



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

RHODE ISLAND ORAL HEALTH PROGRAM :: AUGUST 2013

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SUMMARY

In September–December 2012, the Oral Health Program at the Rhode Island Department of Health conducted a statewide oral health screening survey of preschool children enrolled in Rhode Island’s Head Start programs. Screenings were completed at 29 Head Start program sites with a participation rate of 33 percent among enrolled children ages 3–5 years. Resulting estimates describe the oral health status of the state’s children in Head Start programs with high statistical power and accuracy.

KEY FINDINGS

- Dental decay is a significant public health problem for Rhode Island’s children in Head Start programs; a third of children have decay experience (treated and/or untreated) in their primary teeth.
- Many children in Rhode Island Head Start programs do not receive the dental care they need: a quarter 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 prevalent on their primary molar (back) teeth. However, very few children have dental sealants on their primary molars.
- Rhode Island did not meet the Healthy People 2020 objectives for reducing the prevalence of untreated tooth decay or increasing the prevalence of dental sealants among preschool children age 3–5 years.



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.¹ Following decades of sustained community efforts, including water fluoridation, topical fluoride regimens, and educational interventions, many children are free from tooth decay. However, tooth decay is the single most common chronic disease of childhood, five times more common than asthma.²

Based on the National Health and Nutrition Examination Survey (NHANES), more than a quarter of U.S. children ages 2–5 years are reported to have early childhood caries (ECC).³ ECC affect young preschool age children and are often characterized by severe and deep tooth decay that requires complex and expensive restorative care. Currently, the most accurate predictor of a child’s future caries initiation and development is current or past caries experience.⁴ Unless a young child’s ECC process is modified by 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 than their counterparts.³ Oral disease burden is likely to persist in underprivileged children throughout their school years and negatively impact a lifetime of oral health, unless an effective measure is initiated to prevent and control dental decay in primary teeth.

Many people do not consider tooth decay to be a serious problem, yet if 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 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 the Rhode Island Oral Health Program in Fall 2012. A similar survey was conducted of third grade school children during the 2007-08 and 2010-2011 school years. *The Oral Health of Rhode Island’s Children, 2008* and *The Oral Health of Rhode Island’s Children, 2011* documented disparities in the prevalence of tooth decay among Rhode Island third grade children.^{5,6} 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.

METHODS

POPULATION AND SAMPLE

The primary target population for the screening consisted of children ages 3–5 years who were enrolled in Rhode Island Head Start programs in Fall 2012. In school year 2012–13, seven community-based Head Start grantee organizations with 39 sites served approximately 2,500 children and 19 cities/towns in the State (Table 1).

For valid data analysis, a minimum total of 668 children were needed in the screening, taking into account a two-sided 95% confidence interval for an expected outcome proportion of 50%, a 5% margin of error and a 50% response rate. The desired number of children was proportionally assigned to the seven local Head Start programs by number of children enrolled. Considering the relatively small sizes of total population and sample, and the need to obtain a sufficient number of children from communities across the State, all 39 Head Start locations were invited to participate in the survey.

A total of 809 children from 29 Head Start sites were screened from September to December 2012. The overall screening response rate was 32.8% (809 children out of 2,466 enrolled children in all Rhode Island Head Start programs), varying from 17.9% to 61.5% by Head Start local program (Table 1). The screening participation exceeds the minimally required number of children from each program except one.

TABLE 1. CHILDREN’S SCREENING PARTICIPATION BY HEAD START PROGRAM, RI ORAL HEALTH SURVEY OF PRESCHOOL CHILDREN IN HEAD START PROGRAMS, SEPTEMBER–DECEMBER 2012

Local Head Start Program’s Service Area (City/Town)	All Rhode Island Children in Head Start		Screening Participation		
	Number of Head Start Sites	Enrolled Children Age 3-5 Years (a)*	Number of Head Start Sites	Screened Children Age 3-5 Years (b)	Response Rate (b/a)
Central Falls, Pawtucket, Providence	15	1,124	7	201	17.9%
Charlestown, North Kingstown, Wakefield, Westerly	4	151	4	52	34.4%
Cranston	2	206	2	62	30.1%
East Providence, Newport, Middletown, Tiverton, Warren	7	351	7	216	61.5%
Johnston, North Providence, Pascoag	4	144	4	74	51.4%
Warwick, West Warwick	4	300	2	122	40.7%
Woonsocket	3	190	3	82	43.2%
Total	39	2,466	29	809	32.8%

* Enrollment numbers for school year 2012–13 were obtained from the Head Start local programs’ health managers/nurses.

DATA MANAGEMENT AND ANALYSIS

Screening data were entered into a customized Microsoft Access database which included edit checks for logic and data entry errors. Analysis was completed using the survey analysis procedures in SAS 9.3. 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 was 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 are 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 2012 Oral Health Screening Form for Children Enrolled in Head Start (Appendix A) was adapted from the Basic Screening Survey developed by the Association of State and Territorial Dental Directors.⁷ 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, the Oral Health Program and Head Start programs mutually 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.⁸ 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/crowns or teeth that have been extracted due to decay), untreated (unrestored) decay, and treatment urgency. The screening results are likely to underestimate the percent of children with untreated or treated decay, because examiners do not take radiographs (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".

RESULTS

Outcome data in this report have been adjusted for the response rates at each Head Start local program (Table 1). Based on the screening participation (32.8% or 809 of 2,466 children enrolled in all Rhode Island Head Start programs), the estimates describe the oral health status of the State’s children in Head Start with high statistical power and accuracy.

DEMOGRAPHIC CHARACTERISTICS OF CHILDREN

Table 2 summarizes the distribution of children’s gender, age and race/ethnicity in the survey. Comparable state-wide 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.

Based on the children screened, 28% are 3 years old, 61% are 4 years old, and 11% are 5 years old. The majority (68%) of children are identified as of a racial/ethnic minority (Hispanic, Black/African American, multiracial, other, or unknown).

TABLE 2. CHILDREN BY GENDER, AGE AND RACE/ETHNICITY, RI ORAL HEALTH SURVEY OF PRESCHOOL CHILDREN IN HEAD START PROGRAMS, SEPTEMBER–DECEMBER 2012

		Unweighted Number	Weighted % (95% CI)
Gender*	Male	414	51.1 (49.1-53.1)
	Female	390	48.9 (46.9-50.9)
Age (years)*	3	241	28.2 (26.4-30.0)
	4	475	61.3 (59.4-63.3)
	5	80	10.5 (9.3-11.7)
Race/Ethnicity	Non-Hispanic White	331	31.8 (30.0-33.6)
	Minority†	478	68.2 (66.4-70.0)

* Numbers in each category do not add up to total of 809 due to missing or unknown records.

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

ORAL HEALTH OUTCOMES

Tooth Decay (Table 3 and Figure 1)

Children who have experienced tooth decay may have treated decay, untreated (unrestored) decay, or both conditions. Three in ten children (29.4%) in Head Start have decay experience in their primary teeth. About one in five (22.1%) 3 year-old children experiences dental decay; among 4 and 5 year-old children, a third of children (31.6% and 33.2%, respectively) are identified as having experienced decay.

For all age groups of children, most of the decay experience is untreated. One child in four (25.4%) has untreated tooth decay, indicating a need for dental treatment in most children with decay experience. Only a few children have treated tooth decay (indicated by the presence of a filling/crown), demonstrating limited access to needed restorative dental care.

Among preschool children age 3–5 years in these Head Start programs, tooth decay is quite prevalent in their primary molars; 26.1% of children have decay experience in their primary molars (19.3% in their molars only and 6.8% with decay in both in their anterior teeth [incisors or canine] and molars).

Five percent of the children need urgent dental treatment due to signs of infection and/or pain associated with decay.

Table 3 also 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, are identified as having untreated decay.

Dental Sealants (Table 3)

Less than one percent of children have a dental sealant on at least one primary molar. Dental sealants provide 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 sealant treatments 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 the guideline by the American Academy of Pediatric Dentistry (AAPD).⁹

The survey result above presents that tooth decay on primary molars accounts for most of the children's tooth decay. Dental sealant placement on primary molars would reduce future decay treatment needs of these teeth and could possibly also postpone caries development and process in the permanent dentition. Barriers that exist in promoting primary molar sealant services for preschool children, including but not limited to lack of public and commercial insurance coverage, providers' perception and parental acceptance, should be assessed and addressed.

TABLE 3. ORAL HEALTH STATUS SUMMARY, RI ORAL HEALTH SURVEY OF PRESCHOOL CHILDREN IN HEAD START PROGRAMS, SEPTEMBER–DECEMBER 2012

	Weighted % (95% CI)					
	All Children	Age 3	Age 4	Age 5	Non-Hispanic White	Minority‡
Treated Decay	7.5 (6.5-8.5)	4.0 (2.5-5.5)	8.6 (7.2-10.0)	9.2 (5.6-12.7)	8.0 (6.1-9.9)	7.2 (6.0-8.5)
Untreated Decay	25.4 (23.7-27.1)	18.8 (15.9-21.7)	28.0 (25.7-30.3)	24.1 (18.8-29.3)	21.6 (18.7-24.5)	27.2 (25.0-29.3)
Decay experience*	29.4 (27.6-31.2)	22.1 (18.9-25.2)	31.6 (29.2-33.9)	33.2 (27.4-39.0)	26.5 (23.4-29.6)	30.8 (28.6-33.0)
Primary anterior teeth (incisors/canine) only	3.2 (2.5-3.9)	3.5 (2.1-4.9)	3.1 (2.2-4.0)	3.7 (1.4-6.0)	3.5 (2.2-4.8)	3.1 (2.3-3.9)
Primary posterior molar teeth only	19.3 (17.7-20.8)	14.5 (11.9-17.2)	20.8 (18.7-22.8)	21.6 (16.6-26.7)	16.5 (13.9-19.1)	20.6 (18.6-22.5)
Primary anterior and posterior teeth	6.8 (5.8-7.8)	3.8 (2.4-5.3)	7.6 (6.2-8.9)	7.8 (4.5-11.1)	6.2 (4.5-7.9)	7.0 (5.8-8.2)
Urgent treatment needed†	5.2 (4.3-6.1)	4.2 (2.7-5.7)	5.2 (4.1-6.4)	6.6 (3.5-9.6)	4.3 (2.9-5.7)	5.7 (4.6-6.8)
Dental sealants	0.8 (0.4-1.1)	-	-	-	-	-

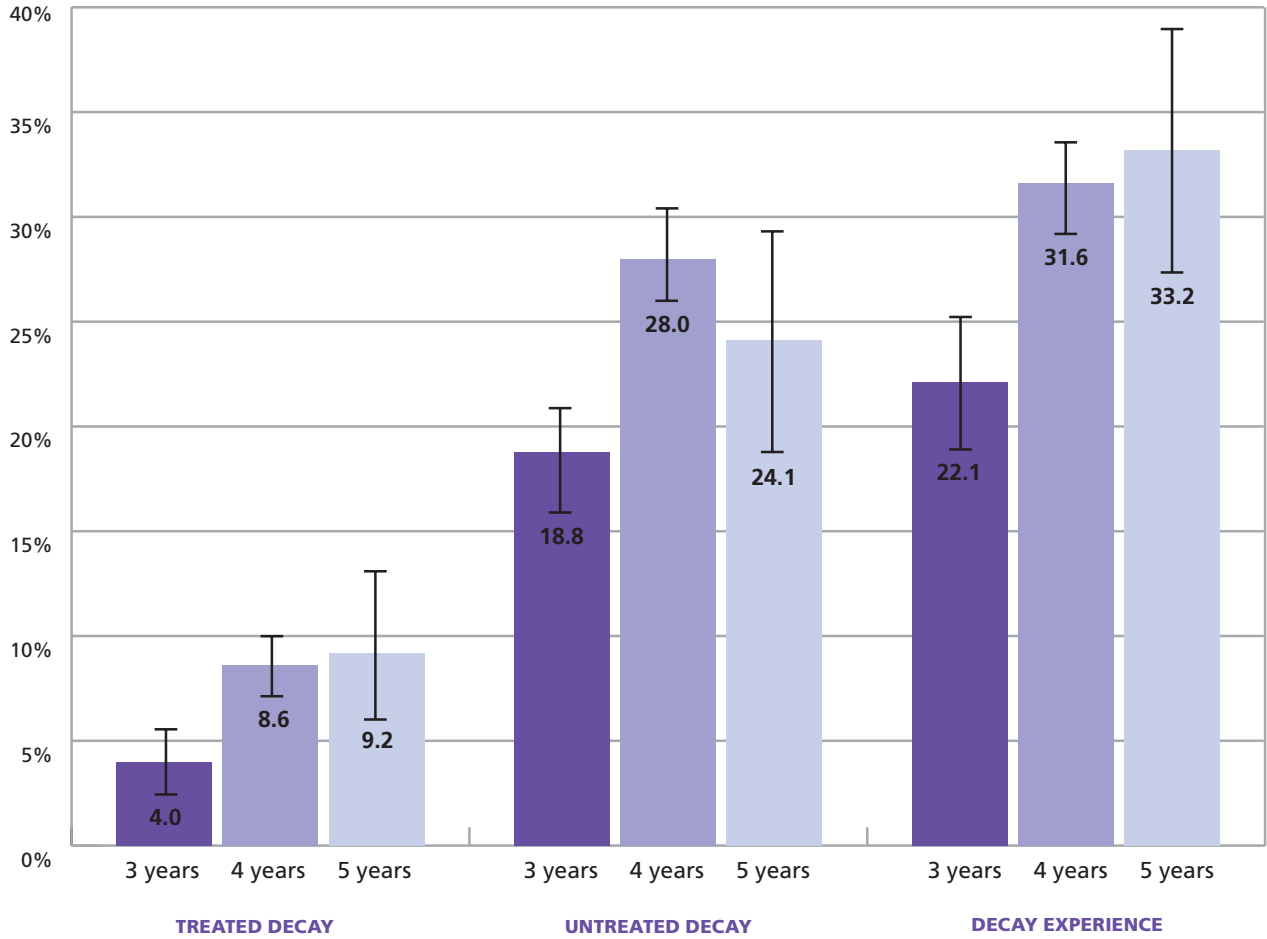
* Defined as having treated decay, untreated decay, or both conditions. Treated decay indicated by presence of fillings/crowns or teeth that have been extracted due to decay; Untreated decay indicated by decay identified but unrestored.

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

- Suppressed due to <1%

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

FIGURE 1. PREVALENCE OF TREATED DECAY, UNTREATED DECAY AND DECAY EXPERIENCE* BY AGE, RI ORAL HEALTH SURVEY OF PRESCHOOL CHILDREN IN HEAD START PROGRAMS, SEPTEMBER–DECEMBER 2012



* Defined as having treated decay, untreated decay, or both conditions. Treated decay indicated by presence of fillings/crowns or teeth that have been extracted due to decay; Untreated decay indicated by decay identified but unrestored. The range of prevalence, or 95% CIs, are marked in figures using vertical error bars (I). Since percentages from survey data are estimates, the 95% CI indicates the range of values within which the “true” value lies 95% of the time. When observing differences between two estimates for a categorized indicator, confidence intervals that do not overlap will usually indicate a statistically significant difference.

COMPARISON TO HEALTHY PEOPLE 2020 OBJECTIVES

Healthy People 2020 outlines several oral health status objectives for preschool children (Figure 2). For children ages 3-5 years, there are three primary objectives:

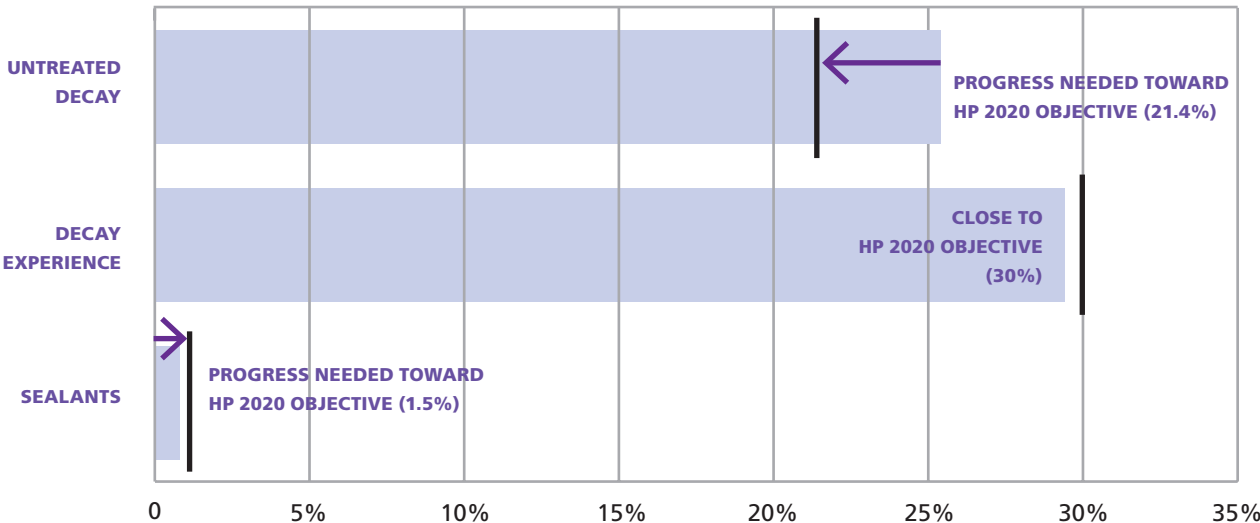
- To decrease the proportion of children ages 3–5 years who have untreated dental decay in their primary teeth to 21.4 percent.
- To decrease the proportion of children ages 3–5 years who have dental decay experience in their primary teeth to 30 percent.
- To increase the proportion of children ages 3–5 years who have received dental sealants on their primary molar teeth to 1.5 percent.

Note that the Rhode Island oral health survey was not designed to be representative of all Rhode Island children age three to five; the survey focused on children age 3–5 years who are enrolled in Head Start programs.

Twenty five percent (25.4%, CI=23.7%-27.1%) of Rhode Island children enrolled in Head Start programs have untreated dental decay; this is a higher percentage than the Healthy People 2020 objective of 21.4 percent. Rhode Island is close to meeting the objective of the proportion of children who have dental decay experience. Less than one percent (0.8%, CI=0.4%-1.1%) of children in Head Start have received dental sealants on their primary molar teeth; the proportion should be increased to meet the national benchmark.

The state must make significant progress particularly on reducing untreated dental decay prevalence and promoting dental sealants among preschool children.

FIGURE 2. PREVALENCE OF UNTREATED DECAY, DECAY EXPERIENCE AND SEALANTS OF RI PRESCHOOL CHILDREN IN HEAD START PROGRAMS COMPARED TO HEALTHY PEOPLE (HP) 2020 OBJECTIVES



Bold vertical lines indicate HP2020 objective.

RECOMMENDATIONS

Based on the results of this screening, the following recommendations are suggested:

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 oral health professionals who provide care for Head Start participants enrolled in Rite Smiles.

Facilitate Head Start program teacher and parent involvement in developing a culturally and linguistically appropriate oral health campaign for children enrolled in Head Start and their families.

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.

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APPENDIX A



RI DENTAL SCREENING FOR CHILDREN ENROLLED IN HEAD START, 2012

(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

1. TREATED CARIES <small>(including perm/temp filling, or missing because of caries)</small> <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Ant Teeth (2) <input type="checkbox"/> Post Teeth (3)	2. UNTREATED CARIES <small>(cavitated lesion)</small> <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Ant Teeth (2) <input type="checkbox"/> Post Teeth (3)	3. SEALANT(S) on PRIMARY MOLARS <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1)
4. ABNORMAL SOFT TISSUE <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <small>Gross gingival inflammation or soft tissue lesions (fistulas, abscesses, etc.)</small>	5. TREATMENT URGENCY <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/ Immediate Referral Recommended (2)	
7. COMMENTS 		

ACKNOWLEDGEMENTS

We would like to thank our partners: Rhode Island Department of Human Services Head Start State Collaboration Office, Head Start local programs' directors and health managers/ nurses, classroom teachers at participant Head Start sites, community dentists, and parents/guardians for assisting us in completing this survey.

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