

## STATEWIDE EFFORTS TO INCREASE HPV VACCINATION RATES

### CHALLENGE

In South Dakota, HPV vaccination rates among adolescents continue to fall below the national average. In 2018, just 49.5% of South Dakota adolescents aged 13–17 were up to date on the HPV vaccine series, compared to a national average of 51.1%. When the 2021–2025 South Dakota Cancer Plan was first released, one of the goals was to increase the percentage of adolescents—both males and females—who are up to date with the HPV vaccine series to 60%.

Sanford Health, the largest health system in South Dakota, had also begun exploring interventions to boost HPV vaccination rates, as uptake for the HPV vaccine remained significantly lower compared to the system's internal rates for other vaccines. This disparity, along with the high prevalence of HPV in the population, elevated the initiative to a priority for both Sanford Health and South Dakota's Comprehensive Cancer Control Program (SD CCCP).

Like much of South Dakota, many of Sanford's clinics are in rural areas designated as medically underserved by the Health Resources and Services Administration (HRSA). This project offers an opportunity to uncover systemic barriers that contribute to health disparities—especially among American Indian populations, individuals with lower socioeconomic status, and those residing in rural or frontier communities.

### ACTION

South Dakota's Comprehensive Cancer Control Program (CCCP) partnered with Sanford Health to enhance HPV vaccination efforts. The initiative began in Year 1 at five clinics. In Year 2, it expanded to 26 clinics, and by Year 3, it had grown to include Sanford's entire South Dakota network—reaching 45 primary care clinics across Family Medicine, Pediatrics, Internal Medicine, and OBGYN.

For several years, Sanford has guided its HPV immunization improvement efforts using best practice recommendations from the American Academy of Pediatrics and the American Cancer Society. These guidelines highlight the importance of starting the HPV vaccine series as early as age 9 and completing it by age 13. Studies have also shown that using electronic health records for patient reminders and provider recalls is a cost-effective way to boost vaccination rates. To support these goals, clinics worked to implement a comprehensive, multi-faceted strategy to integrate these best practices across the broader health system and enhance HPV vaccination uptake.

The first step in their multi-pronged approach was obtaining approval for nurses to administer the HPV vaccine at ages nine and ten via a nursing protocol order (i.e., standing order). This empowered providers and nurses who already had the knowledge and support for this best practice to start executing. Sanford's electronic health record was updated to flag the HPV vaccine as due starting at age nine in June 2022. Sanford's immunization strategy department was responsible for the development and implementation of these interventions.

The Sanford Immunization team supported clinics in implementing reminder letters, sent every six months through the electronic medical record system, to patients ages 9 to 12 who were overdue for the HPV vaccine. Using the system's bulk communication feature, clinics could efficiently filter patients by age and vaccine type to reach thousands within minutes. For patients still overdue three months after the initial reminder, clinic nursing staff followed up with phone calls to answer questions, address concerns, and help schedule vaccination appointments. This reminder approach applied to any patient behind on either the first or second dose of the HPV vaccine.

To ensure patients are not overburdened with excessive communication attempts, Sanford Health has chosen the following communication schedule:

1. Initial communication about the HPV vaccination as a MyChart pop-up once the patient reaches the age of 9 years.
2. Every six months, patient reminder letters will be sent to all MyChart active patients ages 9 through 12 years.
3. Patients who remain overdue for the HPV vaccine three months after the reminder letter is sent will receive a phone call from clinic nursing staff to schedule a vaccine appointment.

Interventions were necessary to correct misunderstandings about the HPV vaccine and to reduce hesitancy around receiving it. Educational sessions were introduced to support informed conversations between providers, patients, and guardians about the vaccine. These sessions aimed to enhance providers' knowledge of HPV and the vaccine, strengthen cultural competency, and improve communication strategies and recommendation approaches. The sessions focused on building providers' confidence and effectiveness in recommending the vaccine, as well as improving their overall communication style.

## IMPACT

After Year 3 with this system change in place, the percentage of nine- and ten-year-olds who received at least one dose of the HPV vaccine rose from 0.7% to 20.9%, while the percentage who completed the full vaccine series increased from 0% to 6.9%. Comparing vaccine doses administered between June 2021–December 2022 to the same period the following year, there was an increase from 0 to 4,950 doses. Additionally, 13,627 more doses were administered to children ages 11 and 12. At the same time, a decrease in doses given to individuals aged 13 to 26 suggests improved timeliness in completing the vaccination series. Vaccinating more children at younger ages—likely before exposure—greatly reduces their future risk of developing HPV-related cancers.

In Year 1, Sanford selected 5 clinics for the launch of the intervention. The participating clinics are in rural communities where access to care may be limited. The intervention resulted in 2,302 reminders sent and a total of 411 vaccine doses being administered during the project year.

As the initiative grew from 26 clinics in Year 2 and then statewide by Year 3. So did the number of reminders that were disseminated. Over the two years, Sanford's intervention resulted in over 73,000 reminders being sent out, 2,100 phone call were made which equated to 11,467 doses being administered to 9–12-year-old males and females. In less than 5 years, a total of 132,430 doses throughout the state were administered.

Statewide progress continued under the South Dakota Cancer Plan. In Year 1, the percentage of adolescent males and females aged 13–17 who were up to date with the HPV vaccine series rose from the baseline of 49.5% to 61.2%. In Years 2 and 3, this figure further increased from 71.5% to 74.7%. After surpassing the initial target of 60%, we increased our goal to 80% to reflect ongoing progress and ambition.

## LESSONS LEARNED

There were many lessons learned from the HPV improvement project. To further enhance vaccination compliance year after year, Sanford strives to implement the following strategic initiatives.

1. Proactive Scheduling: maintaining consistent scheduling of well-child visits to ensure regular patient engagement.
2. Enhanced Patient Outreach: As staffing capacity increases, we will prioritize contacting patients with missed appointments and unanswered calls.
3. Targeted Education: Deliver comprehensive education to both staff and patients regarding vaccine benefits and address common concerns.
4. Clinical Culture: Reinforce a "no missed opportunities" approach, ensuring every patient interaction is leveraged to promote vaccination.
5. Data-Driven Monitoring: Rigorously track vaccine refusals, conduct thorough chart reconciliations, and continuously evaluate missed opportunities reports to inform ongoing improvements.

Education has played a vital role in building staff confidence when discussing the HPV vaccine. Sanford partnered with the Center for Immunization Research and Education to host four webinars. These sessions covered a range of topics, including HPV and the vaccine, the importance of initiating the vaccine series at age 9, debunking common myths and misconceptions, evaluating immunization rates, addressing racial and ethnic disparities in vaccination, and implementing effective communication strategies. Additionally, the education will provide a comparison of HPV immunization rates for our patients, statewide, and nationally. Participation in this training is required for providers, nursing staff, and front desk personnel. Continuing education credits were available for both medical and nursing professionals.

To enhance a “no missed opportunity” approach Sanford utilizes a missed opportunities report that captures data from all visit types where a patient remained overdue for a vaccine at the end of the appointment. Staff at participating clinics will audit 20% of these missed opportunities every other month. Audit findings will be reviewed with clinic teams to identify gaps and establish action steps to reduce future missed opportunities. In addition to these audits, monthly provider-level immunization rates will be shared to help drive improvements in HPV vaccination. Clinics will also provide feedback to the immunization strategy team regarding identified barriers and proposed solutions to improve vaccine uptake.

The Immunization Strategy team launched quarterly, theme-based competitions—funded internally—to encourage clinic engagement and support for the initiative. These incentivized contests aimed to boost participation and foster buy-in. One example was the ‘Donut Wait, Vaccinate!’ campaign, where clinics that followed the ‘No Missed Opportunity’ approach to vaccination were rewarded with donuts.

Studies continue to demonstrate a strong provider recommendation for vaccination is the best predictor for vaccine acceptance. Parents consistently rate their provider’s advice as one of the most influential elements in vaccine decision-making. This initiative also demonstrated that a personal phone call from a nurse had more influence in getting patients in to be vaccinated.

## NEXT STEPS

With support from the South Dakota Comprehensive Cancer Control Program, Sanford Health has now achieved full sustainability in its HPV vaccination system change. While significant progress has been made, continued focus is essential to create a culture where completing the HPV vaccine series by age 13 is standard practice—ensuring optimal protection for our patients. Ongoing reminders about timely vaccination will be integrated into daily safety briefs and team huddles.

An immunization performance improvement plan is currently being developed to guide staff in prioritizing key immunizations. HPV vaccination will be a central focus of this plan, underscoring the organization’s commitment to reducing HPV-related cancers through prevention. There are also internal discussions about aligning HPV vaccination rates with cervical cancer screening quality measures.

Monitoring of immunization rates will continue at both the department and provider levels. In addition, the effectiveness of reminder letters in prompting patients to visit the clinic for overdue vaccinations will continuously be evaluated. To improve patient convenience and experience, the MyChart platform will be enhanced to allow patients to schedule appointments directly from the reminder letter.

We value our partnership with Sanford Health and remain committed to increasing HPV vaccination rates while working to reduce the incidence of all HPV-related cancers.