

Dental Caries in Served and Un- served Alaskan communities: analysis of the Yukon-Kuskokwim oral health surveillance data

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Hypothesis

- Children with access to piped water will have better oral health due to:
 - Increased ability to brush teeth
 - Increased access to clean water for drinking
 - Potentially exposure to fluoride



Findings of 2008 CDC oral health survey in YK region

- High rates of untreated decay
- Two factors significantly associated with higher prevalence of dental caries
 - Increased soda consumption
 - Lack of fluoridated water
- Recommended establishing an ongoing surveillance system



Advantages of Ongoing Electronic Record Surveillance

- Provides mechanism to assess population health over time
- Allows comparison of communities e.g. presence of DHATs, piped water and fluoridation



Possible limitation of Ongoing Electronic Record Surveillance

The numerator comes only from children who have interacted with the dental health care system. This group may be biased toward the children who have the earliest and most severe disease.



Decayed, Missing, Filled Teeth (dmft)

Decayed



Missing



Filled



Methods (1)

- Electronic dental record
 - date of service
 - service codes (including comprehensive exam codes)
 - status of each tooth (n= 20 primary teeth)
 - dft and dmft score established for each child
 - date of birth
 - community of residence



Methods (2)

- Community information
 - YK communities except Bethel
 - Piped water status in year of exam
 - Piped \geq 80% homes served
 - Un-piped \leq 20% homes served
 - Fluoridation status in 2015
 - DHAT status in year of exam
 - No DHAT, Itinerant or permanent



Methods (3)

- Population data
 - State of Alaska Dept. of Labor and Statistics
 - Census number by race, year, census designated borough and age



Analysis

- Comparison to CDC survey
- Report on number of FMDRs 2011-2015
- Report proportion of children receiving exam
- Compare means of dmft for piped vs un-piped villages in 3 year olds and 5 year olds
 - Age at time of last dental exam for each age group
- Controlled for cumulative exposure to DHAT



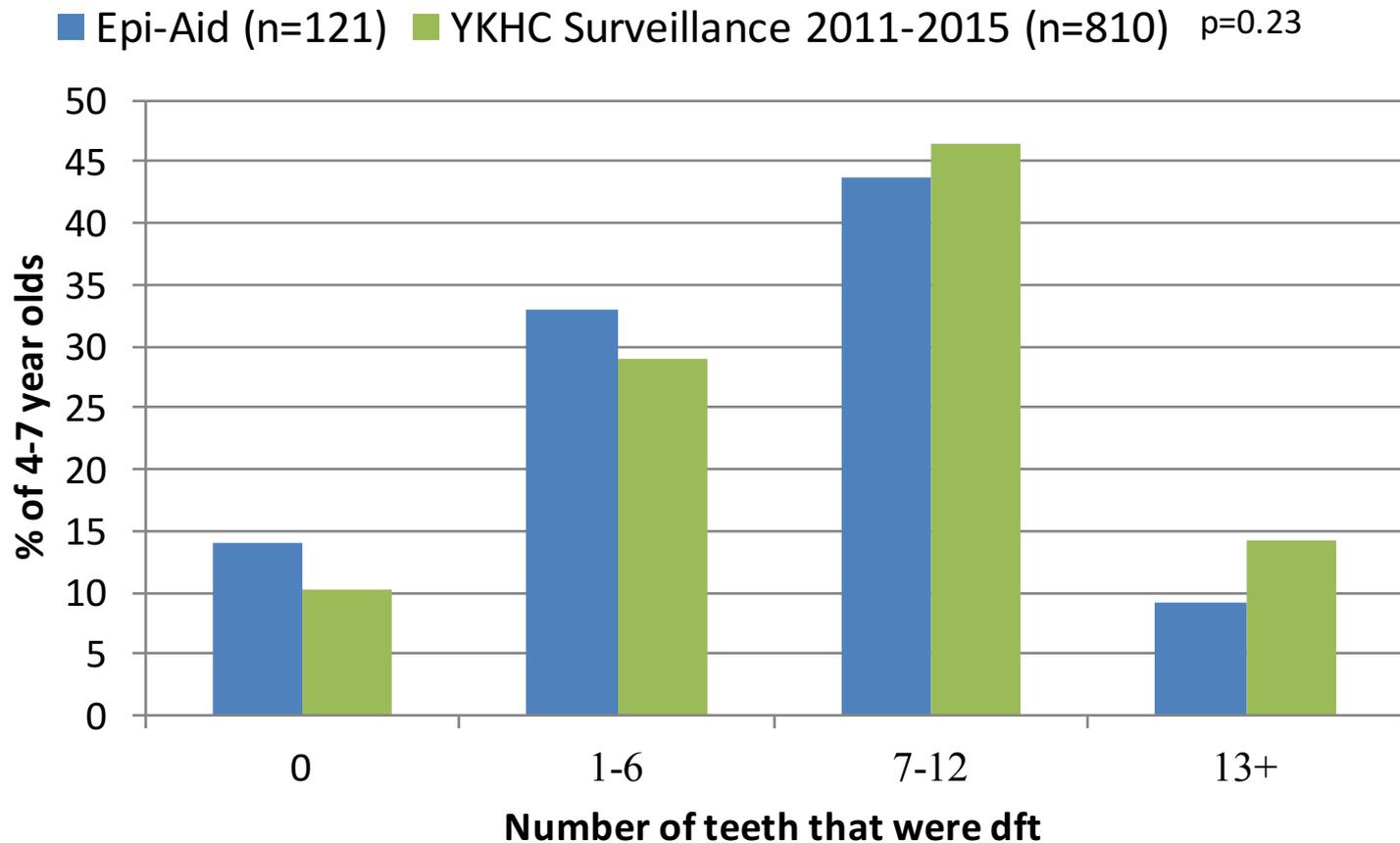
Results



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Comparison to CDC survey

Proportion of 4-7 yr olds with given dft (same 4 villages)



Numbers of AN children Age 1-5 Years *Referred* for Full Mouth Dental Rehabilitation 2011-2015

Age (yrs)	Year					
	2011	2012	2013	2014	2015	
1	6	6	14	2	12	
2	67	41	82	86	102	
3	169	110	154	186	210	
4	146	81	168	189	142	
5	77	38	80	88	75	TOTAL
	466	276	499	551	541	2333
Completed	381	302	305	403	375	1766



Full Mouth Dental Rehabilitation



Between 2011 and 2015, **73%** of children in the YK Delta received an FMDR by the time they were 6 years old.



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Oral Health Status of *3 year olds* who received a comprehensive dental exam

2011-2015

(denominator is from census population)

Year	No. of children n (%)	Presence of any cavities %	Mean decayed, missing, filled teeth score (dmft)
2011	141 (24%)	87%	9.2
2012	132 (23%)	86%	8.2
2013	217 (37%)	92%	9.0
2014	248 (44%)	91%	9.4
2015	331 (59%)	91%	9.8



Oral Health Status of *3 and 5 year olds* who received a comprehensive dental exam 2011-2015

Year	3 year old mean dmft	5 year old mean dmft
2011	9.2	10.1
2012	8.2	9.8
2013	9.0	9.3
2014	9.4	10.8
2015	9.8	10.8



Mean dmft scores for *5 year olds* by Community Water Service Status

Year	<u>Piped</u>			<u>Un-piped</u>			p-value
	Total 5 year old Pop	Dental Exam n (%)	dmft	Total 5 year old Pop	Dental Exam n (%)	dmft	
2011-2015	1195	333 (28%)	10.8	985	233 (24%)	12.2	<0.05

Each additional year of piped water exposure resulted in a 1/4 point decrease in dmft

No change after adjusting for presence of DHAT

Mean dfmt scores for *5 year olds* by **Fluoridation Status for Piped Communities**

Year	<u>Fluoridated</u>			<u>Non-Fluoridated</u>			p-value
	Total 5 year old Pop	Dental Exam n (%)	dmft	Total 5 year old Pop	Dental Exam n (%)	dmft	
2011-2015	356	96 (27%)	10.1	838	288 (34%)	9.8	0.5



Summary

- Children experience huge disease burden early in life
- Significantly lower mean dmft scores in villages with piped water compared to those without
 - Difference is small
 - Other factors may contribute to disease e.g. soda, low Vitamin D levels, inadequate fluoridation



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