

**PHASE II FINAL REPORT**  
**Chewer's Choice: Interactive Smokeless Tobacco Cessation**  
**Funding Period:** August 2000 to July 31, 2002  
**Grant #:** 5 R44 CA71294-03  
**Principal Investigator:** Herbert H. Severson, Ph.D.



### **Specific Aims**

The overall goal of this project was to develop and evaluate an interactive smokeless tobacco cessation program to be used as a CD-ROM application for desktop computers. During the first year of Phase II we built on our Phase I prototype version of *Chewer's Choice*® by reviewing data from Phase I, expanding and refining the product, and pilot testing the product with users. During the second year of the project, we modified the product as needed and developed a Beta version. The final changes and modifications to the product were based upon the results of the evaluation and review by expert consultants. A desktop version of the program for both Macintosh and PC formats was prepared for a full commercial release.

- Aim 1. Develop a functional, full-featured version (Alpha) of our *Chewer's Choice*® prototype created in Phase I.
- Aim 2. Conduct a pilot evaluation of the Alpha version of the program to test for functionality and user interface.
- Aim 3. Modify Alpha version and develop Beta version of the interactive program.
- Aim 4. Evaluate the Beta version of the program in a clinical trial with adult chewers.
- Aim 5. Make final changes to the program as a desktop version (both MacOS™ and Windows™ platforms) for commercial release and develop associated materials.

### **Development of Interactive Cessation Program**

The Phase II task was to revise the computer-based interactive cessation program for adult smokeless tobacco (ST) users. This program combines video, graphics, text and animation to assess and educate users regarding their ST habits. The program provides customized on-screen recommendations, as well as a printed plan to help users in their quit efforts.

The *Chewer's Choice*® development team included: Dr. Herbert H. Severson, a researcher in tobacco cessation for over 20 years and author of several studies on ST cessation; Steven M. Christiansen, a media producer with 30 years of experience who has created numerous health intervention programs; and Thomas A. Jacobs, a multimedia producer who also has more than two decades of experience in the media production industry.

The basic content and organization for *Chewer's Choice*® is derived from a self-study cessation booklet, *Enough Snuff: A Guide for Quitting Smokeless Tobacco On Your Own*.® This guide has been used extensively in several published studies and has been sold commercially for several years. Written and published by Dr. Severson, the 56-page booklet was designed to provide a step-by-step plan to assist people through the ST cessation process. Dr. Severson has extensive experience using

the booklet clinically with users and has revised it several times based on both user feedback and clinical cessation experience with clients.

Additional pre-existing content included a ST cessation video, “Enough Snuff: A Video Program for Quitting Spit Tobacco” (ORI, 1997), a collaboration between Dr. Severson and Mr. Christiansen. Producing this video gave us additional experience in development of a cessation guide and provided a library of testimonials from chewers who had quit using ST with the help of the Enough Snuff booklet. Because the footage already existed, we were able to include a great deal of video in *Chewer’s Choice*® at minimal cost. These testimonials proved to be very popular with users and reviewers in our evaluation of the prototype program.

Because of the long association between baseball and spit tobacco, as well as the disproportionately high use rate among professional baseball players, we felt that incorporating a baseball theme into the program would mesh well with the message of cessation. Moreover, the baseball metaphor offered an excellent organizational and motivational framework, ideally suited to our decision design model. It allowed us to identify four preparatory steps in the quitting process — Getting Started, Planning To Quit, Dealing With Withdrawal and Avoiding Relapse — which we associated with baselines on the baseball field. We used the bases themselves to signify four achievement steps — “I Am Ready,” “I Am Quitting,” “I Have Quit,” and “I Am Tobacco-Free.” These steps of quitting are consistent with cognitive/behavioral procedures in tobacco cessation: movement along a baseline corresponds with the actions a user must take, while reaching a base corresponds with the results of those actions.

All of the steps and processes of this program are based on a long empirical history of tobacco cessation research and grounded in social-behavioral principles that have proven effective in adult tobacco cessation (Lichtenstein & Glasgow, 1992).

## Design Stage

The design stage of the Phase II project was focused on improving both the “look and feel” and the functionality of the interactive program. To accomplish these goals, we initiated a series of twice-weekly design sessions that included several members of the Deschutes Research, Inc. (DRI) staff and a programmer, graphic artist and project manager from InterVision. This group carefully went through every screen of the *Chewer’s Choice*® prototype and came up with design suggestions that solved existing problems and were responsive to the input from focus groups and tobacco experts. After each meeting, the InterVision artist would generate sketches or sample screens that provided the group with a menu of graphic options for dealing with each individual form or content issue. Although this “collaborative brainstorming” extended over a period of four months, the process yielded significant changes to the user interface, more engaging graphics and workable solutions to problems with navigation and delivery of certain areas of smokeless tobacco cessation content. At the end of the design process, we ended up with several documents that would guide us through the Beta development stage of the revised *Chewer’s Choice*® program.

The five items resulting from the design stage were:

1. A new set of scripts for all the narrations in the program that incorporated changes in both content and navigation.
2. A list of specifications for all text and graphic elements that were to appear in the program.
3. A list of all audio, video and animation elements (in addition to the on-camera narrator) that were to appear in the program.
4. A set of functional specifications that directed the programming of the Beta version.
5. A timetable for completing the various tasks that would yield a Beta version for the evaluation.

## Development Stage

Using the five documents generated in the design stage, InterVision staff proceeded to carry out all the necessary development tasks to complete this stage of the project. The project manager, programmer and graphic artist worked in collaboration with DRI staff to maintain quality control and ensure that the objectives of the design documents were reached. What follows is a list of changes that were made to the program during the Phase II development stage:

1. Created a new setup screen that expedited data collection for the evaluation of the program.
2. Created a musical introduction to the program that frames the issue of ST cessation through graphics and photos prior to the display of the basic interface.
3. Created a completely new user interface for the program, including new baseball stadium metaphor, new buttons throughout the program, new video icons, new backgrounds, new color scheme, new Game Plan notebook function, new "look" to the Reasons area, new displays for feedback in the Dependency and Difficulty area.
4. Created a new animated character that runs the bases and lets the user know what stage of the cessation process has been completed.
5. Created a completely new format and graphic appeal for the Game Plan printout received by the user at the end of the program.
6. Created an elegant new calendar program that allows the user to click on any date to put it in the Game Plan.
7. Recorded and integrated a new set of video testimonials for use in the program.
8. Recorded video scenes to illustrate various Strategies and other elements of the program.
9. Developed new content sections for Reasons, Difficulty, Strategies, 4A's and Slips that expanded or clarified sections of the program.
10. Created a Review function that operated throughout the program, allowing the user to use the revised scoreboard to navigate back and forth to various sections.
11. Inserted pull-down menus that allowed the user to select the brand of chew used and the number of tins per week.
12. Created a Cost Calculator that automatically inserts the number of chew cans used per week and allows the user to calculate the cost of chewing on a weekly, monthly, yearly or 5-year basis.
13. Created 3-D animated sequences illustrating Nicotine Blending, Nicotine Fading and Brand Switching methods of quitting smokeless tobacco program.
14. Created a new logo and icon set for the program.
15. Recompressed all the media to allow for cross-platform media playback.
16. Created a cross-platform version of the program that allows it to run on MacIntosh and Windows-compatible computers.

## Pilot Stage

In order to pilot test the Alpha version of *Chewer's Choice*<sup>®</sup>, we recruited daily smokeless tobacco (ST) users to come into our office to evaluate the program with regard to function, ease of use and utility of the information provided. We purchased newspaper display ads as well as radio spots, which offered \$20 to ST users to test the program. These ads specified that in order to participate the individual had to be a daily user of snuff or chewing tobacco for at least the past year, and over the age of 18. Respondents were scheduled for one-hour office visits at their convenience.

After arriving at our office, the participants each signed an informed consent document and were briefly oriented to the program. They sat alone at an Apple iMac™ computer and used a mouse to operate the program. A staff member sat in the room with subjects in order to observe their progress and provide assistance if required.

After completing the *Chewer's Choice*® program, the user was asked to complete a written evaluation survey, as well as provide verbal feedback on their experience of using the program. The subject was then paid \$20 for his participation.

## Testing Stage

After the piloting stage, and after external review of the program by experts and internal review of the program by DRI and InterVision staff, several refinements to the program were made. Rollover features were added in several content sections that provide the user with a preview of what information is available by clicking certain buttons or a synopsis of what a testimonial might say. Based upon feedback from users and experts, small changes were made to some of the Tip windows and Info windows and to the Banner messages that streamed across the outfield fence as part of the baseball field interface. Once the final Beta version was created, the InterVision team put it through a rigorous testing process that identified programming “bugs” and allowed us to fix any navigational problems and other issues related to programming code. The end result of this process was a robust, functional, interactive program ready for evaluation.

## Program Completion

The last steps in the Phase II production schedule were to make final changes to the program and to create packaging for the CD-ROM prior to releasing it as a marketable product. At this point, InterVision programmers removed the data-gathering function and implemented the cross-platform capability of the program. The result of this process was to generate a Final Candidate for the *Chewer's Choice*® CD-ROM. After making final refinements to the code, another round of testing was completed to ensure that the program was functioning smoothly on a variety of computer platforms. Using some of the graphics from the program, labels for the discs and packaging for the jewel case were designed and a master template was created for printing packaging materials.

During an extensive design phase, the *Chewer's Choice*® development team assembled scripts, storyboards and flowcharts to create a decision design model. This model was crafted to anticipate user decisions and choices, provide frequent opportunities for interactivity, allow the user to make personal decisions about the evolving quitting plan, keep the user engaged in a process of moving toward quitting ST, and provide ample testimonials from ex-chewers, with whom the user could identify.

## Interactive CD-ROM Program Flow

The interactive CD-ROM, *Chewer's Choice*®, is user-friendly and uses a point and click method via the mouse to navigate through the program, modeled after a baseball field. After a brief introductory video, the user is asked to click on the first baseline in order to begin the **Getting Started** process. This section includes three subsections — Dependency Survey, Readiness Scale and Reasons for Quitting:

1. Dependency Survey. The user answers a series of questions to assess tobacco use and dependence. The resulting Dependency Score provides feedback immediately through an on-screen graphic provided in the form of a bar chart and specific narration regarding the user's level of dependence. It is also a component in an algorithm found later in the program that makes recommendations on strategies to make quitting easier, based on the user's ST dependency and cigarette smoking status.
2. Readiness Scale. The user indicates a readiness to quit using concepts developed by Prochaska & DiClemente (1983) and using a readiness ladder developed by Biener and Abrams

(1978). Even if the user is not ready to quit now, he/she is encouraged to go through the program to learn how to quit when ready.

3. **Reasons for Quitting.** The program provides testimonials from actual users concerning their reasons for quitting. The user identifies personal reasons for quitting, including an open-ended unspecified reason. Since a person's motivation to quit is an important element of being a successful quitter (Severson, Eakin, Lichtenstein & Stevens, 1990), we elaborated upon several common reasons that clients have shared with us in our clinical work with ST cessation. The user clicks on a selection and it appears in their Game Plan area.

The development of a personalized Game Plan is an ongoing and integral feature of *Chewer's Choice*®. The Game Plan is introduced in the Reasons section and appears as a note pad to the right of the screen, which records selections made. As the program progresses, the Game Plan appears in three other places, allowing the user to develop a comprehensive yet personal plan for quitting. At the end of the program, *Chewer's Choice*® generates a customized printout that includes the Game Plan choices as well as “Tips for Quitting” and other informational material such as proper use of nicotine gum or patches.



Dependency Score Scale



Preview of Game Plan Printout



Having completed the last task in the “Getting Started” section, the user is rewarded with an audio clip of a cheering crowd, an animated baseball character running to first base, and the lighting up of first base with the “I Am Ready” message.

A video clip introduces the next section, **Planning to Quit**, which includes three subsections — Quit Method, Quit Date and Support:

1. **Quit Method.** The user chooses either of two methods, Cold Turkey or Gradual Nicotine Reduction, by clicking on the chosen method. The selection will also appear on the Game Plan. Each method is described in video detail by clicking on the “Info” button. In addition, users can choose to view video testimonials by ex-chewers describing why a particular method worked for them. Most users report using the cold turkey approach, and we provide six key elements for success using this method. The Gradual Nicotine Reduction Methods have three distinct ways to proceed, which include: a) nicotine fading, b) brand switching and c) blending.
2. **Quit Date.** Presented with a two-month calendar, the user chooses a quit date, which appears on the Game Plan. The narration recommends the user pick a date that will not be too stressful and is in some way significant, such as a birthday or anniversary. Picking a quit date is a key element in successful quitting (Lichtenstein & Glasgow, 1992), and the date is printed on the Game Plan.
3. **Support.** The user can select people to provide support to them during the quitting process. The program presents ten options to choose from and the user can select as many as desired.



Quit Method Screen



Symptoms/Responses Results Screen



This completes the last task in the “Planning to Quit” section, at which point the user is once again rewarded with cheering and the animated ball. Second base lights up with the “I Am Quitting” message.

A video clip introduces the next section, **Dealing With Withdrawal**, which includes three subsections: Withdrawal Scale, Withdrawal Symptoms/Responses and Recommendations for dealing with withdrawal:

1. Withdrawal Scale. The user drags slider knobs to indicate the anticipated seriousness for each of eight symptoms dealing with mood changes, cravings, appetite increases and sleep disturbances.
2. Symptoms/Responses. The user can examine various types of withdrawal symptoms and see recommended strategies for dealing with each one. *Chewer’s Choice*® uses an algorithm to determine which if any of the symptoms are likely to be particularly challenging.
3. Recommendations. *Chewer’s Choice*® presents a video and textual assessment of how much difficulty the user is likely to have in quitting, along with specific recommendations to help the user deal with withdrawal. Users can view informational videos that describe the use of chew/snuff substitutes as well as nicotine gum and patches. The assessment and recommendations are computed using an algorithm based on the Dependency Survey and Withdrawal Symptoms.



At this point, the user has finished the “Dealing With Withdrawal” section and is rewarded with cheering and the animated ball. Third base lights up with the “I Have Quit” message.

Next, a video introduces the section, **Avoiding Relapse**, which contains two subsections — Difficult Situations and Slips:

1. Difficult Situations. The user is introduced to the Four A’s (Avoid, Alter, Activities, Alternatives), which describe strategies for dealing with situations where one is tempted to use ST. Users can roll the mouse over any of the Four A’s to “pop up” text-based descriptions. They can also watch videos of ex-chewers describing their use of each of these strategies.
2. Slips. The user hears narration, accompanied by bulleted text points, explaining how to cope with temporary relapses or “slips.”





Dealing With Slips or Relapses

Animated baseball having completed the computer program



Before moving to home plate, the user is presented with a text screen, which quickly summarizes *Chewer's Choice*® program. Then, as the animated ball reaches home plate, the crowd cheers and the message “I Am Tobacco-Free” lights up.

*Chewer's Choice*® automatically generates a customized printout that includes the four Game Plan items — Reasons for Quitting, Quit Method, Quit Date and Support — along with general tips helpful to any ST user. In addition, the printout includes step-by-step procedures on how to quit, using the method — Cold Turkey or Gradual Nicotine Reduction — selected by the user during the program. If the use of nicotine gum or patches was recommended, information is also included on both of these. The Game Plan is generated for the subject to keep for their reference during their quit attempt.

## Evaluation Protocol

The *Chewer's Choice*® program was evaluated at two sites, the offices of Deschutes Research, Inc. in Eugene, Oregon and The ACT Center in Jackson, Mississippi.

## Subject Recruitment

From November 2000 through October 2002, we recruited 170 daily smokeless tobacco (ST) users to use *Chewer's Choice*® between the two site locations (Eugene, OR and Jackson, MS). Display and classified ads in local newspapers, flyers, radio spots, seminar presentations, mass mailings and contacts in the industry were various advertising methods used by both sites (Eugene, OR and Jackson, MS) to recruit ST users who were interested in quitting and willing to participate in the evaluation study. The criteria for participation were that the subject had to be a user of snuff or chewing tobacco for a year or more, over the age of 18, interested in quitting ST use, and not currently in any tobacco cessation treatment nor using nicotine replacement products. Individuals were screened by phone and scheduled for one-hour office visits at their convenience. Of the approximate 450+ inquiries to Eugene, Oregon, 6% were screened out as not meeting criteria (most misunderstood and thought this study was to quit smoking), 47% were unreachable (i.e. they did not return calls to schedule appointments, no answers, left messages, disconnected number, etc.) or changed their minds and/or were not interested in participating, and 6% did not keep their appointment and did not reschedule.

Subjects were paid up to \$40 for completion of the program. They would receive \$20 for completing the consent form, baseline survey, computer program and user evaluation survey and \$10 for each follow up survey (one and three month) they completed and returned.

## **Methods and Procedures**

When they arrived at the office, participants signed an informed consent and filled out a baseline survey, which gathered demographic information as well as information on use patterns, brand preferences, alcohol use, a depression screener and information on computer usage. Subjects were briefly oriented to the program and then asked to begin. They sat alone at computers and used a mouse to operate the program, which was run on an Apple iMac™ computer in Eugene, Oregon and surrounding areas and a Windows compatible PC in Mississippi. A staff member monitored their progress through the program and was available for assistance.

After completing the *Chewer's Choice*® program, which varied from 15 to 45 minutes (mean = 22 minutes), the user was asked to complete our written consumer evaluation survey (see Table 1). Before departing, the user was briefly interviewed about his/her overall reaction to the program and were reminded that we would be contacting them by mail, approximately one and three months from the day they participated in the interactive computer program, with follow up surveys for them to fill out and return in prepaid envelopes. The subjects were paid \$20 for their computer participation and \$10 for each follow up survey returned.

## **Baseline Data From Evaluation Study**

The subjects were mostly male (164 male, 6 female), married (59.6%), white (95.1%) and had completed at least some college (34.5%). Subjects had used ST for a mean of 14 years, and primarily used moist snuff tobacco (76.5%) rather than loose-leaf chew. The subjects reported using a can of chew an average of every two to three days. For this sample, 10.2% reported current use of cigarettes. This compares to approximately 20% in a previous dental study (Stevens et al., 1995). There is clear evidence that people who both smoke and chew tobacco have a harder time quitting and are more likely to relapse if they do quit (Andrews et al., 2001). In this study, 29% of the sample reported smoking cigarettes while trying to quit chew or snuff. When asked if they had made a quit attempt in the past year, 66.7% of the sample said they had made one or more attempts (range 1 to 5 attempts).

There were study population differences between the subjects recruited in Oregon and Mississippi sites. With the exception of Gender, the variables listed below in the table format are the variables that were found to be significantly different between the two samples on the baseline assessment.

### **Gender**

Site	Male	Female
Oregon	96.4% (109)	3.6% (4)
Mississippi	96.5% (55)	3.5% (2)

### **Education**

Site	5 <sup>th</sup> , 6 <sup>th</sup> , 7 <sup>th</sup> , or 8 <sup>th</sup> Grade	9 <sup>th</sup> , 10 <sup>th</sup> , 11 <sup>th</sup> , or 12 <sup>th</sup> Grade, No Diploma	High School Diploma	Some College, No Degree	Associate	Bachelor's Degree	Masters Degree	Doctorate or Professional Degree
Oregon	0.0%	5.4%	22.5%	38.7%	12.6%	18.0%	2.7%	0.0%
Mississippi	1.8%	0.0%	14.0%	26.3%	8.8%	40.4%	7.0%	1.8%

P ≤ .00662

**Type of Tobacco**

Site	Snuff	Chew	Plug
Oregon	69.6%	30.4%	0.0%
Mississippi	89.7%	8.6%	1.7%

P ≤ .00274

**Tin Lasts**

Site	1 Day	2 Days	3 Days
Oregon	17.0%	27.7%	29.5%
Mississippi	52.6%	29.8%	8.8%

P ≤ .00003

**Oral Health Problems**

Site	Yes	No
Oregon	28.0%	72.0%
Mississippi	14.3%	85.7%

P ≤ .04862

**Cans/Pouches Per Week**

Site	Less Than 1	1-2	3-4	5-6	7 or More
Oregon	3.6%	38.4%	35.7%	11.6%	10.7%
Mississippi	0.0%	16.1%	26.8%	21.4%	35.7%

P ≤ .00010

**Swallow Tobacco Juices**

Site	Never	Sometimes	Almost Always
Oregon	42.9%	34.8%	22.3%
Mississippi	80.0%	14.5%	5.5%

P ≤ .00003

**Keep Chew Or Dip In Mouth Almost All The Time**

Site	Yes	No
Oregon	56.3%	43.8%
Mississippi	39.3%	60.7%

P ≤ .03815

**Depression** (2 or more years sad/depressed most days + sad/depressed past year)

Site	Yes	No
Oregon	44.0%	56.0%
Mississippi	18.8%	81.3%

P ≤ .01867

**Computer In Home**

Site	Yes	No
Oregon	66.7%	33.3%
Mississippi	84.5%	15.5%

P ≤ .01349

**Readiness Ladder** (mean rating)

Site	Rating
Oregon	9.6071
Mississippi	8.6786

Two-tailed significance ≤ .001

**Users' Consumer Satisfaction Evaluation**

All of the 170 subjects completed the *Chewer's Choice*® program, even though they could exit the program at any time. There were, of course, some demand characteristics of the situation since they were being observed and would receive remuneration at the end of the session, but they were reminded that they could use the program as they wished and could leave at any time. The items assessed in Table 1 assessed the subjects' evaluation of *Chewer's Choice*® on a 5-point Likert scale.

**Table 1**

<b>Consumer Evaluation Table</b>		
	<b>Males (N=164)</b>	<b>Females (N=6)</b>
1. Did you complete the Chewer's Choice program?	<b>98.8%</b>	<b>100%</b>
2. How useful was the program in helping you prepare to quit?	<b>4.07</b>	<b>4.17</b>
3. As a result of completing the Chewer's Choice program, did you set a quit date within the next two weeks?	<b>Yes = 66.4%</b> <b>No = 2.1%</b> <b>Set quit date, but not in the next 2 weeks = 31.5%</b>	<b>Yes = 83.3%</b> <b>No = 0.0%</b> <b>Set quit date, but not in the next 2 weeks = 16.7%</b>
4. As a result of completing the program, how likely are you to make a quit attempt in the next 30 days?	<b>4.65</b>	<b>4.00</b>
5. As a result of completing the program, how confident are you about your ability to quit smokeless tobacco?	<b>3.77</b>	<b>3.17</b>
6. How strongly would you recommend the program to friends who want to quit smokeless tobacco?	<b>4.21</b>	<b>4.33</b>
7. How interesting did you find the Chewer's Choice program?	<b>4.24</b>	<b>4.50</b>
8. How well organized was the quitting program as presented?	<b>4.71</b>	<b>4.50</b>
9. How complete was the Chewer's Choice program in dealing with issues you have about quitting?	<b>4.41</b>	<b>4.33</b>
10. How much new information about quitting SLT did the Chewer's Choice program provide?	<b>3.38</b>	<b>4.00</b>
11. How well did you like the narrator?	<b>4.29</b>	<b>4.33</b>
12. How well did you like the interface (baseball field, scoreboard screens, & buttons)?	<b>4.34</b>	<b>4.17</b>
13. If you watched testimonials in Chewer's Choice, how well did you like them?	<b>4.08</b>	<b>4.00</b>
14. How easy was the program to use?	<b>4.88</b>	<b>5.00</b>
15. The program was useful in helping you prepare to quit.	<b>4.03</b>	<b>4.00</b>
16. I would recommend the Chewer's Choice program to a friend.	<b>4.32</b>	<b>3.83</b>
17. Overall, how would you rate the Chewer's Choice program?	<b>4.16</b>	<b>4.00</b>

**1** = Not Useful, Not Likely, Not Confident, Not Recommend, Not Interesting, Not Well Organized, Not Complete, No New Information, Did Not Like at All, Not Easy to Use, Poor

**5** = Very Useful, Very Likely, Very Confident, Very Strongly Recommend, Very Interesting, Very Well Organized, Very Complete, A Lot of New Information, Liked a Lot, Very Easy, Excellent

Subjects rated 14 program components such as Dependency Survey, Readiness Scale (the ladder), and Using Oral Substitutes, on how helpful these would be in quitting smokeless tobacco. As shown in the table above, the support was very strong for almost all components.

The results of our evaluation of *Chewer's Choice*® with ST users were very encouraging. In terms of process measures, the subjects were very positive about the program in terms of usefulness, new information provided, increasing their motivation to quit and self-efficacy about quitting. The subjects were mostly long-term users, and reported that the program enhanced their likelihood of quitting and confidence in quitting. Users were asked about how helpful they found the *Chewer's Choice*® program, and 73.9% reported that the program was either very helpful or helpful. It was also very encouraging to learn that 78.6% of the subjects would either very strongly or strongly recommend the *Chewer's Choice*® program to their friends. Given that the prototype was operated by a mouse, and some subjects had limited computer experience, the fact that almost all rated the program as easy to use was strong support for the overall design.

### Follow-Up Evaluation (One & Three Months)

We mailed surveys to users one and three months after using the program to determine if they had made a quit attempt and been successful in their effort. We were able to reach 66% of the original subjects three-month follow up. For persons unable to quit their use of snuff or chew, 69% of subjects reported that they had cut down on their use of ST or changed to a brand that contained a lower level of nicotine.

In sum, the evaluation of *Chewer's Choice*® with ST users found the program both efficacious and effective. Furthermore, the self-reported quit rate at one-month follow up was 27% and at three-month, this rate rose to 35.2%. The increase in cessation rates between one and three-month follow-up could be attributed to subjects setting quit dates after the one-month survey was administered. Additionally, while 23.3% of the subjects reported a current oral health problem due to ST use, the majority was not currently experiencing such problems. It would appear that their motivation to quit was not due to current oral health problems. There were some differences between sites with regard to quit rates. However, the increase in cessation was consistent across sites. See table below.

#### Quit rate (no use in past week)

Site	1-Month	3-Month
Oregon	30.9%	38.8%
Mississippi	21.3%	28.9%

P ≤ .25378 (1-month) .30953 (3-month)

There are no other studies of interactive ST cessation with which to compare, but a recent study of self-help materials and LifeSign™ computer for ST cessation reported 31.3% and 25.0% quit rates (respectively) at 2-month follow-up (Severson, Akers, Andrews, Lichtenstein & Jerome, 2000). This study has shown that interactive computer mediated interventions promise to be a significant aid in helping many users quit. Even users who did not quit found the program useful in reducing their tobacco use.

### Clinical Significance

Because the study design did not include a control group, the three-month intent-to-treat cessation rate was compared to three-month cessation rates obtained from two previous SLT behavioral intervention randomized trials conducted by our group (Stevens et al., 1995; Severson et al., 2000) in order to evaluate the clinical significance of the study. The three-month cessation rate of 22.6% obtained in the

current study exceeded, but was not significantly different from, the three-month cessation rates obtained for the intervention conditions in Stevens et al. (19.0%) and Severson et al. (17.8%). Furthermore, the three-month cessation rate obtained in the current study was significantly higher than the control conditions in Stevens et al. (10.0%; critical ratio  $z = 5.25$ ,  $p < .001$ ) and Severson et al. (8.8%;  $z = 6.10$ ,  $p < .001$ ). Thus, the CD-ROM program produced a clinically significant cessation rate that is comparable to our previous SLT behavioral intervention trials with three-month follow-up data.

### **Publications & Presentations** (*Related to the Chewer's Choice Program*)

- Severson, H.H. (1998). Chewer's Choice: An interactive spit tobacco cessation program. NCI/NIDR Spit Tobacco Steering Committee. NIH Campus, Bethesda, MD. August 10, 1998.
- Fisher, K.J., Severson, H.H., Christiansen, S., Williams, C.J., Cody, C. (2000). Interactive Computer-Mediated Smokeless Tobacco Cessation: The Chewer's Choice Program. Poster presented at the Society of Behavioral Medicine, Nashville, TN. Spring 2000.
- Severson, H.H. (2000). Helping Chewers Quit on Their Own: A Review of Cessation With Minimal Assistance. Invited paper presented at the 11th World Conference on Tobacco or Health, Chicago, IL. August 2000.
- Severson, H.H., Tomar, S. (2000). Spit Tobacco, Cigars, and Alternative Tobacco Products. Tobacco Use Prevention Training Institute, sponsored by CDC, University of North Carolina, and Robert Wood Johnson, Foundation in Denver Colorado. September 13-17, 2000. Course Instructor.
- Williams, C.J., Severson, H.H., Christiansen, S., Jacobs, T., Kok, W. (2001). Interactive Spit Tobacco Cessation: Chewer's Choice. Paper presented at the Society for Research on Nicotine and Tobacco's Seventh Annual Scientific Sessions, Seattle, WA. March 23-25, 2001.
- Fisher, K.J., Severson, H.H., Christiansen, S., & Williams, C. (2001). Using Interactive Technology to Aid Smokeless Tobacco Cessation: A Pilot Study. *American Journal of Health Education*, 32(6), 332-340.
- Severson, H.H. (2002). Using Clinical Opportunities to Help Patients Quit Tobacco: A Review of The Evidence. Invited presenter at the University of Miami Medical School, Miami, FL. May 13-14, 2002.
- Severson, H.H. (2002). Spit tobacco, Cigars, & Alternative Tobacco Products. Invited presenter at the Tobacco Use Prevention Training Institute Conference in Kansas City, MO. July 7, 2002.
- Severson, H.H. (2002). Smokeless Tobacco Cessation: What Do We Know and What Do We Need To Know. Invited presenter at the 3<sup>rd</sup> International Conference on Smokeless Tobacco in Stockholm, Sweden, September 22-25, 2002.
- Severson, H.H., Christiansen, S., Jacobs, T., Williams, C. & Seeley, J. (2002). Evaluation of an Interactive Computer Based Cessation for Smokeless Tobacco Users: Chewers Choice. Poster presented at the American Academy of Health Behavior in Napa, CA. March 24, 2002.
- Severson, H.H., Williams, C.J., Christiansen, S., Jacobs, T. & Seeley, J. (2002). Interactive Smokeless Tobacco Cessation For Adults. Poster presented at 3<sup>rd</sup> International Conference on Smokeless Tobacco in Stockholm, Sweden September 22-25, 2002.
- Williams, C.J. (2002). Innovative Interventions for Smokeless Tobacco Users. Presented interactive CD-ROM program at 6th Annual Statewide Tobacco Prevention & Education Conference, Lincoln City, OR. Spring 2002.

### **References**

- Andrews, J.A., Severson, H.H., Akers, L., Lichtenstein, E., & Barckley, M. (2001). Who Enrolls In A Self-Help Cessation Program For Smokeless Tobacco? *Addictive Behaviors*, 26(5), 757-64.
- Biener, L. & Abrams, D.B. (1978). The contemplation ladder: Validation of a measure of readiness to consider smoking cessation. *Health Psychology*, 10, 360-365.

- Lichtenstein, E. & Glasgow, R.E. (1992). Smoking cessation: What have we learned over the past decade? Journal of Consulting and Clinical Psychology, 60(4), 518-527.
- Prochaska, J.O. & DiClemente, C.C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. Journal of Consulting and Clinical Psychology, 51(3), 390-395.
- Severson, H.H. (2001). Enough Snuff: A Guide For Quitting Smokeless Tobacco. Copyright 2001. Applied Behavior Science Press, Eugene, OR. Sixth Edition.
- Severson, H.H., Akers, L., & Christiansen, S. script authors. (1997). Enough Snuff: A Video Program to Help You Quit Spit Tobacco. Copyright 1997, Oregon Research Institute. Video to supplement the Enough Snuff manual as a self-help smokeless tobacco quitting program.
- Severson, H.H., Andrews, J.A., Lichtenstein, E., Gordon, J.S., & Barckley, M. (2000). A self-help cessation program for smokeless tobacco users: Comparison of two interventions. Nicotine & Tobacco Research, 2(4), 363-370.
- Severson, H.H., Eakin, E.G., Lichtenstein, E., & Stevens, V.J. (1990). The inside scoop on the stuff called snuff: An interview study of 94 adult male smokeless tobacco users. Journal of Substance Abuse, 2, 77-85.
- Severson H.H., Eakin E.G., Stevens V.J., & Lichtenstein, E. (1990). Dental office practices for tobacco users: independent practice and HMO clinics. American Journal of Public Health, 80(12), 1503-5.
- Stevens, V.J., Severson, H.H., Lichtenstein, E., Little, S.J., & Leben, J. (1995). Making The Most of a Teachable Moment: Smokeless Tobacco Cessation In a Dental Office Setting. American Journal of Public Health 85(2), 231-235.