

Evaluation of SEAL!ND: School Year 2022-2023

The North Dakota Oral Health Program's
School-Based Sealant Program



List of Acronyms and Abbreviations

| | |
|---------|--|
| AI | American Indian |
| CDC | Centers for Disease Control and Prevention |
| CHC | Community Health Center |
| HHS | Health and Human Services |
| DPI | Department of Public Instruction |
| FQHC | Federally Qualified Health Center |
| FRFSL | Free and Reduced-Fee School Lunch |
| HRSA | Health Resources and Services Administration |
| MOU | Memorandum of Understanding |
| ND | North Dakota |
| NDDA | North Dakota Dental Association |
| NDDF | North Dakota Dental Foundation |
| NDSCS | North Dakota State College of Science |
| NQ | Non-qualifying |
| OHP | Oral Health Program |
| PHH | Public Health Hygienist |
| Q | Qualifying |
| RMCM | Ronald McDonald Care Mobile |
| SEAL!ND | Name of the North Dakota school-based dental sealant program |

Definitions

| | |
|--------------------|---|
| Rampant decay | Decay present on seven or more teeth. |
| No treatment | No obvious problem, recommend regular checkup within six months. |
| Early care needed | Decay present without pain or swelling. Refer to a dentist for treatment. |
| Urgent care needed | Pain, infection, large decay, abscess or draining. Immediate referral. |

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Table of Contents

| | |
|---|----|
| SEALIND: School-based Dental Sealant Program | 4 |
| Dental Screening | 5 |
| Executive Summary: Reach of SEALIND, 2022-23 | 6 |
| Evaluation Activities | 7 |
| Site Data | 7 |
| School Survey | 7 |
| Additional Activities | 7 |
| Community Reach and Impact | 8 |
| Qualifying and Non-Qualifying Schools | 9 |
| Non-Qualifying Schools: Reach | 10 |
| Qualifying Schools: Reach | 11 |
| Students Served | 13 |
| Students Served: Comparing Nine Years of SEALIND | 14 |
| Students Served: Racial Equity Concerns | 16 |
| Students Served by Grade Level: Kindergarten through Grade 12 | 17 |
| Recommendations from Previous Year | 21 |
| Recommendation One: Reaching Younger Children | 21 |
| Recommendation Two: Discuss Stopped Services | 21 |
| Recommendation Three: Educate Private Practice Dental Teams | 21 |
| Recommendation Four: Promote Oral Health Equity | 22 |
| Recommendations for 2023-2024 | 22 |
| About the Oral Health Program | 23 |
| Acknowledgements | 23 |
| Citations | 24 |
| Appendix A: SEALIND Education Material | 25 |
| Appendix B: Invitation Letter and Consent Form | 26 |
| Appendix C: Visit Results Sheet | 28 |
| Appendix D: Electronic Student Dental Record | 29 |

List of Figures

| | |
|--|----|
| Figure 1. Percentage of AI and Non-AI Students in Qualifying Schools Needing Treatment and With No Dental Visit by School Year | 6 |
| Figure 2. Percentage of Schools Participating in a School-Based Sealant Program Visited by Each Provider Type, by School Year | 9 |
| Figure 3. Number of Qualifying Schools Participating in SEAL!ND, by Year | 11 |
| Figure 4. Percentage of Students in Qualifying Schools Needing Treatment and Presenting with Decay, by School Year | 12 |
| Figure 5. Percentage of Students Needing Treatment, by School Year | 14 |
| Figure 6. Percentage of Students Needing Treatment, by School Year | 15 |
| Figure 7. Percentage of Students Receiving at Least One Dental Sealant, by School Year | 15 |
| Figure 8. Percentage of AI and Non-AI Students in Qualifying Schools with Treated and Untreated Decay by School Year | 16 |
| Figure 9. Percentage of AI and Non-AI Students in Qualifying Schools Needing Treatment and with No Dental Visit by School Year | 17 |
| Figure 10. Percentage of Students Needing Treatment by Grade Level, First Visit 2022-23 | 17 |
| Figure 11. Percentage of Students with No Dental Visit, by Grade Level and School Year | 18 |
| Figure 12. Percentage of Students with Untreated Decay Present at First Visit, by Grade Level and School Year | 19 |
| Figure 13. Percentage of Students with Urgent Dental Care Needs at First Visit, by Grade Level and School Year | 20 |

List of Tables

| | |
|---|----|
| Table 1. Number Of Schools In North Dakota With A School-Based Dental Sealant Program By Provider And School Year (Qualifying And Non-Qualifying Schools) | 8 |
| Table 2. Non-Qualifying Schools Participating in SEAL!ND | 10 |
| Table 3. Number and Percentage of Students Served by Race, Gender, and Grade Level | 13 |
| Table 4. Dental Treatment Need by Grade Level and Visit, 2022-23 | 17 |
| Table 5. Percentage of Students Needing Treatment at First Visit, by Grade Level and Year | 20 |

SEAL!ND: School-based Dental Sealant Program

The [North Dakota Department of Health and Human Services \(HHS\)](#)^a Oral Health Program (OHP)^b has established a school-based dental sealant program, (SEAL!ND)^c, which has been providing dental sealants, fluoride varnish applications, oral health education and dental screenings and referrals for students throughout North Dakota (ND) dating back to 2012. All services occur in the school during school hours. School-based sealant programs are a highly effective way to deliver preventive oral health services and dental sealants to children less likely to receive private dental care.

The SEAL!ND program prioritizes providing preventive oral health care to low-income and underserved students by targeting schools with 45% or greater of their students enrolled in the free and reduced-fee school lunch (FRFSL) program. The OHP Prevention Coordinator identifies eligible schools utilizing data from the [North Dakota Department of Public Instruction \(DPI\)](#).^d Although schools with a larger proportion of youth who are living in lower-income households are prioritized and covered under federal grant support, additional schools participate in SEAL!ND and receive care from local dental providers.

The OHP Prevention Coordinator works with the public health hygienists (PHHs) who are employed by the OHP, community dental providers that have signed Memorandums of Understanding (MOU) with the OHP, and local schools to identify opportunities to implement SEAL!ND. The OHP Prevention Coordinator is responsible for developing and sharing manuals that assist schools and dental teams with implementing and participating in SEAL!ND.

The OHP Prevention Coordinator also assists participating schools by providing:

- Educational materials on the benefits of dental sealants to administrators, staff and parents (see Appendix A).
- Videos describing the program and how sealants work.
- Invitation letter and consent form for parents (see Appendix B) and the dental visit sheet results (Appendix C).

Due to the global health pandemic (COVID-19), fewer providers and schools participated in SEAL!ND during the 2020-21 school year. As a result, the OHP Prevention Coordinator redirected efforts and funding to provide dental hygiene bags to students throughout the state. These hygiene bags contained a toothbrush, travel-size tube of toothpaste and dental floss. Educators were also provided with short, two to four-minute videos that could be shared in the classroom with students and/or with parents electronically.

Oral health services provided by the OHP, PHH, and the local dental teams who partner with the OHP include:

- Dental screening
- Fluoride varnish application
- Dental sealant application
- Oral health education
- Dental referral (as needed)

Dental Screening

Dental screening includes collecting information on the student's dental health. The participating dental team members look for and identify:

- Self-report of previously having a dental visit
- Untreated decay
- Treated decay
- Rampant decay (decay of seven or more teeth)
- Presence of any sealant(s)
- Number of filled or decayed molars
- Treatment urgency

Fluoride Varnish

Fluoride varnish is a sticky, colorless paste that contains the appropriate levels of fluoride that helps prevent cavities. If cavities are in the early stages, the fluoride can slow or even stop the cavity process. The entire process is fast, painless and takes less than five minutes to apply.

Fluoride varnish can be applied by any dental team member, doctors, pediatricians and nursing staff. Because of this, it can be applied in numerous community and health care settings such as primary care clinics, schools, long-term care and public health centers.

Dental Sealants

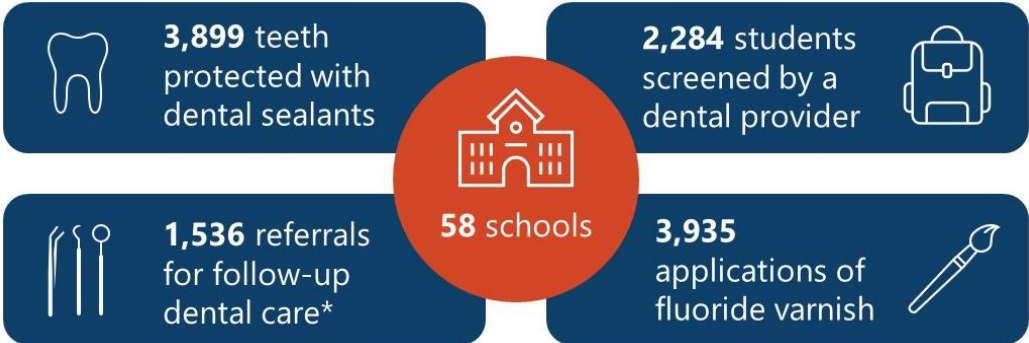
A dental sealant is a coating made from an adhesive material such as resin or glass ionomer, which a dental professional applies to the back teeth. Teeth can be re-sealed if the sealant falls off, but traditionally, it lasts for years. This seals off the grooves in teeth that tend to collect food and protects them from the acid. The process is quick and easy, with the whole procedure taking roughly 10 minutes.

Sealants prevent cavities by creating a barrier between the teeth and cavity-causing bacteria. Sealants also stop cavities from growing and can prevent the need for fillings. Dental sealants prevent 80% of cavities in the back teeth, where 9 out of 10 cavities generally occur.

The OHP continues to administer SEAL!ND, utilizing dollars from both the [Centers for Disease Control and Prevention \(CDC\) State Actions to Improve Oral Health Outcomes^e](#) grant and the [Health Resources and Services Administration's \(HRSA\) Grants to States to Support Oral Health Workforce Activities^f](#).

Executive Summary: Reach of SEAL!ND, 2022-23

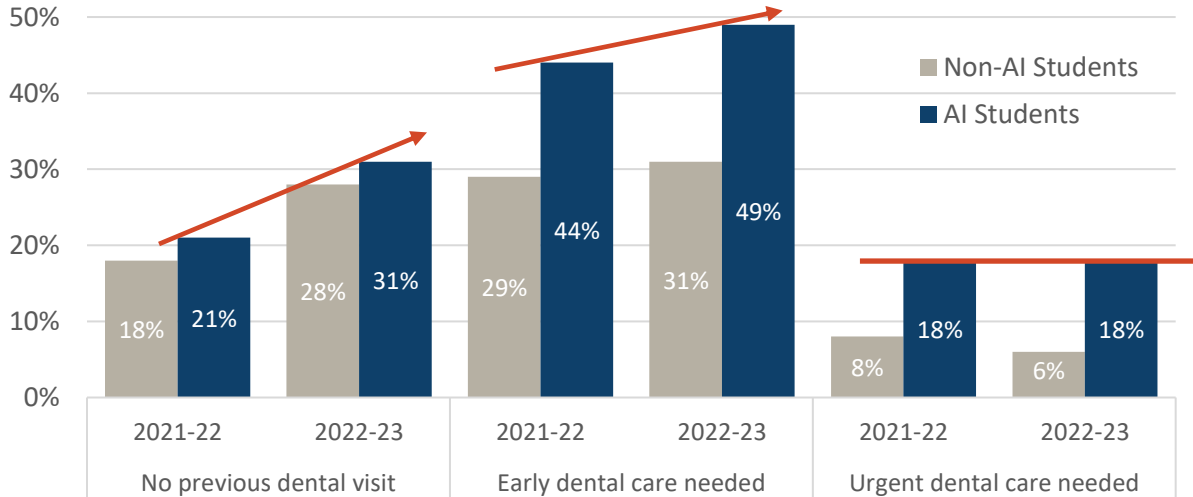
The SEAL!ND program prioritizes providing preventive oral health care to underserved students by targeting schools with 45% or greater of their students enrolled in the FRFSL program (these are considered qualifying schools). Although schools with a larger proportion of youth who are from lower-income households are prioritized by federal funding, additional schools participate and receive care from local dental providers (these are referred to as non-qualifying). During the 2022-23 school year, 58 schools participated in SEAL!ND; 40 qualifying schools (Q) and 18 non-qualifying (NQ); 55 of the 58 schools had two visits (one in the fall and one in the spring).



* Total number of referrals made between first and second visit, not total number of students with a referral. Students referred for care at visit one may again be referred to care at visit two.

More than two out of every three American Indian (AI) students (67%) had untreated decay (including rampant decay); up from three out of five (60%) the previous year and notably more than non-AI students where 38% presented with untreated decay. It is imperative that the OHP work with communities, share results of this work and allow space for communities to identify opportunities to promote oral health equity, outside of (or in addition to) SEAL!ND.

Figure 1. Percentage of AI and Non-AI Students in Qualifying Schools Needing Treatment and With No Dental Visit by School Year



Evaluation Activities

The evaluation team at the University of North Dakota School of Medicine & Health Sciences works with the team at the OHP to collect data on the clinical reach of the SEAL!ND program, the referral practices, dental sealant cost savings and perceptions of school personnel regarding their experiences with the program.

Site Data

Site data for all students are compiled by OHP PHHs and dental providers who have signed MOUs with the OHP. The data provide performance measures to calculate and demonstrate program outcomes. The program evaluators analyze the data collected. Data collection methods employed by the OHP PHHs are consistent; however, the systems used by partnering providers and those offering school-based services on their own to NQ schools do not all collect the same patient data. Through strong partnership, these providers continue to share the data they do collect with the OHP to measure community impact. See Appendix D for an example of the patient record utilized by the OHP PHHs.

Student data included in this report are collected and provided by:

- The hygienists employed by the OHP to provide SEAL!ND in Q schools,
- Dental teams participating in SEAL!ND under MOUs signed with the OHP and serving Q schools,
- Additional dental teams participating in SEAL!ND and providing care to NQ schools (schools that do not qualify for grant-supported SEAL!ND services because less than 45% of their students are enrolled in the FRFSL program), and
- The [Ronald McDonald Care Mobile's \(RMCN's\)](#)⁹ school-based sealant program, which is separate from SEAL!ND and stopped school-based services in 2020 in order to meet other community need.

School Survey

During the 2018-19 and 2019-20 school years, the evaluation team sent electronic surveys to administrators and staff at every school participating in SEAL!ND. The survey was designed to explore the schools' experiences with both SEAL!ND and the dental providers, as well as to obtain data regarding challenges and barriers to participating in the program. This survey was not conducted during the 2020-21, 2021-22 school years because of competing school demands during and following the COVID-19 pandemic. Results from the survey distributed during the 2019-20 school year are available in the report, [Evaluation of SEAL!ND: School Year 2019-2020](#).^h

Additional Activities

The evaluation team also assists in the assessment of any local, state or national presentations provided about the program; and the team evaluates outreach, education and dissemination strategies, including distribution of dental hygiene kits.

Community Reach and Impact

Among the 58 schools that participated in SEAL!ND during the 2022-23 school year, 22 were served by the OHP PHHs and the remaining 36 were served by partnering dental teams to include 15 community health centers (CHCs) and 21 private practices. During the midst of the COVID-19 pandemic (2020-21 school year), there were no participating CHCs and the RMCM also refrained from providing services. The RMCM has voiced interest in returning to school-based services. However, the team continues to be meeting other community demand for dental care. See Table 1. RMCM’s decision is based on cost, time, increased community demand and insufficient providers/resources. The OHP will continue communicating and working with the RMCM team to explore future opportunities to return to the school setting.

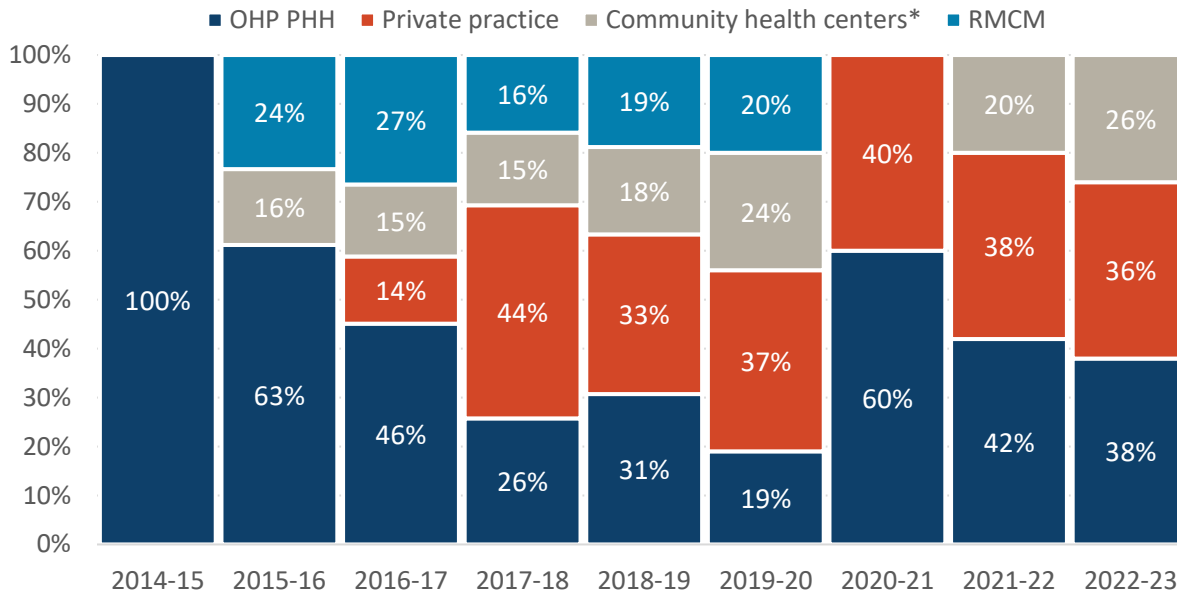
Table 1. Number Of Schools In North Dakota With A School-Based Dental Sealant Program By Provider And School Year (Qualifying And Non-Qualifying Schools)

| School Year: | | 14-15 | 15-16 | 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 | 22-23 |
|-----------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SEAL!ND | Private practice providers | 0 | 0 | 12 | 49 | 32 | 37 | 12 | 19 | 21 |
| | Community Health Centers* | 0 | 8 | 13 | 17 | 17 | 24 | 0 | 10 | 15 |
| | OHP PHH | 18 | 32 | 41 | 29 | 30 | 19 | 18 | 21 | 22 |
| Ronald McDonald Care Mobile | | 0 | 12 | 24 | 18 | 18 | 20 | 0 | 0 | 0 |
| TOTAL Schools | | 18 | 52 | 90 | 113 | 97 | 100 | 30 | 50 | 58 |

* Total includes federally qualified health centers, tribal health services at Spirit Lake Health Center, and the Dental Hygiene Program at the North Dakota State College of Science (NDSCS)

During the 2019-20 school year (prior to the COVID-19 pandemic), one in five schools participating in a school-based sealant program were doing so in partnership with the RMCM through Bridging the Dental Gap; the OHP PHHs were responsible for only 19% of schools. The OHP stepped in to meet demand in 2020 providing care for 60% of participating schools and have now regained partnership with private practice providers and CHCs. Through MOUs and partnerships developed by the OHP, the percentage of schools visited by the OHP PHHs has historically decreased. In contrast, the rate of schools visited by CHCs, Federally Qualified Health Centers (FQHCs), and private practice providers has increased. For example, the percentage of schools visited by private practice increased from 0% in 2014-15 to 36% by the 2022-23 school year. See Figure 2. This trend illustrates historical growth and potential sustainability as the work of the OHP identified and supported dental partners who were willing to serve in school settings.

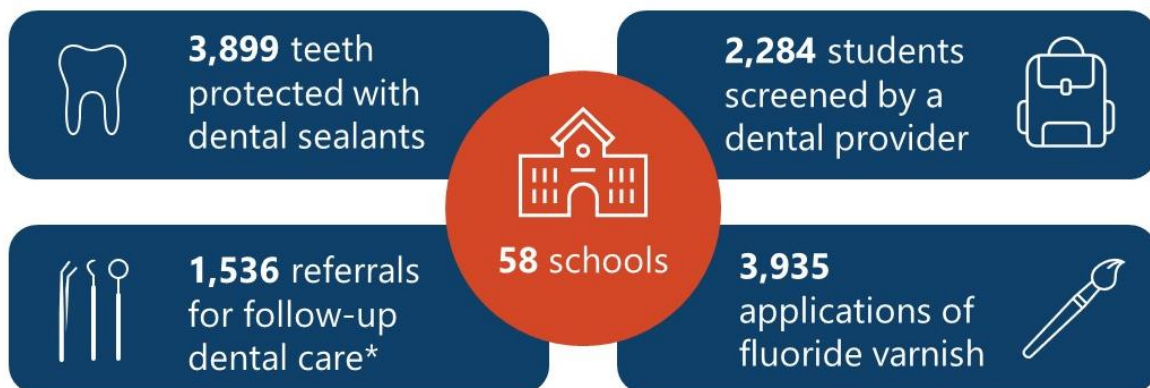
Figure 1. Percentage of Schools Participating in a School-Based Sealant Program Visited by Each Provider Type, by School Year



* This total includes FQHCs, tribal health services provided by Spirit Lake Health Center and the Dental Hygiene Program at NDSCS. Note: Totals may equal greater than 100% because of rounding to the nearest whole percentage.

Qualifying and Non-Qualifying Schools

The program reached 40 schools that qualified for services (Q schools). These are schools meeting the criteria of high-risk, reporting at least 45% of their students enrolled in the FRFSL program. Partners with signed MOUs provided dental screening and prevention for an additional 18 schools, or non-qualified (NQ) schools. These are schools receiving services that had fewer than 45% of their students enrolled in the FRFSL program. Collectively, 58 schools participated in SEAL!ND.



* Total number of referrals made between 1st and 2nd visit, not total number of students with a referral. Students referred for care at visit one may again be referred to care at visit two.

Non-Qualifying Schools: Reach

One challenge of the federally funded programming is that it limits the OHP to serve only schools that qualify for services based on the FRFSL program. For example, a Q school with 150 K-5 students where 75% of the students qualify for the FRFSL program will serve fewer under-resourced children than if the OHP were to visit a school with 1,500 K-5 students where only 44% of the children were covered by the FRFSL program (not qualifying for services).



Fortunately, there are dental teams in ND who participate in SEAL!ND and volunteer their own time and resources to serve students in NQ schools. Partners who participate in SEAL!ND, providing oral health screenings and preventive services among NQ schools, do not report student-level data to the OHP. However, they do provide aggregate data (totals) to assist the OHP in measuring community impact. During the 2022-23 school year, dental teams in ND visited 18 NQ schools (four more than the year before) and provided care for 630 children. This is a notable increase from the 2020-21 school year but not at the level of participation prior to the COVID-19 pandemic. See Table 2.

Table 2. Non-Qualifying Schools Participating in SEAL!ND

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
|---|---------|---------|---------|---------|
| Participating schools | 28 | 9 | 14 | 18 |
| Students screened (unduplicated) | 1,191 | 326 | 525 | 630 |
| Fluoride varnish applications* | 1,349 | 449 | 974 | 1,009 |
| Dental sealants placed* | 1,864 | 632 | 942 | 1,322 |
| Students referred for follow-up dental care | 319 | 122 | 154 | 203 |

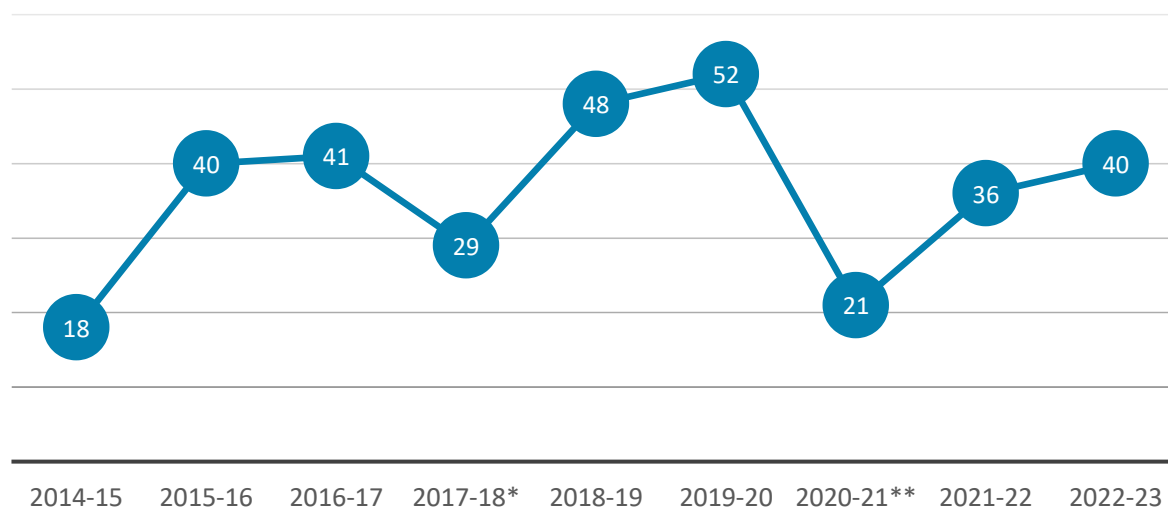
* These numbers include duplicate applications; 525 students were screened between the first and second visits. Many of these students received fluoride varnish at both visits, and several teeth were either resealed or newly erupted (a tooth that had grown in that was not present at first visit) between the first and second visits.

Qualifying Schools: Reach

The OHP Prevention Coordinator provides oversight, scheduling, materials and manuals for both Q and NQ schools and interested dental teams. Specific patient data are only provided for schools that qualify for services. During the 2022-23 school year, 58 schools participated in SEAL!ND; 55 of the 58 schools had two visits, one in the fall and one in the spring. Only 40 of the 58 schools met the criteria of high-risk, reporting at least 45% of their students enrolled in the FRFSL program.

Among the 40 Q schools, 38 had both a fall and a spring retention visit. Before the 2020-21 school year, in which the COVID-19 pandemic delayed or stopped service delivery, the number of schools that qualified for and received services from the OHP had increased annually and exceeded the 5% goal. See Figure 3. The program continues to see an increase in the number of schools participating following the COVID-19 pandemic.

Figure 2. Number of Qualifying Schools Participating in SEAL!ND, by Year

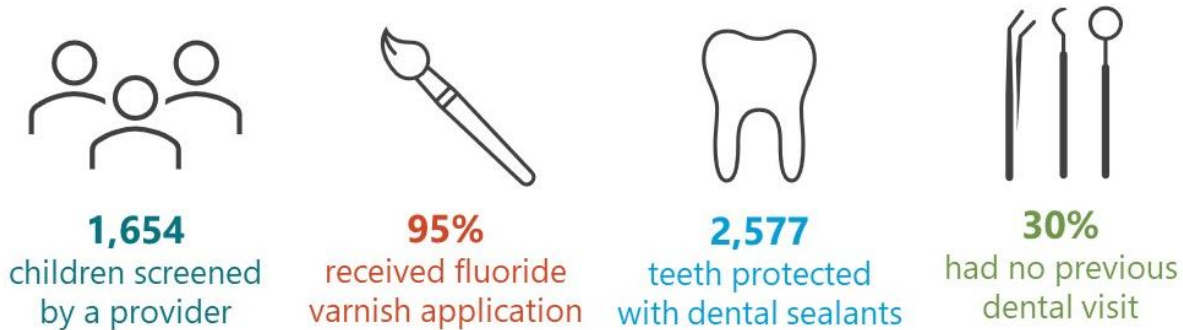


* Data for 2017-18 were only available for schools served by the PHH and did not include services provided to Q schools under a MOU by FQHCs or private dental teams.

** The COVID-19 pandemic led to a nationwide shutdown, temporary school closures and delayed the reopening and provision of services in dental clinics and FQHCs.

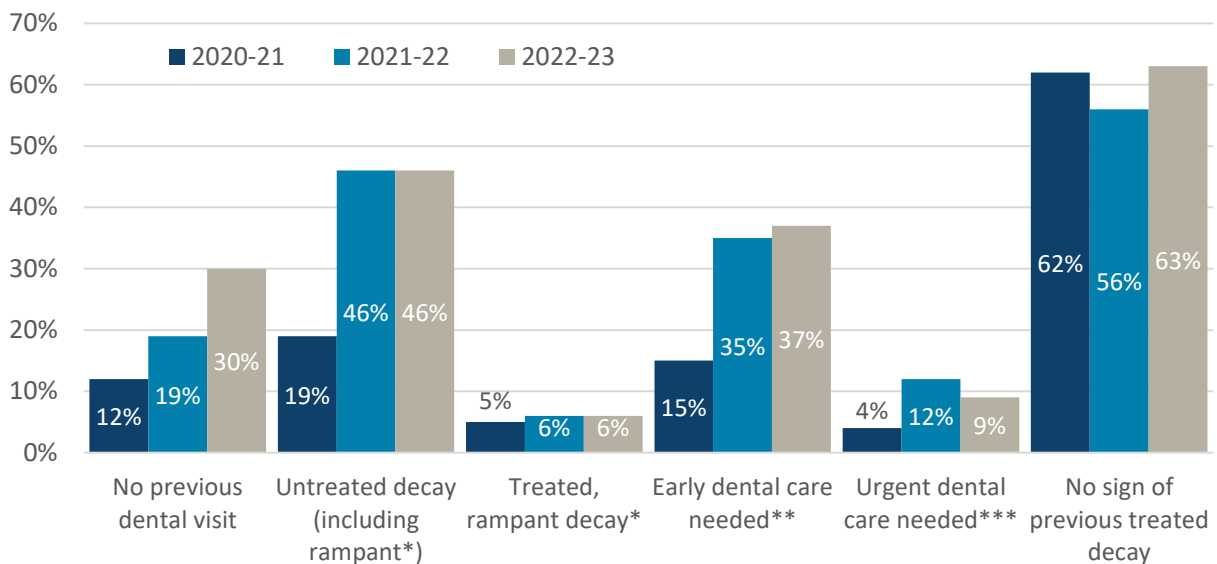
Among the 40 Q schools, 1,857 teeth were sealed at the first visit. Between the fall and spring, providers sealed a total of 2,577 teeth for the 1,654 students. At the first visit, 47% of students needed early (36%) or urgent (9%) dental care. At the time of the first SEAL!ND visit, 38% of students already had a dental sealant. This is down from the previous two school years, where 41% and 51% had existing dental sealants respectively.

Among the 40 Q schools, 1,654 children were screened by a dental provider. Between both the fall and spring (retention) visits, 2,577 teeth were sealed, and 95% of the students received a fluoride varnish treatment.



Following what has been reported in national data as a decline in dental prevention and treatment services during 2020 and 2021, SEALIND has noted a decline in oral health status among students participating in the program. It is important to note that the data are not comparing or tracking the same students over time. However, among participating schools, the percentage of students presenting with untreated decay, early dental care need, and no previous dental visit is concerning. See Figure 4.

Figure 3. Percentage of Students in Qualifying Schools Needing Treatment and Presenting with Decay, by School Year¹



1. 2020-21, n=564; 2021-2022, n=1,159; 2022-2023, n=1,654

* Rampant decay is indicated if the student has decay present on seven or more of their teeth.

** Decay present without pain or swelling. Refer to a dentist for treatment.

*** Pain, infection, large decay, abscess or draining. Immediate referral for treatment.

Students Served

One in five students attending a Q school were in kindergarten (21%) with a majority in grades K-5 (91%). About half (53%) of students served were non-Hispanic White, and 24% of students served were AI. This is notable, given only 5.7% of the total state population includes individuals who are AI.ⁱ See Table 3 for the demographic breakdown of students served. The sealant program served a similar number of females and males, and there was no variation in dental treatment need or services required/provided to students based on gender. There is variability in dental services needed and provided by grade level and race.

Table 3. Number and Percentage of Students Served by Race, Gender, and Grade Level

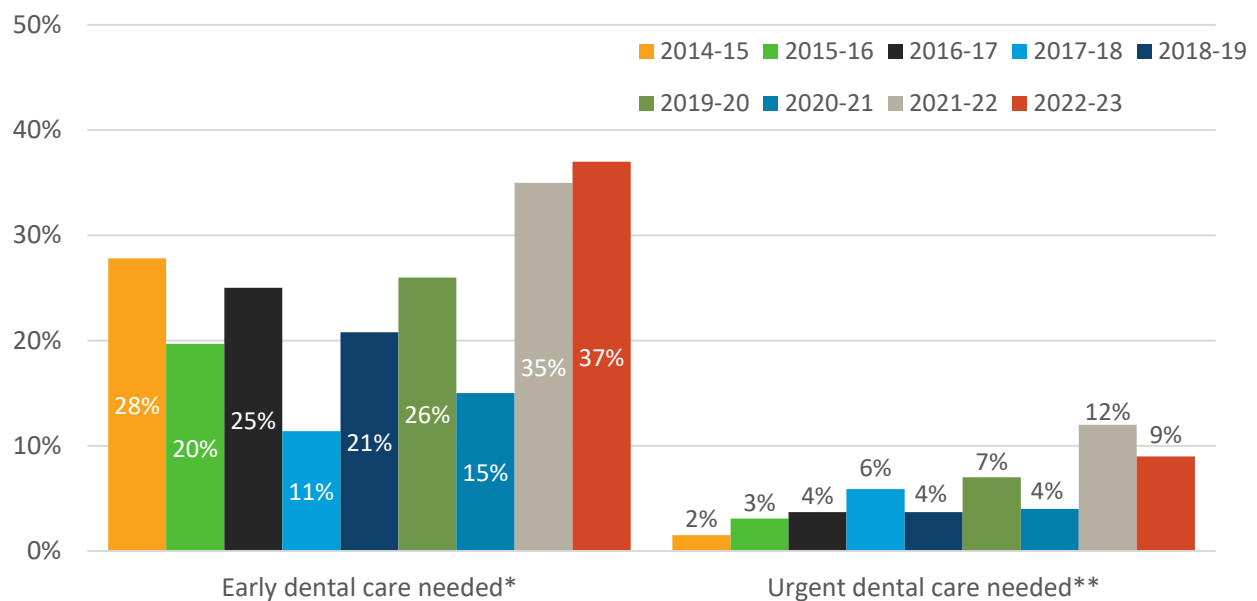
| RACE | 2022-23 | | 2021-22 | 2020-21 | 2019-20 |
|------------------------|-----------|-----|-----------|----------|------------|
| | n = 1654* | % | n = 1139* | n = 562* | n = 2,322* |
| White | 779 | 53% | 51% | 65% | 46% |
| American Indian | 361 | 24% | 41% | 21% | 27% |
| Black/African American | 151 | 10% | 2% | 4% | 10% |
| Asian | 49 | 3% | 1% | 0% | 6% |
| Multi-Race | 66 | 4% | 2% | 6% | 7% |
| GENDER | n | % | % | % | % |
| Male | 775 | 48% | 47% | 45% | 45% |
| Female | 846 | 52% | 53% | 55% | 54% |
| GRADE | n | % | % | % | % |
| Pre-K | 47 | 3% | 3% | 1% | 0% |
| Kindergarten | 341 | 21% | 16% | 14% | 19% |
| First grade | 304 | 18% | 15% | 18% | 17% |
| Second grade | 266 | 16% | 16% | 16% | 17% |
| Third grade | 243 | 15% | 15% | 15% | 14% |
| Fourth grade | 192 | 12% | 11% | 14% | 13% |
| Fifth grade | 142 | 9% | 9% | 10% | 10% |
| Grades 6-12 | 113 | 7% | 18% | 12% | 8% |

* The N reflects the total sample for each year, however, not all participants provided their race, grade, or gender. As a result, the percentages will not total 100% as the missing and no-response variables are omitted from this table. Columns where the total is greater than 100% is a result of rounding to the nearest whole percentage.

Students Served: Comparing Nine Years of SEAL!ND

The percentage of students participating in SEAL!ND who required urgent dental care increased considerably in the last two years. As of the 2021-22 school year, for the first time in eight years, more than one in three students needed early dental care, and roughly one in eight required urgent dental treatment. See Figure 5. There is concern about comparing annual data because of continual workflow and data management changes, and it is important to remember that the number of participating schools and students varies annually. However, regardless of those concerns, in the most recent school year, nearly half of the students (46%) were requiring dental referral for either early or urgent treatment need.

Figure 4. Percentage of Students Needing Treatment, by School Year

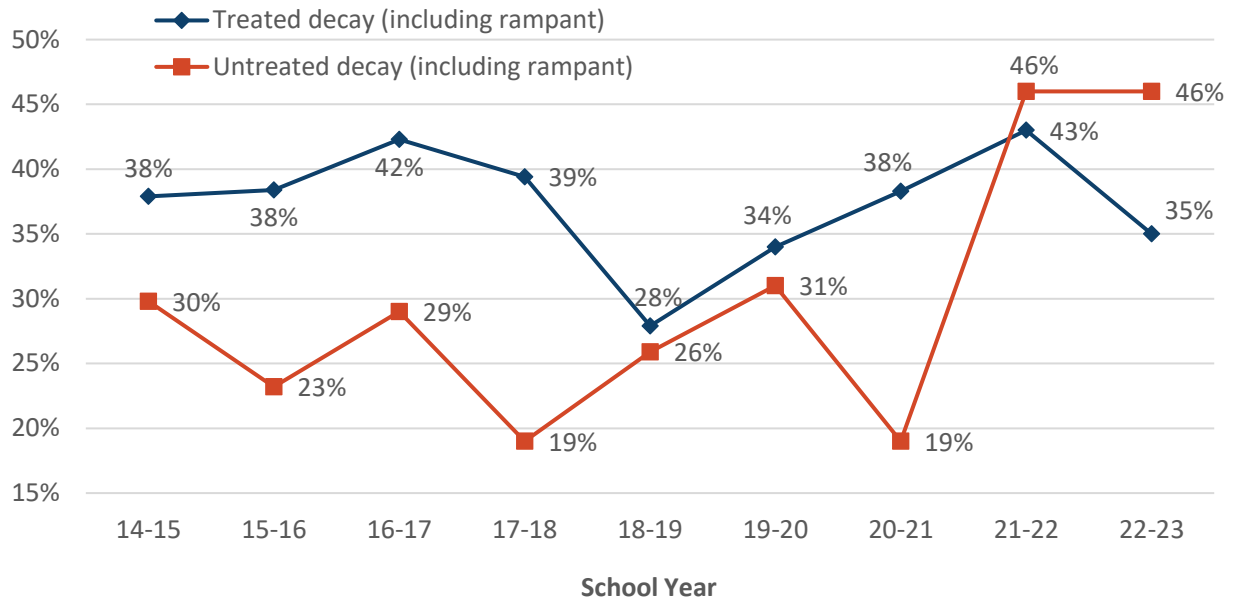


* Decay present without pain or swelling. Refer to a dentist for treatment.

** Pain, infection, large decay, abscess or draining. Immediate referral for treatment.

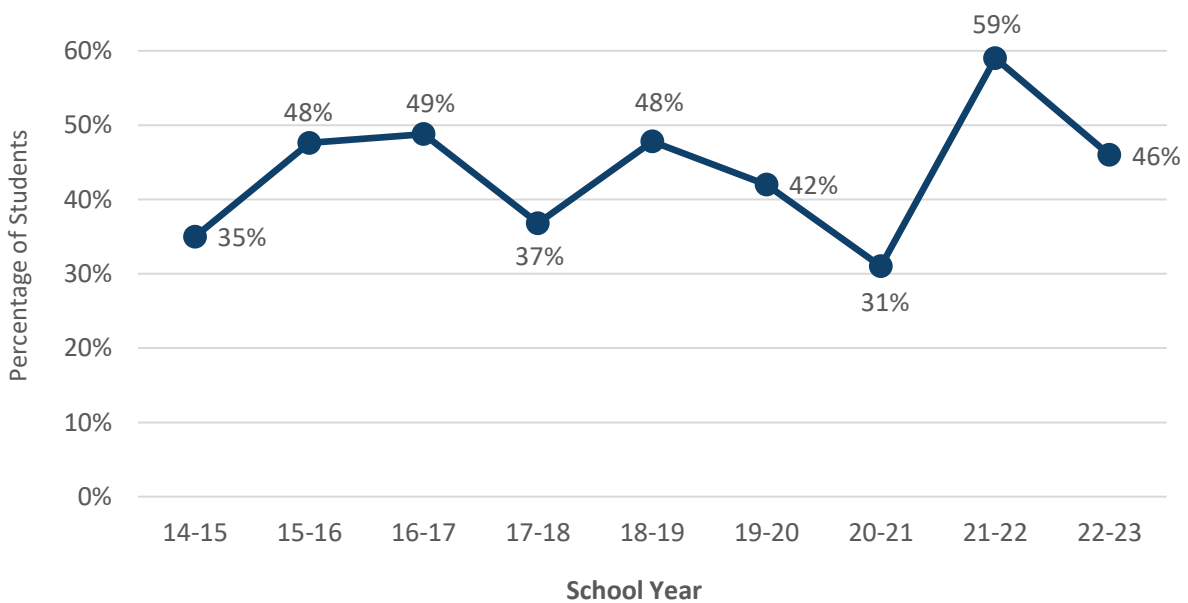
The reason a provider indicates a child requires early or urgent dental care can vary, but one of the more common reasons would be identification of untreated dental decay. The percentage of students with untreated decay increased considerably during the 2021-22 school year and has remained constant. In the last two years, 46% of students screened presented with untreated decay compared to only 19% the prior year. See Figure 6. Although there is no research to currently identify the cause of this spike in ND, anecdotal evidence, and research outside of the state would indicate this may be the result of delayed care during the period of the COVID-19 pandemic. Patients were less inclined to visit the dentist during 2020, offices closed for long periods of time, and prevention programs stopped or limited care provision. During this time, SEAL!ND continued to screen and apply fluoride varnish, but did not provide sealant application because of the risk of aerosol spread of COVID-19.

Figure 5. Percentage of Students Needing Treatment, by School Year



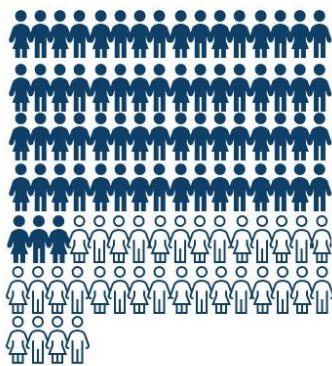
Of all students in Q schools participating in SEAL!ND during the 2022-23 school year, 46% received at least one dental sealant. See Figure 7. An increase in sealant placement can be indicative of fewer students having already received dental sealants in a dental clinic or it can simply indicate that the students screened had newly erupted molars. The explanation for the low percentage of sealant placements in 2020-21 relates to limitations on private practice providers who could only offer fluoride varnish because of the risks associated with aerosol spread of COVID-19 during sealant placement.

Figure 6. Percentage of Students Receiving at Least One Dental Sealant, by School Year

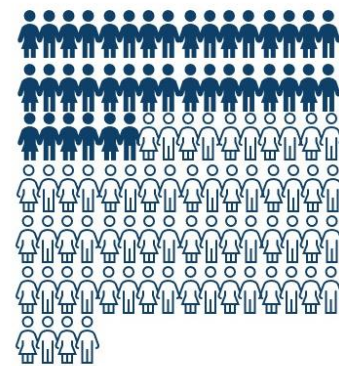


Students Served: Racial Equity Concerns

The primary purpose of SEAL!ND is to implement a sustainable school-based sealant program to provide preventive oral health services. In this regard, the ND OHP has been highly successful in reengaging schools and provider groups, undoubtedly having a positive impact on the health of children in the most under-resourced communities in ND. Specifically, close to half (41%) of the students participating in SEAL!ND in the last school year were AI (24%). This is notable, given only 5.7% of the total state population includes individuals who are AI. SEAL!ND is addressing dental care access inequities for racial minority groups in ND.



For every 100 AI children screened, 67 report untreated decay (including rampant decay) compared to only 38 non-AI students.



Although SEAL!ND has had a positive impact on the health of community, data from the last two school years indicate increasing inequities for AI children. Greater proportions of AI students presented with decay and dental care need. See Figure 8 and Figure 9. It is imperative that the OHP work with community, share results of this work and allow space for communities to identify opportunities to promote oral health equity, outside of (or in addition to) SEAL!ND.

Figure 7. Percentage of AI and Non-AI Students in Qualifying Schools with Treated and Untreated Decay by School Year

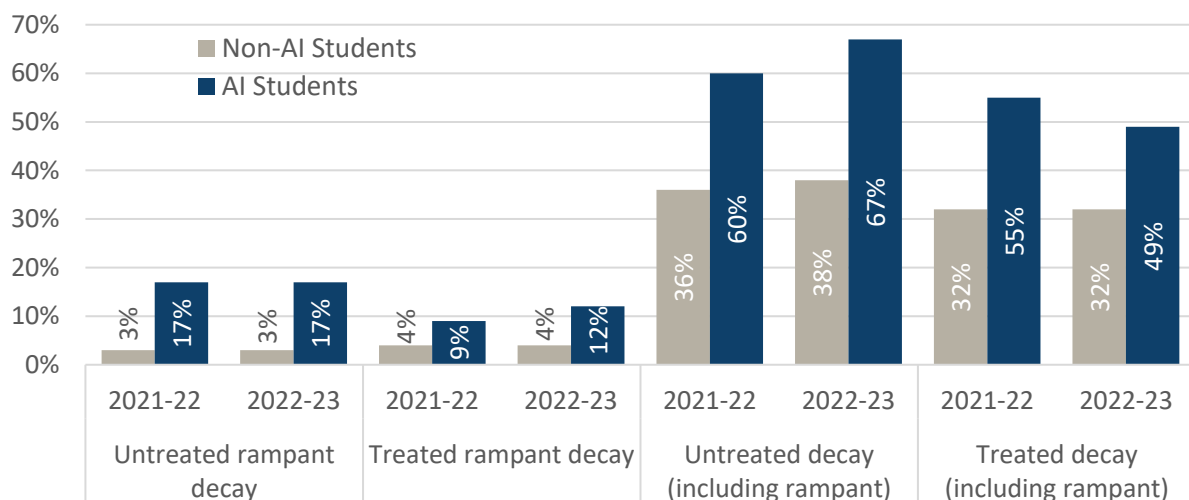
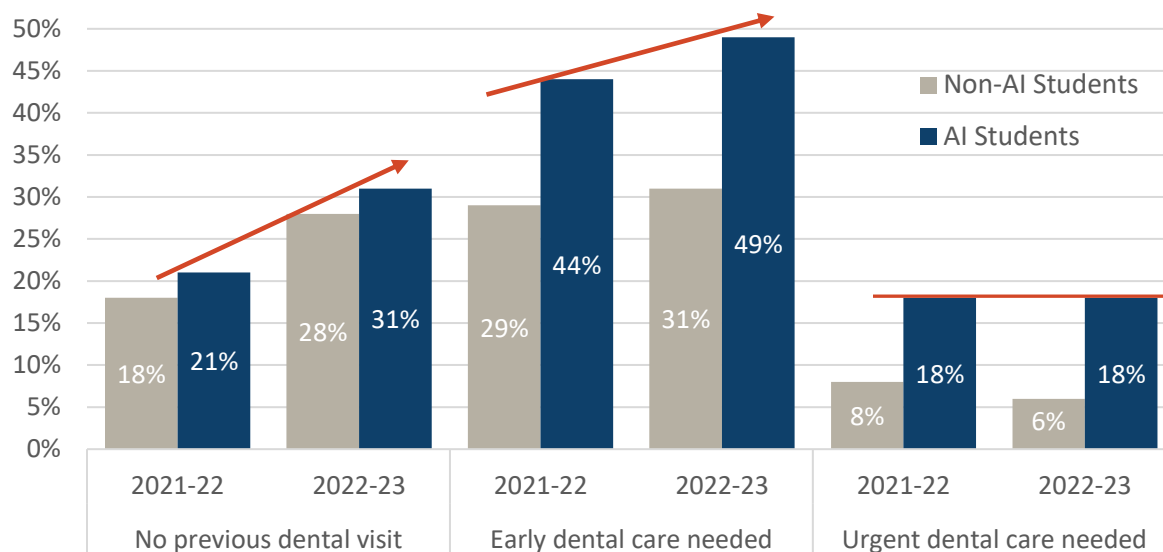


Figure 9. Percentage of AI and Non-AI Students in Qualifying Schools Needing Treatment and with No Dental Visit by School Year



Students Served by Grade Level: Kindergarten through Grade 12

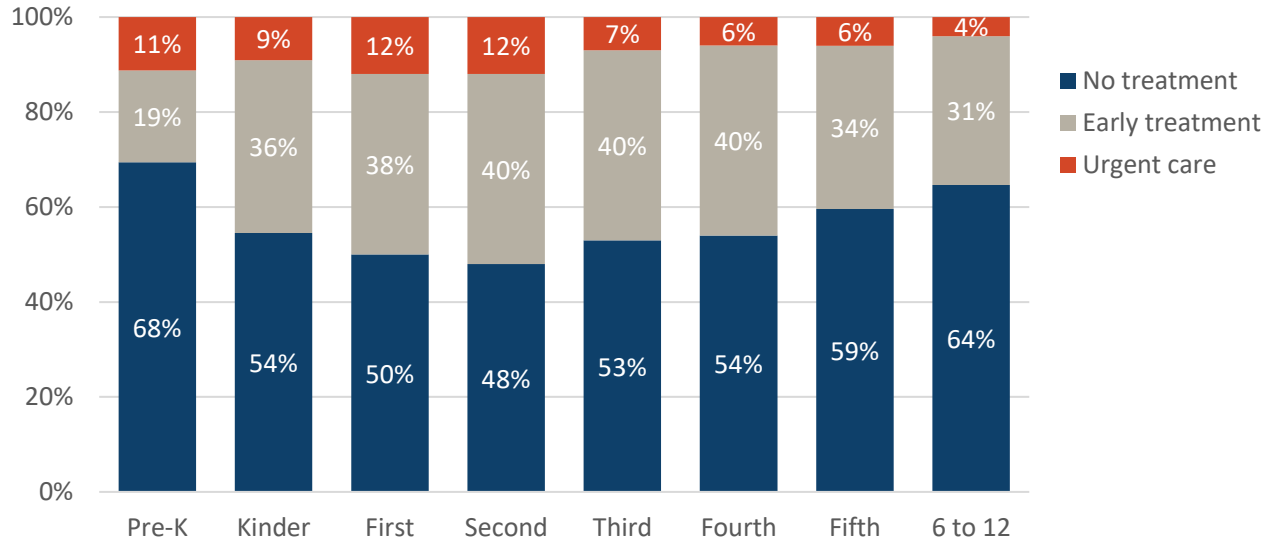
There was no significant variability by grade in the dental visit rates (Figure 11) or sealant application that could not be explained by age. As students get older, the percentage who report having had a sealant, dental visit, and treated decay increases. However, a greater proportion of the youngest students required urgent care (pre-k through grade two) compared to those in grades four and higher. Also notable is that nearly half of all students (regardless of grade level) required early or urgent dental care. See Figure 10 and Table 4.

Table 4. Dental Treatment Need by Grade Level and Visit, 2022-23

| | | Pre-K | Kindergarten | First | Second | Third | Fourth | Fifth | Grades 6-12 |
|---------------------------------------|-----------------|-------|--------------|-------|--------|-------|--------|-------|-------------|
| 1 st Visit n= 1,608 | No treatment | 68% | 54% | 50% | 48% | 53% | 54% | 59% | 64% |
| | Early treatment | 19% | 36% | 38% | 40% | 40% | 40% | 34% | 31% |
| | Urgent care | 11% | 9% | 12% | 12% | 7% | 6% | 6% | 4% |
| 2 nd Visit n= 1,381* | No treatment | 71% | 56% | 55% | 55% | 58% | 62% | 62% | 66% |
| | Early treatment | 15% | 35% | 33% | 36% | 35% | 35% | 34% | 29% |
| | Urgent care | 15% | 9% | 12% | 10% | 7% | 3% | 4% | 5% |

* 1,608 students had a first visit, and 1,381 of those 1,608 had a second visit with data to report on treatment urgency. Columns where the total is greater or less than 100% is a result of rounding to the nearest whole percentage.

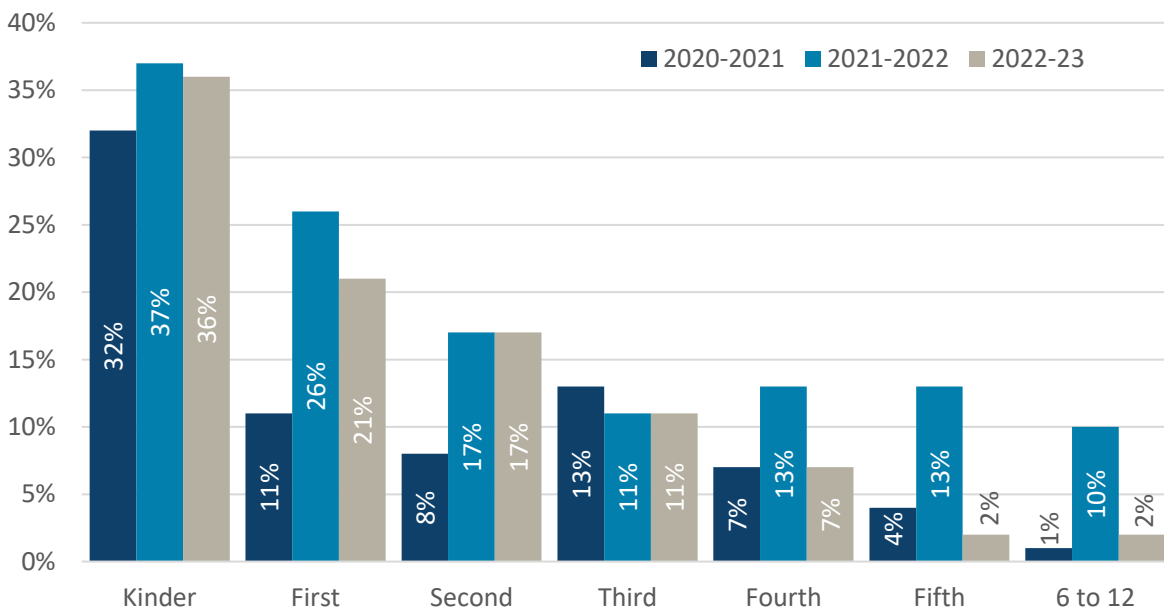
Figure 10. Percentage of Students Needing Treatment by Grade Level, First Visit 2022-23



Note: Totals may not equal 100% because of rounding to the nearest whole percentage

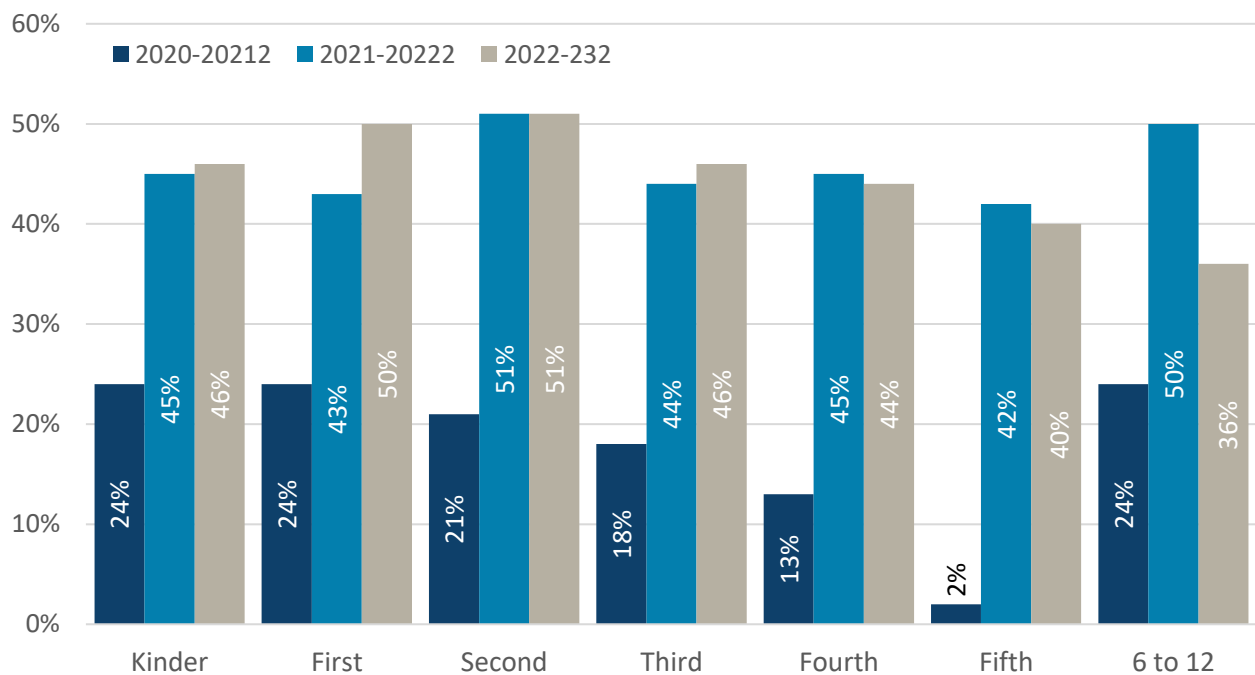
Except for students in grade three, the percentage of students with no prior dental visit increased dramatically (by as much as 15%) following the onset of the COVID-19 pandemic (2020). The percentage of students who have had no dental visit is decreasing among all grade levels, but more than one in three kindergarteners, and one in five first graders are entering school with no previous dental visit.

Figure 11. Percentage of Students with No Dental Visit, by Grade Level and School Year



It is known that children who have regular dental cleanings are less likely to experience decay. With a larger proportion of students indicating they had no dental visit during the 2020-21 school year (Figure 11), it is not surprising to see that in 2021-22, the percentage of students presenting with untreated decay increased among all grades (Figure 12). However, with a noted increase in dental visits following the COVID-19 pandemic, we are beginning to see a plateau or even decline in the percentage of children with untreated decay. Most notable is the 14% decrease in the last year in the proportion of students in grades 6-12 who presented with untreated decay at the first visit. See Figure 12.

Figure 12. Percentage of Students with Untreated Decay* Present at First Visit, by Grade Level and School Year



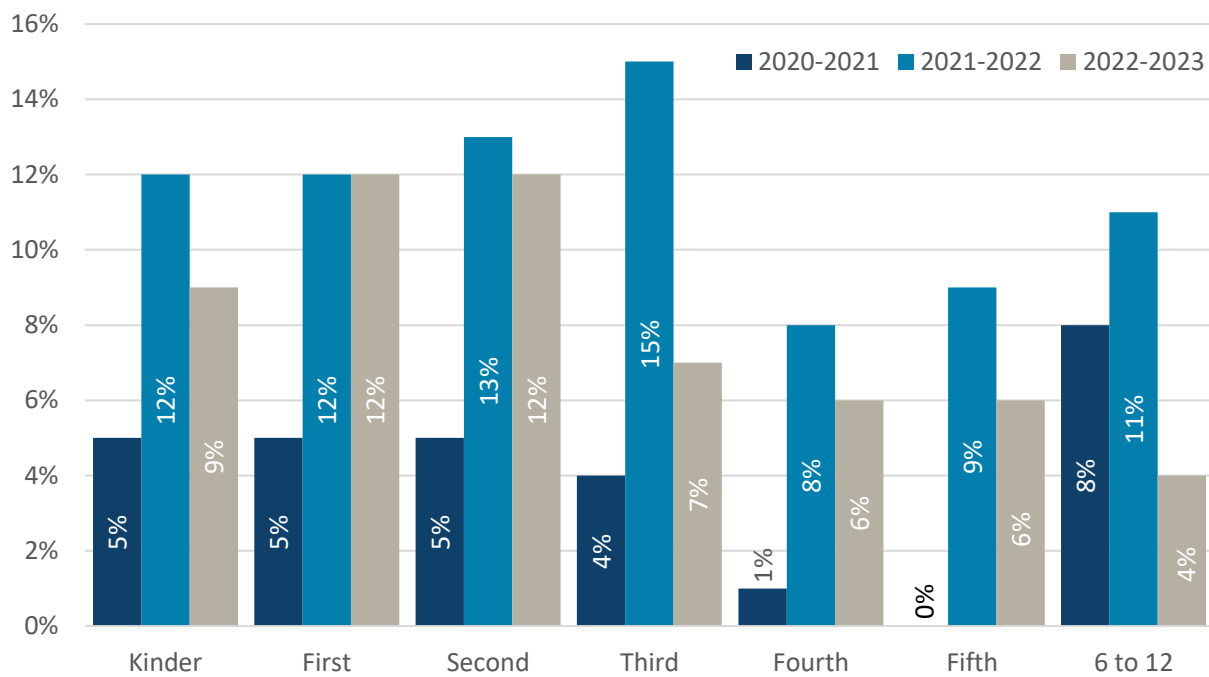
*Includes any untreated decay present and rampant decay present.

The percentage of students identified as needing urgent care at the first school screening increased substantially across all grades between the 2020-21 school year and 2021-22. The most recent school year has presented a decrease in the percentage of students reporting need for urgent care. See Table 5 and Figure 13. However, the greatest proportion of students who are in need of urgent dental care continue to be identified in the youngest grade levels (kindergarten, first, and second). There is a clear need for early intervention and oral health prevention among our youngest children.

Table 5. Percentage of Students Needing Treatment at First Visit, by Grade Level and Year

| | | Kindergarten | First | Second | Third | Fourth | Fifth | Grades 6-12 |
|------------------|-----------|--------------|-------|--------|-------|--------|-------|-------------|
| No treatment | 2019-2020 | 69% | 66% | 64% | 68% | 68% | 66% | 69% |
| | 2020-2021 | 77% | 77% | 78% | 82% | 85% | 98% | 77% |
| | 2021-2022 | 55% | 51% | 50% | 56% | 55% | 57% | 49% |
| | 2022-2023 | 54% | 50% | 48% | 53% | 54% | 59% | 64% |
| Early treatment | 2019-2020 | 24% | 27% | 25% | 26% | 28% | 23% | 25% |
| | 2020-2021 | 17% | 18% | 17% | 15% | 13% | 2% | 15% |
| | 2021-2022 | 33% | 36% | 37% | 29% | 37% | 34% | 40% |
| | 2022-2023 | 36% | 38% | 40% | 40% | 40% | 34% | 31% |
| Urgent treatment | 2019-2020 | 5% | 10% | 9% | 7% | 6% | 5% | 8% |
| | 2020-2021 | 5% | 5% | 5% | 4% | 1% | 0% | 8% |
| | 2021-2022 | 12% | 12% | 13% | 15% | 8% | 9% | 11% |
| | 2022-2023 | 9% | 12% | 12% | 7% | 6% | 6% | 4% |

Figure 13. Percentage of Students with Urgent Dental Care Needs at First Visit, by Grade Level and School Year



Recommendations from Previous Year

The SEAL!ND program had a significant impact on the health and well-being of more than 1,600 students in ND during the previous 2021-22 academic year. The OHP has had a tremendously positive impact in the state; however, opportunities remained to ensure children in ND have equitable access to good oral health. In no particular order, it was recommended that the OHP and SEAL!ND teams focus on four specific areas to address pediatric oral health during the 2022-23 school year.

1. Identify opportunities to reach children before kindergarten.
2. Continue communication and partnership with providers and schools who stopped services.
3. Educate private dental teams on the need for and benefits of school-based sealant programs.
4. Address and promote oral health equity.

Recommendation One: Reaching Younger Children

During the 2022-23 school year, the ND OHP expanded their program to specifically provide dental screenings for children younger than age five (kindergarten). The Best in Class Program provided dental screenings for 137 children during the 2022-23 school year. It is recommended that future work with the Best in Class Program collect data similar to SEAL!ND so that the program can both measure impact, and identify need.

Recommendation Two: Discuss Stopped Services

The OHP Prevention Coordinator continues to contact private dental providers who had participated in the program previously, assessing their willingness and determining a potential timeline to reengage with schools. This work also includes partnering with CHCs, with private practice dental providers, and with the RMCM to determine if there are local schools that dental teams can work with and provide similar services to SEAL!ND.

Recommendation Three: Educate Private Practice Dental Teams

The [Dentistry as Primary Care TeleECHO™ Series](#) offered free training for dental providers on how to care for pediatric patients and patients covered by ND Medicaid, how to discuss good nutrition and fluoridated water, and other topics.^j One of the specific courses (which carried free continuing education credits for dental providers) promoted the success of SEAL!ND and offered details on how a private practice dental office could begin providing school-based services. The training continues to be available online for dental offices interested. The OHP also continues to share opportunities with the North Dakota Dental Association (NDDA) and present at state and national conferences to promote programming like SEAL!ND.

Recommendation Four: Promote Oral Health Equity

The OHP engages in numerous activities to promote oral health equity in ND. Some of these activities include (but are not limited to):

- Engaging the NDDA, North Dakota Dental Foundation, and the Oral Health Coalition to identify solutions to dental access concerns for households covered by ND Medicaid
- Working with the ND Long Term Care Association to improve care access and dental prevention for nursing home residents
- Meeting with the Tribal health liaisons to identify opportunities for collaboration
- Monitoring data through oral health surveillance efforts in order to determine areas of need and potential public health intervention

Additionally, over a dozen infographics were designed for communities on the importance of oral health and how to practice good dental hygiene. [Examples](#) can be viewed related to pediatric patients including Protect Your Baby's Teeth and Gums and Protecting The Smiles of Our Indigenous Children.^k

Recommendations for 2023-2024

The goals identified in 2022-23 continue to be relevant and it will be important for the OHP to further explore private practice partnerships, identify models where providers can be reimbursed for care provided in a school-based setting, and to maintain relationships with organizations like the RMCM who have provided care previously and who may be interested in reengaging with SEALIND.

Additional recommendations for the 2023-24 school year include:

1. Working with the schools new to the program and who are working with other staff or partners to ensure that the data collected are consistent with data already reported as part of SEALIND. This will include those programs serving pre-school aged children like the Best in Class Program
2. Surveying school leadership and staff responsible for managing school-based sealant programs to identify areas for improvement
3. Continuing to expand reach in other community-based settings serving pre-school aged children

About the Oral Health Program

The vision of the ND DHHS is “to make North Dakota the healthiest state in the nation.”^a The mission of the OHP is “to improve the oral health of all North Dakotans through prevention and education.”^b

The primary goal of the OHP is to prevent and reduce oral disease by:

- Promoting the use of innovative and cost-effective approaches for oral health promotion and disease prevention
- Fostering community and statewide partnerships to promote oral health and improve access to dental care
- Increasing awareness of the importance of preventive oral health care
- Identifying and reducing oral health disparities among specific population groups
- Facilitating the transfer of new research into practice

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- Cheri Kiefer, Oral Health Program Director
- Toni Hruby, Oral Health Prevention Coordinator
- Vanessa Bopp, Public Health Hygienist
- Mary Strube, Public Health Hygienist
- Paige Ward, Public Health Hygienist

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Any questions regarding this product or the data presented can be directed to:

Shawnda Schroeder, PhD, MA | Educator Scholar, Faculty
Department of Indigenous Health | UND School of Medicine & Health Sciences
Shawnda.schroeder@UND.edu | 701-777-0787

Citations

- a. North Dakota Department of Health and Human Services. Retrieved from hhs.nd.gov/about-us
- b. North Dakota Oral Health Program. Retrieved from hhs.nd.gov/health/oral-health-program
- c. School-Based Sealant Program (SEAL!ND). Retrieved from hhs.nd.gov/public-health/oral-health-program/school-based-fluoride-varnish-sealant-program
- d. North Dakota Department of Public Instruction. Retrieved from nd.gov/dpi/
- e. Centers for Disease Control and Prevention (CDC) State Actions to Improve Oral Health Outcomes. Retrieved from cdc.gov/oralhealth/funded_programs/cooperative_agreements/index.htm
- f. Health Resources and Services Administration's Grants to States to Support Oral Health Workforce Activities. Retrieved from hrsa.gov/grants/find-funding/HRSA-18-014
- g. Ronald McDonald Care Mobile. Retrieved from rmhcbismarck.org/caremobile/
- h. Schroeder, S. (2020). Evaluation of SEAL!ND: School Year 2019-2020. Retrieved from ruralhealth.und.edu/assets/4061-17204/evaluation-of-seal-nd-2019-2020.pdf
- i. United States Census Bureau. Retrieved from census.gov/quickfacts/ND
- j. Dentistry as Primary Care TeleECHO™ Series. Retrieved from ruralhealth.und.edu/projects/project-echo/topics/dentistry/previous-clinics
- k. Oral Health for Adolescents. Retrieved from hhs.nd.gov/health/oral-health-program/oral-health-adolescents

Appendix A: SEAL!ND Education Material

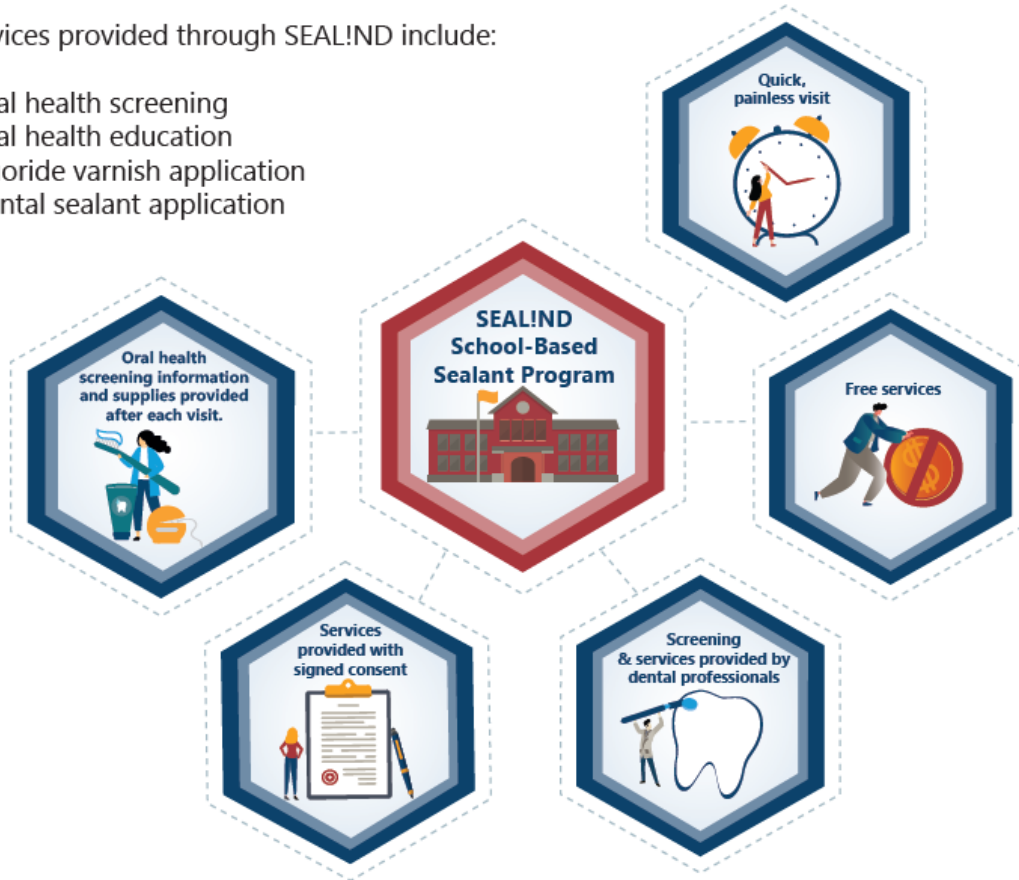
SEAL!ND: North Dakota School-Based Sealant Program

SEAL!ND brings a public health dental hygienist into the school setting two times a year in order to provide direct preventive services.

To have your child participate in the program, complete the consent form that was sent home and be sure to ensure your child is at school the day the dental professional visits.

Services provided through SEAL!ND include:

- Oral health screening
- Oral health education
- Fluoride varnish application
- Dental sealant application



Dental Sealants

Dental sealants are thin coatings painted on the surface of back molars that can last up to nine years. Once applied, sealants protect against 80% of cavities for two years and continue to protect against 50% of cavities for up to four years.

Fluoride Varnish

Fluoride varnish is a protective coating that is painted on the face of all teeth to help prevent cavities and to help slow or stop cavities that have just started. Varnish must be reapplied every six months.



Learn more about SEAL!ND using the QR code or by visiting: tinyurl.com/SEALND



Appendix B: Invitation Letter and Consent Form

WE ARE COMING TO YOUR SCHOOL! **SEAL!ND Dental Sealant & Fluoride Varnish Program**



The North Dakota Department of Health's SEAL!ND program will be visiting your child's school this year to help keep your children's teeth healthy! **If your child goes to the dentist at least once a year, this program is not intended for them. Keep seeing your regular dentist!**

Services provided include:



We will also be teaching your child how they can prevent cavities by regularly brushing and flossing their teeth and visiting the dentist!

Both fluoride varnish and sealants are safe, easy to apply and painless! Fluoride varnish can be painted onto teeth to protect them from cavities; it can be applied up to four times per year. Because it is so easy to apply fluoride varnish and sealants, we will not need to give your child anything to relax them, any shots, medications or x-rays.

Complete all sections of the consent form and return it to your child's homeroom teacher; we need your signed permission for your child to participate.

We encourage all children to have regular dental care. This program does NOT take the place of seeing your family dentist. A results form will be sent home with your child after we see them; we recommend your child see a dentist regarding any concerns we find with their teeth. Your child's smile is important!

If you don't have a current dentist or if you have any questions, please contact us at 701-328-2356.





PARENT CONSENT
 NORTH DAKOTA DEPARTMENT OF HEALTH
 ORAL HEALTH PROGRAM
 SFN 61686 (6-2022)

SEALIND: North Dakota Dental Sealant and Fluoride Varnish Program

| | | | |
|--|---|---|-------------------|
| Name of Child (First, Middle, Legal Last) | | Age | |
| Child's Date of Birth (MM/DD/YYYY) | Gender <input type="checkbox"/> Male <input type="checkbox"/> Female | Primary Language (if not English) | |
| Name of Teacher | | Grade | |
| <input type="checkbox"/> YES, I give my permission for my child to receive the following treatments: <input type="checkbox"/> Oral Screening <input type="checkbox"/> Sealants <input type="checkbox"/> Fluoride Varnish <input type="checkbox"/> NO, I do not give my permission for my child to receive treatment. Specify reason: <input type="checkbox"/> My child already has sealants and/or receives varnish. <input type="checkbox"/> My child regularly sees a dentist. <input type="checkbox"/> Other (describe): _____ | | | |
| <p>* If you checked no, you do not need to complete the rest of the form. Please return to the teacher. If you checked yes, complete the rest of the form and return to the teacher.</p> | | | |
| Name of Parent/Guardian | | Parent/Guardian Email Address | |
| Address | | City | State ZIP Code |
| Race of Child (check one) <input type="checkbox"/> White <input type="checkbox"/> Black/African American <input type="checkbox"/> Multi-racial <input type="checkbox"/> Asian <input type="checkbox"/> American Indian/Alaskan <input type="checkbox"/> Other <input type="checkbox"/> Declined to Answer | | | |
| Ethnicity of Child (check one) <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> Not Hispanic/Latino <input type="checkbox"/> Declined to Answer | | | |
| Tribal Affiliation of Child (if applicable) | | | |
| Yes | No | | |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your child allergic to anything? If yes, what? _____ | |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your child taking any medications? If yes, what? _____ | |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your child have any medical conditions such as heart disease, asthma, hay fever, hepatitis, cancer, diabetes, etc.? Or any other medical condition? If yes, specify: _____ | |
| <input type="checkbox"/> | <input type="checkbox"/> | Has your child ever needed dental services but was unable to receive services or denied services? If yes, explain: _____ | |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your child have a dentist? If yes, answer below: | |
| Name of Child's Dentist | | Date of Last Visit <input type="checkbox"/> Between 6-12 months ago | |
| | | <input type="checkbox"/> Within the last 6 months <input type="checkbox"/> More than one year ago <input type="checkbox"/> Never | |
| <input type="checkbox"/> My child has no dental insurance | | | |
| No family or child will receive a bill for services; however, Medicaid will be billed if your child is covered by Medicaid. | | | |
| Medicaid Number (if applicable) | | | |
| Photo Consent/Release: I consent to the use of pictures, video or audio recordings of my child for program promotion. <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Signature of Parent/Guardian | | Date | |

"This consent will be valid for the 12-month period of this program. By signing above, indicates that you have read and understand the contents of the general information and medical history form. You understand the terms of the consent agreement and that you have legal authority to give consent for this child. Your child's personal information will be kept confidential and will not be shared with any person who is not directly involved in the care of your child as part of the Health Insurance Portability and Accountability Act (HIPAA) without written authorization."

Appendix C: Visit Results Sheet

VISIT RESULTS

SEAL!ND Dental Sealant & Fluoride Varnish Program

To the Parent/Guardian of: _____

Date: _____

We were happy to see your child today!

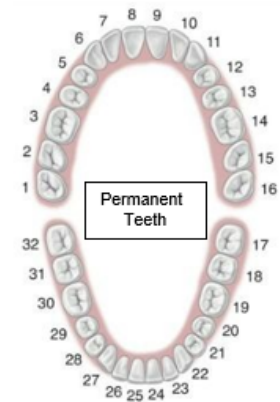
Your child received the following mouth care services today:

- Visual mouth check
- Fluoride treatment - fluoride varnish is a natural vitamin that is painted on the teeth to keep them strong (see instructions below)
- Sealants – thin plastic coating applied to the chewing surfaces of back teeth to prevent food and bacteria from getting into the grooves helping to prevent cavities

NOTES regarding your child: _____

Your child should see a dentist:

- Right away because of possible cavities and/or infection in his/her mouth
- Every six months for a cleaning and x-rays



If your child had a fluoride varnish treatment:

- Don't brush teeth until bedtime.
- They can eat and drink right away.
- For just today they should not have anything chewy like gummy bears or gum and nothing crunchy like chips.

If your child had sealants:

- They can eat and drink right away.
- The sealant is tooth colored and may not be visible.
- They may feel the sealant with their tongue but will quickly adjust to them.

All children should see their dentist every 6 months for teeth cleanings and x-rays!

If you have any questions or need help finding a dentist, please contact:

NORTH
Dakota | Health
Be Legendary.™
701-328-2356

Staff signature: _____

Appendix D: Electronic Student Dental Record

| Demographics | | | | |
|---|--|--|----------------------|----------------------|
| Date of birth: | Child's age in years: | | | |
| <input type="text"/> | <input type="text"/> | | | |
| Gender: | <input type="text"/> | | | |
| Race: | <input type="text"/> | | | |
| Ethnicity: | <input type="text"/> | | | |
| Street Address: | City: | State: | | |
| <input type="text"/> | <input type="text"/> | ND <input type="text"/> | | |
| Zip Code: | County: | Phone number: | | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | | |
| Screening Information | | | | |
| Site code: | <input type="text"/> | | | |
| Consent: | <input checked="" type="radio"/> Parent/Guardian Consent for Both (Sealants and Fluoride Varnish) <input type="radio"/> Parent/Guardian Consent for Sealant <input type="radio"/> Parent/Guardian Consent for Fluoride Varnish | | | |
| Screening or Application Not Completed: | <input type="radio"/> Child Absent <input type="radio"/> Child Moved <input type="radio"/> Child uncooperative | | | |
| Grade level: | <input type="text"/> | | | |
| | 1st Grade <input type="text"/> | | | |
| Screening | | | | |
| Screening/Application date: | <input type="text"/> | | | |
| | 04/01/2021 <input type="text"/> | | | |
| Previous dental visits (with or without treatment): | <input type="radio"/> No previous dental visit has occurred <input checked="" type="radio"/> Yes, a previous dental visit has occurred | | | |
| Untreated decay. Primary and/or permanent teeth. Loss of tooth structure at enamel surface, carious lesion, or sticky area. | <input type="radio"/> No untreated decay <input checked="" type="radio"/> Untreated decay present <input type="radio"/> Rampant decay - seven or more untreated areas | | | |
| Treated decay. Silver or composite fillings, restorations, crowns or missing teeth due to decay | <input type="radio"/> No sign of previous decay <input checked="" type="radio"/> Yes, filled teeth or restored teeth <input type="radio"/> Rampant decay - seven or more treated areas | | | |
| Sealants on Permanent Molars (if surface is smooth by toothpick exploration, sealant may be present): | <input checked="" type="radio"/> No sealants present <input type="radio"/> Yes, sealants previously placed by DDS | | | |
| 1: | 2: | 3: | 4: | 5: |
| <input type="text"/> | <input type="text"/> | Prescribe Sealant <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 12: | 13: | 14: | 15: | 16: |
| <input type="text"/> | <input type="text"/> | Prescribe Sealant <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 32: | 31: | 30: | 29: | 28: |
| <input type="text"/> | <input type="text"/> | Prescribe Sealant <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 21: | 20: | 19: | 18: | 17: |
| <input type="text"/> | <input type="text"/> | Prescribe Sealant <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Number of molars decayed or filled | 1st molars: | 2nd molars: | | |
| | 0 <input type="text"/> | 0 <input type="text"/> | | |

| Application | | | | |
|--|--------------------------------|--------------------------------|----------------------|----------------------|
| 1: | 2: | 3: | 4: | 5: |
| <input type="text"/> | <input type="text"/> | Place Sealant | <input type="text"/> | <input type="text"/> |
| 12: | 13: | 14: | 15: | 16: |
| <input type="text"/> | <input type="text"/> | Place Sealant | <input type="text"/> | <input type="text"/> |
| 32: | 31: | 30: | 29: | 28: |
| <input type="text"/> | <input type="text"/> | Place Sealant | <input type="text"/> | <input type="text"/> |
| 21: | 20: | 19: | 18: | 17: |
| <input type="text"/> | <input type="text"/> | Place Sealant | <input type="text"/> | <input type="text"/> |
| Number of teeth sealed | | | | |
| 1st molars: | 2nd molars: | 3rd molars: | | |
| <input type="text" value="4"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | | |
| 1st premolars: | 2nd premolars: | | | |
| <input type="text" value="0"/> | <input type="text" value="0"/> | | | |
| Fluoride varnish treatment received today: | | | | |
| <input type="radio"/> No, fluoride varnish was not applied today <input checked="" type="radio"/> Yes, fluoride varnish was applied today | | | | |
| Treatment Urgency: | | | | |
| <input type="radio"/> No obvious problem. Treatment: Next regular checkup within six months. <input checked="" type="radio"/> Early dental care (decay w/out pain or swelling). Treatment: Refer to dentist. <input type="radio"/> Urgent care (pain, infection, large decay, abscess or drainage). Treatment: Immediate referral. | | | | |
| Treatment complete: | | | | |
| <input type="checkbox"/> Yes | | | | |
| Treatment Notes: | | | | |
| baby teeth possible decay | | | | |