Episode-of-Care Analysis and Tobacco Treatment in Primary Care Settings

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Economists and health services researchers have long been faced with the problem of how to effectively unitize and assess cost and quality of health care delivery across diverse practice settings. One such approach is episode-of-care analysis, first theorized and applied by Hornbrook and his colleagues in the mid-1980s. A health care episode is defined as a series of health-related events with a beginning, an end, and a course, all related to a given health problem that exists over a specific time period (i.e., time horizon). In our research we have adapted an episode-of-care framework to the topic of treating tobacco use and dependence. Further reductions in tobacco use calls for increased readiness and capacity of primary care physicians to treat tobacco dependence (CDC 2002). However, Primary care providers face considerable pressure to address multiple patient care concerns during increasingly brief clinical visits (Cabana et al. 1999). Efforts to encourage adaptation of well-established clinical practice guidelines must address the tension between time limitations and best practices. We need techniques and tools to support sustainable change in practice related to tobacco dependence in diverse primary care settings, particularly those located in medically underserved communities (Davis and Taylor-Vaisey 1995; Hellinger 1996; Stone et al. 2002; Swartz et al. 2002; Wandersman 2003).

Our efforts are focused on how to improve dissemination and implementation of the U.S. Public Health Service Guideline for Treating Tobacco Use and Dependence in primary care practices (Foire et al. 1996). This line of work is especially timely, as the PHS Guidelines for Treating Tobacco Dependence are currently under revision and innovations to support dissemination are of especially high priority. Our system dynamics modeling will show the interdependent process of patients and providers cycling through various stages of tobacco use and treatment, and it will need to represent a patient’s stage of readiness to quit or likelihood to avoid relapse.

Focus on Primary Care Practices

Brief counseling intervention by primary care providers has been shown to effectively promote tobacco use cessation, yet many physicians do not consistently adhere to this practice for all patients at each appointment (Davis and Taylor-Vaisey 1995; Goldstein et al. 1998; Greco and Eisenberg 1993). Significant barriers exist that can interfere with clinicians’ assessment and treatment of smokers. Many clinicians lack knowledge about how to identify smokers quickly and easily, which treatments are efficacious, how treatments can be delivered, and the relative efficacies of different treatments (Orleans 1993). Even if clinical knowledge is strong, many physicians do not consistently use this intervention (Davis and Taylor-Vaisey 1995; Goldstein et al. 1998; Greco and Eisenberg 1993).

The Association of American Medical Colleges and the American Legacy Foundation (AAMC/Legacy Foundation), working in cooperation with the Center for Health Workforce Studies at the University of Albany, recently published an in-depth report on physician behavior and practice patterns related to smoking cessation (2007). The report noted that physicians do not address tobacco use and dependence among their patients as consistently and intensively as they might, citing work by the Centers for Disease Control and Prevention (2004) that indicates that no less than 70% of patients wanted to quit at any given time and that, although more than 80% of physicians report asking patients about whether or not they smoke, this level falls short of agreed upon national goals (Fiore et al. 2000; Katz et al. 2002). Moreover, far fewer physicians
routinely prescribe cessation pharmacotherapies or refer patients to counseling and other supports, as recommended in the guidelines (Thorndike et al., 1998; Bourm 2000).

**Shortage of Cessation Tools and Resources.** The AAMC/Legacy Foundation (2007) study reported that a majority of physicians across specialties and settings reported significant limitations in the interventions they have available to help end their tobacco use. These included having too few cessation resources and organizational supports, as well as lacking interventions that are effective in helping them quit. Moreover, the study that access to more resources and organizational supports was associated with more active cessation interventions on the part of physicians.

Only half of physicians reported having any type of resource to aide in the delivery of tobacco treatment, such as informational posters and brochures for their waiting rooms (50%) or a tobacco user identification system (33%). When asked if they would refer patients to individual counseling and group programs should they be available, 90% of physicians said they would. However, only 10% of reporting physicians rated their ability to address smoking among their patients as “very effective.” When physicians knew about the patients’ insurance coverage and eligibility for medication and pharmacotherapy, counseling, and quitlines, they were more likely to engage their patients in smoking interventions.

Access to resources did not vary greatly across types of medical specialties. However, psychiatrists were found to be least likely to report that resources were available, with the exception of individual counseling. Among primary care providers, internists were more likely to report limited availability of resources, though they were also found to show higher levels active participation in smoking cessation interventions for their patients (see also Meredith et al. 2005).

**Other Barriers to Tobacco Treatment in Primary Care.** Lack of patient motivation and poor financing of cessation activities were both reported as large barriers to addressing tobacco use and dependence in their patients. These results were also consistent with prior findings (see Adsit et al. 2005; Cabana et al. 1999; Glynn and Manley 1989). Physicians surveyed for the AAMC/Legacy Foundation (2007) report underscored that patients bear a considerable responsibility for choosing to smoke and for quitting. The most commonly endorsed physician-reported barrier identified by the AAMC/Legacy Foundation study was that patients are not motivated to quit (63%). Reimbursement of coverage for cessation interventions and limited reimbursement for office visits were key financial barriers (54% and 52%, respectively).

In addition, there was a general perception about the overall effectiveness of smoking cessation interventions. A majority of physicians reported that most cessation interventions have “some” effectiveness; however, less than one-third rated any single intervention as “highly” effective. Bupropion and nicotine replacement therapies (NRT) were assessed to be the most efficacious interventions by physicians. No differences were found in terms of assessment of interventions by physicians’ subspecialty, organizational setting, or gender. Younger physicians and those whose medical training covered tobacco treatment were more likely to correctly assess intervention effectiveness.
Conceptual Framework for Development of the Simulation Tool

Our conceptual framework for development of the simulation tool is organized around three general domains of interest: (1) primary care, (2) tobacco use, and (3) patient health (see Figure 1). Tobacco use can be viewed as a mediator of patients’ health and their use of primary care, in that everyone requires some level of primary care at some point (whether for an acute, chronic or preventive health matter) (Fetter et al. 1984; Ritzwoller et al. 2005). Moreover, we know that tobacco users are more likely to have respiratory, cardiovascular, gastrointestinal, and other chronic health problems and, therefore, are more likely to require primary care services (Rigotti 2002; Ritzwoller et al. 2005).

Figure 1 - Conceptual framework

To represent the interdependent nature of these domains, we have chosen to adopt Hornbrook’s fundamental concept of health care episodes (Hornbrook, Hurtado, and Johnson 1985). Hornbrook and his colleagues are economists and health services researchers whose work takes a theoretical approach to unitizing health care services and costs (Hornbrook et al. 2005). The concept of a health care episode is useful here because it “enables more appropriate assessment of costs of care and, in addition, lends itself to analysis of the processes as well as the outcomes of medical care” (Hornbrook, Hurtado, and Johnson 1985)(p. 164).

The concept of a health care episode lends itself to system dynamics analysis because it is a dynamic event, bounded by a variable length of time. A health care episode is defined as a series of health-related events with a beginning, an end, and a course, all related to a given health problem that exists over a specific time period. We have identified four types of episodes useful for modeling tobacco treatment interventions, namely: (1) smoking episodes, (2) quitting episodes, (3) illness episodes, and (4) treatment episodes (see Figure 2).

Quitting episodes and smoking episodes are the most concretely defined units in our model: they are bounded by the moment at which the patient stops using tobacco and the moment the patient resumes using tobacco, or relapses. Treatment episodes may be defined in many different ways. For our purposes, a treatment episode for tobacco begins when a patient makes his or her first office visit to physician’s practice, as either a well patient or a sick one. Likewise, the treatment episode ends when the patient leaves a physician’s practice, that is, he or she leaves the providers care or is lost to follow-up. More than 70% of those who use tobacco will make at least one visit to a physician each year (Cromwell et al. 1997). When physicians take this opportunity to intervene, studies have shown that patients are more likely to make a quit attempt and more likely to sustain long-term cessation (from 7% without to 30% with; Orleans & Alper, 2003).
An illness episode is arguably the most difficult episode to define, for it involves the patient and the doctor recognizing that a patient is afflicted with a particular medical condition, whether acute or chronic. For example, a common illness episode among smokers would be the period of time someone is sick with bronchitis, from the earliest stages of coughing through to the patient’s full recovery.

With respect to the topic of treating tobacco use and dependence, we delineate two general goals: (1) to motivate patients who currently use tobacco to quit and, for those who quit, (2) to prevent their relapse. To understand how to facilitate achievement of these goals for any given patient, providers must assess their own preparedness and resources, as well the patient’s readiness to change. The PHS Guideline presents research that describes how trained providers can assist patients at any stage of cessation, as conceptualized by Prochaska and colleagues’ transtheoretical model, from pre-contemplation through maintenance, as well as when patients relapse (Prochaska, Delucchi, and Hall 2004; Prochaska and DiClemente 1992). We will explore principles of the transtheoretical model in our planned study, and we will view each treatment episode, or each provider-patient encounter, as a potential opportunity to intervene and to prompt quitting episode, or at least foster additional readiness to consider quitting. The experience of an illness episode is likely to compel one or more office visits, offering the opportunity to address their tobacco use (Easton et al. 2001; Katz et al. 2002; McBride et al. 1997; Sippel et al. 1999; Smith et al. 2003; Thompson et al. 1988).

Sample Partial Model and Simulation Output

To help illustrate how we plan to apply our conceptual framework and the notion of episodes-of-care to study tobacco treatment interventions in primary care settings, we present a stock and flow diagram of our current, partial sample model, using Vensim (Ventana Systems, Harvard, MA). A table that lists each of the 22 variables that currently comprise the model is also provided, organized by domain (i.e., either Primary Care and Tobacco Use; Patient Health is not yet featured in our partial model). The table shows each variable’s name, its class (Auxiliary, Flow, or Stock), type, and dimension. We provide a brief definition and/or relevant assumption to further explain how the variable is used (see appendix).
To demonstrate the current model’s behavior, we have initialized the practice size to 400 patients (200 never smokers, 100 current smokers, and 100 former smokers). These proportions are based on population statistics of prevalence of smoking in a typical primary care practice (Bourm 2000; Easton et al. 2001; McBride et al. 1997; Sippel et al. 1999). For this practice population, we assume that 7% of patients will quit without assistance (Burkhalter 2005; Lamb et al. 2005; Webb, Simmons, and Brandon 2005). We also assume that about 7 out of 10 patients are at a moderately high level of readiness to quit (readiness = .70; scale: 0 → 1.0) (CDC 2005). The sample partial model is unitized in weeks and runs over a period of 100 weeks (25 months). We chose to unitize the model in weeks because we assume that most patients would not require more than one primary care office visit per week. Also, a week’s time is short enough to allow reliable estimates of patient flow, staffing, and other important variables in the model (see Sample Partial Model in appendix).

We generated results of three possible intervention scenarios, namely that the counseling intervention delivered to a patient lasted 3 minutes (minimal), 7 minutes (brief), or 15 minutes (full), per the PHS Guideline and as summarized by Cromwell et al. 1997; Table 1). Results of this baseline scenario run indicate that, as expected more intervention time per patient yields

<table>
<thead>
<tr>
<th>Interventions for primary care physicians</th>
<th>Intervention time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min counseling</td>
</tr>
<tr>
<td>Screening for tobacco use</td>
<td></td>
</tr>
<tr>
<td>Registered nurses</td>
<td>1</td>
</tr>
<tr>
<td>Advice to quit</td>
<td></td>
</tr>
<tr>
<td>Physician alone</td>
<td>1</td>
</tr>
<tr>
<td>Initial cessation counseling</td>
<td></td>
</tr>
<tr>
<td>Physician alone</td>
<td>3</td>
</tr>
<tr>
<td>Physician with patch or gum</td>
<td>6</td>
</tr>
<tr>
<td>Follow-up counseling</td>
<td></td>
</tr>
<tr>
<td>First follow-up physician visit</td>
<td>3-6</td>
</tr>
<tr>
<td>Second follow-up physician visit</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intensive interventions for smoking cessation specialists</th>
<th>Intervention time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual intensive³</td>
</tr>
<tr>
<td>Screening for tobacco use</td>
<td>1</td>
</tr>
<tr>
<td>Registered nurse</td>
<td>1</td>
</tr>
<tr>
<td>Advice to quit</td>
<td>1</td>
</tr>
<tr>
<td>Physician</td>
<td>1</td>
</tr>
<tr>
<td>Cessation counseling sessions</td>
<td>10</td>
</tr>
<tr>
<td>Physician</td>
<td>80</td>
</tr>
<tr>
<td>Registered nurse</td>
<td>60</td>
</tr>
<tr>
<td>Psychologist</td>
<td>10</td>
</tr>
</tbody>
</table>

¹Data from Fiore et al.
²Patients referred to a smoking cessation specialist are first screened in an office and advised to quit by a primary care provider.
³Counseling time for ‘Individual intensive’ patients are distributed over five 30-minute sessions.
⁴Counseling time for ‘Group intensive’ patients are distributed over 7 1-hour sessions.
higher quit rates. However, in this practice, the model shows that more patients are relapsing
that quitting, on a weekly basis, over the specified time period (see sample output in appendix).

In our planned study (currently under review by the NIH), we will continue developing
our sample partial model in collaboration with an expert advisory group and a sample of
community-based primary care practices. The participating practices will aid our formative
assessment the system dynamics model. The formative assessment will examine: (1) feasibility
and acceptability of using the simulation tool in an academic detailing intervention, (2) changes
in individual provider attitudes about and practices in tobacco treatment, (3) and implementation
of new or improved office systems to improve tobacco treatment at the practice level. We
hypothesize that system dynamics modeling of the practice environment will promote deeper
understanding of and greater impetus to implement the PHS Guideline.

Our planned study will be nested within Queens Quits!, a larger, on-going statewide
initiative to disseminate and implement the PHS Guideline into clinical practice via a network of
19 Tobacco Cessation Centers, funded by the New York State Department of Health
(NYSDOH). Memorial Sloan-Kettering Cancer Center (MSKCC) colleagues (Ostroff and
Lounsbury) provide expertise in tobacco cessation treatment and program evaluation to Queens
Quits!

Planned Application of the Model: Academic Detailing to Change Provider Practices

Academic detailing interventions typically involved multiple components, including
 provision of written materials and sample supplies, didactic training, auditing (with feedback),
‘reminder’ systems, and one or more office-based consultations (Gandjour and Lauterbach 2005;
Goldstein et al. 2003; Soumerai and Avorn 1990). A recent Cochrane review by O’Brien and
colleagues (O’Brien et al. 2005) examined the effectiveness of educational outreach visits, or
academic detailing, to promote changes in medical and health care provider practices. In 13 of 18
randomized trials examined, the targeted provider behavior was prescribing practices. Three
studies addressed preventive practices, including brief counseling for smoking cessation (Avorn
et al. 1992; Berings, Blondeel, and Harbraken 1994). Collectively, these efforts help detailers
establish a rapport with providers that, in turn, can generate effective change in practices.

Although positive outcomes were observed in all studies in the review, interventions that
provided one or more of the following, including individual instruction, used audit and feedback
strategies, incorporated review by peers, and that successfully integrated ‘reminder’ systems,
were among the most effective for medical professionals (Dietrich et al. 1992; Steele et al. 1989)
(Andrews et al. 2001; Kiefe et al. 2001; Weissman et al. 1999; Wensing and Grol 1994; Yano
et al. 1995). Results did not reveal a clear relationship between the number of office visits by
detailers and impact on the provider, although it was noted that interventions with as few as one
or two visits had positive effects. Overall, academic detailing appears to be a promising way to
change provider behaviors, especially when the behavior was prescribing medications. However,
additional research on interventions intended to change preventive practices, including tobacco
treatment practices (Goldstein et al. 2003), is needed. Although dissemination-only strategies
(e.g., conferences and mailings) always demonstrated smaller effects than interventions
involving outreach visits or peer review, such interventions had varying levels of effective
impact (Oxman et al. 1995).

We believe that the system dynamics modeling approach has the potential to transform
how clinical guidelines and scientific reviews are disseminated to busy professionals. A well-
designed simulation tool could greatly accelerate the rapport-building process between detailers and providers. We hypothesize that the capability to automatically simulate the dynamics of implementing practice changes during the course of either a didactic training session and/or an office-based consultation would help an academic detailer quickly learn about a provider’s practice environment and help providers make practice-specific, cost-effective decisions about how to most efficiently and rapidly attain (and/or sustain) evidence-based standards of tobacco treatment for their patients. A tool with this capability would allow for quick comparison of alternative ways of changing office procedures by generating scenarios that simulate different combinations of role-sharing or resource exchange.

The system dynamics simulation tool we envision would be able to generate customized output, on the spot, in the form of easy-to-read behavior-over-time charts and data tables. Results would give a dynamic picture of demand on providers as well as patient outcomes over a specified period of time. It could show how, for example, adding tobacco treatment time during office visits will impact wait times over the course of a single day, or how combination NRT impacts relapse rates for heavy smokers over a three year period. More generally, our completed simulation tool would help providers answer critical questions such as: Which staff members should (and can) be involved in the practice’s tobacco treatment strategies? How effective are minimal interventions, such as clinician advice to stop smoking, for our patients, or are more intensive interventions required? How does the duration of an intervention in number of treatment sessions or in total face-to-face contact time substantially influence efficacy for our patients? How much counseling time can we allocate during an office visit? What are the short-term and long-term costs of not effectively treating tobacco use, to the practice and to our patients? Which pharmacologic interventions will be easiest for our patients to adhere to and may lead to greater patient contact? How many times do patients relapse before they quit for good?

We expect that the capacity to address these types of questions with the simulation tool will help primary care providers visualize the implementation of various features of the tobacco treatment guidelines. In turn, we expect that providers will more quickly identify the mechanisms that will drive effective tobacco treatment in their own practices.

Summary

Our sample partial model is a starting point for a planned study with primary care physicians in New York City. Episode-of-care analysis has proven central to conceptualization and application of system dynamics to the problem of tobacco dependence and treatment in primary care. We will use the conceptual framework presented here as a theoretical blueprint to develop the simulation tool, integrating both professional knowledge and knowledge for improvement over the course of the model-building process.
Appendix

Sample Partial Model Stock and Flow Diagram

- **Proportion of smokers who are 'ready to quit':** Set to 70%
- **Effect of time devoted to intervention on quitters:** Set to 7%
- **Fraction of smokers who make unaided quit attempts:** End of quitting episodes | Beginning of smoking episodes
- **Time devoted to intervention per smoker:** Set to 3 min, 7 min, or 15 min
- **Overall effectiveness of intervention:** End of smoking episodes | Beginning of quitting episodes
- **Average number of office visits for smokers:** Treatment episode set to 3 office visits
- **Number of minutes devoted to intervention per office visit:** Smokers entering the practice
- **Proportion of smokers who are 'ready to quit':** Smokers leaving the practice
- **Effect of time devoted to intervention on quitters:** Former smokers entering the practice
- **Average time for smokers to leave the practice:** Patients quitting
- **Average time for former smokers to leave the practice:** Average time for never smokers to leave the practice
- **Average number of office visits for smokers:** Set to 7%
- **Time devoted to intervention per smoker:** Smokers entering the practice
- **Proportion of smokers who are 'ready to quit':** Smokers leaving the practice
- **Effect of time devoted to intervention on quitters:** Former smokers entering the practice
- **Average time for smokers to leave the practice:** Patients quitting
- **Average time for former smokers to leave the practice:** Average time for never smokers to leave the practice
Sample Partial Model Output

**Former Smokers**

If we start with 100 Smokers and 100 Former Smokers in the practice, then we see that implementing counseling (5As) is effective, and that more time spent per visit generate more Former Smokers. However, we also see that it takes time to expose all of the Smokers to the treatment. Only so many Smokers make an office visit each week. Over time, we see that consistent implementation of the counseling intervention increases the number of Former Smokers.

**Quitting and Relapsing**

This figure shows quit rates and relapse rates over time. Note how implementation of the treatment immediately reduces relapse rates and increases quit rates, as patients switch from a smoking episode to a quitting episode. Over time, as Smokers are seen at the office, and thereby receive the counseling intervention, the rate of relapsing and quitting approach each other. However, note that quit rates never surpass relapse rates. This implies that, although the treatment is having the expected effect, more needs to be done to lengthen the quitting episode.
Sample Partial Model Variable Definitions

<table>
<thead>
<tr>
<th>Domain</th>
<th>Variable name</th>
<th>Variable Class</th>
<th>Variable Type</th>
<th>Definition/Assumption</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Care</td>
<td>Average number of office visits for smokers</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>Set to 3. Constitutes an average treatment episode. Assumes no more than 1 session per week.</td>
<td>Office visits</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Average time for never smokers to leave the practice</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>96 weeks (nearly 2 years).</td>
<td>Weeks</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Average time for former smokers to leave the practice</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>72 weeks (nearly 1.5 years).</td>
<td>Weeks</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Average time for smokers to leave practice</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>48 weeks (nearly 1 year).</td>
<td>Weeks</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Effect of time devoted to intervention on former smokers</td>
<td>Auxiliary</td>
<td>Variable (lookup table)</td>
<td>More time devoted, stronger effect.</td>
<td>1/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Never smokers entering the practice</td>
<td>Flow</td>
<td>Constant</td>
<td>Rate at which new patients join the practice.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Never smokers leaving the practice</td>
<td>Flow</td>
<td>Draining process</td>
<td>Rate at which patients leave one practice for another, move away, die, etc.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Number of minutes devoted to intervention per office visit</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>Set to either 3 minutes (minimal), 7 minutes (moderate), or 15 minutes (full) of tobacco counseling time (5As).</td>
<td>Minutes/Smoker/Office visit</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Overall effectiveness of intervention</td>
<td>Auxiliary</td>
<td>Multiplicative</td>
<td>The number of smokers seen by a primary care physician X the effectiveness of the intervention X the patient's readiness to quit.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Patients relapsing</td>
<td>Flow</td>
<td>Draining process</td>
<td>Rate at which patients patients who had quit start smoking again. Beginning of smoking episode. End of quitting episode.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Former smokers entering the practice</td>
<td>Flow</td>
<td>Constant</td>
<td>2 per week. Rate at which new patients join the practice.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Former smokers leaving the practice</td>
<td>Flow</td>
<td>Draining process</td>
<td>Rate at which patients leave one practice for another, move away, die, etc.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Smokers entering practice</td>
<td>Flow</td>
<td>Constant</td>
<td>2 per week. Rate at which new patients join the practice.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Smokers leaving the practice</td>
<td>Flow</td>
<td>Draining process</td>
<td>Rate at which patients leave one practice for another, move away, die, etc.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Time devoted to intervention per smoker</td>
<td>Auxiliary</td>
<td>Multiplicative</td>
<td>The number of session per treatment episode X the average time allocated to tobacco counseling.</td>
<td>Minutes/Smoker</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Fraction of smokers who make an unaided quit attempt</td>
<td>Auxiliary</td>
<td>Fraction</td>
<td>The proportion of current smokers who quit without assistance from their provider.</td>
<td>dimensionless</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Never Smokers</td>
<td>Stock</td>
<td>Initial value</td>
<td>Number of patients in practice who have never used tobacco.</td>
<td>People</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Patients quitting</td>
<td>Flow</td>
<td>Draining process</td>
<td>Rate at which patients are quitting, once they are a patient at the practice. Beginning of quitting episode. End of smoking episode.</td>
<td>People/Week</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Patient's relapse time</td>
<td>Auxiliary</td>
<td>Constant</td>
<td>6 weeks. Expected time before a patient would relapse.</td>
<td>Week</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Former Smokers</td>
<td>Stock</td>
<td>Initial value</td>
<td>Number of patients in practice who have quit smoking.</td>
<td>People</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Proportion of patients ready to quit</td>
<td>Auxiliary</td>
<td>Fraction</td>
<td>Patient's readiness level, on a scale from 0 (lowest) to 1.0 (highest).</td>
<td>dimensionless</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>Smokers</td>
<td>Stock</td>
<td>Initial value</td>
<td>Number of patients in practice who currently smoke.</td>
<td>People</td>
</tr>
</tbody>
</table>

Note: Patient Health domain is not shown here.
References


