Actual Use Study of an Oral Nicotine Pouch Product

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Abstract

The FDA Center for Tobacco Products recommends assessment of the public health impact of new tobacco products to understand how U.S. adult consumers actually use the products. Actual use studies provide information on both how the new products will affect the tobacco use behavior of current adult consumers of tobacco and nicotine products and potential misuse of the new product in their natural environments. We conducted a multi-site, open-label, 8-week, prospective observational study at sites geographically dispersed within the U.S. The objective was to evaluate how U.S. adult consumers of tobacco and nicotine products (21-60 years old) use a noncommercial oral nicotine pouch product, Velo Pouch, over a 6-week Actual Use Period (AUP) in their real-life environment. A total of 1,105 regular smokers of at least 5 cigarettes per day (CPD) on at least 20 of the past 30 days were enrolled. Participants were allowed to choose among 12 available study investigational product (IP) variants to use ad libitum and were also permitted to use non-study tobacco and nicotine products. Participants completed interviewer-led questionnaires on specific use behavior, subjective experiences, and future intentions; confirmed eDiary compliance; and received additional IP as needed at designated site visits. The primary outcomes were the number and proportion of subjects who met the definition of 'established users' of the Study IP (defined as using ≥100 pouches) over the 6 weeks of the AUP, the number and proportion of established users who reduced their CPD consumption by 50% or more, and descriptive weekly averages of CPD consumption among all study completers, including both established and non-established users of the IP. Results demonstrate that Velo Pouch use has the potential to displace cigarette use, suggesting a potential public health benefit after introduction.

Study Design

- Participants were identified via a 2-stage screening and were enrolled at the research sites. Daily Baseline product use information [Combustible cigarette (CC) and other Tobacco and Nicotine Products (TNPs), Electronic Nicotine Delivery Systems (ENDS), Smokeless Tobacco (ST), and other combustible products was collected via a custom eDiary installed on personal or study-provided smart devices.
- Starting at SV1, Study IP was provided at no cost for use as desired and participants began recording their pouch use in the eDiary. At SV2 through SV4, participants were interviewed to review eDiary compliance and to provide responses to questionnaires.
- A telephone hotline was available throughout the study for participants to report any AEs associated with the study products, pregnancies, and product complaints.
- At the close of the AUP at SV4, participants returned all unused products and were asked about their satisfaction with study participation via a Close Out Questionnaire (COQ).

Study Endpoints

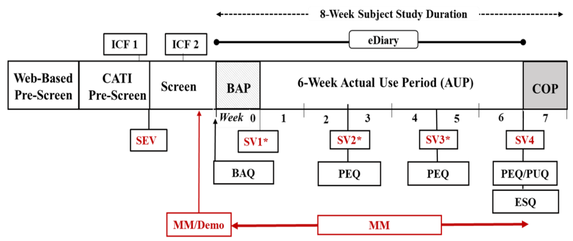
Primary Endpoints

1. Number and proportion of subjects who meet the definition of "established users" of the Study IP (defined as using ≥100 pouches) over the 6 weeks of the AUP.
2. Number and proportion of subjects among "established users" who reduce their cigarettes per day (CPD) consumption by at least 50% at the end of the AUP.
3. Descriptive weekly average CPD consumption per subject among all subjects who complete the study, including both established and non-established users of Study IP.

Secondary endpoints included more detailed descriptions of CC and IP use, including frequency, patterns, and variants, and descriptive summaries of the questionnaire responses (i.e., sociodemographic factors, subjective experiences, and specific use behaviors).

Results

Figure 1. Study Schematic



* Study IP Distribution

BAP-Baseline Assessment Period; BAQ-Baseline Assessment Questionnaire; CATI-Computer-Assisted Telephone Interview; ESQ-End-of-Study Questionnaire; COP-Close Out Period; ICF-Informed Consent Form; MM-Marketing Materials; PEQ-Product Experience Questionnaires; PUQ-Product Use Questionnaires; SEV-Screening & Enrollment Visit; SV-Site Visit

Figure 2: Study Population

Race / Ethnicity (FAS)
- White **54%**
- Black **38%**
- Other **7%**
- Decline to Answer **1.3%**
- Hispanic or Latino **9%**
- Not Hispanic or Latino **91%**

Sex (FAS)
- Male **36%**
- Female **64%**

Age (Years) (FAS)
- 21-30 **6.5%**
- 31-49 **57%**
- 50-60 **37%**

Past 30-Day Tobacco History (FAS)
- Exclusive CC **33%**
- Dual use of CC and Vaping Devices **15%**
- Dual use of CC and Heated Tobacco Products **0.1%**
- Dual use of CC and Oral Products **1%**
- Dual use of CC and Other Combustibles **11%**
- Polyuse of CC and more than one other TNP **32%**

Subject disposition
- Enrolled **1105**
- Full Analysis Set (FAS) **992**
- Completed **920**

The FAS is defined as the use of ≥1 CC during Week 0 and ≥ 1 Study Pouch during the AUP

Figure 3: 'Established Users' Over Time (Overall and Age Stratified)

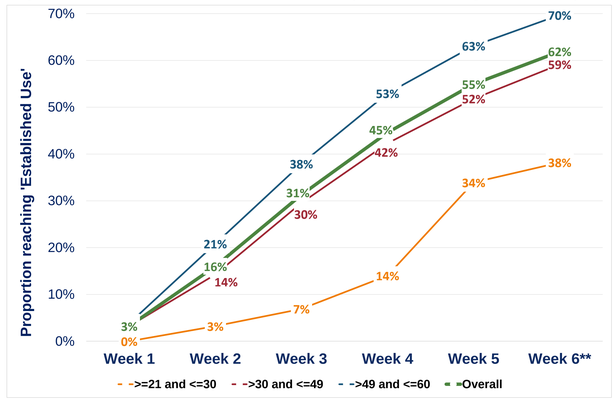


Figure 3. A total of 61.9% of the FAS became 'established users' of Velo nicotine pouch at week 6 of AUP as defined by the use of 100 or more total pouches. Participants in the age group >49 to <= 60 became predominant established users (70%) while fewer participants in the age group >=21 to <=30 became established users (38%) at week 6.

Figure 4: Categories of CPD Change Over Time for 'Established Users'

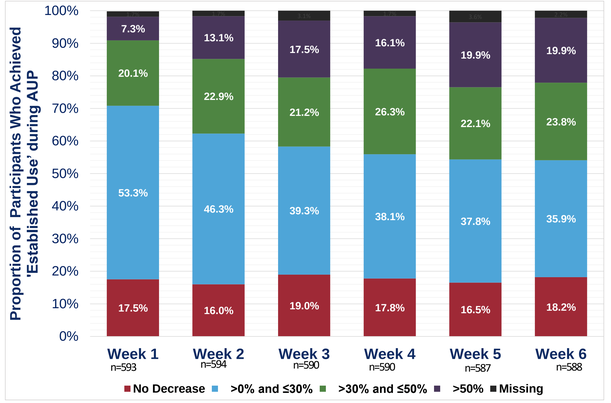


Figure 4. Changes from baseline in weekly mean CPD. Some participants in the "No decrease" category increased their weekly CPD.

Figure 5: Weekly Cigarettes Per Day Among Study Completers

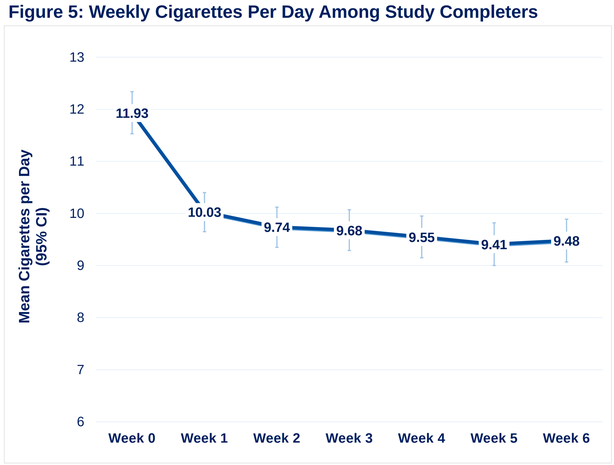


Figure 5: The average number of cigarettes smoked per day among all participants who completed the study decreased from 11.9 (median=10.6) at baseline to 9.48 (median=8.24) in Week 6.

Figure 6: Mean Weekly CPD Reduction by Study IP Use

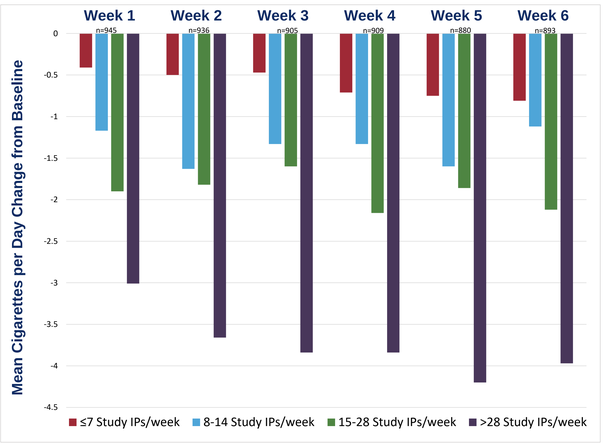


Figure 6. Mean weekly CPD reductions were higher among those who used more pouches in a given week. The category of ≤7 Study IPs/ week included those who used no Study IP.

Study Population

Key Inclusion Criteria:

1. Adult males or females, 21-60 years old, inclusive.
2. Adult consumers of tobacco and nicotine products, smoked 100+ cigarettes in their lifetime and typically smoke on at least 20 days of the past 30.
3. Smokes an average ≥ 5 CPD on days when cigarettes are smoked.
4. Indicate "an intention to use" Study IP after a brief review of product information and product demonstration at the SEV.
5. Able and willing to comply with all study requirements.

Key Exclusion Criteria:

1. Self-report as currently quitting (within the past 30 days) or intending to quit within the next 3 months all tobacco or nicotine products. Those who intend to quit CC only could be enrolled.
2. Female subjects who are currently, or are planning, to become pregnant or breastfeeding within the next 6 months.
3. Self-reports "poor" physical/mental health (based on the five-category PATH questionnaire): "In general, how would you rate your physical/mental health?" (Response choices: Excellent, Very Good, Good, Fair, Poor).

Products, Safety, and Compliance

Study Products:

- Tobacco-derived oral nicotine pouches in multiple flavors, nicotine levels, and pouch configurations. Subjects could take home up to five different study IP at a time.

Figure 7. Velo nicotine pouch

Safety:

- 11/992 (1.1%) participants reported a total of 52 adverse events (AEs)
- 8/992 (0.8%) reported 41 AEs that were classified as either *related* or *possibly related* to Study IP use.
- Most common related AEs were hiccups, gum pain, and mouth tingle

eDiary Compliance

- During Week 0 (Baseline), 89.0% of expected eDiary entries were made
- During Weeks 1 through 6 of the AUP, compliance with completing the eDiary decreased from 72.3% to 64.8%.
- Approximately 50 subjects/week reported technical issues with the eDiary app when queried at the SVs.

Conclusions

- 61.9% of participants became 'established users' of Velo Pouches
- 20% of established users reduced their CC consumption by ≥ 50% at week 6 of the AUP 9
- The mean CPD decreased from 11.9 at baseline to 9.4 in Week 6
- High compliance rates (eDiary completion and site visit rates)
- Study results demonstrated Velo Pouches acceptance and their potential to displace CC use among smokers
- Velo Pouches have the potential to positively impact public health

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