

# The Oral Health of Rhode Island's Preschool Children Enrolled in Head Start Programs

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## Summary

From September to December 2016, the Rhode Island Department of Health's (RIDOH) Oral Health Program conducted a statewide oral health screening survey of preschool children enrolled in Rhode Island's Head Start programs. Screenings were completed at 41 Head Start program sites with a participation rate of 52% among enrolled children ages three to five years. Resulting estimates describe the oral health status of the State's children in Head Start programs with high statistical confidence and accuracy.

## Key Findings

- Rhode Island children enrolled in Head Start programs have a higher prevalence of tooth decay (27%) compared to the current national average (23%); however, Rhode Island has met its Healthy People 2020 objective (30%).
- Decay experience increases with age, and minority children have a higher prevalence compared to White children.
- Many children in Rhode Island Head Start programs do not receive the dental care they need. More than one in five of children have untreated tooth decay. More minority children than non-Hispanic White children are identified as having untreated decay.
- Among children in Rhode Island Head Start programs, tooth decay is common on primary molar (back) teeth. However, very few children have protective dental sealants on those same teeth.
- Children in Rhode Island's Head Start programs have a **higher prevalence** of untreated decay (21%) than the current national average (14%); however, Rhode Island has met its Healthy People 2020 objective (21%). Compared to low-income children nationwide, Rhode Island's Head Start children have a lower prevalence of untreated decay (25% versus 21%)

## Introduction

Tooth decay (dental caries) is a common, complex, and chronic disease resulting from an imbalance of multiple risk factors and protective factors over time.<sup>1</sup> Following decades of sustained community efforts, including water fluoridation, topical fluoride, and educational interventions, many children do not have tooth decay. However, tooth decay remains the single most common chronic disease of childhood and is five times more common than asthma.<sup>2</sup>

Based on the National Health and Nutrition Examination Survey (NHANES), nearly a quarter (23%) of US children ages two to five are reported to have early childhood caries (ECC).<sup>3</sup> ECC affect young, preschool-age children and is often characterized by severe and deep tooth decay that requires complex and expensive restorative care. The most accurate predictor of a child's future tooth decay and development is current or past cavity experience.<sup>4</sup> Unless a young child's ECC problem is addressed by use of appropriate and early interventions, the child's permanent teeth will be affected by the disease as well. A more concerning public health problem is that children from lower-income families and racial/ethnic minority groups are disproportionately affected by ECC compared to their counterparts.<sup>3</sup> Oral disease burden is likely to persist in underprivileged children throughout their school years and cause a lifetime of negative impacts on oral health unless an effective measure is initiated to prevent and control dental decay in primary (baby) teeth.

Many people do not consider tooth decay to be a serious problem; however, if it is ignored, the pain and disability caused by untreated tooth decay may limit a child's ability to focus and perform in the classroom, leading to missed school days and falling behind their peers. Consequences of ECC include hospitalizations, emergency department visits, increased treatment costs, poor physical development, loss of school days, increased days with restricted activity, decreased ability to learn, and diminished oral health-related quality of life.

As part of a continuing surveillance effort to identify the oral health needs of Rhode Island's children and ensure that all Rhode Island children receive optimal oral health services, a statewide oral health screening survey of children in Head Start programs that serve preschool children from families with low incomes was conducted by RIDOH's Oral Health Program in the fall of 2016. A similar survey was conducted with children in Head Start programs who were three to five years old during the 2012-2013 school year.<sup>5</sup> Additional surveys have been administered to third graders in 2010 and in 2013, with disparities in the prevalence of tooth decay among Rhode Island third graders documented.<sup>6,7</sup> The Program uses these data to facilitate collaborative efforts of decision makers and stakeholders to improve oral health and reduce disparities among Rhode Island children.

## Results

A total of 1,185 children ages three to five from 41 Head Start sites in Rhode Island were screened from September 2016 to December 2016. Outcome data in this report have been adjusted for the response rates at each Head Start local program. Based on the screening

participation (52% or 1,185 of 2,261 children enrolled in all Rhode Island Head Start programs), the estimates describe the oral health status of the children in Head Start with high statistical confidence and accuracy. For more information on survey methodology and aggregate sample, please see the related report section on page 14.

## Demographic Characteristics of Children

Table 1 summarizes the distribution of children's gender, age, and race/ethnicity in the survey. Comparable statewide Head Start population data were not available to assess proximity of the participants' distributions to those of all Rhode Island preschool children enrolled in Head Start. Of the children screened, 31% were three years old, 59% were four years old, and 10% were five years old. The majority (68%) of children were of a racial or ethnic minority (Hispanic, Black/African American, multiracial, or other).

**Table 1: Demographics of Surveyed Preschool Children in Rhode Island Head Start, September – December 2016**

Demographic Characteristic	Unweighted Number	Weighted %
<b>Age</b>		
3 years	370	30.9
4 years	690	58.8
5 years	125	10.3
<b>Gender*</b>		
Male	620	52.3
Female	556	46.5
<b>Race/Ethnicity</b>		
White (non-Hispanic)	395	31.8
Black/African American (non-Hispanic)	201	16.4
Hispanic/Latino	464	39.0
Other	122	12.6
Missing/Unknown	3	0.2
<b>Minority status</b>		
White (non-Hispanic)	395	31.8
Minority (Hispanic or non-White race) †	787	68.0
Missing/Unknown	3	0.2

\* Numbers in each category do not add up to total of 1,185 due to nine missing or unknown records.

† Children in this group include those identified as Hispanic, Black/African American, multiracial, or other.

## Oral Health Outcomes

### Tooth Decay (Table 2 and Figure 1)

Children who have experienced tooth decay may have treated decay, untreated (unrestored) decay, or both. One in four children (26%) in Head Start have decay in their primary teeth. One in six (19%) three-year-olds experiences dental decay; among four and five-year-olds, one third

of children (29% and 32%, respectively) are identified as having experienced decay.

For all age groups of children, most of the decay experience is untreated. One in five children (21%) had untreated tooth decay, indicating a need for dental treatment in most children with decay experience. Only a few children (7%) have treated tooth decay—indicated by the presence of a filling or crown--demonstrating limited access to needed restorative dental care.

Among preschool children ages three to five in Head Start programs, tooth decay is quite prevalent in primary molars; 22% of children have decay experience in primary molars (18% in molars only and 4% with decay in both front teeth [incisors or canine] and molars). Nearly 2% of the children needed urgent dental treatment due to signs of infection and/or pain associated with decay.

Table 2 describes the oral health status of Rhode Island children in Head Start programs by race and ethnicity. More minority children than non-Hispanic White children had untreated decay.

### Dental Sealants (Table 2)

Less than 1% of children have a dental sealant on at least one primary molar. Dental sealants are an effective way to prevent decay on the chewing surfaces of primary and permanent molars, which are the most vulnerable to decay. It is recommended that children receive dental sealants as soon as their molar teeth are fully erupted to prevent cavity-causing bacteria from reaching difficult-to-clean areas. Although dental sealants are more commonly applied to permanent molars, any tooth at risk, primary or permanent, would benefit from dental sealant treatment as stated in guideline from the American Academy of Pediatric Dentistry (AAPD).<sup>8</sup>

The survey results show that tooth decay on primary molars accounts for most of the children's tooth decay. Dental sealant treatment on primary molars would reduce future decay treatment needs for these teeth and could possibly postpone development of cavities in the permanent dentition. Barriers exist in promoting primary molar sealant services for preschool children, including lack of public and commercial insurance coverage, providers' perception, and parental acceptance. All of these barriers should be assessed and addressed.

**Table 2: Summary of Oral Health Status, Survey of Rhode Island Preschool Children in Head Start Programs, September – December 2016**

	Weighted %					
	All Children (n=1,185)	Age 3 (n=370)	Age 4 (n=690)	Age 5 (n=125)	Non- Hispanic White (n=395)	Minority‡ (n=787)
<b>Treated decay</b>	7.2	3.0	7.7	17.0	5.7	8.0
<b>Untreated decay</b>	21.3	16.6	24.1	19.7	16.9	23.4
<b>Decay experience*</b>	26.5	18.9	29.5	32.1	21.2	28.9
<b>Primary anterior teeth only</b>	3.6	4.4	3.6	1.5	3.0	4.0
<b>Primary posterior molar teeth only</b>	18.3	10.8	21.0	25.8	14.5	20.1

<b>Primary anterior and posterior teeth</b>	4.1	3.7	4.2	4.8	3.1	4.6
<b>Urgent treatment needed†</b>	1.5	1.1	2.0	-	1.3	1.6
<b>Dental sealants</b>	0.5	-	0.8	0.6	0.6	0.5

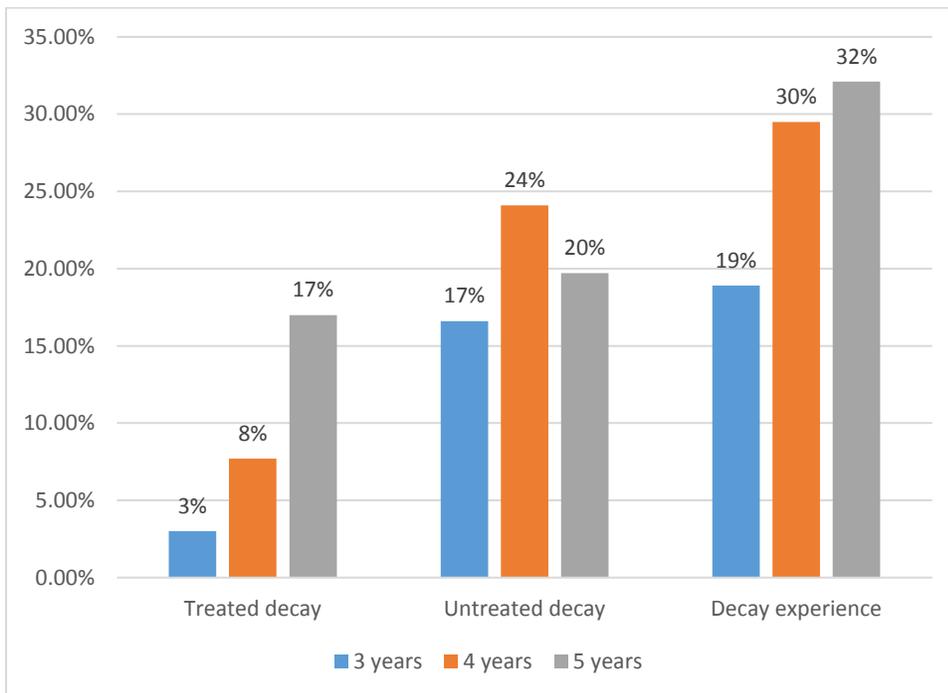
\*Defined as having treated decay, untreated decay, or both conditions. Treated decay is indicated by the presence of fillings and/or crowns or teeth that have been extracted due to decay. Untreated decay is indicated by decay that is identified but unrestored.

† Urgent or immediate referral recommended due to signs of infection and/or pain associated

-Suppressed due to <0.5%

‡ Children in this group include those identified as Hispanic, Black/African American, multiracial, or other.

**Figure 1: Prevalence of Treated Decay, Untreated Decay, and Decay Experience\*; By Age; Survey of Rhode Island Preschool Children in Head Start Programs, September – December 2016**



\*Defined as having treated decay, untreated decay, or both conditions. Treated decay is indicated by the presence of fillings and/or crowns or teeth that have been extracted due to decay. Untreated decay is indicated by decay that is identified but unrestored.

### Comparison to *Healthy People 2020* Objectives

*Healthy People 2020* outlines several oral health status objectives for preschool children (Figure 2). For children age three to five years, there are three primary objectives:

- Decrease the proportion of children age three to five years who have untreated dental decay in their primary teeth to 21.4%.

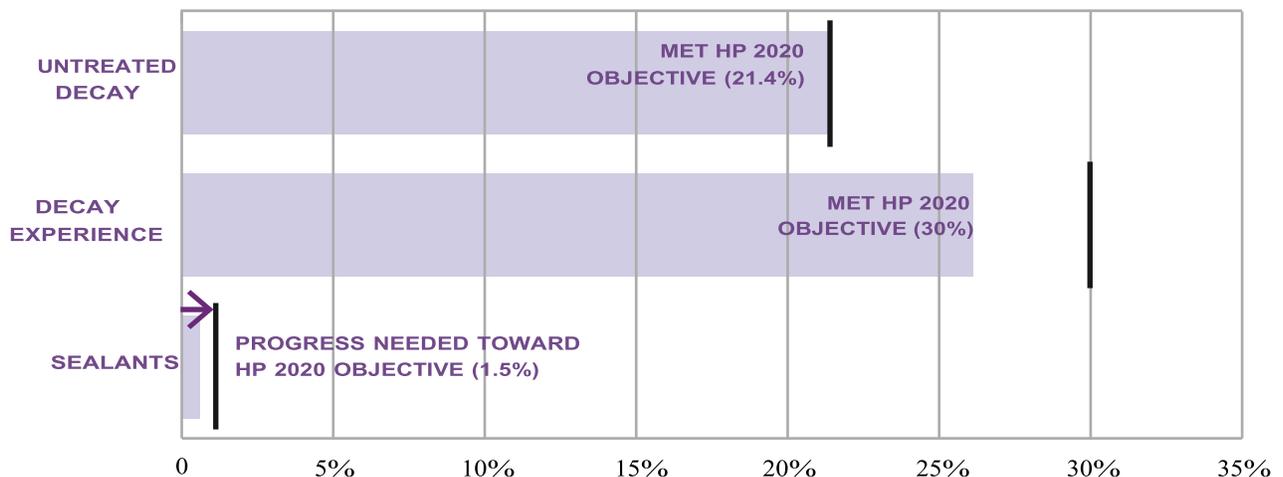
- Decrease the proportion of children age three to five years who have dental decay experience in their primary teeth to 30%.
- Increase the proportion of children age three to five years who have received dental sealants on their primary molar teeth to 1.5%.<sup>9</sup>

The Rhode Island oral health survey was not designed to be representative of all Rhode Island children ages three to five. The survey focused on children ages three to five years who were enrolled in Head Start programs.

Twenty-one percent (21.3%, CI=18.7%-23.9%) of Rhode Island children enrolled in Head Start programs have untreated dental decay. This is a slightly lower than the *Healthy People 2020* objective of 21.4%. Rhode Island has met the *Healthy People 2020* objective of the proportion of children who have dental decay experience (26.5%, CI=23.7%-29.2%). Less than 1% (0.5%, CI=0.4%-1.1%) of children in Head Start have received dental sealants on their primary molar teeth. This proportion should be increased to meet the national benchmark.

Rhode Island must continue its efforts toward reducing untreated dental decay prevalence and promoting dental sealants among preschool children.

**Figure 2:** Prevalence of Untreated Decay, Decay Experience, and Sealants of Rhode Island Children Enrolled in Head Start Programs Compared to Healthy People 2020 Objectives, 2016



*Bold vertical lines indicate Healthy People 2020 objective.*

### 2012 and 2016 Survey Results Comparison

A comparison of decay experience between 2012 and 2016 is valuable to determine if any factors may be contributing to changes during the four-year period. We chose to look at decay experience as it is not fully clear if there was a difference in availability of dental services between the two samples. Assessing decay experience would be the measure that would be least likely to reflect availability of dental services.

A slight reduction in decay experience was noted for all ages as illustrated in Table 3 and Figure 3. While not statistically significant, a real reduction could be attributed to greater emphasis on preventive measures at an early age, such as fluoride varnish, early anticipatory guidance, and influence of the *TeethFirst!* Program—a statewide bilingual campaign that promotes the age 1 dental visit through its bilingual website, social media channels, and community and provider outreach activities.<sup>10</sup>

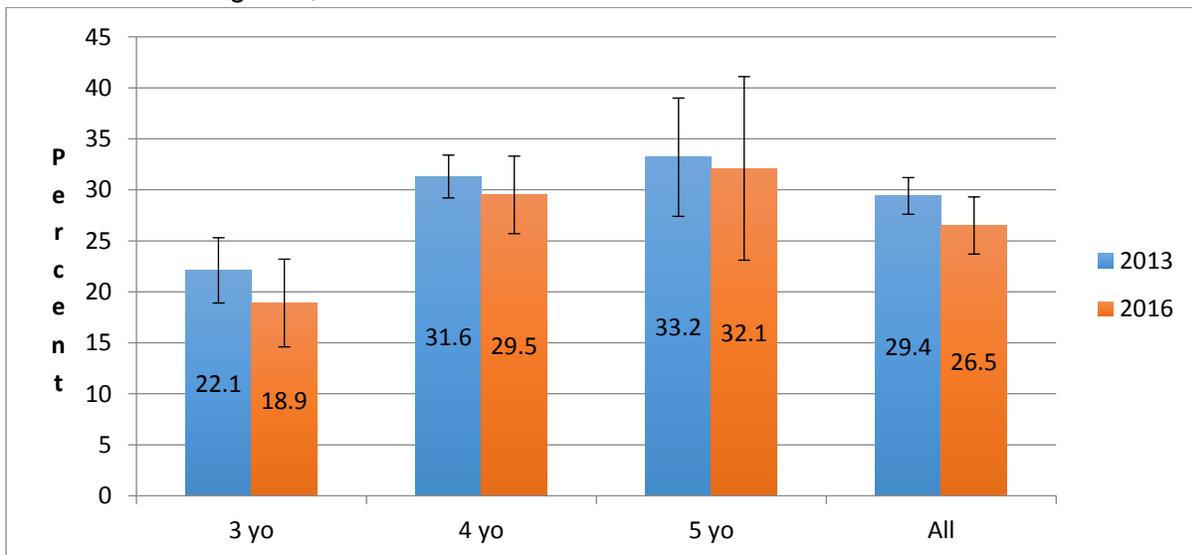
Additionally, there has been a statistically significant decrease in the percentage of children who needed urgent dental care between 2012 (5%) and 2016 (1.5%).

**Table 3: Decay Experience\* Rates, By Age, Rhode Island Preschool Children Enrolled in Head Start Programs, 2012 and 2016**

	<b>2012</b> Weighted % (95% CI) (n=809)	<b>2016</b> Weighted % (95% CI) (n=1,185)
<b>3 years</b>	22.1 (18.9-25.2)	18.9 (14.6-23.2)
<b>4 years</b>	31.6 (29.2-33.9)	29.5 (25.7-33.2)
<b>5 years</b>	33.2 (27.4-39.0)	32.1 (23.1-41.2)
<b>All</b>	29.4 (27.6-31.2)	26.5 (23.7-29.2)

\*Defined as having treated decay, untreated decay, or both conditions. Treated decay is indicated by the presence of fillings and/or crowns or teeth that have been extracted due to decay. Untreated decay is indicated by decay that is identified but unrestored.

**Figure 3: Prevalence of Decay Experience\*, By Age, Rhode Island Preschool Children Enrolled in Head Start Programs, 2012 and 2016**



\*Defined as having treated decay, untreated decay, or both conditions. Treated decay is indicated by the presence of fillings and/or crowns or teeth that have been extracted due to decay. Untreated decay is indicated by decay that is identified but unrestored.

## Methods

### Population and sample

The primary target population for the screening consisted of children age three to five years who were enrolled in Rhode Island Head Start programs in the fall of 2016. In total, seven community-based Head Start grantee organizations with 42 sites served 2,261 children and 19 municipalities. (Table 4).

Considering the relatively small size of the total population and sample and the need to obtain a sufficient number of children from communities across the State, all 42 Head Start sites were invited to participate in the survey. All seven of the Head Start grantees in Rhode Island agreed to participate. Of the 42 Head Start sites operated by the seven grantees, 41 agreed to participate in the oral health survey, for a 98% site participation rate.

A total of 1,339 children from 41 Head Start sites were screened from September to December 2016. One hundred fifty were Early Head Start (younger than three years) and 1,185 were ages three to five. The ages of four children were missing. Of the 2,261 children ages three to five years enrolled at the participating sites, 1,185 were screened, for a 52% child participation rate due to an active consent model. Parents had to sign releases for their child to participate in the on-site dental screening.

**Table 4: Screening Participation Rate for Oral Health Survey, By Head Start Program, September – December 2016**

Program Service Area	All children in Head Start		Screening participation rates		
	Number of sites	Total enrolled, age three to five*	Number of sites	Total screened, age three to five	Response rate
Central Falls, Pawtucket, Providence	17	1,052	17	594	56.5%
Charlestown, North Kingstown, South Kingstown, Westerly	4	151	4	33	21.9%
Cranston	3	179	3	45	25.1%
East Providence, Newport, Middletown, Tiverton, Warren	6	238	6	187	78.6%
Johnston, North Providence, Pascoag	5	176	4	42	23.9%
Warwick, West Warwick	4	277	4	205	74.0%
Woonsocket	3	188	3	79	42.0%
<b>Total</b>	<b>42</b>	<b>2,261</b>	<b>41</b>	<b>1,185</b>	<b>52.4%</b>

\* Enrollment numbers for school year 2016–17 were obtained from the Head Start local programs' health managers/nurses.

## **Data management and analysis**

Screening data were entered into a customized database which included edit checks for logic and data entry errors. Analysis was completed using the survey analysis procedures in SAS 9.3 with consultant assistance from the Association of State and Territorial Dental Directors (ASTDD). Because all grantees and 98% of sites participated, strata and cluster factors were not included in the analysis. Outcome data in this report have been weighted (adjusted) for children's response rate by program and are presented with 95% confidence intervals (CI). Since percentages from survey data are population estimates, the 95% CI indicates the range of values within which the true value lies 95% of the time. In other words, if the same exact survey were conducted 100 times for the same target population, the 95% CI represents the range of values that 95 of the surveys would produce. The narrower a CI is, the closer estimation one would expect to get to that observed in the population. Generally wider CI is due to small numbers of people in a sample. The range of prevalence, or 95% CIs, are marked in figures using vertical error bars (I).

## **Screening methods**

The *2016 Oral Health Screening Form for Children Enrolled in Head Start* (Appendix A) was adapted from the *Basic Screening Survey* developed by the ASTDD.<sup>1</sup> The primary purpose of the *Basic Screening Survey* is to provide a framework for obtaining oral health data that is inexpensive and easy to implement, yet consistent. By collecting data in a consistent manner, communities and states can compare their data over time and with data collected by other organizations. Surveys are cross-sectional (looking at a population at a point in time), and descriptive (intended to determine estimates of oral health status for a defined population). An oral health screening is not a thorough clinical examination and does not make a clinical diagnosis resulting in a treatment plan. A screening is intended to identify gross dental or oral lesions according to the survey guidelines.

In the survey planning stage, RIDOH's Oral Health Program and Head Start programs agreed on the use of a standardized form and measurements for the Head Start dental screenings. Federal Head Start requirements include provision of a dental examination for every child within 90 days of entry into the program.<sup>12</sup> A total of 16 community dentists and one Oral Health Program public health dentist completed the examinations using gloves, a light source, and disposable mouth mirrors. To ensure consistency among examiners, the dentists reviewed the diagnostic criteria outlined in *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* prior to the start of the screening process.

To measure prevalence and severity of tooth decay among children, examiners assessed treated decay (presence of fillings and/or crowns or teeth that have been extracted due to decay), untreated (unrestored) decay, and treatment urgency. The screening results are likely to underestimate the percentage of children with untreated or treated decay, because examiners do not take X-rays or use dental instruments for tactile assessment of teeth. Examiners also looked for a dental sealant on at least one primary molar tooth, an indicator of a child's access to preventive services. These indicators are consistent with the National Oral Health Surveillance System standards and *Healthy People 2020* oral health objectives, allowing for comparisons with other states and the nation.

Screenings were conducted anonymously; no identifying information, such as name or date of birth, was obtained. Program staff provided each child's age, while the screener or recorder determined gender and race/ethnicity (Non-Hispanic White, Hispanic, Black/African American,

or other). If the screeners could not easily determine the race/ethnicity of the child, they were asked to code the race/ethnicity of the child as unknown.

## Recommendations

Based on the results of this screening, RIDOH's Oral Health Program recommends:

- **Continue collaborating with Head Start programs** to share evidence-based prevention and early-intervention practice information and promote oral disease prevention efforts starting in early childhood. Assess and address barriers that exist in promoting dental sealant services for preschool children.
- **Promote networking** among the State Head Start Collaboration Office, community Head Start programs, State Oral Health Program, State Medicaid agency, and dental professional organizations to establish dental homes and improve age-appropriate preventive dental services (topical fluoride and dental sealants), particularly among high-risk children, such as those enrolled in Head Start programs, RIte Smiles and/or Medicaid.
- **Increase the number of dental professionals who provide care** for Head Start participants enrolled in RIte Smiles starting at age one.
- **Increase the number of medical professionals who incorporate** oral health assessments, services, and referrals at routine well-child visits.
- **Promote the bilingual *TeethFirst!* RI campaign and related resources** among Head Start program teachers, staff, and parents to enhance home dental care and increase awareness about the importance of early dental visits.
- **Continue to integrate Head Start oral health issues into the State Oral Health Plan** and share common agenda on early prevention strategy with stakeholders.
- **Continue to encourage Head Start health managers, teachers, and parents** to actively participate on the Rhode Island Oral Health Commission.
- **Continue oral health needs assessments and surveillance activities** in collaboration with Head Start programs, and track progress in reducing oral health disparities in Rhode Island.

## References

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- <sup>9</sup> Dye BA, Li X, Thornton-Evans G. Oral health disparities as determined by selected Healthy People 2020 oral health objectives for the United States, 2009–2010. NCHS data brief, no 104. Hyattsville, MD: National Center for Health Statistics. 2012. [www.cdc.gov/nchs/data/databriefs/db104.pdf](http://www.cdc.gov/nchs/data/databriefs/db104.pdf)
- <sup>10</sup> TeethFirst! RI is an initiative of the Rhode Island Oral Health Commission and is a collaborative group of stakeholders that promotes early dental visits for very young children in Rhode Island among parents and families, medical providers, dentists, and community organizations. To learn more about the initiative and its many free bilingual resources, please visit [www.teethfirstri.org](http://www.teethfirstri.org)
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- <sup>12</sup> Administration of Children and Family Office of Health Start, U.S. Department of Health and Human Services. *Head Start Program Performance Standards and Other Regulations.* <https://eclkc.ohs.acf.hhs.gov/policy>

# Appendix A: Rhode Island Dental Screening Form



## RI DENTAL SCREENING FOR CHILDREN ENROLLED IN HEAD START, 2016

(a) SITE NAME (CODE):	(b) CITY/TOWN:
(c) SCREENER:	(d) DATE:

### CHILD DEMOGRAPHICS

(g) AGE	(h) GENDER	(i) RACE
— —	<input type="checkbox"/> Male (1) <input type="checkbox"/> Female (2)	<input type="checkbox"/> Non-Hispanic, White (1) <input type="checkbox"/> Non-Hispanic, Black/African American (2) <input type="checkbox"/> Hispanic (3) <input type="checkbox"/> Other (4)

### SCREENING FINDINGS

<b>1. TREATED CARIES</b> (including perm/temp filling, or missing because of caries)	<b>2. UNTREATED CARIES</b> (cavitated lesion)	<b>3. SEALANT(S) on PRIMARY MOLARS</b> Head Start children only
<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Ant Teeth (2) <input type="checkbox"/> Post Teeth (3)	<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Ant Teeth (2) <input type="checkbox"/> Post Teeth (3)	<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1)
<b>4. ABNORMAL SOFT TISSUE</b>	<b>5. TREATMENT URGENCY</b>	
<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) Gross gingival inflammation or soft tissue lesions (fistulas, abscesses, etc.)	<input type="checkbox"/> No Apparent Need for Care (0) <input type="checkbox"/> Apparent Need for Routine, Non-Urgent Care/ Referral Recommended (1) <input type="checkbox"/> Apparent Emergency Need/ <b>Immediate</b> Referral Recommended (2)	
<b>7. COMMENTS</b>		
_____ _____ _____		

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