Hospital Visits for Dental Conditions in Maryland

DentaQuest INSTITUTE

Introduction

Hospital visits for chronic dental conditions are a growing public health concern.[1-3] Emergency departments (EDs) are a place where dental care costs are very high, care provided is very limited in scope and the dental care received is usually only palliative. About 90 percent of dental visits to the ED result in no dental procedures, only focus on pain and infection managment.[4] Previous research in Maryland finds that patients visit the ED for dental conditions due to the high cost of regular dental care, lack of insurance, difficulty in finding a dentist, and poor overall health literacy.[5-8] Significant racial disparities also exist in ED utilization for chronic dental conditions in Maryland.[9] Many EDs in Maryland are not capable of providing definitive treatment of dental conditions and many patients return there for additional palliative care.[5-7] For a small proportion of patients, the visit to the ED occurs when the condition is severe, and they have to be admitted to the hospital for inpatient treatment. A hospital utilization model for chronic dental conditions is presented in *Figure 1*.

Our study was conducted in response to Maryland Senate Bill 169[10], authorizing Maryland Dental Action Coalition (MDAC) to conduct an evaluation of the cost of emergency department (ED) visits for adults with dental conditions. The goal is to assess whether state funds can be re-allocated to establish an adult dental benefit and address gaps in access to dental care for adults. This study was performed by the DentaQuest Institute Analytics and Publication team on behalf of the Maryland Dental Action Coalition (MDAC).

This report describes state-wide hospital visits for dental conditions for all payers. To better understand the true burden associated with ED visits, we include both

1. visits to the ED for dental conditions and
2. emergency hospital admissions for dental conditions.

The report supplements the Medicaid focused report presented to the legislature, titled *"Financial Impact of Emergency Department Visits by Adults for Dental Conditions in Maryland"*. Supplemental information available from MDAC include:

1. county-level summary reports and
2. databases of ED visits and emergency hospital admissions that contain statewide, county (including Baltimore City), and zip code level data.

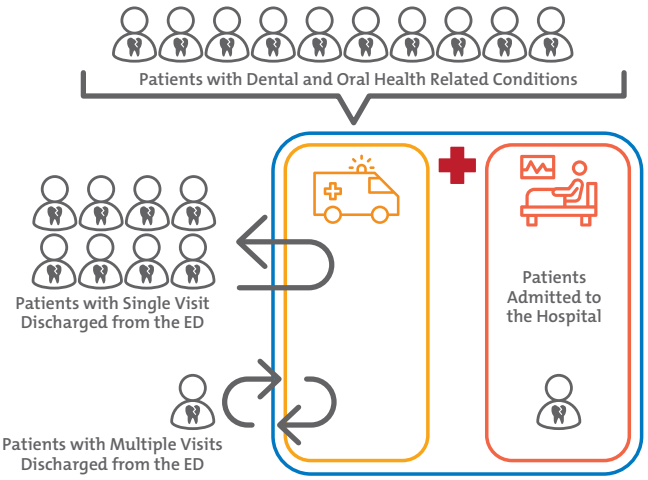


Figure 1: Model of Hospital Visits for Dental Conditions

Study Methodology

Data from the Health Services Cost Review Commission (HSCRC) for Fiscal Years (FY) 2013 to FY2016 was analyzed.[i] Inpatient and outpatient revisit databases was used to examine the scope of hospital utilization for dental needs. HSCRC reporting rules prohibit the distribution of statistics with a cell count of less than or equal to 10 records to prevent identification of individual persons, therefore these are removed from the final report. The statistics on financial impact represent total charges. The study received IRB approval from the Western Institutional Review Board (study number: 1178697).

Inclusion criteria: patients with visit the hospital with a chronic dental condition—defined as a diagnosis of ICD-9-CM codes 520.0 through 529.9 and/or ICD-10-CM codes A690, K000-K149, and M260-M279.[9,11] In the inpatient data, patients are defined as having a dental condition if a dental diagnosis is listed as the principal diagnosis and is present on admission or is in the first four secondary diagnoses present on admissions with a primary diagnosis of cellulitis of the face or neck (ICD-9-CM codes 682.0-682.1 and/or ICD-10-CM codes LO3211-LO3212, LO3221-LO3222).[12]

The analysis is restricted to adults, defined as those 20 and over at the time of admission to the hospital[ii] and only Maryland residents. Patients that were discharged from a hospital ED or patients who were admitted to the hospital from home or the ED and assigned to medical or surgical services were included.

Population rates are calculated using Census Population Estimates and the American Community Survey at the beginning of the fiscal year for the geographic area.[13,14] Payers of hospital visits are grouped by Commercial Insurance, Medicaid, Medicare, and the Uninsured/ Self-pay. The Medicaid category combines the MCO and FFS plans.[iii] In order to better understand demographic differences in hospital visits for dental conditions, the results are broken down by sex, age, and race/ethnicity. Race and ethnicity are defined as non-Hispanic white, non-Hispanic black, non-Hispanic other racial group, and Hispanics. Gender is defined as either female or male. Age is defined as the following age brackets: 20-24, 25-34, 35-44, 45-54, 55-64, 65-74 and 75 and over. The rate of consecutive visits is calculated using a unique patient ID and the time elapsed between visits.

[i] Data from FY2017 was incomplete and was not included in the study.

[ii] The HSCRC database includes information on age groups in 5 year intervals.

[iii] It is not possible to delineate the cost of Medicaid visits into general and federal funds using HSCRC data. Data on the income of the patients is also not available from the HSCRC.

Findings

Between FY2013 and FY2016, there were 198,950 Emergency Department visits for chronic dental conditions among adult Maryland residents *(Table 1)*. The rate in the population has declined over time, from 120 visits per 10,000 adult residents of Maryland in FY2013 to 94.7 visits per 10,000 in FY2016 *(Figure 2)*. However, the rate is significantly higher than national rates of ED visits for dental conditions among adults. Rates of ED visits are highest in Baltimore City as well as in the rural counties of the Eastern Shore Maryland, particularly Dorchester and Wicomico counties *(Figure 3)*. Most counties have seen small decreases in ED visits between FY2013 and FY2016, with the largest decreases in Baltimore City and Cecil County *(Figure 4)*. On average, total charges for these visits were $24.9 million per fiscal year. In total, $99,538,000 was charged for these visits in the four fiscal years.

Table 1: Hospital Visits for Chronic Dental Conditions Among Adults in Maryland, FY2013-2016

	Count				Rate Per 10,000 of Population			
	FY2013	FY2014	FY2015	FY2016	FY2013	FY2014	FY2015	FY2016
ED Visits	↑ 52,577	↑ 51,882	↑ 49,379	↓ 42,327	↑ 118.6	↑ 116.3	→ 109.9	↓ 93.8
Inpatient Admissions	↑ 626	↑ 619	→ 545	↓ 395	↑ 1.4	↑ 1.4	→ 1.2	↓ 0.9
Total	↑ **53,203**	↑ **52,501**	↑ **49,924**	↓ **42,722**	↑ **120.0**	↑ **117.7**	→ **111.2**	↓ **94.7**
	Inflation Adjusted Total Charge				Inflation Adjusted Average Charge			
ED Visits	→ $24,823,000	↑ $25,553,000	↑ $26,462,000	↓ $22,700,000	↓ $472	↓ $492	↑ $536	↑ $537
Inpatient Admissions	↑ $5,000,283	↑ $4,797,002	↑ $5,180,791	↓ $3,680,277	↓ $7,988	↓ $7,750	↑ $9,506	↑ $9,317
Total	→ **$29,823,283**	↑ **$30,350,002**	↑ **$31,642,791**	↓ **$26,380,277**	↓ **$501**	↑ **$590**	↑ **$592**	↑ **$580**

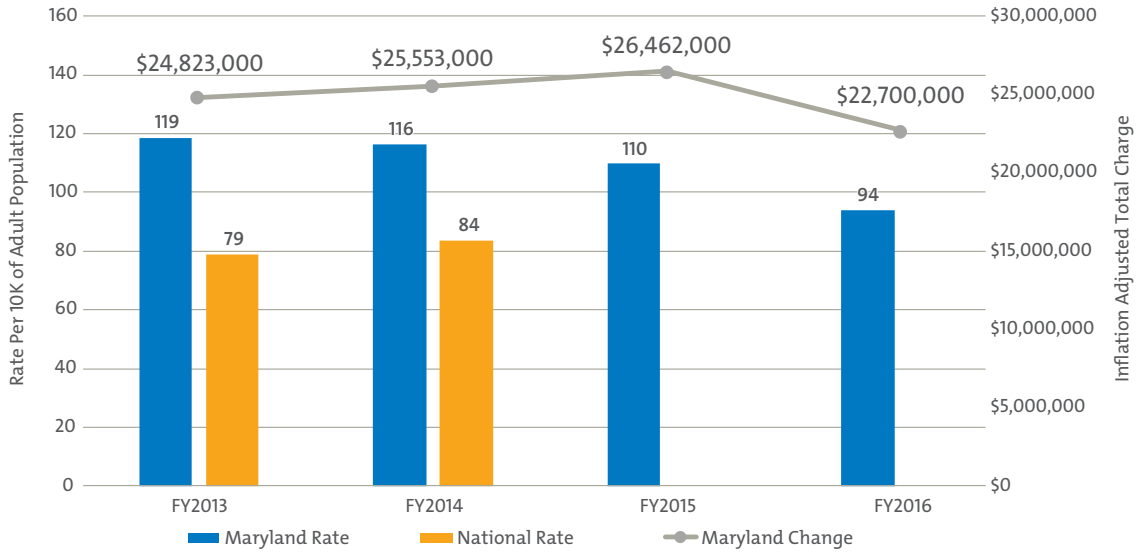


Figure 2: Rates and Total Charges for ED Visits for Dental Conditions Among Adults in Maryland and Nationally

Figure 3: Rates of ED Visits for Chronic Dental Conditions among Adults in Maryland Counties in FY2016

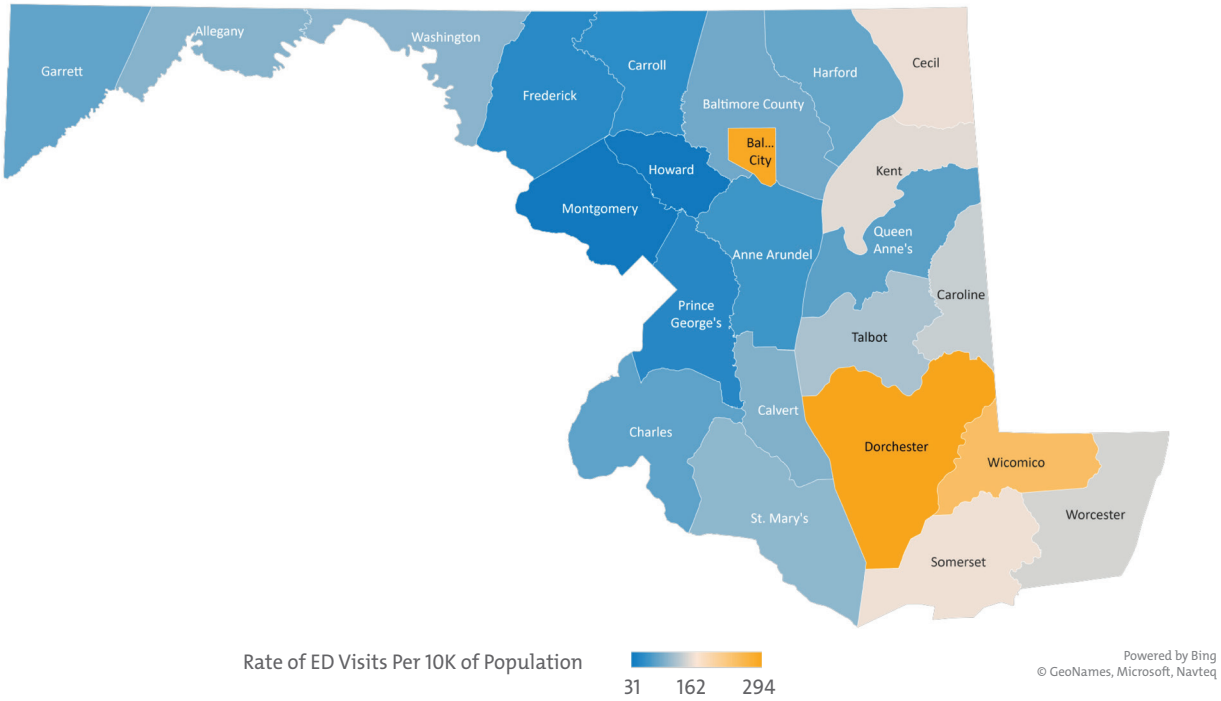
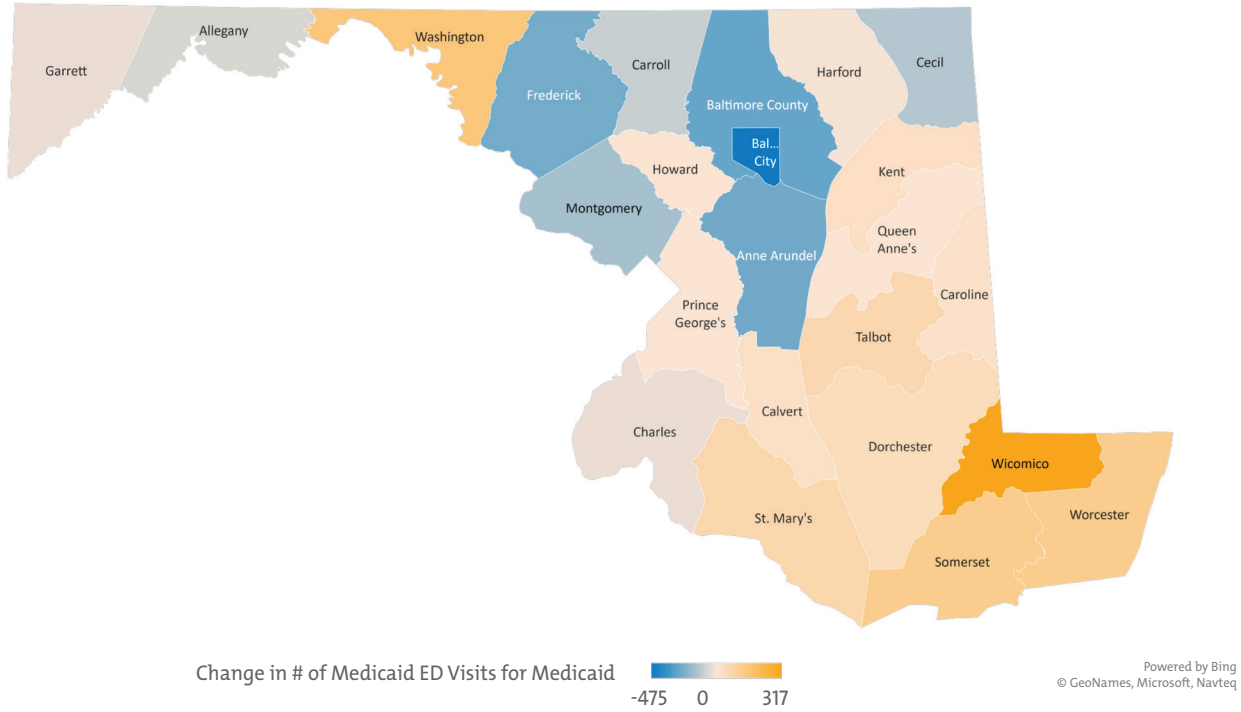


Figure 4: Change in Rate of ED Visits forChronic Dental Conditions among Adults in Maryland Counties from FY2013 TO FY2016



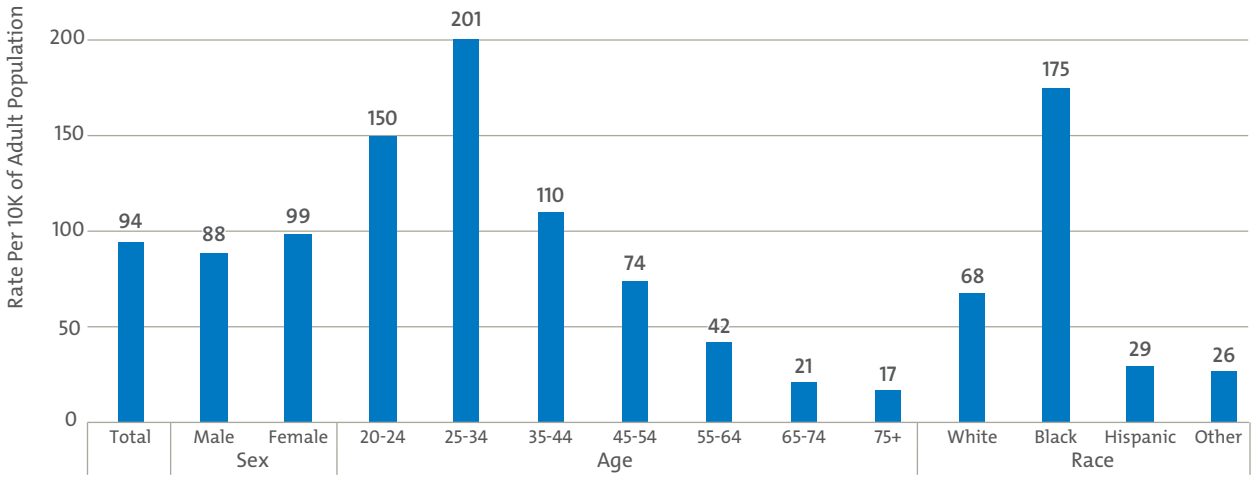


Figure 5: Rate of ED Visits for Chronic Dental Conditions Among Adults by Sex, Age, and Race in Maryland in 2016

Admissions for chronic dental conditions among adult Maryland residents were substantially lower than ED visits, with 626 admissions in FY2013 and declining to 395 FY2016 *(Table 1)*. Rates of inpatient admissions are again highest in Baltimore City as well as Allegany, Dorchester, Somerset, Washington, and Wicomico counties. In total, these admissions had charges of $18,658,353 with an average annual charge of $4.6 million dollars. These admissions are very expensive, with an average cost of $8,640 per admission, compared to $509 for ED visits. As these admissions are so expensive, they account for 16% of the $118.2 million dollars spent in total on ED visits and hospital admissions across the four fiscal years. Those who are admitted have an average hospital stay of 3.3 days.

Some demographic groups are much more likely to visit the ED for dental conditions than others. In 2016, those ages 20-34 and Non-Hispanic Blacks had far higher rates of visits in their respective populations than average *(Figure 5)*. On the other hand, those over 55 and Hispanics and those of other races have far lower rates of visits in their respective populations. This pattern is consistent over time. Adult Maryland residents admitted to the hospital with a dental condition skew older, with the highest rates being among those 75 and over.

There are substantial changes in payers for both ED visits and inpatient admissions over time. Between FY2013 and FY2016, the percentage of visits covered by Medicaid increased from 44% to 53%, while the percentage among those uninsured dropped from 28% to 18% *(Figure 6)*. This is due to Medicaid expansion, which nearly doubled the number of adults covered by Medicaid in Maryland between FY2013 and FY2016. The percentage covered by commercial insurance stayed constant over time. Similarly, the percentage of inpatient admissions covered by Medicaid increased from 22% in FY2013 to 29% in FY2016, while the percentage among the uninsured dropped from 19% to 4%. However, the most common payer of inpatient admissions is Medicare.

Hospitals EDs often can't provide definitive treatment of chronic dental conditions and many patients fall into the cycle of repeat visits. Among adult ED visits for chronic dental conditions, 20% of all patients who visit the ED return to the ED for the treatment of a chronic dental condition within one year of their initial visit in 2016 *(Figure 7)*. 15% of all patients treated for a dental condition return within 15 days and another 1% of all patients return to the same or a different ED on the same day. These patterns are similar across all years of data.

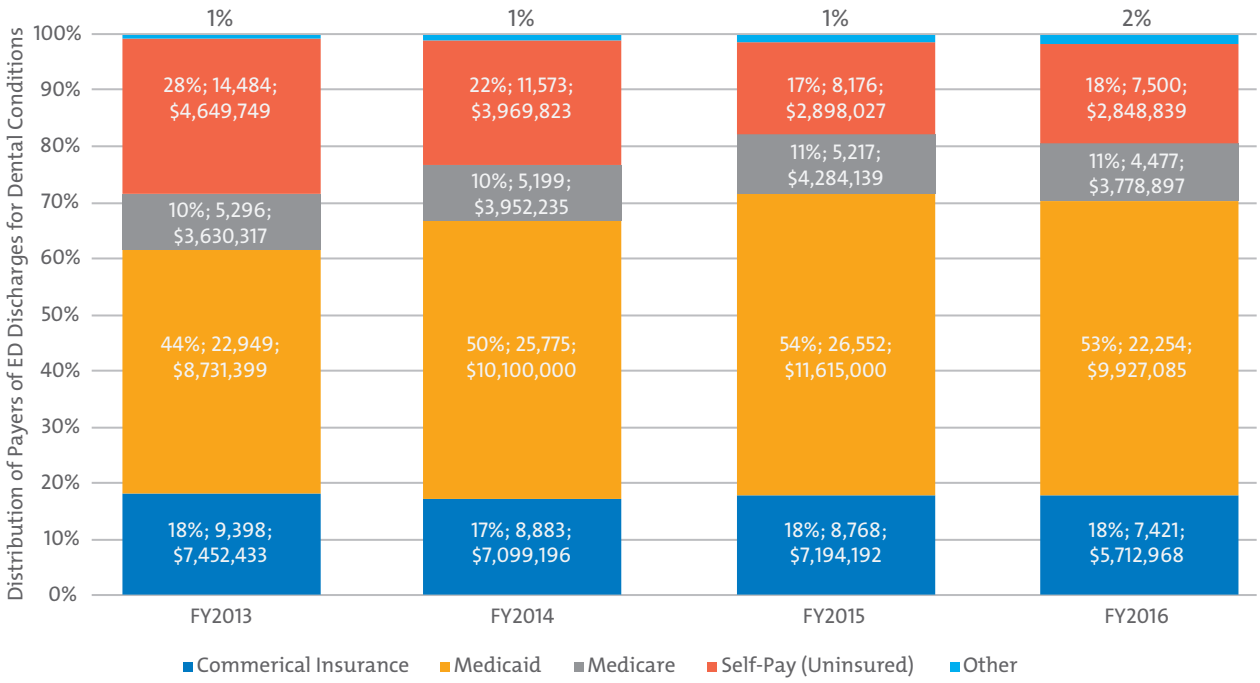


Figure 6: Payers of ED Visits for Chronic Dental Conditions among Adults in Maryland

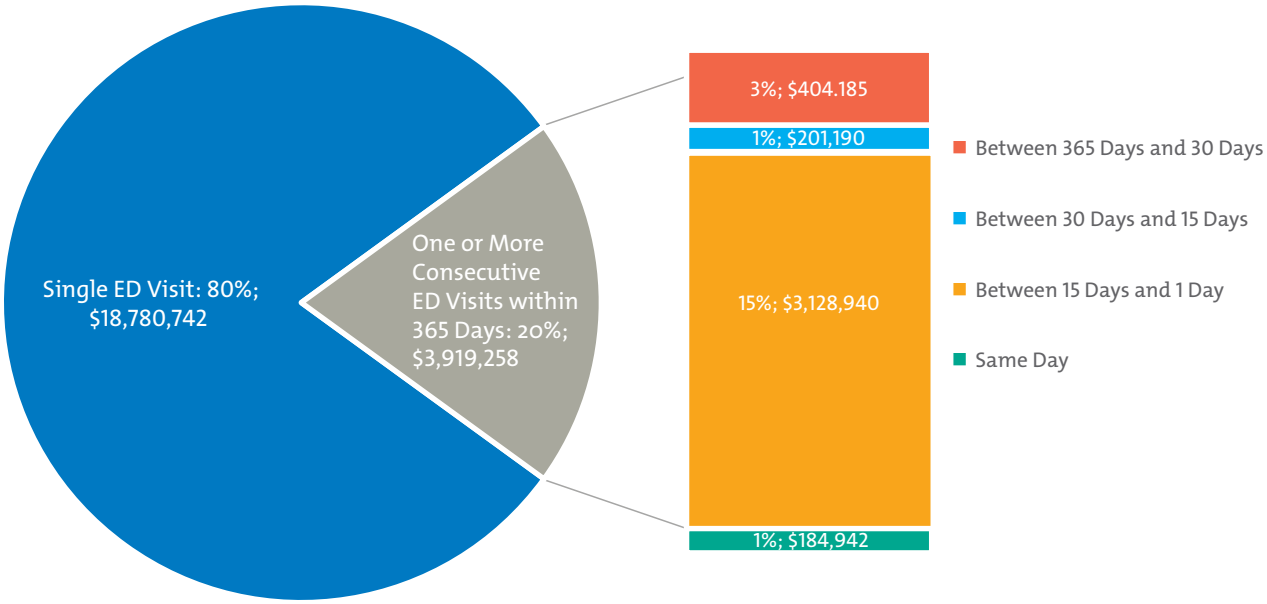


Figure 7: Distribution of Repeat ED Visits for Dental Conditions Among Adults in 2016

Conclusion

We summarize the estimated financial impact of ED visits and hospital admissions for chronic dental conditions in Maryland in 2016 in *Figure 8*. In addition to this direct medical cost, ED use is associated with significant financial impact due to lost productivity and absenteeism from work/school. We do not estimate these impacts in this report, but is an important consideration for future research. In Canada, productivity losses attributed to dental and related treatment are estimated to over $1 billion dollars.[15] In the US lost productivity time from common pain conditions among active workers costs an estimated $61.2 billion per year.[16] This estimate does not include dental pain and to date, very little is known about oral health and lost productivity.

Oral health is intricately connected to overall health.[17] Hospital visits for dental conditions, particularly ED visits for chronic dental conditions, are a significant burden on the state, hospitals, and patients. In an environment in which states are asked to do more with less, the addition of an adult Medicaid dental benefit in Maryland can provide access to early prevention, diagnostic and treatment services and avoidance of costly inefficiently and ineffectively delivered oral health services in the ED. It will close a significant gap on missed prevention opportunities. It would provide needed care to residents of the state and would reduce the burden of hospitals utilization for dental care needs and ultimately help achieve better health in health equity in the state of Maryland.

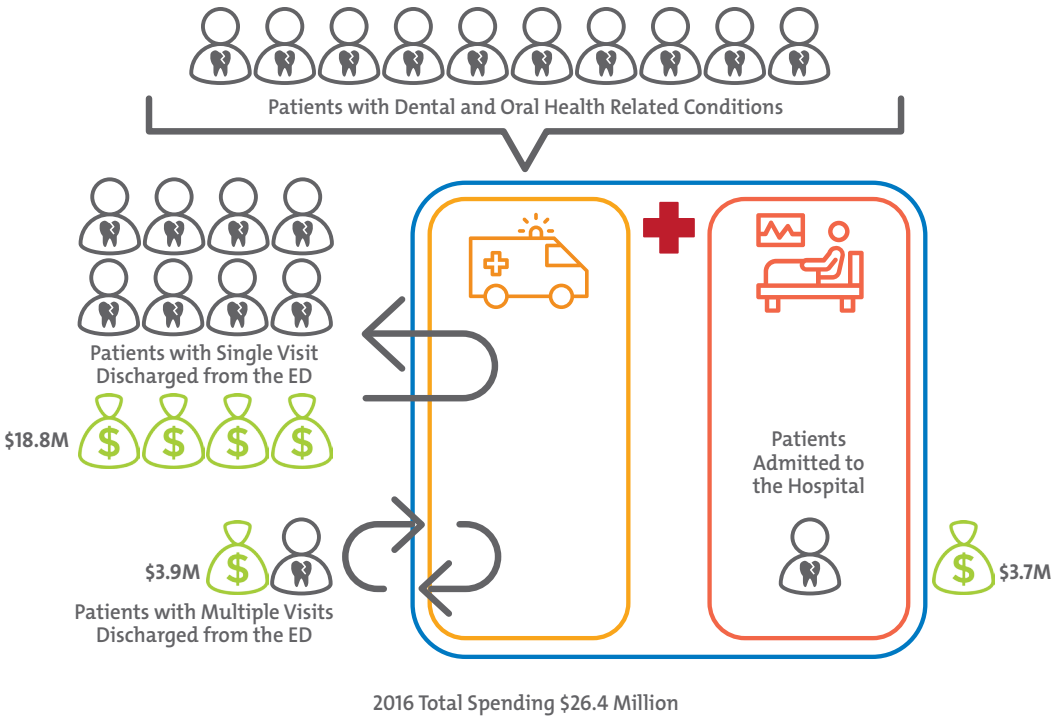


Figure 8: Estimated Financial Impact of Hospital Visits for Dental Conditions in Maryland in 2016

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