UCSF Benioff Children's Hospital Oakland

CREATION AND IMPLEMENTATION OF AN EHR QUIT SMOKING TOOL IN SAFETY NET CLINICS
FINAL REPORT

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Alameda County Alcohol Tobacco and
Other Drug Provider Network
California Smokers' Helpline
Community Health Clinic Network
Lifelong Medical Systems

ABSTRACT:

Tobacco use and secondhand smoke exposure remain a leading cause of morbidity and mortality, especially among families living in poverty. This project sought to build, implement, evaluate and disseminate a Computerized Physician Order Entry (CPOE) tool and 2 way e-referral to the California Smokers Helpline for the NextGen electronic health record system to enable providers to more readily identify smokers and systematize the treatment and referral of smokers. This "enhanced tobacco package", which included the CPOE and 2 way e-referral was built with input from staff and providers using a "tobacco champions" model. Seven clinic sites within the LifeLong clinic system were randomized, with 4 receiving the enhanced tobacco package, and 3 not receiving the package. Referrals from the control and intervention groups were compared. Sites with the e-referral capability had higher raw numbers of referrals than the sites without the e-referral, although overall percentage of referrals remained low. Tobacco template use remained low in the intervention sites. Our results suggest that e-referrals are a promising way to improve referrals to a state Quitline, however uptake of the new EHR tobacco template is highly user dependent.

INTRODUCTION:

Problem Description:

Tobacco use is a major global health crisis, and remains the major cause of annual preventable death in the United States[1]. In Oakland CA, 13.4% of the 1.5 million residents are smokers, but among certain high risk groups, including people living in poverty and African Americans, the

[1] Vital Signs: Current Cigarette Smoking Among Adults Aged ≥18 Years --- United States, 2009 MMWR September 10, 2010 / 59(35);1135-1140

smoking rate is close to 17%[2]. The current smoking rate is highest among young adults between the ages of 18-24 years at 18.6%.[3] In addition to smoking cigarettes, secondhand smoke (SHS) also causes significant morbidity and mortality[4]. Sixty percent of children living at or below 185% of the federal poverty level are estimated to be exposed to SHS[5], which has been linked to a myriad of health problems including sudden infant death syndrome, pneumonia, ear infections, asthma, attention deficit disorder, and stroke. Adults exposed to SHS are more likely to have heart disease, lung cancer, chronic lung disease, and stroke.[6] Research in pediatrics shows that the vast majority of parents feel it is a pediatrician's job to ask about SHS exposure and that they would accept tobacco cessation assistance from the pediatrician[7], demonstrating that healthcare providers have a valuable role in actively supporting family members who want to quit smoking.

Telephone counseling such as the California Smokers' Helpline (Helpline) provides is an evidence based and effective strategy to help smokers quit[8]; Clinicians play a valuable role in connecting patients to the Helpline as they represent the largest driver of calls, at 36.8% of total referrals.[9] Furthermore, when clinicians refer patients to the Helpline, patients have higher quit rates than those who self refer.[10] However, in 2013, only 0.8% of Alameda County's smokers used the Helpline's services[11], indicating a need for improving referral rates to the Helpline. Additionally, health care providers' rates of advising patients to quit smoking, prescribing tobacco cessation medications, and referral to treatment remain woefully low[12].

Incorporating tobacco cessation measures into the EHR, and integrating tobacco cessation into the EHR of community health clinics has been shown to increase the number of community health center patients who receive assistance to quit smoking[13]. By adding tobacco cessation into the EHR, adding systematic quality improvement cycles, and integrating tobacco cessation

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[2] Health of Alameda County Cities and Places report 2010 http://www.whhs.com/static/adminuploads/documents/cna_2010_4cd44f575cc89.pdf

[3] Health of Alameda County Cities and Places report 2010

[4] The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. 2014.

[5] Quinto KB et al "Environmental tobacco exposure in children aged 3-19 years with and without asthma in the US 1999-2010" NCHS Data Brief 2013 Aug (126): 1-8

[6] Surgeon General's Report 2014

[7] Moss D et al. Accessing adult smokers in the pediatric setting: What do parents think? Nicotine & Tobacco Research Vol 8, (1). Feb 2006 67-75.

[8] Lichtenstein E et al. Smoking cessation quitlines: an underrecognized intervention success story. Am Psychol. 2010 May-Jun;65(4)

[9] Data from California Smokers' Helpline

[10] Guy M. Relationship between smokers' modes of entry into outlines and treatment outcomes. Am J Health Behav. Jan 2012; 36(1):3-11.

[11] Based on California Smokers' Helpline data for calls in 2013

[12] Jamal A et al. Tobacco Use Screening and Counseling During Physician Office Visits Among Adults — National Ambulatory Medical Care Survey and National Health Interview Survey, United States, 2005–2009. MMWR June 15, 2012 / 61(02);38-45

[13] Silfen at al

into the clinic workflow, we aimed to improve smoking cessation support that would ultimately increase quit attempts and quit rates among low income smokers in Alameda County.[14]

Rationale:

This project built on our prior, successful CEASE (Clinical Effort Against Secondhand Smoke Exposure) California intervention funded by First 5 California. Dr. Jyothi Marbin, PI, has been training pediatric clinicians across the state of California on the evidence-based CEASE model which is based on "Ask, Assist, Connect" to help smokers quit. Through CEASE, pediatricians are trained to help caregivers quit smoking by screening children for SHS, offering smokers nicotine replacement therapy and connecting them to the Helpline. A major barrier to successful implementation of CEASE is the lack of a systematic, EHR based tool to support clinicians in helping smokers quit.

The LifeLong clinics use the NextGen EHR version 8.3. Our current project sought to create a set of tobacco enhancements within NextGen, including improved tobacco screening, a Computerized Physician Order Entry (CPOE) system with a bidirectional e-referral system, and building reports and lists to help the staff monitor smoking patients and their quit rates for quality improvement efforts. CPOEs are a commonly used clinical decision tool in electronic health records to improve efficiency and patient health outcomes.[15] Bi-directional e-referrals have been shown to dramatically increase referral rates to state quitlines.[16] In addition to referring primary smokers, the CPOE also provided support for household smokers; ie the smoking caregiver of a child or smokers who live with other adults.

Bi-directional e-referrals are an area of active development by the North American Quitline Consortium (NAQC)[17]. NAQC has established an e-referral workgroup, whose members have been piloting implementation of e-referrals between health care organizations and quitlines in four states[18]. California is one of these states, but the only e-referral platform currently available is on the Epic system. However, NextGen is the most popular EHR platform for community health centers, in California[19] which serve low income populations with disproportionately high smoking prevalence rates. Thus, it is critical to develop a CPOE system for use in the NextGen EHR platform.

This project took place in the LifeLong Medical Care system, which is part of the Community Health Center Network (CHCN) in Alameda County, CA. The CHCN is an association of 8 federally qualified health centers (FQHC) that provide primary care to over 175,000 low income and medically underserved residents of Alameda County.[20] The clinic systems included in CHCN are Asian Health Services, Axis Community Health, La Clinica, LifeLong Medical Care, Native

[14] Silfen et al

[15]

[16] Adsit R. Using the electronic health record to connect primary care patients to evidence-based telephonic tobacco quitline services: a closed-loop demonstration project. Transl behav med. Sep 2014; 4(3) 324-332.

[17] Personal communication with Linda Bailey, Director, North American Quitline Consortium

[18] http://www.naquitline.org/?page=EQR

[19] http://chcnetwork.org/nextgen-practice-management-system-is-live/

[20] Data from CHCN

American Health Center, Tiburcio Vazquez Health Center, Tri-City Health Center, and the West Oakland Health Council. Most of these systems have a number of clinic sites within Alameda County. These CHCN FQHC clinics serve Alameda County's lowest income residents - 45% of patients are uninsured, and 52% have Medi-Cal, Medicare, or other public insurance. The CHCN clinics serve patients of all ages and races - 35% of CHCN patients are 0-19 years old; 32% are 20-44 years old, and the remainder are 45 and older. CHCN also has a racially diverse patient base - 45% of patients are Hispanic/Latino, 22% are Asian, 15% are Black/African American, and 10% are white.[21]

Although NextGen had some functionality to allow providers to document smoking status and prescribe medications for smokers who want to quit, there was no CPOE for smoking cessation, no integrated solution for referring patients to helplines and no way for clinicians to track referrals. Additionally, there was no systematic way to screen for and document SHS.

Our project sought to enhance Alameda County's approach to helping low income smokers quit by systematically incorporating smoking cessation CPOEs and e-referrals into the EHR in safety net clinics. NextGen is one of the top 5 EHRs in the country[22] and is used by over 400 community clinics nationwide[23], suggesting that if this program is successful on a county level, there is the potential to move this innovation upstream and disseminate it to community clinics across the country. Similar pilot work with Epic users at Dean Health in WI led to incorporation of quitline e-referral into the basic Epic software starting in 2015.

Specific Aims:

The goal of this project was to build tobacco cessation support tools into the electronic health record (EHR) to increase the number of adult smokers living in poverty who make cessation attempts, and who successfully quit smoking.

The following are the specific aims:

Objectives:

1. Build tobacco cessation CPOE in NextGen that includes the tools for identifying smokers and household smokers and assisting them to quit.
2. Build a bidirectional e-referral between the NextGen Electronic Health Record (EHR) and the California Smokers' Helpline.
3. Deliver CPOE and e-referral with a brief training to 11 Lifelong Clinics and 5 CHCN Clinics in Alameda County.
4. Evaluate the implementation and impact of the CPOE and e-referral tool on the number of patients screened for tobacco use, Helpline referrals made, the number of tobacco cessation pharmacological agents prescribed to smokers, and assess the quit rate among counseled smokers.

[21] Alameda Health Consortium Fact Sheet 2013

[22] Conn, J. 5 EHR vendors lead pack in ambulatory-care niche. Modern Healthcare online http://www.modernhealthcare.com/article/20130924/NEWS/309249937

[23] https://www.nextgen.com/Specialties/Community-Health-Center-EHR

METHODS:

Intervention: Developing an Enhanced Tobacco Template:

In order to design an optimal, user centered tobacco tool, we engaged "Tobacco Champions" from LifeLong Clinics to help us design a tool that would be most useful and helpful to them. The Tobacco Champions came from 4 different clinic settings, and they included people in various roles - medical assistants, community health workers, and physicians. This group met 4 times over the summer of 2015 to examine existing tools, brainstorm additional features, discuss workflow, and give feedback on the tool we designed. Champions were also responsible for coordinating ongoing tobacco QI efforts at the clinic site, including producing reports and reviewing them regularly with the clinic staff. Each clinic system implementing the NextGen tools received a small monetary incentive to help with staffing and/or technological issues related to the project.

The key planning team consisted of myself, our evaluator, a pediatric champion from LifeLong who played a key role in developing the tool, and will helped with providing access to clinic sites, Dr. Cathy McDonald, a LifeLong physician and longtime anti tobacco advocate, and Ryan Hensler, the lead technologist at LifeLong, who attended the champion meetings, helped us understand what changes to the EHR would be feasible and practical, and helped us understand overall NextGen workflow. He also made design changes to the tool based on the input of the champions. Mr. Hensler also built and helped design trainings for the two way e-referral to the Helpline and provided monthly summaries of data that was inputted into the EHR to monitor screening and smoking cessation support (including educational counseling, nicotine replacement therapy and e-referrals to the Smoker's Helpline).. With the guidance of the champions, he was able to do the following:

1. Improve the documentation of tobacco use in screening/social history, with alerts for patients who are tobacco use/exposed to secondhand smoke
    a. Created an alert for tobacco users that appears on the main note template as a visual reminder for the provider to address tobacco use
    b. Improved documentation of SHSE for pediatric providers
2. Create a tobacco template
3. Create a 2-way e-referral to the Helpline for primary smokers, and for referral of household members who are smokers

Screenshots of each of these changes are provided below:

I. Improve the documentation of tobacco use in screening/social history

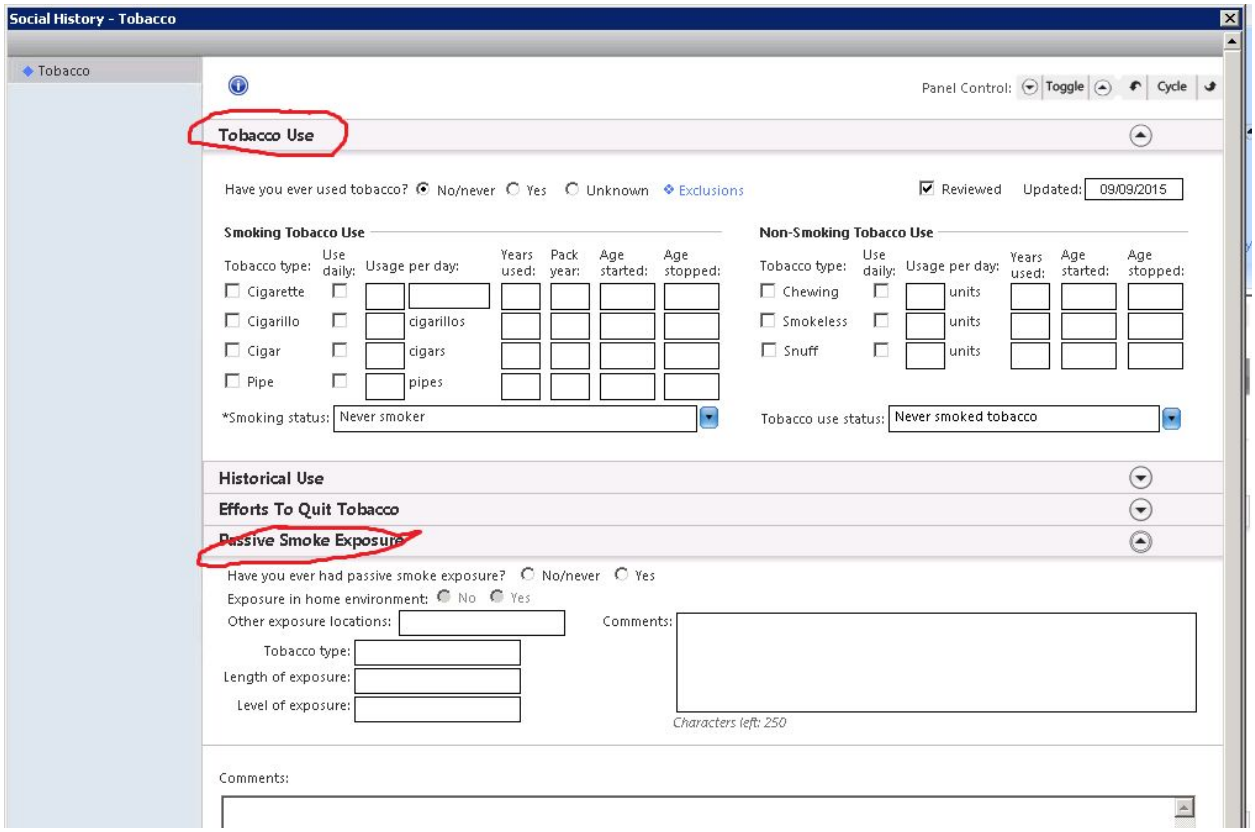
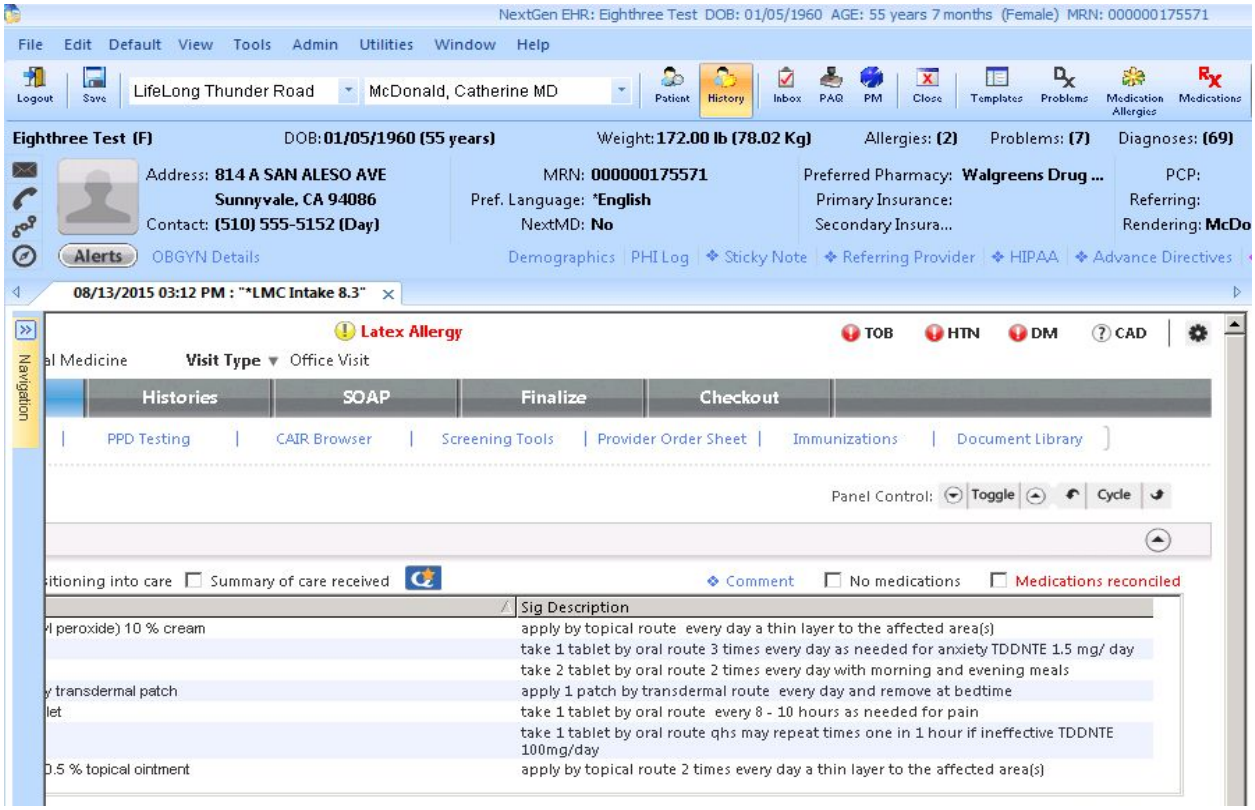


Image 1: Documentation of Tobacco use/passive smoke



EHR Quit Smoking Tool/Marbin

Image 2: When a tobacco user is identified, a red "TOB" marker appears on the SOAP note

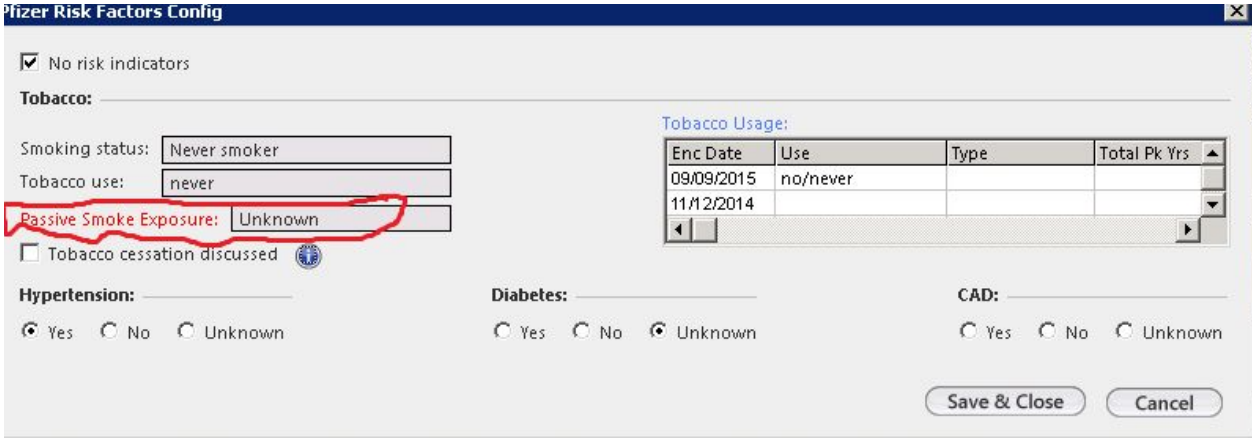


Image 3: Improve documentation of passive smoke exposure

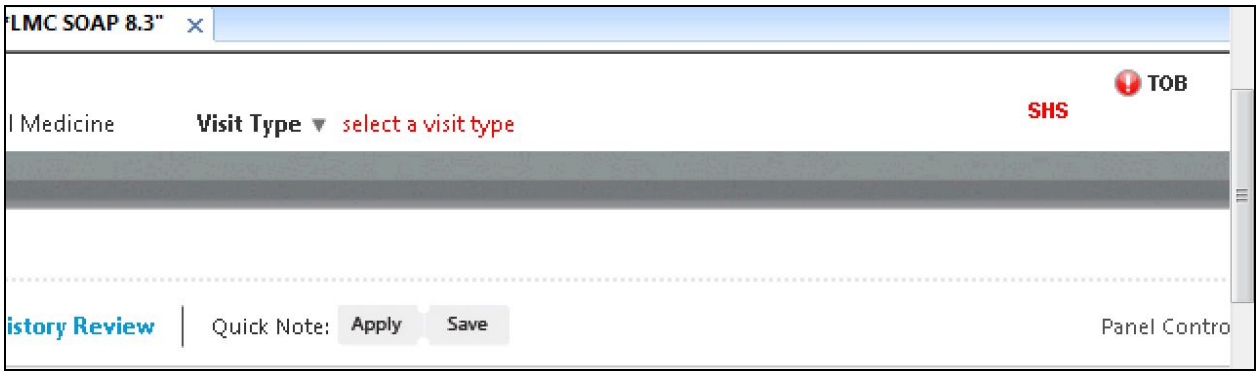
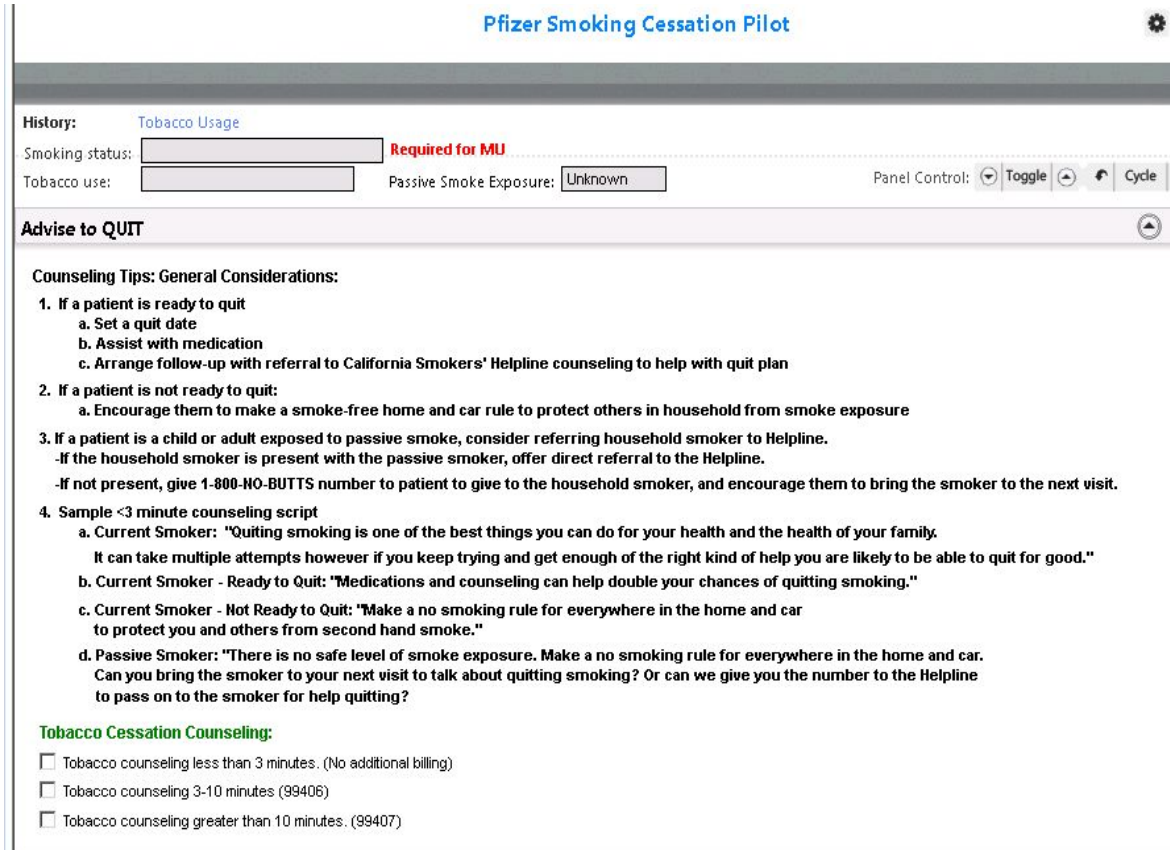


Image 4: if passive smoke exposure is identified, a red "SHS" alert appears on SOAP note to remind providers to address passive smoke exposure

II. Create a tobacco template

The goal of the tobacco template was to provide all of the tobacco cessation support in one easy to access screen. The screenshots of the template demonstrate how we consolidated information to a few easy to navigate screens with links to resources embedded:


Pfizer Smoking Cessation Pilot
History:
Tobacco Usage
Smoking status:
Required for MU
Tobacco use:
Passive Smoke Exposure:
Unknown
Panel Control:
Toggle
Cycle
Advise to QUIT
Counseling Tips: General Considerations:
1. If a patient is ready to quit
a. Set a quit date
b. Assist with medication
c. Arrange follow-up with referral to California Smokers' Helpline counseling to help with quit plan
2. If a patient is not ready to quit:
a. Encourage them to make a smoke-free home and car rule to protect others in household from smoke exposure
3. If a patient is a child or adult exposed to passive smoke, consider referring household smoker to Helpline.
-If the household smoker is present with the passive smoker, offer direct referral to the Helpline.
-If not present, give 1-800-NO-BUTTS number to patient to give to the household smoker, and encourage them to bring the smoker to the next visit.
4. Sample <3 minute counseling script
a. Current Smoker: "Quiting smoking is one of the best things you can do for your health and the health of your family.
It can take multiple attempts however if you keep trying and get enough of the right kind of help you are likely to be able to quit for good."
b. Current Smoker - Ready to Quit: "Medications and counseling can help double your chances of quitting smoking."
c. Current Smoker - Not Ready to Quit: "Make a no smoking rule for everywhere in the home and car
to protect you and others from second hand smoke."
d. Passive Smoker: "There is no safe level of smoke exposure. Make a no smoking rule for everywhere in the home and car.
Can you bring the smoker to your next visit to talk about quitting smoking? Or can we give you the number to the Helpline
to pass on to the smoker for help quitting?
Tobacco Cessation Counseling:
Tobacco counseling less than 3 minutes. (No additional billing)
Tobacco counseling 3-10 minutes (99406)
Tobacco counseling greater than 10 minutes. (99407)

Assist Quit Attempt (Medications)

Prescribing Tips: General Considerations:

1. Need help selecting medications or identifying coverage issues? Your CCA or CHW or UCSD-based California Smokers' Helpline can help. For more information about medications see www.ucquits.com/medications/fda-approved Refer for counseling before quit date to prepare patient and increase chances of long-term quitting.
2. Emphasize importance of quitting combustible tobacco products. If using e-cigarette, urge FDA approved products. If unwilling to use support quit attempt with e-cigarettes with plan to quit e-cigarettes as soon as possible.
3. Medication guide: prescribe about 2-3 months to allow for behavior change, try to carrange follow up at least monthly
   a. Nicotine dose: about 1 mg of nicotine for 1 cigarette. (1pack = 20 cigarettes)
   b. Nicotine gum/lozenge (4mg) recommended for smokers who smoke within 30 minutes of awakening. Otherwise, use 2mg gum/lozenge for smokers who smoke more than 30 minutes after awakening.
   c Nicotine nasal spray (peaks at 11-13 minutes) and nicotine inhaler (peaks at 15 minutes) provide most immediate nicotine delivery
   d. Recommend no smoking while using nicotine replacement therapy. If they are unable to quit smoking while on NRT, they probably need more NRT. Refer to handout "Tips from the Experts".
   e. Bupropion and Varenicline should be started 1 week before quit date.
4. Combination therapy
   a. Nicotine patch (long-acting) and gum/lozenge (short-acting) may be used for breakthrough craving.
   b. Combination bupropion and nicotine products can be used for those struggling to quit. Monitor blood pressure.
5. Contraindications/concerns:
   a. Bupropion SR or Zyban: seizure disorder or increased seizure risk (eg. Head trauma), bipolar, eating disorder, taking MAO inhibitor in last 14 days. Monitor for neuropsychiatric changes.
   b. Nicotine medication: recent myocardial infarction, life threatening arrythmia, worsening angina. Caution in pregnancy.
   d. Verenicline: monitor for neuropsychiatric changes or cardiovascular symptoms.

6. Patients wanting to use e-cigarettes to quit
   a. Inform of unknowns of e-cigarettes
   b. Encourage use of FDA approved, evidence-based treatments known to be safe a
   c. Emphasize importance of completely quitting all combustible cigarettes.
   d. If unwilling to use evidence-based pharmacotherapy support quit attempt with e
   e. Advise of importance of stopping e-cigarettes as soon as possible.
   f. Provide handout on e-cigarettes found with meds handouts.
7. For passive smokers, make a household referral to UCSD California Smokers' Helpl Rx for household member who smokes, MediCal requires a prescription printed o
8. Paperwork
   a. Certificate of counseling may be required for medication coverage. CCA or UCSD
   b. Treatment Authorization form may be required for some medications (e.g. Nicoti

Medications: Med Module

No Medications Ordered

☐ Medications for Tobacco Cessation Contraindicated

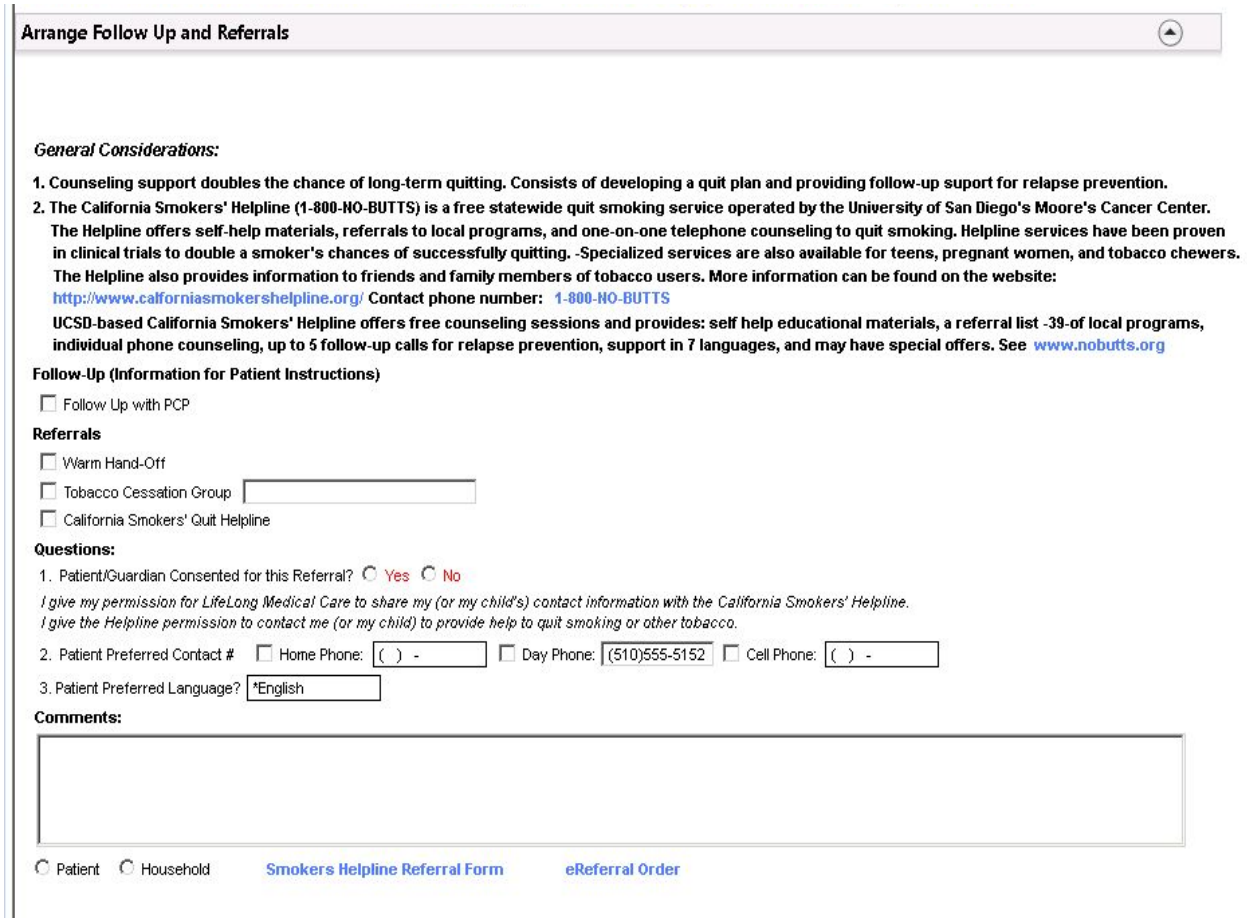
☐ Patient Declined Medication

Med Module (click to launch)

-Heavy Smokers (>=10-cigarettes daily)

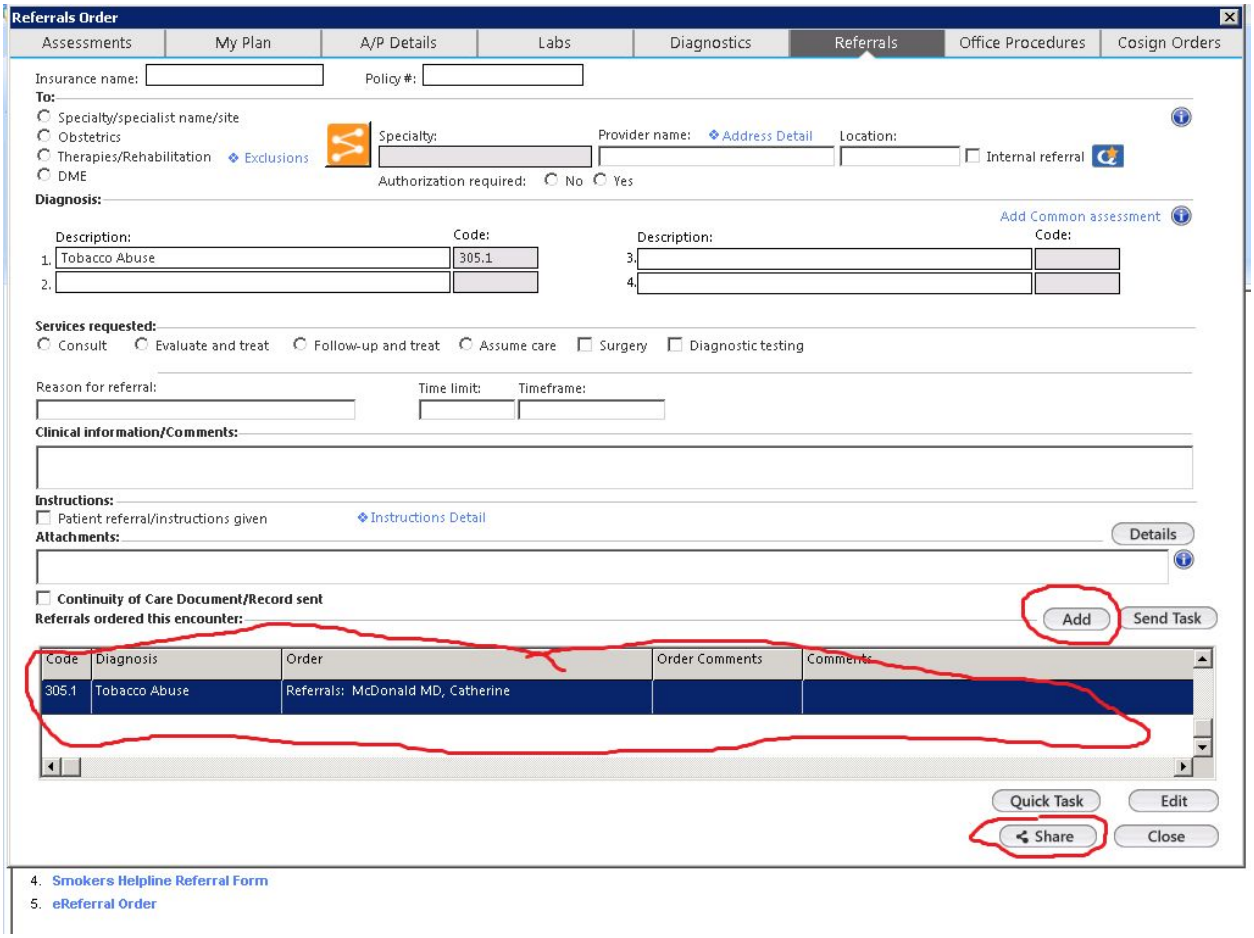
-Light Smokers (<10 cigarettes daily)

-Non-daily Smokers (Occasional Smoker)

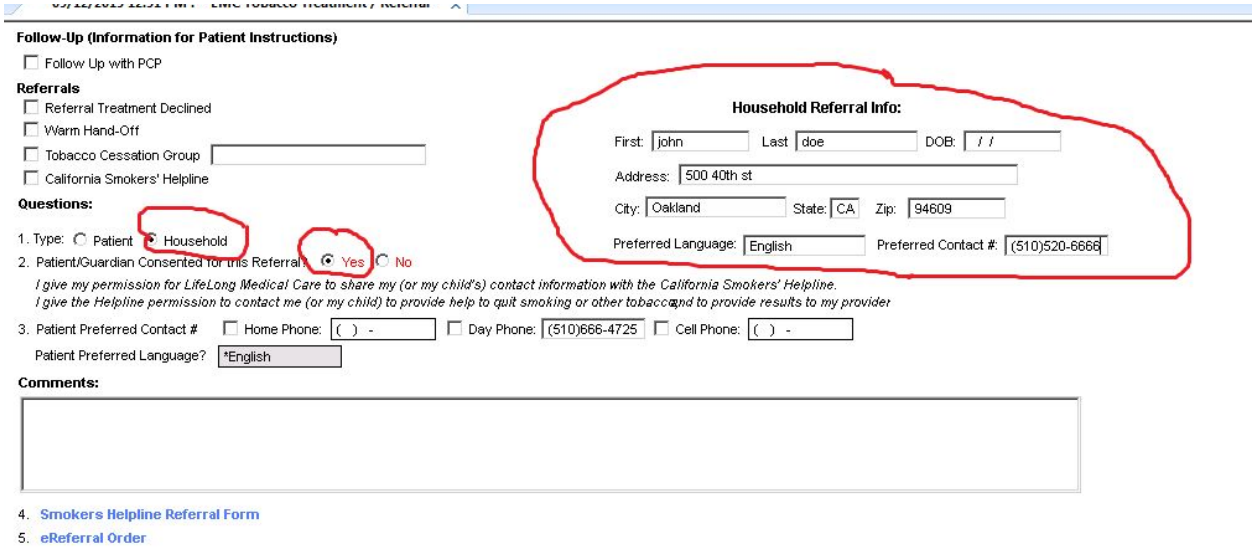


III. Create a 2 way e-referral to the CA Smokers' Helpline:

The 2 way e-referral was designed to streamline referrals to the Helpline. This allowed referring providers to make referrals directly through the Helpline, instead of using the fax or web based referrals, which necessitate opening a new browser window. The integrated referral also allowed the referral to become part of the EHR for documentation purposes.



We created e-referrals not only for primary smokers, but for household smokers as well.



Intervention: Training & Quality Improvement:

Once the smoking documentation, tobacco template and the direct referrals were completed, we piloted the tool at the 3 intervention sites. All sites were trained in tobacco cessation - this "control" training included basic demographics on tobacco use, health consequences of smoking, information about SHS, review of the Ask, Assist, Refer intervention, and a review of tobacco cessation medications. The 4 intervention sites were trained on these things, and were also trained on how to use the new tobacco template and 2 way e-referral. The trainings were made available on Sharepoint, and the Help Desk was also available to support practitioners in using the online tools. We led trainings at 9 clinic sites related to tobacco cessation in the fall of 2015, and trained over 300 providers and staff at the clinics.

The pilot implementation of the e-referral in a small number of clinics allowed us to observe the template and e-referral in real time use.

Tobacco champions were given a monthly report, such as the one below, that provided them with data from the monthly reports at their clinic that they could then use in a PDSA model to identify areas of improvement.

Figure 1: Sample QI report:

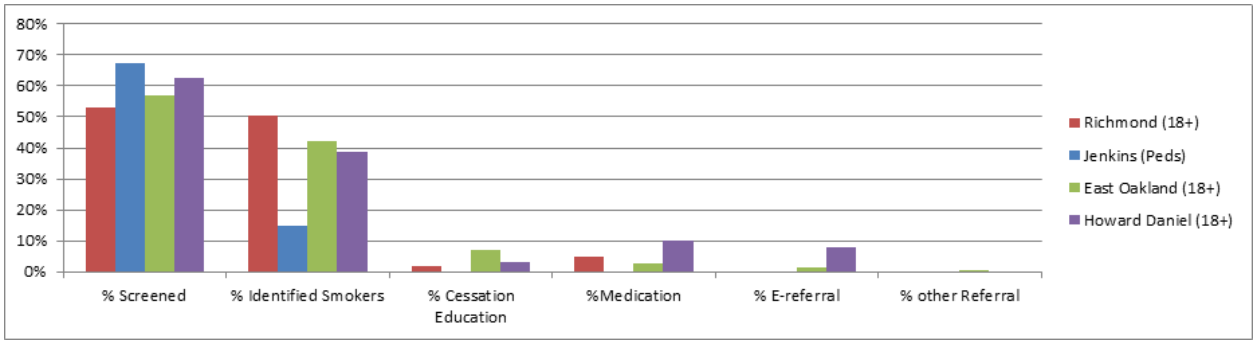


Table 1. Target Patients Screened, Identified and Support Provided

Site	Eligible (n)	Screened (n)	Identified (n)	% Screened	% Identified Smokers	% Received Education	% HouseholdRx	% Medication	% e-Referral	% Other Referral
Richmond 18+ Tobacco Use	221	117	59	52.9 %	50.4%	1.69%	0%	5.1%	0%	0%

Richmond 18+SHSE Screen	221	25	8	11.3 %	32.0%	n/a	n/a	n/a	n/a	n/a
Richmond Preg Tobacco Use	1	1	1	100%	100%	0%	0%	0%	0%	0%
Richmond Preg SHSE Screen	1	1	1	100%	100%	n/a	n/a	n/a	n/a	n/a
Jenkins Peds Tobacco Use	202	85	0	42.1 %	0%	0%	0%	0%	0%	0%
Jenkins Peds SHSE Screen	202	136	20	67.3 %	14.7%	n/a	n/a	n/a	n/a	n/a
E. Oakland 18+ Tobacco Use	964	548	230	56.9 %	42.0%	6.9%	0.4%	2.6%	1.3 %	0%
E. Oakland 18+ SHSE Screen	964	160	65	16.6 %	40.6%	n/a	n/a	n/a	n/a	n/a
E. Oakland Preg Tobacco Use	11	6	4	54.6 %	66.7%	0%	0%	0%	0%	0%
E. Oakland Preg SHSE Screen	11	2	2	18.2 %	100%	n/a	n/a	n/a	n/a	n/a
Daniel 18+ Tobacco Use	415	260	102	62.7 %	38.9%	2.97%	0%	9.9%	7.9 %	.99 %
H. Daniel 18+ SHSE Screen	415	87	15	21.0 %	17.2%	n/a	n/a	n/a	n/a	n/a
H. Daniel Peds Tobacco Use	86	12	0	14.0 %	0%	0%	0%	0%	0%	0%
H. Daniel Peds SHSE Screen	86	60	6	69.8 %	10.0%	n/a	n/a	n/a	n/a	n/a
H. Daniel Preg Tobacco Use	50	24	5	48.0 %	20.8%	0%	0%	0%	20.0 %	0%
H. Daniel Preg SHSE Screen	50	14	4	28.0 %	28.6%	n/a	n/a	n/a	n/a	n/a

We met with the tobacco champions 4 times in person, and then had quarterly phone meetings with them over an 18 month period. On these calls, we discussed the tobacco reports we generated from Next Gen. In their role as tobacco champions, this group was responsible for reviewing the data, and then sharing the data with the rest of the clinic staff and brainstorm ways to improve outcomes using the quality improvement "Plan Do Study Act" PDSA model. The quarterly calls with this champion team were opportunities to discuss best practices and to provide support to the champions.

After the template and e-referral had been in place for 6 months, we met with providers to get feedback on the template and made additional changes to the template based on their feedback.

In the spring of year 2, we shared the template and e-referral with all the Lifelong Clinic sites. Each site received a training on how to use the template.

We presented the template and 2 way e-referral to the Associate Medical Directors of the CHCN clinics in February of 2017. Mr. Hensler served as a consultant to help adapt the template for use in non Lifelong Clinics to those sites interested in implementing it, and Dr. McDonald served as a trainer for the sites looking to adopt the enhanced tobacco package.

The project concluded in May 2017.

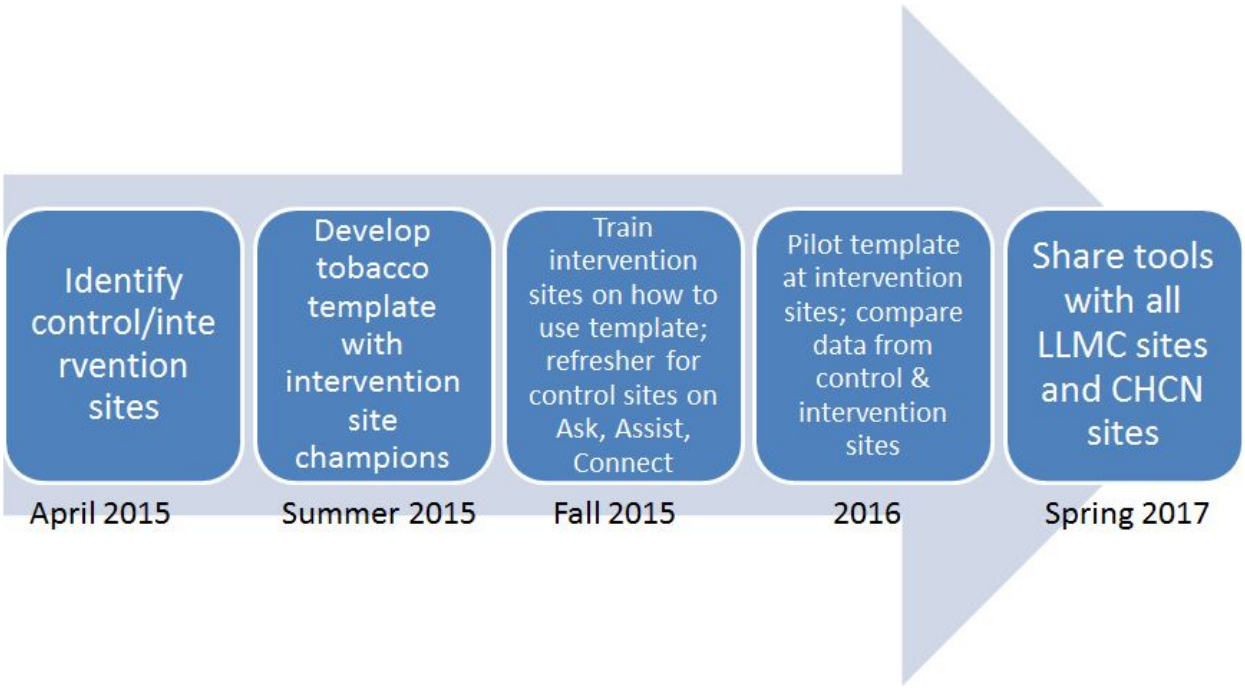


Figure 2: Project Timeline

Study of the Intervention:
We studied the impact of the intervention through monthly reports looking at the number of referrals made, smokers identified, and medications prescribed. We compared data from the intervention clinics with the enhanced tobacco package with the results from the control clinics without the enhanced package.

Measures:
We collected tobacco use information in discrete data fields to allow us to generate reports on the number of patients who screen positive for tobacco use and SHS, treatment options offered, number of e-referrals made, medications ordered, etc.

These reports also helped with QI cycles at each clinic, by allowing clinic teams to review their progress towards goals on screening, treating, and referring smokers. They also allow leadership teams to identify best practices at high performing clinics that can be shared and replicated at other sites.

Key measures used were drawn directly from the EHR template, and included:

- % change in patients screened for tobacco use
- % change in patients screened for SHSE
- % change in tobacco treatment prescribed
- % change in Helpline Referrals and onsite referrals to CCA's, CHW's

Ethical Considerations:
An IRB was received from the CHildren's Hospital Oakland Research Institute. We tracked intervention versus control data for 1 year, and then shared the enhanced package with the control sites and trained them in how to use it.

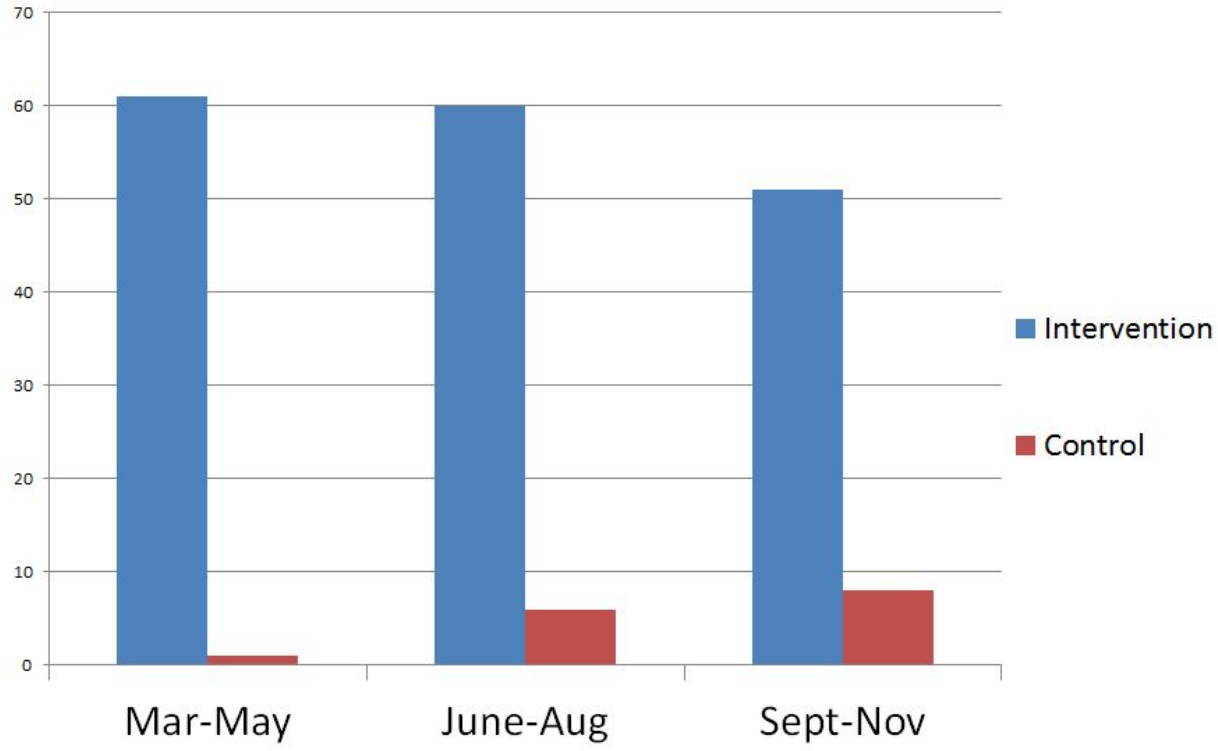
RESULTS:

This project successfully engaged clinic champions in the development of a computerized Physician Order Entry (CPOE) tool and 2 way e-referral to the California Smokers Helpline for the NextGen electronic health record system. Clinic providers and staff at each of the intervention clinics received training on how to use the system and each site integrated this into their clinical workflows.

Tobacco screening remained relatively high at all sites. The smoking rates at the Lifelong clinic sites are higher than the statewide average, ranging from 30% to 70%, which is to be expected given the high-risk, low-income population served by these clinics. However, screening for secondhand smoke exposure remained relatively low, and did not significantly improve after the intervention.

We examined referrals to the Helpline over a 6 month period across the intervention and control sites and found that the intervention sites with the e-referral system had many more referrals to the Helpline than the control sites without the e-referral. During this time frame, a total 184 smokers received a referral to the Smokers' Helpline compared to 17 at the control sites (see FIgure 2).

Figure 2: Helpline Referrals Mar – Nov 2016



While the raw numbers indicate a dramatic difference between the intervention and control sites, the proportion of smokers referred was low. Despite that limitation, of the smokers referred > 50% were reached, and of those reached >70% agree to accept smoking cessation support.

DISCUSSION:

This project developed and implemented a CPOE tool and 2 way e-referral to the California Smokers Helpline for the NextGen EHR. The system resulted in an increase in referrals to the Helpline across the intervention clinics and then the tool was disseminated for use at each of the control sites.

Our study suggests that this e-referral system increased referrals to the Helpline. However, the majority of providers that we spoke with were interested in the feedback from their referrals

through the e-referrals, but were concerned that the messages from the Helpline might increase their email volume so were not as enthusiastic about this as some others have reported.

We also found that uptake and use of the tobacco template was extremely provider dependent, and required a fair amount of training and support in order to support usage. We had an unanticipated amount of staff and provider turnover, which affected our champion group, and also affected utilization of the template. This is further explored below.

We found that screening rates were already high in general, and we did find that screening did identify a higher than expected number of smokers at each of the clinic sites. The system we developed did capture smoking cessation education, medication and group referrals effectively and efficiently, but retraining providers to document in the new sections so that we could capture the tobacco cessation work that was happening remained challenging.

Key Lessons Learned & Limitations:

There were a number of lessons learned over the course of this project which are summarized below.

Solutions are EHR specific

One of the early lesson we learned is that it is not possible to implement streamlined data collection across different EHRs. We learned that 2 of our LifeLong sites were not on NextGen, and therefore we were unable to build comparable reports to the NextGen reports that the other clinics in the study used. We therefore had to drop them from the analysis.

Use of the tobacco template is user dependent

The uptake and usage of the tobacco template continued to be a challenge despite frequent attempts to get feedback from the template users.

Simpler is better!

When we initially launched the project, the process of using Direct Messaging to send a referral was complicated. Over time, due to changes in NextGen, we were able to further simplify the referral process. We did find resistance to using the referral process at first due to the complexity involved.

Small group trainings are preferable to large group trainings for EHR interventions

While we initially started with large group trainings to teach clinic staff and providers how to use the enhanced tobacco tools, we quickly realized we needed to go back to each clinic and spend one on one time with providers and staff to really teach them how to use the tool

Sustainability of Interventions

Paid tobacco champions at each site are extremely helpful in continuing the intervention because the funding ensures the champions have time to address smoking cessation efforts. We budgeted in a small stipend for the medical assistants and community health workers to serve as tobacco champions. However, given the busy clinical settings they worked in, and the relatively small amount of funding we were able to provide, they were unable to devote as much time as we would have ideally liked them to do to this project.

High turnover

Throughout the project, we were challenged by high turnover of the medical assistants and physician champions. Over the course of the 2 year project, our physician champion changed twice, and our tobacco champion core group also turned over a number of times. We attribute this to the financial hardship and high burnout for staff and providers working in clinics serving communities of high need and a disproportionate population of low-income families. This turnover made it difficult to sustain the intervention consistently at the sites, as we were often retraining champions, who then had to build credibility and identity at their clinic sites before serving as leaders in tobacco cessation

Documentation in EHR is difficult to track

Our EHR report was set to capture a number of metrics, including medications prescribed and referrals made to group counseling. However, capturing these metrics directly depends on where this is documented in the EHR. We found it challenging to train providers who are used to one workflow (ie documenting interventions in their narrative note) to switch to another (using checkboxes that are able to be captured in EHR reports). It is not possible to determine if the low numbers documented in the EHR were a result of poor documentation or if they were a true reflection of clinical practice. Champions' reports indicate that changing clinical practice regarding the uptake of new documentation systems is difficult. Thus, the numbers in the EHR likely underestimate the impact of the intervention on improving screening and the provision of smoking cessation support. Greater attention is needed to improve the implementation and sustainability of clinical practice changes to improve the uptake of computer-based interventions such as this.

Pediatric SHS is still a major issue, and needs more work

While our ultimate goal was to increase pediatric screening for SHS and referrals to the Helpline, this goal was only partially realized. Despite training and encouraging pediatricians to prescribe nicotine replacement therapy to caregivers who smoke, this did not result in an overall increase in household smoking NRT prescriptions. This is not necessarily a failure of the idea, as other projects like CEASE California are having success in this area, but rather due to insufficient buy-in from the providers, and high provider and staff turnover. Further, the extra step of having to print out the NRT prescription is likely another barrier to prescribing NRT of household smokers. This is an area that needs more research. I have used the lessons learned from this project and applied them in my current partnership with First 5 California and the CA Smokers' Helpline in CEASE California, which is aimed at supporting pediatricians in providing quit assistance to families. CEASE is also using e-referrals, and though using pediatric champions, is working to integrate secondhand smoke exposure reduction programs into the inpatient, outpatient and nursery settings.

Direct Messaging is a Promising Technology:

Direct messaging was not being used for 2 way e-referrals when we started this project; in fact, we had planned on building a VPN tunnel for Helpline e-referrals, and our technologist suggested that Direct Messaging could provide the same service at a much lower cost. As a result of this project, Direct Messaging is now being used by the Helpline to make e-referrals a more realistic options for clinics who do not have the funds to invest in building a VPN tunnel.

Conclusion:

Tobacco use is still a major source of morbidity and mortality, particularly in low-income populations. This project helped us understand the opportunities and limitations to using the EHR as a tool to support health care providers working with low income families in tobacco cessation efforts. While we had high expectations in introducing a tobacco template as a timesaving measure, the bar to learning a new workflow and high turnover of staff proved to be a deterrent to use by providers. We did have some success in implementing the 2-way e-referral, which suggests that e-referrals can be a useful tool in a busy, low-income clinic setting. More research needs to be done around improving workflow for enhanced tobacco templates and improving utilization and uptake.