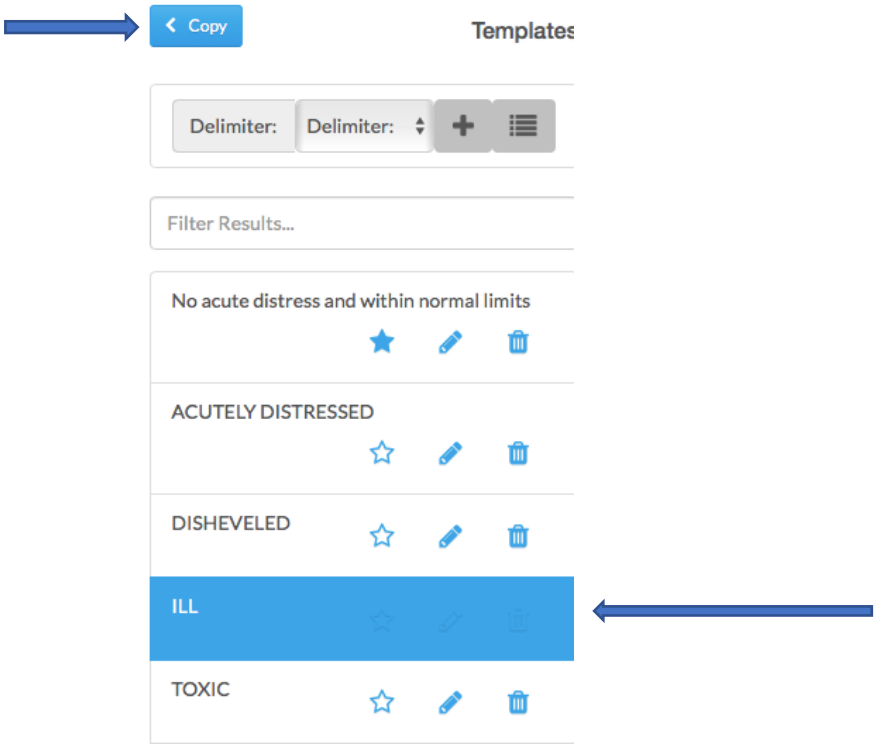
***Nurses will chart the vital signs and also any lab values (blood glucose/pregnancy tests) will in the physical assessment box.

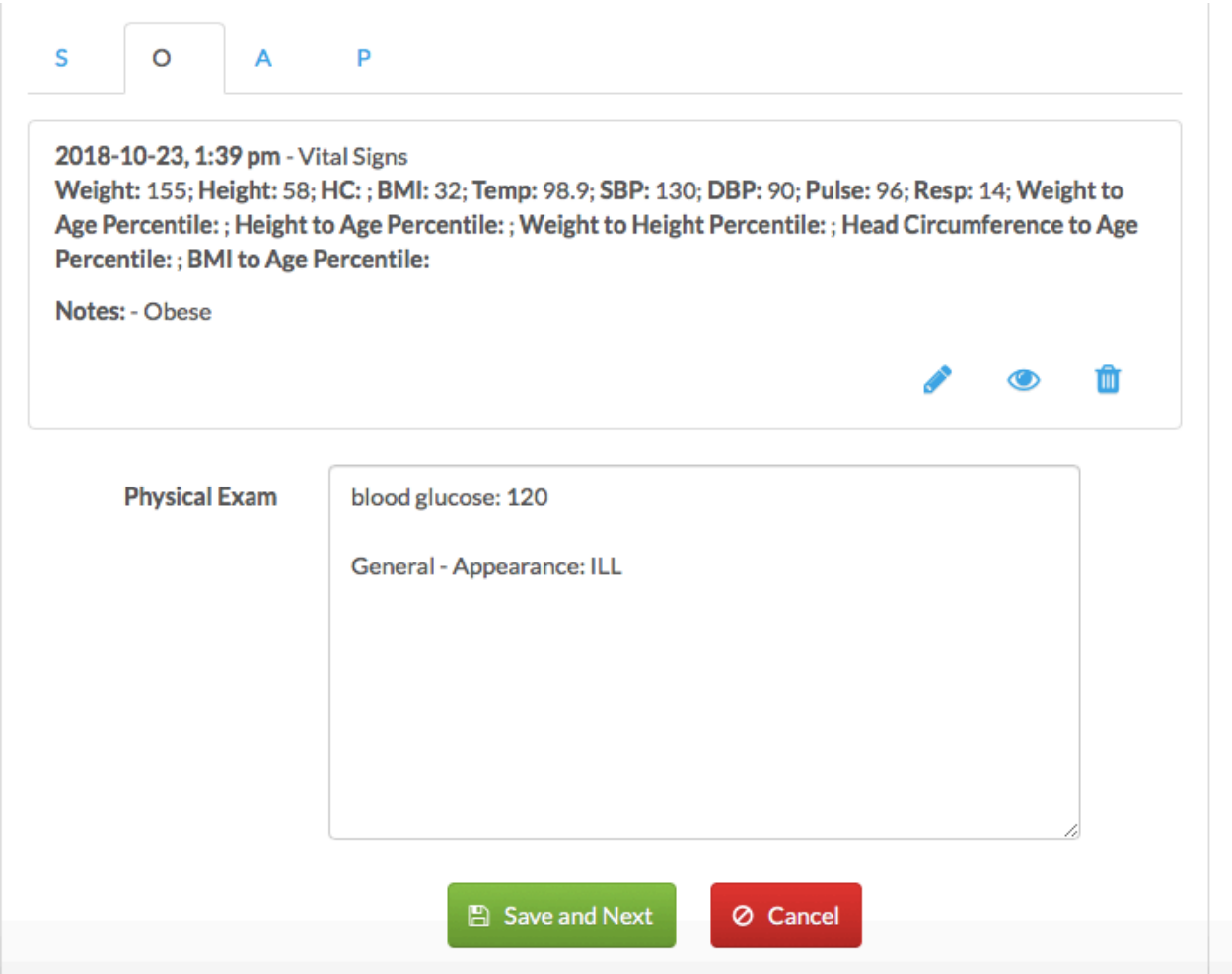


- When you click on Physical Exam, templates will appear in the right-hand column. You can click on the template you would like to document on, for instance if your patient looked ill you would click General-Appearance.



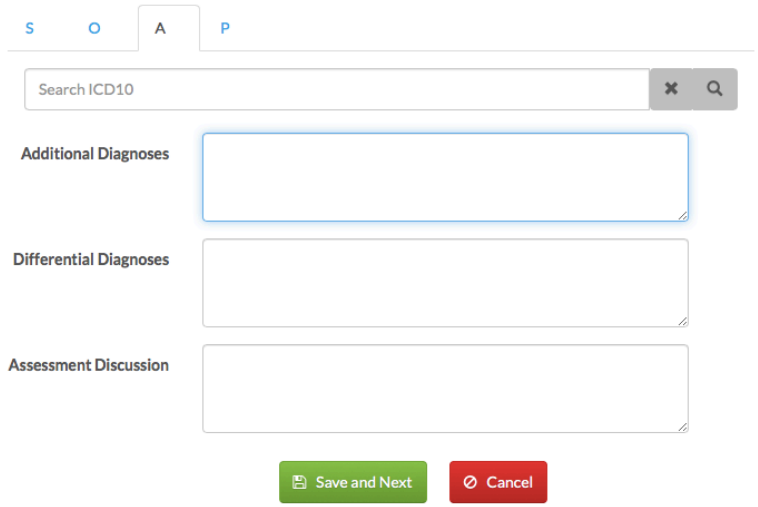
- Click “Ill” and then “Copy” to transfer it to the physical assessment portion of the SOAP note.





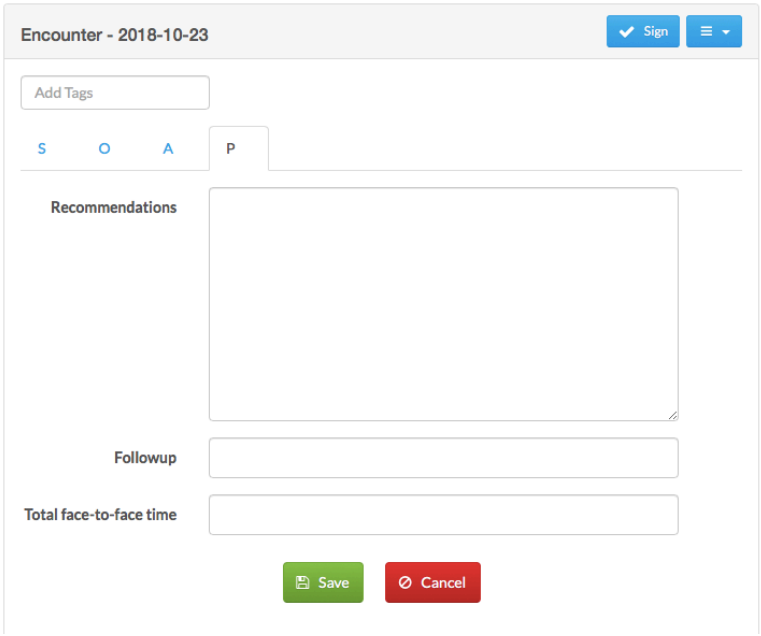
- Click “Save and Next” to proceed.

2. Under the assessment portion of the SOAP note (A) add an ICD 10 code and any further diagnoses.

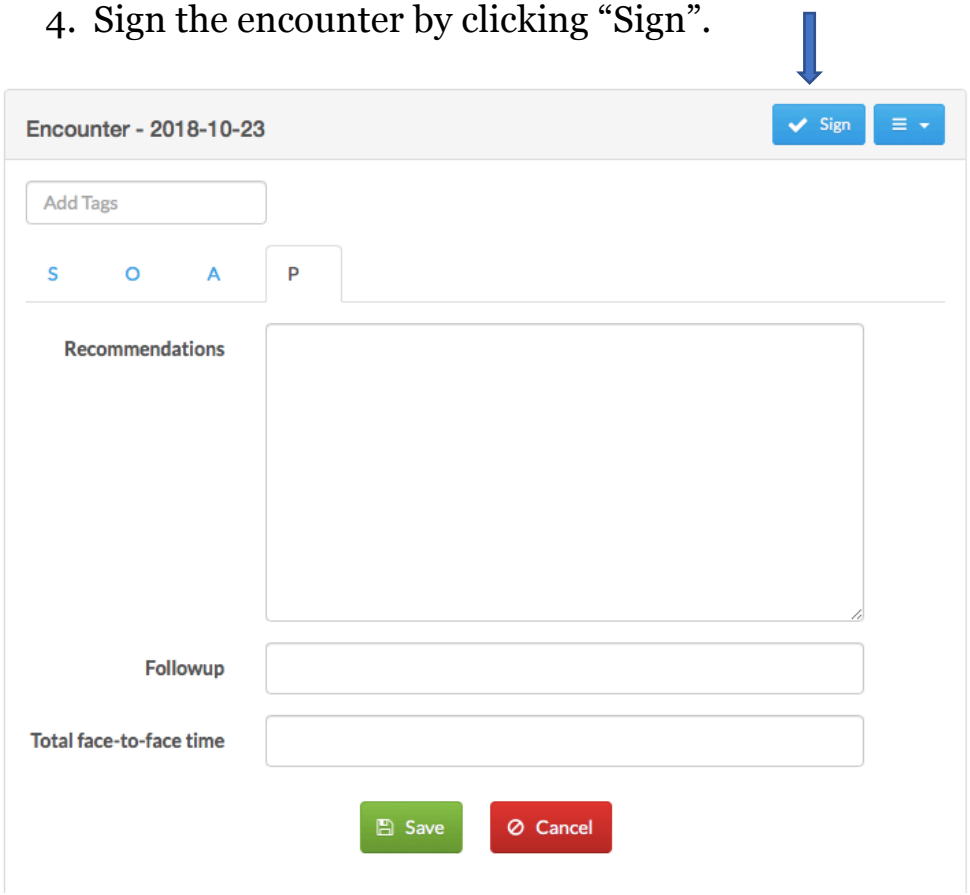


   - Click “Save and Next” to proceed.

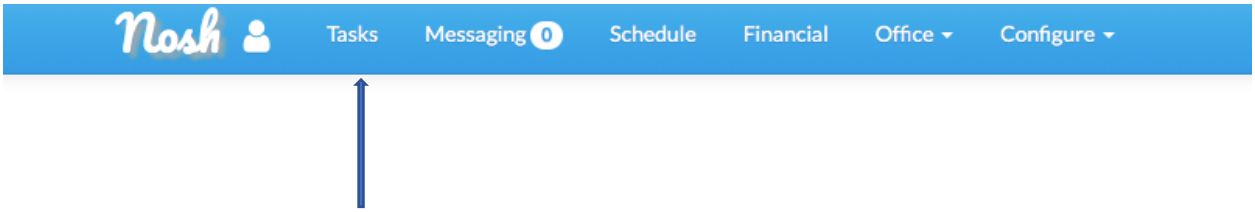
3. Under the planning portion of the SOAP note (P) add your recommendations, including any paper prescriptions given to the patient and the total minutes of the visit.



4. Sign the encounter by clicking “Sign”.



To begin on a new patient, click “Tasks” at the top of the page and begin the process again.



Appendix F
Patient forms

Past Surgical History

☐ CABG ☐ Spine Surgery ☐ Heart Catheterization ☐ Appendix Removal ☐ Gallbladder
☐ Kidney/Bladder ☐ Colon ☐ Stomach ☐ Pancreas ☐ Prostate ☐ Breast ☐ Total Hip ☐ Total Knee
☐ Foot/leg ☐ Arm ☐ Hip ☐ Vein ☐ Cesarean section ☐ No previous surgeries

Other

Notes

Past Medical History

☐ Heart Pain ☐ Heart arrythmia ☐ High cholesterol ☐ Diabetes Type 1 ☐ Diabetes Type 2
☐ Deep vein blood clots ☐ Blood clotting disorder ☐ Lymphoma ☐ Leukemia ☐ Stroke ☐ TIA
☐ Neuropathy ☐ Peripheral artery disease ☐ GERD ☐ Thyroid problems ☐ Liver problems ☐ Dialysis
☐ COPD ☐ Asthma ☐ Chronic bronchitis ☐ Pneumonia ☐ Kidney problems ☐ UTI ☐ Cancer
☐ Seizures ☐ Prostate problems ☐ Arthritis ☐ Rheumatoid arthritis ☐ Autoimmune disease
☐ Seasonal allergies ☐ Blindness ☐ Psoriasis ☐ Low back pain ☐ Leg swelling ☐ Trauma
☐ Pregnancy ☐ Stomach ulcer ☐ Pancreatitis ☐ Esophagitis ☐ Anemia ☐ Diverticulosis/Diverticulitis

Complete Form

WholeHealth Family History

☐ Allergies ☐ Alcoholism ☐ Cancer ☐ Heart disease ☐ High cholesterol ☐ Stroke ☐ Clotting disorders
☐ Asthma ☐ Diabetes ☐ Autoimmune disease ☐ Seizures

Would you say that in general your health is

☐ Excellent (1) ☐ Very good (2) ☐ Good (3) ☐ Fair (4) ☐ Poor (5)

Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

WholeHealth Family History

☐ Allergies ☐ Alcoholism ☐ Cancer ☐ Heart disease ☐ High cholesterol ☐ Stroke ☐ Clotting disorders
☐ Asthma ☐ Diabetes ☐ Autoimmune disease ☐ Seizures