

RESEARCH BRIEF

# Dental Utilization

**Among Patients Living with HIV**

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# Key Findings



- Compared to non-HIV patients, **those with HIV are less likely to go to the dentist overall.**
- HIV-positive patients have high dental needs: when patients do visit the dentist, they are **more likely to require major restorative or extraction procedures.**
- Females with HIV **utilize dental services significantly less** than males.
- HIV-positive individuals aged 21-64 have **the lowest utilization of dental services and the highest need.**



# Introduction

At the end of 2017, [38,739 people were newly diagnosed with human immunodeficiency virus \(HIV\)](#) in the United States (US) and more than 1.1 million were infected nationwide. Treatments for HIV, like highly-active antiretroviral therapy ([HAART](#)) medications have substantially increased the overall health of those with the disease and changed the state of infection from a terminal diagnosis to a chronic, manageable illness. Despite these advancements, significant disparities in [treatment, health, and patient characteristics](#) remain.

Today's dental care providers, though aware of HIV, often struggle to incorporate patient education and disease progression monitoring into day-to-day operations. In earlier analyses, almost half of [HIV-positive patients reported an unmet dental need](#) since diagnosis and [62.6% of participants](#) reported experiencing at least one oral health condition very or fairly often in the last 30-days. Targeted case management services provided by dental care teams have improved both

[screening](#) for and the [maintenance](#) and overall health of HIV-positive patients. Among community providers, participants of an oral health collaborative were better able to address [unmet dental needs](#) of HIV-positive patients. Additionally, integrating medical and dental services in rural Oregon increased utilization of dental services by HIV-positive patients from 10% to 65% through adjusting capacity, using dental students to help meet need, and adding a dental case [manager](#).

This report aims to evaluate, in a nationally-representative sample, whether HIV-positive patients experience different treatment outcomes than non-HIV patients. Previous studies have looked at specific diagnoses as they relate to HIV, or specific medications used to treat the disease, but none address the type of services or whether HIV-positive patients have different utilization rates of those services than non-HIV positive patients.

# Methods

This study utilizes the [IBM MarketScan Research Medicaid Databases](#), 2013-2015, to evaluate access and dental services utilization among HIV-positive adults. This database represents administrative claims records from 13 US states, and though nationally representative, does not identify individual states.

Patients were divided into four age groups: 0-14, 15-20, 21-64, and 65 and older. Patients were also stratified by race and gender dichotomously as male or female, and black or white. Due to sample size limitations, Hispanics and those of other races were excluded from the analysis. Race was not

categorized for patients 65-100 as the resulting sample size was similarly too small for meaningful analysis. The population analyzed contains all patients with a medical or dental visit in 2013, either inpatient or outpatient, and who also had at least 1,000 days of continuous enrollment with 90-day gaps in coverage allowed.

All patients with a *Code on Dental Procedures and Nomenclature (CDT) 2018* procedure code within the administrative record were defined as having a dental service. Seven procedure categories were created based on those

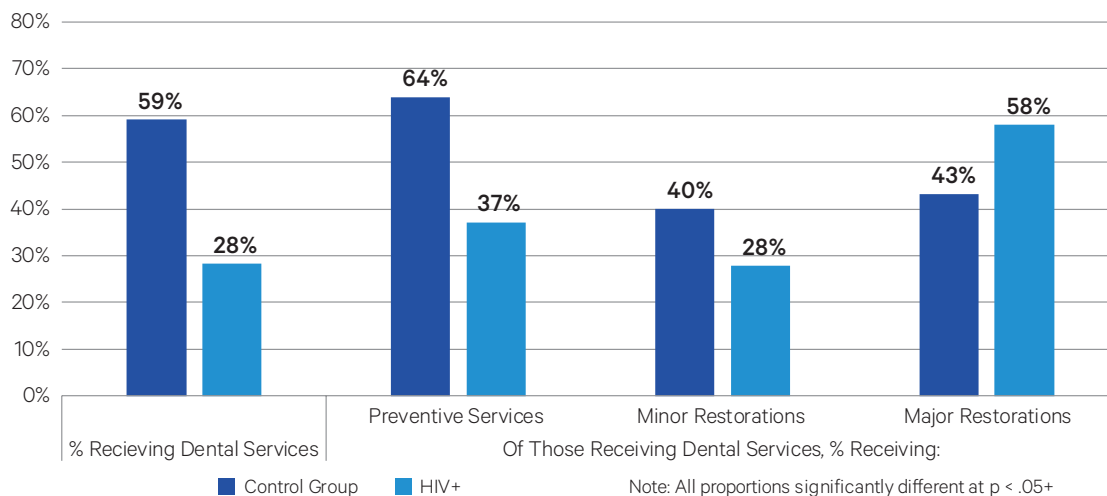
codes: diagnostic, preventive, major restorations, minor restorations, periodontal, orthodontic, and adjunctive general services. Specific codes included in each grouping are in the Appendix. HIV patients were identified using the *International Classification of Diseases, Ninth Edition, (ICD-9)* codes 042.xx-044.xx. Patients with an HIV diagnosis anywhere in the administrative record were classified as HIV-positive and all others were classified as the control. Statistical significance was evaluated using two-sample test of proportions testing. All analyses were performed using SAS.

# Results

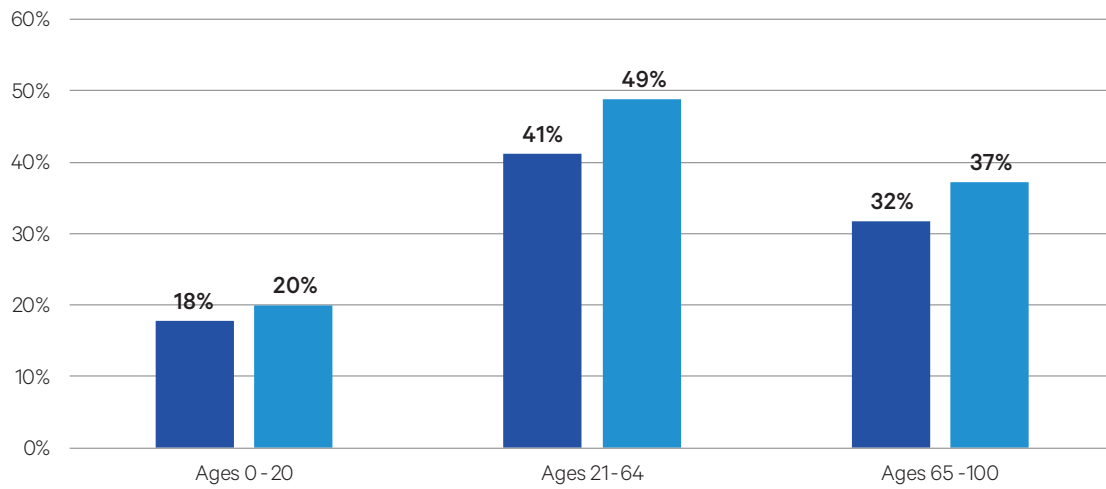
Based on an analysis of [IBM MarketScan Research Medicaid Databases, 2013-2015](#), HIV-positive patients are, in general, less likely to go to the dentist overall when compared to non-HIV patients, and when they do visit are more likely to have a major restorative or extraction procedure performed. 4,834,860 patients were included in the cohort; 15,403 were diagnosed with HIV; only 28.2% (n=4,341) of those with HIV visited the dentist compared to 59.1% of the control group.

This was a statistically significant difference (see Figure 1). Among those receiving dental services, those with HIV had statistically significant lower levels of both preventive services and minor restorations, and significantly higher levels of major restorations performed (see Figure 1). For all adults in the study, rates of extractions were statistically significant ( $p < 0.05$ ) when compared to rates for those in the control group (see Figure 2).

**Figure 1: Dental Service Utilization among HIV Positive Patients Compared to a Control Group**



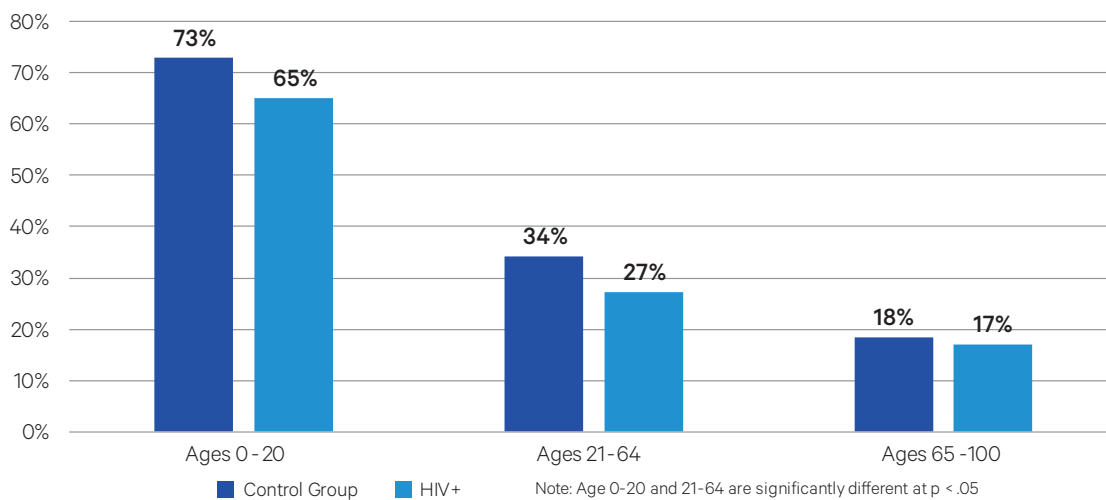
**Figure 2: Proportion of Patients Receiving Dental Services Dental that had an Extraction, among HIV Positive Patients Compared to a Control Group**



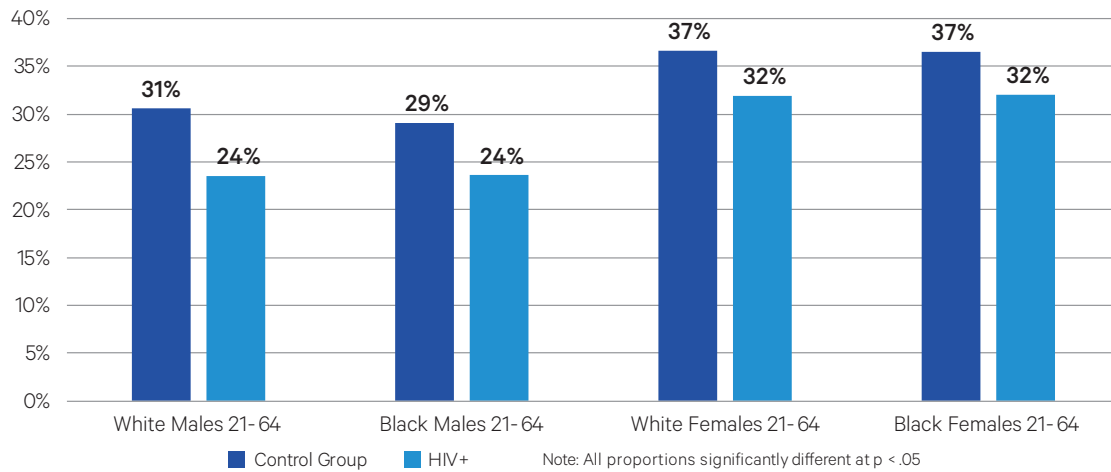
This utilization trend was observed across all age groups, except for those over 65 (see Figure 3). The relatively high levels of utilization among those age 0-20 is consistent with other research findings demonstrating children enrolled in either [Medicaid](#) or who are [commercially insured](#) have higher dental services utilization (see Figure 2). Older adult males (65-100) with HIV utilized dental services more than females in the same age group (21.5% vs. 18.6%). Among HIV-positive females 65 or older, 13.5% utilized dental services, compared

with 18.4% for the control group. Males diagnosed with HIV have higher dental utilization rates than females across all age groups, with women having a [higher likelihood](#) of [dropping out of care](#) and having significantly more [negative outcomes](#) than men, a pattern observed before. When stratified by gender and race, differences in dental services utilization were significantly different for everyone in the 21-64 age group (see Figure 4).

**Figure 3: Dental Service Utilization by Age, among HIV Positive Patients Compared to a Control Group**



**Figure 4: Dental Service Utilization by Gender & Race among Those Ages 21 - 64, among HIV Positive Patients Compared to a Control Group**



## Discussion

An increasing body of evidence has shown that HIV-positive patients often have [poor oral health](#) despite regular and frequent medical care. However, these complications can be mitigated with [earlier and more frequent](#) dental and oral healthcare. For HIV-positive patients, the dental encounter can offer a treatment modality that can monitor disease progression and potential co-occurring conditions like HPV even when the patients are disconnected from traditional, medical-based monitoring. A recent analysis reported that the [dental office](#) is best-placed to monitor, define, and implement treatments for the oral manifestations of disease as well as concomitant oral disease for these patients.

It should be noted that many reasons HIV-positive patients do not seek or maintain regular dental and oral healthcare are often the same as for non-HIV patients including lack of dental coverage through Medicaid, transportation issues, difficulty in locating providers, and other socioeconomic status-related factors. This work highlights that more research is needed to continue to identify specific areas that lead to reduced utilization of dental services among this population, particularly females.

There are some limitations in this study. Analysis is limited to administrative claims data only, and thus, excludes any of the approximately [15% of patients](#) receiving dental services who may have HIV but remain undiagnosed. While these results suggest differences in service utilization between groups, it is unable to address socio-economic and systemic factors that may influence dental services utilization like patient perceptions of stigma, episodic provider stigma, access to services, transportation, and other factors known to influence health and dental care access and utilization. This study also did not evaluate the influence of confounding factors that are often seen in HIV-positive patients like smoking behaviors, alcohol use, drug use and abuse, and the role of HPV infection. Finally, this study cannot evaluate geographic differences due to individual states within the database not being identified. There could be underlying factors based on urbanicity influencing these findings that cannot be delineated within this analysis.

For additional information on



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# Appendix

## Appendix 1. List of Diagnostic Code Group and Specific Codes

### Diagnostic Services:

D0000 to D0999

### Preventive Services:

D1000 to D1999

### Minor Restorations:

D2000 to D2664

### Major Restorations:

D2665 to D3999

D5000 to D7999

### Periodontal:

D4000 to D4999

### Orthodontic:

D8000 to D8999

### Adjunctive General:

D9000 to D9999

### Extractions:

D7111 to D7251



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