

ORIGINAL RESEARCH

At-Home Integrated HPV Self-Collection With Telehealth

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Abstract

Objective: At-home papillomavirus (HPV) self-collection (SC) can overcome screening barriers and expand access. We analyzed data from the first FDA-authorized at-home HPV SC with integrated telehealth offering papillomavirus (HPV) self-collection (SC).

Methods: Descriptive analysis of routine data, including medical records, satisfaction surveys, user feedback, and back-end data from the telehealth system. Participants met screening guidelines (25- to 65-year-old intact cervix) but were ineligible due to pregnancy, a history of high-grade squamous intraepithelial lesion, a loop electrosurgical excision procedure, immunosuppression, or abnormal bleeding. Analysis focused on HPV test results by April 16, 2026. A digital intake, a telehealth visit, SC at home, and digital results delivery were completed. Those with HPV-positive results had a follow-up telehealth visit with navigation to in-person triage. Descriptive statistics examined participants' demographic characteristics, prior screening history, reasons for choosing at-home screening, and satisfaction.

Results: During the first ten months following introduction, at-home SC provided 2,881 users with cervical cancer screening results.

- SC users represented all 50 states, 16% rural.
- > 12% had never screened previously, 59% ≥ 5 years from screening.
- Reasons for SC included privacy/convenience (50%), distrust/avoidance of in-person care (17%), pain with exams/vaginismus (11%), work/childcare obligations (9%), and trauma (7%).
- High levels of satisfaction, including ease of use (97%), the telehealth new patient visit (97%), comfort (94%), and overall experience (99%).

Conclusions: At-home SC increased participation in screening, particularly for never/under-screened and overcame barriers. Telehealth-enabled screening modalities reach women who do not access or prefer clinic-based screening, including rural dwellers, mitigating disparities in cervical screening in the U.S.

Plain Language Summary

Cervical cancer, caused by the human papillomavirus, is preventable through vaccination and screening. However, more than 25% of women in the U.S. are under-screened. Barriers to screening include:

- Long distances to health facilities,
- Medical trauma; and
- Discomfort with speculum exams.

Home screening options—papillomavirus self-collection paired with telehealth—address many barriers to screening and appeal to women. Early implementation data from the first U.S. Food and Drug Administration-authorized home-based HPV self-collection and telehealth service in the U.S. show:

- 1) who is reached by this approach to screening, and
- 2) the user experience among early adopters.

Home screening served every U.S. state, 16% rural. More than half were overdue at the time of self-collection. User rated their experience positively, including telehealth support, citing ease and comfort. Self-collection reaches the under-screened, addressing known barriers. Scaling self-collection with telehealth could meaningfully reduce the under-screened population in the U.S.

Key Takeaways

- Despite being almost completely preventable, more than 13,000 cases of cervical cancer were diagnosed in the U.S. in 2025—leading to more than 4,300 deaths.
- In the U.S. at-home self-collection for cervical cancer screening with telehealth promotes screening and can successfully reach never-and under-screened users.
- This innovation expands preventive care options for and mitigates disparities in cervical screening in the U.S.

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Despite being almost completely preventable, more than 13,000 new cases of cervical cancer were diagnosed in the U.S. in 2025, leading to more than 4,300 deaths.¹ Cervical cancer screening can prevent cancer and diagnose cases earlier, leading to better treatment outcomes and improved survival.² Along with human papillomavirus (HPV) vaccination, widespread access to cervical cancer screening, via cervical cytology and/or high-risk HPV (hrHPV) testing, has led to substantial reductions in cervical cancer deaths in the U.S.³ While age-adjusted cervical cancer mortality rates have declined overall—from 3.5 per 100,000 women in 1992 to 2.1 deaths per 100,000 in 2022¹—these downward trends have not persisted for all groups. Women, especially Black women, from low-income counties have seen significant increases in cervical cancer incidence and mortality since 2007⁴ and cervical cancer diagnoses have increased 11% among younger women (30–44 years old) in the past decade.⁵

Despite the significant benefits from regular cervical cancer screening, more than one in four women in the U.S. are thought to be behind on screening.⁶ Trends in cervical cancer screening declined precipitously during the COVID-19 pandemic and have not rebounded since.⁷ Barriers to screening are numerous and include rural residence, a lack of health literacy and knowledge about cancer risks or the benefits of screening, and logistical barriers in accessing care, as well as financial barriers such as high costs or the lack of insurance.^{8–11} Cervical cancer screening service delivery in the U.S. is also complex and varies across women's life courses. For women under 40, screening is typically performed by obstetricians/gynaecologists as a part of larger reproductive health services. As women age, family practice, primary care physicians, and internal medicine play a more prominent role in screening.¹² As a result, multiple specialties and types of providers are required to understand changing guidelines and how they affect clinical management. Individual-level barriers also contribute to poor screening coverage. Patient-level factors, including embarrassment or discomfort with screening, fear of the health system, or procrastination/avoidance, have also been associated with under-screening.¹³ Furthermore, screening guidelines and recommended screening intervals have changed in recent years,¹⁴ generating complexity and leading to confusion and uncertainty for both patients and clinicians.¹⁵ Taken together, these barriers result in variable screening intervals, delayed or missed screening, and over-utilisation of triage steps when screening is performed.¹⁵

Primary HPV screening is now recommended as the preferred screening modality, for which self-collection (SC) is now available and clinically equivalent.^{16,17} Self-collection for HPV testing is an effective approach to addressing some of the known barriers to screening, with at-home SC acknowledged as the approach offering the greatest uptake.¹⁸ However, SC was only recently approved for healthcare settings in May 2024.¹⁹ To date, this option is still not widely available and requires patients to travel to a clinical location. At-home SC was U.S. Food and Drug Administration (FDA)-approved more recently (May 2025), with home-based SC rolled out within 2 months of approval to select states and full availability to U.S. women and people with a cervix within 6 months of launch.²⁰ This home-based SC model leverages telehealth women's health specialists to deliver HPV education and confirm eligibility prior to SC and for results delivery and education following sampling and kit return. Navigation services are included for HPV+ triage care that includes patient education and referral to a local clinician for guideline-led follow-up care.

While home-based SC is relatively new in the U.S., the U.S. Preventive Services Task Force (USPSTF) considers at-home SC as the screening modality most likely to improve screening rates.²¹ Data from other settings, including Scandinavia, support this hypothesis and have found that the introduction of home-based SC led to a 27% decline in invasive cervical cancer incidence.²² The U.S. Health Resources and Services Administration (HRSA) updated its Women's Preventive Services Guidelines to mandate that, starting in 2027, insurers must not only cover FDA-authorised SC options but also the additional diagnostic tests to rule out malignancy—a change that is highly likely to increase screening uptake.¹⁷ While early data from the U.S. also support this conclusion,^{23,24} the evidence base for home-based SC in the U.S. remains more limited. In this paper, we explore user and client experience data from early adopters of the FDA-authorised Teal Health home-based SC kit to demonstrate the acceptability of home-based SC and its potential for increasing cervical cancer screening coverage in the U.S.

Methods

Study Participants

Data for this analysis were obtained via Teal Health's at-home cervical cancer screening telehealth platform and consenting users' electronic health records (EHR). Analysis was limited to users who self-collected and received their HPV screening results between July 1, 2025 and April 16, 2026. These users

learned about at-home screening either by signing up for a waitlist prior to FDA authorisation or through news and social media, as the offering has strictly been direct-to-consumer to date. Customers incurred an out-of-pocket cost of \$99–\$249, depending on their individual health insurance coverage. This out-of-pocket payment covers the supplies and mailing, which is not yet considered for insurance coverage.

The Teal Wand is a prescription-only device. As such, eligibility according to medical guidelines was established by trained women's health medical providers through an eligibility questionnaire. Teal users were eligible for average-risk and cervical cancer screening according to the American Cancer Society and the American Society for Colposcopy and Cervical Pathology (ASCCP) guidelines,¹⁶ had an intact cervix, and were between of 25 and 65 years of age. Individuals were ineligible for screening and participation if they were currently pregnant, were immunocompromised, had a history of high-grade squamous intraepithelial lesion of the cervix, a loop electrosurgical excision procedure, or a cold knife cone biopsy within the prior 25 years. Users who were current on screening as per the guidelines (screened within the past 3 years) were still eligible for SC through a shared decision-making process.

Self Collection and Screening Process

Eligible individuals completed a digital intake process at registration. The digital intake is designed to be user-friendly for a person familiar with mobile phone use, is “mobile-first”, and was tested for usability.²⁵ Following the intake, they scheduled and completed a telehealth visit with a specialised women's health provider. During this appointment, the provider reviewed the patient's screening history and confirmed their eligibility. The provider then issued a prescription for the Teal Wand kit—an FDA-authorised and clinically validated home-based cervical cancer screening tool²⁶ for primary HPV screening designed for users to self-collect a sample for HPV testing. Kits were mailed to the patients' home addresses; using the written and/or video instructions, the participants self-collected their samples, packaged them with the provided return materials, and mailed them to the lab via the USPS.

At the Clinical Laboratory Improvement Amendments-certified lab, samples were processed using the Roche Cobas® test—an FDA-approved, USPSTF-recommended testing platform for primary HPV screening.²⁷ After laboratory testing was completed, the results were delivered electronically to the EHR, and the patient received a text notification that the results were available for review. Patients with HPV-positive results were encouraged to schedule a follow-up telehealth visit with a Teal provider to discuss their results and next steps according to the ASCCP clinical management guidelines.²⁸ The patients were offered navigation for in-person triage or could schedule follow-up appointments with a known provider.

Data Collection

Users were asked to complete optional surveys at two points: (1) following their initial provider visit and SC experience, and (2) following delivery of HPV results. While these surveys did collect some data about user demographics, questions about race, ethnicity, and other characteristics were optional for

users to reduce unnecessary friction. The surveys included questions about users' SC screening experience and reasons for choosing home screening. Surveys also included quantitative questions about patient satisfaction with the SC process, based upon a 5-point Likert scale, as well as qualitative/open-ended questions about the overall screening experience. Data were collected after the initial telehealth visit, after the patient returned the sample via USPS, and then at the end of the screening experience when results were returned to the patient. ZIP code data were obtained for all users in order to mail SC kits.

Data Analysis

Analysis was limited to users who had HPV test results available in the telehealth platform as of April 16, 2026. Quantitative data were analysed descriptively using means and frequencies, and appropriate tests of association (e.g., *t*-tests and chi-square tests). Area-level socioeconomic characteristics were obtained from the American Community Survey 5-year estimates at the ZIP Code Tabulation Area (ZCTA) level.²⁹ The ACS data were used to define community-level sociodemographic variables, including the percentage of residents living below the federal poverty line and the unemployment rate among residents in the civilian workforce in each ZCTA. These data were also used to estimate the proportion of residents in each ZCTA who had completed a Bachelor of Arts degree (or higher), as well as the proportion of residents belonging to racial and ethnic groups, including non-Hispanic white, non-Hispanic Black, non-Hispanic Asian, and Hispanic/Latino. These measures were used to characterise the neighbourhood context of study participants' areas of residence.

To facilitate descriptive analysis, several ACS variables, including poverty level, unemployment rate, and educational attainment, were categorised as low, moderate, or high. These thresholds were drawn from established census and area-level socioeconomic literature, where available,^{30,31} and from national distributional benchmarks otherwise. We defined rural residence using the rural classification of ZCTAs available from the Federal Office of Rural Health Policy (FORHP).³²

Research Ethics

As part of registration, the patient consents to terms and conditions that assure the security of their PHI through the use of a secure EHR. As part of this consent, the patient agrees to the use of aggregated, de-identified data for analysis purposes. WCG IRB waived consent for analysis and publication of these data under 45 CFR 46.104(d)(4) (WCG IRB, Protocol # 20255172).

Results

User Demographics

As of April 16, 2026, a total of 4,443 eligible users had kits prescribed to them over the first 10 months of SC availability. Of those prescribed a kit, 3,795 users had their orders fulfilled on or before April 9th. Of these, 2,933 (77%) users had returned their kits to the lab by April 16th, and 2,881 had HPV test results available in the system by that date. The remainder of this analysis is limited to users with HPV test results available as of April 16, 2026 ($n = 2,881$). Users

Table 1. Demographic characteristics among at-home self-collection users with HPV test results by April 16, 2026.

Variable	Sample with HPV results (N = 2,881) n (%)
Age (Mean, SD)	44.3 (10.3)
Gender (n = 2,864)	
• Woman	2,843 (99.3%)
• Other	21 (0.7%)
Screening payment	
• Insurance	2,353 (81.7%)
• Cash	440 (15.3%)
• Other*	88 (3.1%)
Race (n = 621)	
• White	532 (85.7%)
• Black/African American	24 (3.9%)
• Asian	19 (3.1%)
• American Indian/Alaskan Native	4 (0.6%)
• Other	42 (6.8%)
Ethnicity (n = 615)	
• Not Hispanic/Latino	567 (92.2%)
• Hispanic/Latino	48 (7.8%)
Sexual Orientation (n = 597)	
• Heterosexual	494 (82.8%)
• Bisexual	44 (7.4%)
• Homosexual	34 (5.7%)
• Other	253 (4.2%)

*Other test kits included those provided by specific employee-sponsored plans and provider-covered kits. HPV: human papillomavirus.

averaged 44.3 ± 10.3 years of age, and most identified as women (99%, Table 1). Most early adopters used insurance to pay for the telehealth services associated with home SC ($n = 2,353$, 82%) or cash ($n = 440$, 15%). An out-of-pocket cost of \$99 for the kit was required from all patients, as insurance does not currently cover this supply (expected coverage is January 2027).

Demographics beyond those needed to determine screening eligibility were optional for users and are limited in our data. Among those who reported race, 621 (22%) were mostly white/Caucasian ($n = 532$, 86%). More than 3% of users with known race were Asian (19/621), 4% (24/621) were Black/African American, and 7% (42/621) identified as another race. Among those who disclosed their ethnicity (615, 22%), about 8% (48/615) were Hispanic/Latino. For users whose sexual orientation was known (597, 21%), most identified as heterosexual (83%), with 17% identifying as another orientation (bisexual [7%], homosexual [6%], or other [4%]).

User Residence and ZCTA Sociodemographic Characteristics

Users resided in all 50 U.S. states and the District of Columbia. Most users lived in California ($n = 509$, 18%), Florida ($n = 284$, 10%), Texas ($n = 219$, 8%), or New York ($n = 66$, 6%). In addition to being large population centres, these states were where at-home SC was initially launched. Most users were from states in the South ($n = 1,089$, 38%) or West ($n = 940$, 33%), with fewer users from the Northeast ($n = 439$, 15%) or Midwest ($n = 413$, 14%).

Table 2. HPV self-collection early adopter area of residence sociodemographic characteristics*.

Variable	Sample with HPV test results in system (N = 2,881) n (%)
• Percent ZCTA below poverty (Mean, SD)	10.3% (5.8%)
ZCTA poverty level	
• Low (< 10% ZCTA in poverty)	1,639 (56.9%)
• Moderate (10%–19.9% ZCTA in poverty)	1,062 (36.9%)
• High ($\geq 20\%$ ZCTA in poverty)	180 (6.3%)
• ZCTA unemployment rate (mean $\pm$ SD)	4.7% (2.2)
ZCTA level of employment	
• Low unemployment (< 5%)	1,734 (60.2%)
• Moderate unemployment (5%–9.9%)	1,086 (37.7%)
• High unemployment ($\geq 10\%$)	61 (2.1%)
ZCTA educational attainment (% with bachelors or above)	
• Low educational attainment (< 20% BA or above)	295 (10.2%)
• Moderate educational attainment (20%–39.9% BA or above)	1,116 (38.7%)
• High educational attainment ($\geq 40\%$ BA or above)	1,470 (51.0%)
ZCTA race/ethnicity	
• % Non-Hispanic White	63.9% (21.2)
• % Non-Hispanic Black	7.8% (11.0)
• % Hispanic/Latino	15.8% (14.8)
• % Non-Hispanic Asian	6.6% (9.0)
• FORHP rural area designation**	466 (16.2%)

*Area level sociodemographic characteristics, including poverty estimates, unemployment rates, educational attainment, and race/ethnicity data, were obtained from ZCTA data. **Rural residence was defined using the rural classification of ZCTAs available from the HPV. HPV: human papillomavirus; BA: Bachelor of Arts; FORHP: Federal Office of Rural Health Policy; ZCTA: ZIP Code Tabulation Area.

Since user demographic data, including race and ethnicity, were collected via opt-in surveys, this information was available for a limited subset of users. Further, because user demographic information collected by the opt-in surveys did not include characteristics such as education or income, we describe users' neighbourhood characteristics based on early adopters' ZCTAs and data from the 2020 to 2024 ACS' 5-year estimates. On average, users lived in areas where roughly 10% of residents in households lived below the federal poverty line (Table 2). Most users resided in low-poverty (57%) or moderate-poverty (37%) ZCTAs, though more than 6% resided in high-poverty ZCTAs. Similar proportions of users came from low (60%) or moderate (38%) unemployment ZCTAs. Based on FORHP data, more than 16% of the sample resided in areas considered rural.

Among the 2,794 (97%) early adopters whose cervical cancer screening history was known, a total of 345 (12%) had never previously been screened for cervical cancer (Table 3), although they were well within the guideline-indicated screening age, which starts at 21 years. Of the 2,449 users with a screening history, 2,273 (93%) reported normal results on their most recent screening, 86 (4%) had prior HPV+ (abnormal) results, and 90 (4%) were not sure of their results (Figure 1). Users who had

Table 3. Cervical cancer screening history among at-home self-collection early adopters.

Variable	Never been screened for cervical cancer (n = 345, 12%) n (column %)	Ever been screened for cervical cancer (n = 2,449, 88%) n (column %)	p
Age (Mean, SD)	32.1 (6.4)	45.9 (9.7)	< 0.001
Time since last screening, years (Mean, SD) (n = 2,243)	-	5.8 (3.9)	-
More than 5 years since last screening (n = 2,243)	-	1,319 (58.8%)	-
ZCTA poverty level*			0.086
• Low	177 (51.3%)	1,411 (57.6%)	
• Moderate	144 (41.7%)	887 (36.2%)	
• High	24 (7.0%)	151 (6.2%)	
ZCTA unemployment rate**			0.035
• Full employment	192 (55.7%)	1,515 (61.9%)	
• Moderate unemployment	148 (42.9%)	880 (35.9%)	
• High unemployment	5 (1.5%)	54 (2.2%)	
Neighbourhood educational attainment***			0.372
• Low	29 (8.4%)	266 (10.9%)	
• Moderate	142 (41.2%)	967 (39.5%)	
• High	174 (50.4%)	1,216 (49.7%)	
U.S. Region			0.034
• Northeast	59 (17.1%)	353 (14.4%)	
• Midwest	49 (14.2%)	364 (14.9%)	
• South	112 (32.5%)	977 (39.9%)	
• West	125 (36.2%)	755 (30.8%)	
• Rural residence	43 (12.5%)	432 (17.3%)	0.025

*Low Poverty: < 10% of all ZCTA residents living in households below the federal poverty line; Moderate Poverty: ≥ 10 to less than 20% below federal poverty line; High Poverty: ≥ 20% below the federal poverty line. **Full Employment: < 5% unemployment rate among individuals 16+ in the civilian labour force; ***Moderate Unemployment: ≥ 5 to < 10% unemployment; High Unemployment: ≥ 10% unemployment. Low Educational Attainment: < 20% of adults 25+ in the ZCTA with bachelor's degree; Moderate Educational Attainment: ≥ 20% to < 40% with a bachelor's degree; High Educational Attainment: ≥ 40% with a bachelor's degree. ZCTA: ZIP Code Tabulation Area.

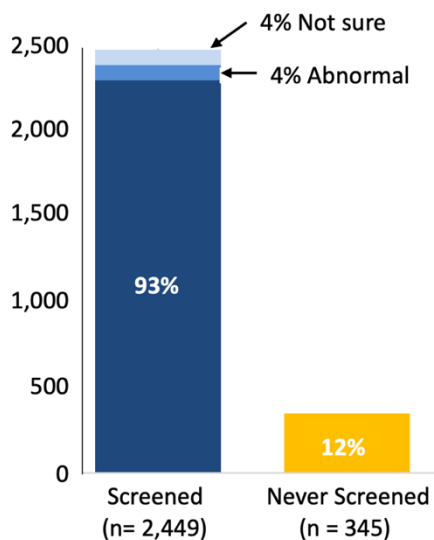


Fig. 1. Cervical cancer screening histories among early adopters of self-collection in the U.S.

previously been screened were significantly older than those who had never been screened (45.9 vs. 32.1 years, $p < 0.001$, Table 3). Among women who had never previously been screened before self-collecting, 54% (185/345) were between the ages of 30 and 50. Even for those with a history of cervical cancer screening, 59%

(1,319/2,243) had been screened > 5 years prior, and on average, users had screened 5.8 years prior to self-collecting (interquartile range [IQR]: 3–7 years). Altogether, 60% of early adopters of SC were considered under-screened. While prior history of screening among early SC adopters in our study was not associated with ZCTA-level factors such as poverty and education, prior screening rates were slightly lower among early adopters from states in the Northeast (86%) or West (86%) compared to those from states in the Midwest (88%) or South (90%, $p = 0.034$). While cervical cancer screening coverage was slightly higher among early adopters living in rural areas compared to those in non-rural areas (91% vs. 87%, $p = 0.025$), residents of rural areas were somewhat more likely to be under-screened than their non-rural counterparts (64% vs. 59%, $p = 0.056$, data not shown).

Reason for Choosing Self Collection

The most commonly reported reasons for choosing SC included convenience or privacy of an at-home screening option (50%), a desire to avoid in-person exams or a distrust of clinics/healthcare providers (17%), and limited access to care (such as living in a rural area or having challenges making appointments) (11%, Table 4). Early adopters who had never been screened previously were significantly more likely than those who had previously been screened to say they chose SC because they avoided in-person exams or distrusted clinics/healthcare providers (35% vs. 15%, $p < 0.001$) or because of a

Table 4. Reasons for choosing self-collection among early adopters.

Variable	All early self-collection adopters (n = 2,881) n (%)	Never been screened for cervical cancer (n = 345, 12%) n (%)	Ever been screened for cervical cancer n (%)	p
Reason reported for choosing at-home self-collection				
Convenience/privacy of at-home option	1,443 (50.1%)	108 (31.3%)	1,335 (54.5%)	< 0.001
Avoid in-person exams/distrust clinics	495 (17.2%)	120 (34.8%)	375 (15.3%)	< 0.001
Limited access to care (rural/challenges making appointment)	329 (11.4%)	19 (5.5%)	310 (12.7%)	< 0.001
Pain with speculums/vaginismus	324 (11.3%)	37 (10.7%)	287 (11.7%)	0.589
Work/childcare/family obligations	262 (9.1%)	5 (1.5%)	257 (10.5%)	< 0.001
History of trauma	210 (7.3%)	45 (13.0%)	165 (6.7%)	< 0.001
Physical/medical disability	35 (1.2%)	7 (2.0%)	28 (1.1%)	0.166
Other	346 (12.0%)	49 (14.2%)	297 (12.1%)	0.273

history of trauma (13% vs. 7%, $p < 0.001$). Those with a history of screening were significantly more likely than those who had never screened to say they chose SC because they valued the convenience and privacy of an at-home option (55% vs. 31%, $p < 0.001$), had challenges accessing screening (13% vs. 6%, $p = 0.001$), or had work or family obligations that made attending clinic appointments challenging (11% vs. 2%, $p < 0.001$).

Self Collection and Screening Results

Users returned SC kits for testing within an average of 12.5 days (IQR: 3–14 days) from kit receipt (data not shown). Average return times were longest for users residing in Western states (14.5 days), followed by the South (11.9 days) and the Northeast (11.5 days), and were shortest in the Midwest (10.4 days, $p = 0.002$). Following SC, a total of 2,669 early adopters had normal HPV test results (93%), 203 (7%) had abnormal (HPV+) results, and 9 users (0.3%) had an invalid result (Table 5). Of the 203 participants with hrHPV-positive results, 35 (17%) were positive for HPV 16 alone, 17 (8%) for HPV 18 alone, 9 (4%) for HPV 16 with other hrHPV co-infection, and 142 (70%) for other hrHPV types only. Overall, among the positive cases, HPV 16 was detected in 44 participants (22%) and HPV 18 in 17 participants (8%). The prevalence of abnormal results did not vary significantly by geographic region, rural versus urban residence, or a history of cervical cancer screening. Users with HPV-positive test results were younger on average than those who were negative (42.6 vs. 44.4 years, $p = 0.018$). Among those with a history of screening, the prevalence of abnormal results was significantly higher among those screened within the past 5 years compared to those screened 5 or more years ago (9.6% vs. 5.8%, $p = 0.001$). Early adopters from areas with full employment were significantly less likely to have abnormal results (104/1,734, 6.0%) than users from areas with moderate (94/1,086, 8.7%) or high (5/61, 8.2%) unemployment ($p = 0.026$).

Telehealth Triage Following Abnormal Results

As part of the screening service, individuals who receive an HPV positive result are invited and encouraged to schedule a telehealth follow-up visit with a Teal provider. During the visit, the provider will discuss the meaning of the results and educate the patient about ASCCP guideline-indicated follow-up steps,³³ all of which require an in-person visit.

Table 5. HPV screening results among early adopters of self-collection.

Variable	HPV test positivity rate n (%)	p
Age (in years)		0.041
• < 30 (n = 262)	24 (9.2%)	
• 30–39 (n = 747)	67 (9.0%)	
• 40–49 (n = 946)	55 (5.8%)	
• 50–59 (n = 663)	38 (5.7%)	
• 60+ (n = 263)	19 (7.2%)	
Cervical cancer screening history		
• Never screened (n = 345)	16 (4.6%)	
• Ever screened (n = 2,449)	182 (7.4%)	0.058
Among those previously screened, most recent screening:		
• < 5 years ago (n = 924)	89 (9.6%)	
• ≥ 5 years ago (n = 1,319)	77 (5.8%)	0.001
Area of residence		
• Rural (n = 423)	34 (8.0%)	
• Not rural (n = 2,026)	148 (7.3%)	0.601
Region		
• Northeast (n = 353)	29 (8.2%)	
• Midwest (n = 364)	26 (7.1%)	
• South (n = 977)	74 (7.6%)	
• West (n = 755)	53 (7.0%)	0.902

HPV: human papillomavirus.

The telehealth visit is intended to educate the patient, provide support regarding a potentially confusing and scary result, and, importantly, navigate the individual to care that suits their screening needs. This includes identifying trauma-informed and/or gender-affirming care and care options that address reasons why screening might have been delayed or avoided in the past. The telehealth visit is included as part of the service and aims to increase follow-up action for the ultimate mitigation of cervical cancer development.

Among the 203 early adopters with abnormal HPV test results in the system as of April 16, 2026, 183 (90%) went on to have follow-up counselling via telehealth with a clinician at the Teal Medical Practice by June 24, 2026 (at the time of analysis). Of these 183 consultations, 146 (72%) were done via a

video visit, 33 (16%) by asynchronous messaging, and 3 (1.5%) by phone call. Six (3%) of these patients declined a referral despite this counselling.

Confirmation of the triage step taken relies both on referred providers notifying Teal Medical and/or the patients themselves closing the loop. A more automated system for collecting these follow-up data is in development; however, despite this limitation, our data show that 88% patients reported scheduling a follow-up appointment, taking a referral from a Teal provider, and/or seeing a clinician of their choosing. Of those, 88% (178/203) completed or are awaiting confirmed follow up appointments after their HPV positive consultation. The remaining 35% (72/203) were still awaiting their appointment at the time of analysis (mean: 137 ± 56 days from positive HPV result). These interval differences were statistically significant ($p < 0.001$).

Given wait times for in person appointments, we expect the majority of those pending to report results in the coming months. Although nearly all patients took the telehealth consultation following the positive HPV result, 12% (24/203) of the patients declined a referral or refused to follow up altogether. There were no observed differences in age, region, rurality, or poverty level for those who completed follow-up, are awaiting follow-up, or declined to follow up. At least one invasive cancer and one AIS (adenoma carcinoma in situ) have been discovered and reported by patients who screened HPV positive using the Teal Wand to date.

Self Collection Experience

Just over a quarter of the sample (758/2,881, 26%) responded to at least one of the client satisfaction questions in the survey based upon a 5-point Likert scale, including comfort with SC ($n = 535$, 19%), ease of use ($n = 535$, 19%), the new patient visit ($n = 534$, 19%), and overall experience with the SC and screening process ($n = 325$, 11%). While response rates were relatively lower for these questions (though consistent with healthcare industry averages), overall satisfaction among reporting users was high, with well over 90% of respondents reporting somewhat or very positive impressions of the SC experience across all four client satisfaction questions (Figure 2). Client satisfaction was not significantly different between those who had previously screened for cervical cancer and those who were new to screening (data not shown).

Discussion

We analysed routine data from 2,881 early adopters of home-based HPV SC during the first 10 months of SC rollout in the

U.S. Users represented all 50 U.S. states and the District of Columbia and ranged in age from 25 to 68 years. Crucially, at least 12% of early adopters of at-home SC in our analysis were first-time screeners, and even among those who had previously undergone screening, nearly 60% had gone more than 5 years since their last cervical cancer screening.

The ability of HPV SC to reach hard-to-reach women or those overdue for screening has been observed in a range of prior studies.^{34,35} Population-based studies following the introduction of universal SC availability in Australia observed substantial increases in screening coverage, with high rates of SC adoption among those who were under-screened or had never previously been screened.³⁶ Prior studies in the U.S. comparing mailing kits to homes of patients at a U.S. safety net health system increased screening participation more than two-fold among patients who were overdue for screening.²⁴ Return rates in this study were highest when a mailed SC kit was paired with patient (phone) navigation for an overall return rate of 47%.²⁴ A very recent Kaiser report showed a 25.1% sample return rate from HPV mailed kits.³⁷ The Kaiser mailed programme was initiated by sending a kit to a patient who was due for screening, along with text, email, and phone messages. The Teal sample return rate reported here (77%) is high compared to other mailed efforts studied in the U.S.^{24,37} The patient telehealth encounter, the high-touch digital reminders, and additional support through FAQs and chat likely support the high sample return rate we observed. Users' out-of-pocket costs could also have influenced the desire to return the sample. Early adopters sought at-home mailed screening and are likely motivated by the option to address their individual barriers.

Home-based SC models may help improve uptake by enhancing screening privacy, convenience, and diminishing feelings of stress or embarrassment,³⁸ which have been documented barriers to traditional cervical cancer screening.³⁹ Early adopters in our experience who had a prior history of cervical cancer screening commonly said they chose home-based SC because of the increased privacy and convenience, because they had limited access to in-person screening because of rural residence or challenges securing appointments, or due to work or family obligations. These findings are well-aligned with previous research that has found SC to be highly appealing to women and to address structural barriers to screening.^{40,41} While first-time screeners in our study also frequently cited increased privacy/convenience as a reason for uptake, they were significantly more likely than those who had previously screened to say they chose SC because they had historically avoided in-person exams, distrusted clinics or providers, or because of a history of trauma or pain associated with pelvic exams. These barriers to traditional pelvic exam-based screening are commonly reported among under-screened women in the U.S. and beyond.^{9,42}

Notably, patients did not report cost as a prior barrier to screening since this screening is a no-cost-sharing covered preventive health service by nearly all insurers. Early adopters were willing to bear some portion of the out-of-pocket costs, since insurance does not yet have adequate coding for the supplies, mailing, and digital adherence platform. A study of 227 low-income women in North Carolina (MBMT-3) showed that 92% of the women were willing to pay for home kits out

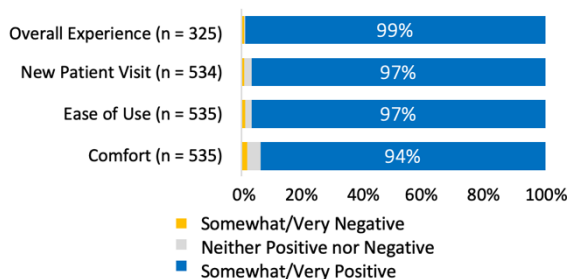


Fig. 2. Client experience of care among early adopters of the teal at-home screening.

of pocket, indicating that nearly half would pay up to \$25 or more, but that other costs associated with deploying at-home kits would also need to be covered.⁴³ The group of early adopters in our study suggests that cost is not the primary friction and a diversity of users was represented; however, we acknowledge that some users will not be able to bear any out-of-pocket costs. The HRSA guidelines mandate coverage of SC options for all commercially insured starting in January 2027 and we hope that there will be no cost-sharing associated with at-home SC. This study adds to a growing body of evidence suggesting that at-home SC can address barriers to uptake and increase participation in screening programmes, especially among under-screened or not previously screened women.^{34,35,44}

This is particularly important given that more than half of the previously unscreened users in our study were between the ages of 30 and 59, putting them a decade or more overdue to begin cervical cancer screening according to U.S. guidelines.^{3,45} While HPV positivity rates were highest among early adopters under age 30 years, more than a quarter of total HPV+ cases identified through SC were among users over 50. Concerningly, hrHPV positivity rates were also higher among users 60 and up compared to those 30–59, an age group that new data suggests may frequently be overdue for cancer screenings in the U.S.⁴⁶

While guidelines advise that screening can be phased out after 65 years for women who are not high risk and for whom recent screenings have been negative, recent data from China found high rates of hrHPV among women ≥ 65 and increased rates of cervical intraepithelial neoplasia grade 2 or worse relative to younger women.⁴⁷ Our results demonstrate that SC is an acceptable and feasible option for older women who still want or need to be screened, a finding that is supported by previous research in the U.S. and Sweden.^{48,49}

Encouragingly, our early implementation data from SC scale-up in the U.S. also suggests that SC can reach a demographically and economically diverse population of users. While individual-level demographic information was limited in our dataset, ZCTA data demonstrated that early adopters resided in racially and economically diverse areas. It is notable that this was true even though the current SC model requires some cost sharing. Prior research in the U.S. has highlighted racial and ethnic disparities in cervical cancer screening coverage and cervical cancer mortality,^{8,50} and the reach of SC in early rollout suggests that SC modalities have a role to play in closing these gaps. More than 16% of early users also resided in rural areas, which prior research has shown to be underserved by traditional cervical cancer screening services.⁵¹

Integrated telehealth platforms may enhance the SC experience, address further barriers to screening, offer essential and accurate clinical education, and ultimately help further decrease cervical cancer-related inequities. Telehealth services surged dramatically during the COVID-19 pandemic, supported by regulatory changes and an easing of restrictions around payments and reimbursements for telemedicine services.⁵² As a result, the use of telemedicine in the early pandemic grew from less than 1% of all medical encounters to nearly 25% of them based on data from private insurance claims.⁵³ Many of the regulatory and policy changes that permitted this growth were extended or made permanent following the pandemic, allowing for integration of telehealth into

models of home-based care, such as SC. While many express concern that at-home screening will not ensure the in-person follow-up care needed for HPV-positive patients, the high-touch, high-education approach described here is showing promising rates of timely follow-up (88% completed or await appointments) compared to most generalizable reports showing guideline-adherent follow-up at or below 50% within 12 to 48 months of HPV-positive screening.^{54,55} We continue to monitor and encourage necessary follow-up, and with more data, we can identify factors that affect a patient's ability to take this step. An at-home screening option may be particularly valuable for rural residents and those who face other barriers to in-person care. Though data are early, initial user feedback suggests that our users found that SC combined with telehealth was highly acceptable, including the new patient telehealth visit (required before SC kits are mailed to users). This aligns with other research conducted since the pandemic, which demonstrates improvements in patient health outcomes and satisfaction related to telemedicine due to factors such as reduced out-of-pocket spending, increased convenience, and a preference for remote vs. in-person care.⁵⁶

Limitations

These findings are based on preliminary data from the first 10 months of implementation of home-based SC combined with telehealth services. The participation and reach of the intervention may vary as time goes on and home-based SC scales further. However, our results include more than 2,800 users from all 50 states and Washington, D.C., and provide a valuable overview of early SC adoption in the U.S. following FDA authorisation. Because SC was only recently approved, insurance coverage varies widely, and the current cost structure for SC (which requires cost sharing for the kit) may be limiting and biasing uptake. This should change in 2027 when insurance is required by HRSA, Women's Preventive Services Initiative guidelines to cover not only SC options but also the diagnostic follow-up required to rule out malignancy. Our results suggest our user base includes individuals from communities with moderate to high levels of poverty, but additional implementation data are needed to monitor reach and equity of home-based SC as this option continues to scale. While we hypothesise that telehealth services are an additional benefit to home-based SC that can better reach under-screened users, engagement in telehealth does require access to technology and a sufficient level of digital literacy, so there can be a natural limitation to widespread telehealth use. Finally, because this analysis is based on routine data from opt-in user surveys, data on demographic characteristics and user experience carry the risk of self-selection bias. Where possible, we have supplemented our data with neighbourhood-level racial and economic characteristics but acknowledge that user acceptability metrics may be biased as a result.

Conclusion

Evidence from the early rollout of SC in the U.S. demonstrates at-home SC for cervical cancer screening integrated with telehealth promotes participation in screening and can successfully reach never- and under-screened users. This is especially true for individuals facing barriers to in-clinic speculum exams, such as pain, trauma, or fear/distrust of the medical system. Early

adopters in our data demonstrate that digital and telehealth-enabled screening modalities will reach women who do not access or do not prefer clinic-based systems, including those in rural geographies and low socioeconomic status neighbourhoods. This innovation expands preventive care options for users and mitigates disparities in cervical screening in the U.S.

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All providers are contractors of the Teal Medical Practice and receive payment for their clinical services only. ES owns the medical practice. TD and MM are employees of Teal Health, Inc. KL is a consultant and receives consulting fees from Teal Health, Inc.

Data Availability Statement (DAS), Data Sharing, Reproducibility, and Data Repositories

All providers are contractors of the Teal Medical Practice and receive payment for their clinical services only. ES owns the medical practice. TD and MM are employees of Teal Health, Inc. KL is a consultant and receives consulting fees from Teal Health, Inc.

Application of AI-Generated Text or Related Technology

Artificial intelligence was not used in analysis, preparation, or in any manner in this manuscript.

Contributions

KL conducted the primary analysis and writing, with assistance from ES and TD. All remaining authors reviewed and approved content.

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