

Program Evaluation of the Healthy Tigers Program at Auburn University

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Rationale

In the United States, the prevalence of chronic conditions is widespread among adults, leading to higher health service utilization and medical spending,^{1,2} and these conditions disproportionately affect people living in Alabama.³ Regarding health status, Alabama ranks number 48 out of the 50 states.⁴ Specific to Lee County, adults have higher rates of ischemic heart disease and obesity compared to national averages.⁵ Lee county residents also have higher rates of diabetes compared to both Alabama and national rates.⁵ The conditions affecting this population include but are not limited to diabetes, hypertension, chronic obstructive pulmonary disease, hyperlipidemia, arthritis, cardiovascular disease, cancer, and asthma.¹ Another condition affecting the majority of Alabama residents is obesity, with 67% of adults with a body mass index (BMI) classified as overweight or obese.³ In response to this, the Alabama Department of Public Health has established goals related to disease prevention and reduced complications in order to combat this issue.³

Adults are most vulnerable to being diagnosed with chronic conditions, with 60% of adults being diagnosed with ≥ 1 chronic condition.² When adults are diagnosed with more than one chronic condition, these adults are referred to as having multiple chronic conditions. The prevalence of multiple chronic conditions varies based on age, and the prevalence typically rises with increasing age. Adults in the range of 18-44 years old are least susceptible to multiple chronic conditions with a low prevalence of 18%.² However, adults aged 45-64 have a higher prevalence at 50%, and adults aged 65 and older are most susceptible with a prevalence of 81%.² This prevalence of chronic conditions is of concern because higher prevalence has been directly linked with lower life expectancy among older adults.⁶ Addressing these chronic conditions by improving early detection and prevention efforts is critical to the adult population, especially those in higher age categories.

Pharmacists at Auburn University Pharmaceutical Care Center (AUPCC), which is an independent pharmacists-led clinic within Harrison School of Pharmacy, are working to tackle this problem and need through the Healthy Tigers Wellness Initiative.^{7,8} Pharmacists perform voluntary health and wellness screenings for employees and their adult dependents. Screenings are done to evaluate several health risk factors including blood pressure, total cholesterol, blood glucose, height, weight and BMI. This initiative that was launched in 2010, provides employees the opportunity to earn a premium discount of \$25 per month. An employee or his/her adult dependents are required to do only one screening per calendar year to qualify for the discount. Based on the information available on AUPCC website, these screenings help ensure early detection and prevention of various diseases, including hypertension, diabetes, cancer and cirrhosis. Before we discuss the potential expansion of the services provided by this Healthy Tigers Wellness initiative, an evaluation of the existing activities provided to date should be conducted.

Purpose

The purpose of the evaluation is to determine how well the Healthy Tigers voluntary screenings and counseling services have been implemented to Auburn University employees and their adult dependents as well as the health and financial outcomes of these services. The results will be used to refine current program initiatives and retail potential expansion for the program.

Stakeholders

The primary stakeholders are Auburn University, the Harrison School of Pharmacy, and the AUPCC employees (pharmacists and pharmacy student interns) that run the program. Auburn University is directly responsible for the outcomes of the program since it is their employees and dependents that benefit from the program. The last primary stakeholder group is the Harrison School of Pharmacy, which is the primary implementer of the program and pays the pharmacists and manages interns that work the program's daily operations.

The secondary group of stakeholders includes Auburn University faculty and staff, local pharmacies, future Auburn University employees, adult dependents of Auburn University employees, hospitals and physician offices, and Blue Cross Blue Shield of Alabama. Auburn University faculty and staff and the adult dependents of this group that use the employer-provided insurance are the target group of this program. This insurance is from Blue Cross Blue Shield of Alabama which means that the outcome of the evaluation could affect the plan that Auburn University provides for its employees. Local pharmacies, hospitals and physician offices are also secondary stakeholders because the current insurance plan impacts how much business they receive from Auburn University employees.

The tertiary stakeholders group includes other universities that can adapt the Healthy Tigers program to their university and large businesses that provide their employees health insurance who can apply the program to their business. These three groups represent the stakeholders of the Healthy Tigers program at Auburn University.

Key Questions

1. How well have eligible participants been informed about the services?
2. How well have pharmacists at the AUPCC been performing screening and counseling following the guidance?
3. How many employees and their adult dependents participated in a voluntary screening annually?
4. To what extent were the participants who complied with the recommendation different from those who did not?

5. What are the facilitators and barriers for operating this program?
6. What kinds of additional services can the program provide that could improve participant's health and wellness?
7. What population groups could the program expand to cover?

Program Description

Healthy Tiger Initiative is an employee wellness program provided by Auburn University Pharmaceutical Care Center (AUPCC). The mission of the program is to improve Auburn University employees' awareness of healthy choices and improve wellness of employees and their adult dependents and spouses.^{7,8} Healthy Tiger Initiative provides annual free screening for employees and their adult dependents and spouses to achieve early identification of diseases and monitor their health conditions. The Healthy Tigers Initiative attempts to ensure recipients receive necessary health assessment, identify potentially needed pharmaceutical care (new medications), help recipients identify and manage risk factors, and reduce the university health-related expenditures.

To achieve the program's mission and objectives, pharmacists at AUPCC perform voluntary health and wellness screenings for eligible employees and their adult dependents and spouses, which will be referred to as "beneficiaries" from now on. The screenings measure several health risk factors such as blood pressure, total cholesterol, blood glucose, height, weight and body mass index (BMI). Beneficiaries will receive the results immediately after the screening is done and will receive personalized counseling from a pharmacist based on these results. The screening appointment will take up to 20 minutes with an additional 15 minutes if follow-up with a physician is required. Auburn University employees who do not subscribe to the university insurance plan may receive these screenings and counseling services for a fee of \$30.00 (employee discount for the testing) because the Healthy Tigers program aims to encourage a health and wellness environment on campus.

Beneficiaries are required to do one screening per calendar year to be qualified for the premium discount. This screening could occur at any time during the year, and it is not necessary to be on the same day every year. Once the first screening is done, the discount will apply to the remaining premium of the calendar year and those for the following calendar year. The premium discount will be available within 60 days after the screening. Beneficiaries can check their subscription status and other related information through Auburn Access (Banner), and they can schedule an appointment through the Healthy Tigers website by clicking on 'Schedule Appointment Online'.

Beneficiaries are required to follow-up with a physician if their results show an alarm value, that is, a value above a predetermined threshold for risk factors. The alarm values for the risk factors included in the screenings are as follows:

- A systolic blood pressure equal or greater than 160 mmHg
- A diastolic blood pressure equal to or greater than 100 mmHg
- A total cholesterol level equal or greater than 250 mg/dL

- A blood glucose equal to or greater than 200 mg/dL
- BMI equal to or greater than 35

Follow-up appointments with physicians must be done before the discount will be activated. However, BMI alarm value is an exception because it requires a self-management plan or a referral to an AUPCC dietician. Beneficiaries can schedule an appointment with either their physician if they already have one or the Healthy Tiger office will help locate a physician at the Auburn University Medical Clinic (AUMC). The co-pay of the first physician follow-up visit will be waived (a value of \$30.00). The beneficiary will receive a Healthy Tigers referral form to take to the physician, and the physician office will be instructed to waive this value. After the appointment, a completed referral form must be faxed, mailed, emailed or hand delivered to the Healthy Tigers office.

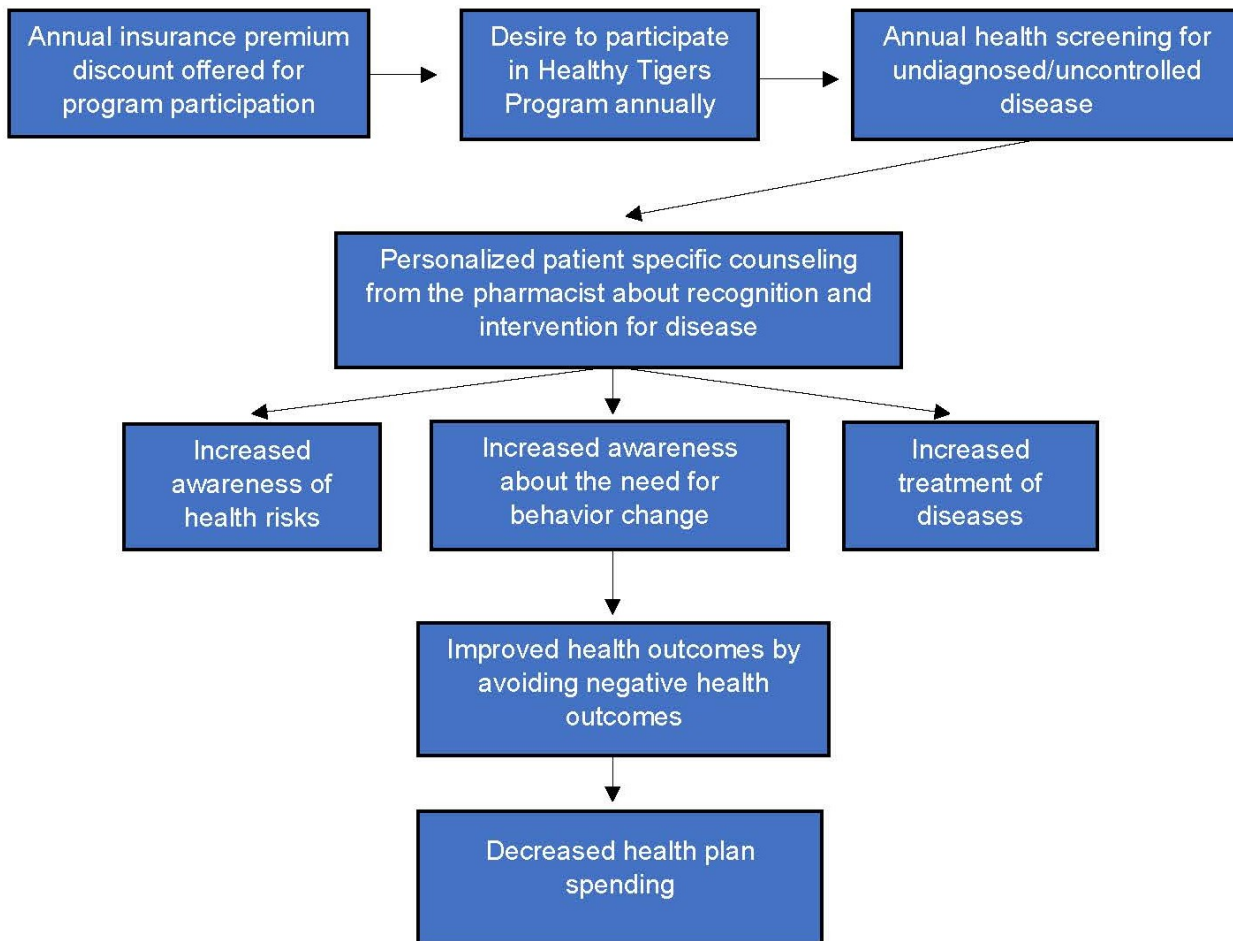
Program Objectives in SMART Terms

The overall objectives for this program are:

1. Reduce Auburn University's annual health plan cost through Blue Cross Blue Shield of Alabama by 5%.
2. Improve early detection and intervention of common chronic conditions (Diabetes, Hypertension and Obesity) by 2.5% among Auburn University beneficiaries annually.
3. Increase annual participation from the current 65% to 70% in the Healthy Tigers Program by incentivizing each Auburn University beneficiary with \$25 monthly insurance premium discount.

These objectives cover a variety of issues related to the program's purpose and address multiple levels with the financial and health-related objectives.

Conceptual Framework



This conceptual framework is supported by various theories. First, the pathway from the insurance premium leading to patients' desire to participate in the Healthy Tigers Program is supported by the extrinsic incentive portion of the Incentive Motivation Theory.⁹ Second, the Health Belief Model states that education serves as cues to action. These cues lead to perceived susceptibility and threat that will influence a patient's adoption of the health behavior.^{10,11}

Research Design

In order to continue funding, the Auburn University Pharmaceutical Care Center (AUPCC) must evaluate the effects of currently implemented programs. The Healthy Tigers program is continually administered year around by the center. Evaluation will investigate the program's process and impact on Auburn University spouses and adult dependents. Thus, the program evaluation of the Healthy Tigers program will be conducted with a mixed methods approach.

First, the impact evaluation will use a retrospective cohort design. The cohort design was considered as the most appropriate design for evaluating the program's impact based on the

Logic Model for Healthy Tigers Program

<p>1. Reduce Auburn University's annual health plan cost through Blue Cross Blue Shield of Alabama by 5%.</p> <p>2. Improve early detection and intervention of common chronic conditions (Diabetes, Hypertension and Obesity) by 2.5% among Auburn University beneficiaries annually.</p> <p>3. Increase annual participation from the current 65% to 70% in the Healthy Tigers Program by incentivizing each Auburn University beneficiary with \$25 monthly insurance premium discount.</p>			<p>To improve Auburn University employees' awareness of healthy choices and improve wellness of employees and their adult dependents and spouses.</p>		
Inputs/Resources	Activities	Outputs	Short-term Outcomes	Intermediate Outcomes	Long-term Outcomes
<ul style="list-style-type: none"> • Auburn University • Pharmaceutical Care Center (AUPCC) • Harrison School of Pharmacy • Pharmacists • Pharmacist student interns • Dietitians • Administrative staff • Time • Healthy Tiger (HT) screening equipment or devices • Money/Funding • Computers and Internet • Established website • Physician partners • Auburn University Medical Clinic 	<ul style="list-style-type: none"> • maintenance • Health screenings • Pharmacist counseling • Pharmacist education • Physician referrals • Dietitian referrals • Monthly premium incentives 	<ul style="list-style-type: none"> • Number of screenings • Number of counseling sessions • Number of education sessions • Number of physician referrals • Number of dietitian referrals • Number of alarm values detected • Number of chronic conditions detected • Number of diseases detected • Number of discounts • Number of appointments scheduled • Number of lab results 	<ul style="list-style-type: none"> • of chronic conditions management • Awareness of susceptibility to diseases • Awareness of susceptibility to and risk factors of chronic conditions • Improved awareness of alarm values • Increased awareness of pharmacist roles <p><u>Process Evaluation Outcomes</u></p> <ul style="list-style-type: none"> • Increased recruitment of participants • Fidelity • Acceptability 	<ul style="list-style-type: none"> • Increased physical activity • Improved medication adherence • Increased monitoring of vital signs • Increased frequency of healthcare utilization • Increased disposable income for Auburn University beneficiaries who participate in HT 	<ul style="list-style-type: none"> • University beneficiary health and wellness • Increased Auburn University beneficiary quality of life • Increased Auburn University beneficiary productivity • Decreased Auburn University beneficiary absenteeism • Management of chronic conditions • Prevention of chronic conditions • Early detection of diseases • Lower health insurance premiums for Auburn University beneficiaries

Indicators

			collected
	employees, spouses, and adult dependents who participate in the healthy tiger screening	Healthy Tiger records	annually after the end of each year
	compared to the program's protocol that is based on the program process theory	implementation	
	appropriate to the majority of patients and pharmacists	participants and pharmacists to assess program acceptability	semiannually
	for beneficiaries	data from the human resources department -For spouses and adult dependents, questionnaires will be distributed to collect self-reported days absent from work	
utilization	including physician visits, emergency department visits, hospitalizations, etc.	Blue Cross Blue Shield of Alabama	
adherence	by dividing days supply by total days evaluated and multiplying this by 100 to get a percent value	Blue Cross Blue Shield of Alabama	
management of chronic conditions	compare the values period glucose, blood pressure, cholesterol, and body mass index	Data collected from the healthy tiger screenings, including	

	beneficiary	cholesterol, and body mass index (BMI)	
alarm values	versus lab values that are within the target range as stated by guidelines	distributed to participants to assess their awareness of alarm values, as applicable	
chronic conditions	recognition of chronic conditions	distributed to participants to assess their awareness of chronic conditions, as applicable	
of insurance premium		Blue Cross Blue Shield of Alabama	

*For consistency between the indicators and the logic model, we have included the program process evaluation outcomes within the column for short-term outcomes in our logic model. However, we recognize that these outcomes are related to the program, not the program participants.

Healthy Tigers program. In this program, Auburn University beneficiaries participate voluntarily, and data collection will not occur until the beneficiary begins the program. However, clinical values examined at the first visit in the Healthy Tigers program can be considered as pre-intervention outcomes because the major intervention is the pharmacist counseling and education, which occurs after the data collection of clinical values. These pre-intervention outcomes will be used to estimate the counterfactual. Then, beneficiaries' clinical values during visits with the program at their most recent Healthy Tigers screening, along with other data collected after the intervention, will be analyzed as post-intervention outcomes in this cohort design. A retrospective design was chosen, as opposed to prospective, because the program has previously collected data for an extended period of time. Therefore, we can estimate the program effects based on a set time period in the past. If the program evaluation is conducted beginning in 2020, it is most feasible and applicable to use data from the year 2019. While a randomized controlled study design would provide the program effects with the most internal validity, the feasibility of conducting a randomized controlled trial in a program that typically makes one, annual contact per beneficiary is low. Thus, a study design that can be conducted in a pragmatic environment, such as the proposed retrospective cohort design, will likely evaluate the program effects with more external validity. The proposed design will also allow adjustment of covariates to more accurately estimate the program impact.

In addition to evaluation of patient health outcomes, we expect to evaluate the implementation process of Healthy Tigers program. The process evaluation will be completed through questionnaire and ethnographies. The questionnaire study will be designed to determine how well Healthy Tigers program has been implemented. The questions will focus on acceptance and satisfaction of the program, self-reported awareness of risk factors of chronic conditions and knowledge about chronic conditions management. Moreover, in qualitative research, credibility is typically used to establish validity. We will conduct ethnographies to collect direct observations from participants. In the questionnaire, we will request participants to recall the services they have received, elaborate their satisfaction and dissatisfaction about the program and recommend any changes they want to see on the program.

The Study Population

The study population are participants of the Healthy Tigers program. These are Auburn University employees, along with their spouses and adult dependents that are on the university's Blue Cross Blue Shield health insurance plan.

For the process evaluation, a sample of pharmacists practicing at the AUPCC will also be recruited.

Sampling Technique

Because a cohort design will be used with pre and post-intervention evaluation, one cohort of program participants will be required. We will recruit patients who participated in a Healthy Tigers screenings from 2010 through 2019. The lab values collected during the first Healthy

Tigers screening will be considered as pre-intervention because the beneficiary has not received counseling and education from the pharmacist, but this does not necessarily mean that the beneficiary must enroll in 2010. The beneficiary may begin participating in any years from 2010-2018. Therefore, information collected during subsequent Healthy Tigers screening will be considered post-intervention. For quantitative, this data is directly accessible from claims records and the electronic medical record maintained by the AUPCC. The inclusion criteria for this sample will be that participants must have participated in the Healthy Tigers program from 2010 to 2019 and are continually enrolled in the university's health insurance plan. Continual enrollment in the health plan is required to access beneficiary's claims data.

For qualitative, we will use a subset of this population to recruit for the completion of open-ended questionnaires. Our target sample size for questionnaires is 200 participants. If the sample size for the questionnaires is limited by this technique, we would allow for those with three or more years to be involved in the open-ended questionnaires.

To evaluate the process implementation, we will collect data from the pharmacists and administrative staff providing services that are part of the Healthy Tigers program.

Data Collection Plan

To ensure that the principles of autonomy, beneficence, and justice are honored, we will contact Auburn University's Institutional Review Board first before starting the process of data collection. We are interested in measuring several quantitative and qualitative indicators, and this will be achieved using different types of data collection methods like questionnaires, observations, and documents review. To achieve the greatest efficiency possible, minimize travel especially for beneficiaries who are non-Auburn University employees, reduce the burden on beneficiaries and pharmacists, we will conduct data collection activities at one site visit as applicable. We aim to examine the program's recruitment as reflected by the number of Auburn University employees, spouses, and adult dependents who participate in the Healthy Tigers screening using the Healthy Tiger's participation records. We are also interested in identifying absenteeism by counting the number of absent days from work for all beneficiaries. We will measure absenteeism for Auburn University employees by collecting data from the human resources departments, and for dependents, questionnaires will be distributed to collect self-reported days absent from work.

We will refer to claim records from Auburn University's Blue Cross Blue Shield of Alabama to measure medication adherence. We will calculate medication possession ratio by dividing days supply by total days evaluated and multiplying this by 100 to get a percent value that will be used to measure medication adherence. In addition, the claims data will be used to count the number of health care visits to measure healthcare utilization. Furthermore, this source will be used to measure the beneficiary's annual premium cost. To measure fidelity, an ethnography will be conducted and compared to the program's protocol that is based on the program process theory. This will be achieved by a qualitative method of data collection, which is observing the program's implementation at AUPCC. Additionally, questionnaires will be distributed to

participants, administrative staff, and pharmacists to determine whether the program is considered appropriate to the majority of the study population, that is to measure acceptability of the program. Management of chronic conditions is a key component/goal in this program, and this will be measured by comparing lab values of the parameters of interest to previous year's lab values for each beneficiary. This information will be obtained from the Healthy Tigers screening records of each beneficiary. We will utilize pre and post questionnaires as applicable to measure participants recognition of alarm values versus lab values that are within the target range as stated by guidelines. The same method will be used to examine improvements of beneficiaries' recognition of chronic conditions as well.

Potential Difficulties and Limitations

For the cohort design, the lack of causality is a major limitation. The use of a pre and post-intervention design also limits our study findings, as opposed to using a control group. The pre-post comparison was considered more feasible in accessing patient information rather than identifying a control group. While a claims data could be accessible from a control group, lab values would not be available. We will only be able to determine associations between pre and post-intervention health outcomes after participation in the Healthy Tigers program. This leads to the possible bias of regression to the mean. For example, patients with extremely high levels for HbA1c or blood pressure will likely to regress to the mean at subsequent visits with the Healthy Tigers program, thereby biasing the program effects. Additionally, the use of a cohort design may introduce possible threats to internal validity as opposed to using a randomized control design. Lastly, interfering events and secular trends could lead to bias. For instance, interfering events, such as the annual school of pharmacy's Dean's Family Fit Challenge may bias changes in blood pressure, weight, HbA1c if these affect participants and non-participants disproportionately. For secular trends, overeating during the holidays, such as Thanksgiving and Christmas, could bias body mass index.

For the qualitative portions of the study, Hawthorne effect should be of concern when conducting ethnographies. Pharmacists and administrative staff may behave or conduct program activities differently when they are aware of the observations taking place. When answering questionnaires, social desirability bias should be taken into consideration during the program evaluation.

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