

---

# **HPV Vaccine Uptake in Texas Pediatric Care Settings: 2014-2015 Environmental Scan Report**

---

This project was funded by a Cancer Center Support Grant (NCI 3 P30 CA016672-39S4) from the National Cancer Institute.

The University of Texas MD Anderson Cancer Center

Dana Ashrawi, M.Ed., R.N., Mehwish Javaid, M.S., Lori Stevens, M.B.A., Rosalind Bello, M.A., Lois Ramondetta, M.D.  
December 2015

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>3</b>
<b>INTRODUCTION</b>	<b>6</b>
<b>METHODOLOGY</b>	<b>9</b>
<b>TEXAS LANDSCAPE</b>	<b>11</b>
Uptake Rates Environment	11
Policy Environment	13
Vaccine Funding Environment	14
Research Environment	14
Statewide Organization Efforts	15
<b>PROVIDER AND SYSTEM ENVIRONMENTS</b>	<b>17</b>
Barriers to Increased Pediatric HPV Vaccination in Texas	17
Facilitators of Increased Pediatric HPV Vaccination in Texas	27
<b>SUMMARY AND RECOMMENDATIONS</b>	<b>36</b>
Key Informant Recommendations	36
Identified Research Needs	36
Texas Scan Specific Recommendations	37
Next Steps	38
<b>APPENDICES</b>	<b>39</b>
<b>GLOSSARY</b>	<b>66</b>
<b>REFERENCES</b>	<b>67</b>

The data in this report represents common themes and issues synthesized from information shared by stakeholders working in HPV vaccination across the state.

Suggested citation: The University of Texas MD Anderson Cancer Center. HPV Vaccine Uptake in Texas Pediatric Care Settings: 2014-2015 Environmental Scan Report. Houston, TX: MD Anderson Cancer Center; 2015.

The authors have no affiliations or financial involvements that conflict with the material presented in this report.

## ACKNOWLEDGEMENTS

This report is the result of widespread collaboration with many stakeholders across the state of Texas. We thank the individuals and organizations that contributed to the project. The following list contains the names of those contributing to this project who gave permission to be listed in the report.

### Survey Participants

Amistad Community Health Center  
 Association of American Indian Physicians  
 Austin Regional Clinic  
 Austin/Travis County Health and Human Services Department  
 Baylor College of Medicine  
 Baylor Scott and White Health and McLane Children's Hospital  
 Baylor Scott and White Health, Central Division  
 Caring For Children Foundation, Inc. (Care Van)  
 Cherokee County Public Health District  
 City of Houston - Houston Health Department  
 City of Laredo Health Department  
 Dr. Rachel Dawson DO, MPH  
 Hillcrest Family Health Center, in Waco  
 Hope Clinic, in Houston  
 Houston Pediatric Society  
 Immunization Coalition of Greater Houston  
 Immunization Collaborative of Tarrant County  
 Kelsey Seybold Clinic, in Houston  
 McAllen Independent School District  
 Parkland Health & Hospital System, in Dallas  
 Rice University's Baker Institute for Public Policy  
 San Antonio Metropolitan Health District  
 San Isidro Independent School District  
 Su Clinica, in Brownsville  
 Tarrant County Public Health Department  
 Texas Children's Health Plan Centers for Children and Women  
 Texas Children's Pediatrics, in Houston  
 Texas Tech University Health Sciences Center

The Immunization Partnership  
 The Immunization Project at Texas Children's Hospital  
 The University of Texas Medical Branch at Galveston  
 The University of Texas Health Science Center at Houston  
 The University of Texas Medical School Department of Pediatrics & Adolescent Medicine  
 The University of Texas Southwestern Medical Center, Harold C. Simmons Comprehensive Cancer Center, Department of Clinical Science and Population Sciences & Cancer Control  
 Urban Inter-tribal Center of Texas  
 Vecino Health Centers, in Houston  
 Williamson County and Cities Health District

### Survey Distributors

Bell County Medical Society  
 Bexar County Medical Society  
 Dallas County Medical Society  
 El Paso Medical Society  
 Hays-Blanco-Caldwell County Medical Society  
 Texas Academy of Family Practitioners- Harris County Academy of Family Physicians  
 Texas Association of Physician Assistants  
 Texas Chapter of the American Academy of Pediatrics – Texas Pediatric Society  
 Texas Medical Association

## The University of Texas MD Anderson Cancer Center Center's HPV-Associated Cancer Prevention Efforts

The association of human papillomavirus (HPV) with several types of cancers is well documented. Best understood is the causative role that certain HPV types play in the development of cervical cancer, but other cancers are associated with HPV including oropharyngeal, penile, anal, vaginal, and vulvar cancers. With the overarching goal of reducing the incidence and mortality of HPV-associated cancers, The University of Texas MD Anderson Cancer Center initiated cancer prevention initiatives to promote awareness of HPV-associated cancers and to provide education about HPV vaccination for the public and health care providers.

Initially, MD Anderson organized a comprehensive cancer control network in the Houston metropolitan service area to develop strategies to reduce the incidence and mortality of cervical cancer. To this end, MD Anderson convened a multidisciplinary team of health care professionals from the fields of gynecology, head and neck surgery, genitourinary surgery, and gastrointestinal oncology to examine commonalities among HPV-associated cancers and to identify opportunities to educate the public and health care community about prevention, screening, diagnosis, and treatment of HPV-associated cancers.

MD Anderson also convened the following four educational summits for the public, community health educators, and health care providers about HPV-associated cancers: two cervical cancer summits in 2012 and 2013, an HPV and cervical cancer summit in 2014, and an HPV-related diseases summit in 2015. The summits featured lectures by cancer experts about the diseases that HPV cause in both females and males and stressed the importance of and recommendations for HPV vaccination. During the 2015 summit, a resource kit, which provided a variety of HPV-related resources, was given to all participants. The HPV Resource Kit can also be found online on the Texas Cancer Information site (<http://www.texasancer.info/hpvresourcekit/>).

MD Anderson also created a free online HPV-related cancer course for health care professionals that features lectures on HPV biology, epidemiology, screening, diagnosis, and treatment for four HPV-related cancers: cervical, oropharyngeal, anal, and penile. The course is available on the MD Anderson Professional Oncology Education Resources website ([www.mdanderson.edu/poe](http://www.mdanderson.edu/poe)). The MD Anderson Moon Shots Program is the institution's comprehensive action plan to significantly reduce cancer deaths, accelerate cures, and prevent cancer altogether through the conversion of innovative scientific discoveries into clinical advances. In 2014, MD Anderson established an HPV Pilot Moon Shot program to develop, tailor, implement, and disseminate evidence-based community-focused prevention programs for HPV-associated cancers. The program focused on health policy and public and professional education in the first year. Many patient and provider resources were developed and are available for public use on the Texas Cancer Information website ([www.texasancer.info](http://www.texasancer.info)). In August 2015, the HPV pilot program was approved to become a full HPV Moon Shot program.

MD Anderson is now pleased to present this report on HPV vaccine uptake in the hope that the findings and recommendations will assist stakeholders in their efforts to increase HPV vaccine uptake in Texas, enhance existing collaborations, and prevent potentially avoidable cancer diagnoses and deaths related to HPV infections.

## Rationale for the Environmental Scan Report

In February 2014, due to increasing alarm about the low rates of HPV vaccine uptake and the rising rates of HPV-associated cancers, the President's Cancer Panel (PCP) published a report titled *HPV Vaccination Uptake: Urgency for Action to Prevent Cancer*, which analyzed reasons for the low uptake and outlined critical goals and objectives needed to increase uptake.<sup>1</sup> The primary goal recommended in the report was to reduce missed clinical opportunities. To encourage cancer centers to conduct environmental scans, the National Cancer Institute (NCI) made funding available to investigate the barriers to and facilitators of HPV vaccine uptake in pediatric settings, to promote coalition strengthening, and to suggest topics for future applied research based on the scan findings. Two institutions in Texas received awards: The University of Texas MD Anderson Cancer Center and Baylor College of Medicine. Sixteen other NCI-designated cancer centers also received awards. See Appendix A the complete list of NCI Cancer Center awardees.

The MD Anderson environmental scan mirrors the three goals of the PCP report:

- Reduce missed clinical opportunities to recommend and administer HPV vaccines;
- Increase parents', caregivers', and adolescents' acceptance of HPV vaccines; and,
- Maximize access to HPV vaccination services.

## Scan Report Format

In September 2014, MD Anderson initiated its statewide environmental scan to determine the barriers, facilitators, and best practices associated with HPV vaccination uptake in Texas in children ages 9-17 years in pediatric care settings based on the three critical goals identified in the PCP report. The scan report includes a description of the methodology used and the findings of both primary and secondary data collection, which are not representative in a statistical sense but present important qualitative views shared by people across Texas whose work involves pediatric HPV vaccination.

## INTRODUCTION

The national uptake rate of human papillomavirus (HPV) vaccination has remained far below the Healthy People 2020 goal of 80%, despite the introduction of the first HPV vaccine in 2006.<sup>2</sup> Although the country faces a growing number of cancer cases caused by HPV infection, the completion rates for the three-part vaccine series are still below 40% for girls and 20% for boys.<sup>3</sup> If vaccination uptake rates remain low, HPV-associated cancer incidence will continue to rise, along with associated costly treatments, reduced quality of life, and deaths, most of which are preventable with vaccination. During 2012, more than 500 Texans died of HPV-associated cancer.<sup>4</sup> Researchers estimated that the United States would have more than 9,600 HPV-associated cancer deaths in 2014.<sup>5</sup> Worldwide, more than 600,000 new cancer cases are caused annually by HPV.<sup>6</sup>

Three FDA-approved vaccines are currently available to prevent mucosal infections from multiple HPV types that cause most HPV-associated cancers and genital warts: a quadrivalent vaccine, Gardasil (June 2006); a nonavalent vaccine, Gardasil 9 (December 2014) for males and females; and a bivalent vaccine, Cervarix (October 2009) for females only. The U.S. Advisory Committee on Immunization Practices (ACIP) recommends giving the HPV vaccine at the 11- or 12-year-old well-child checkup, with catch-up doses administered as needed.<sup>7</sup> Two additional vaccines are recommended at the same well-child checkup: the Tdap (tetanus, diphtheria, and pertussis) vaccine and the meningococcal vaccine. Uptake rates for Tdap and meningococcal vaccines rose quickly after ACIP recommendations were published, reaching uptake of 87.6% and 79.3%, respectively, among adolescents in the United States and an uptake of 88.2% and 88.6%, respectively, in Texas in 2014.<sup>3</sup> Schools in Texas require Tdap and meningococcal vaccines, but at this time do not require HPV vaccination.

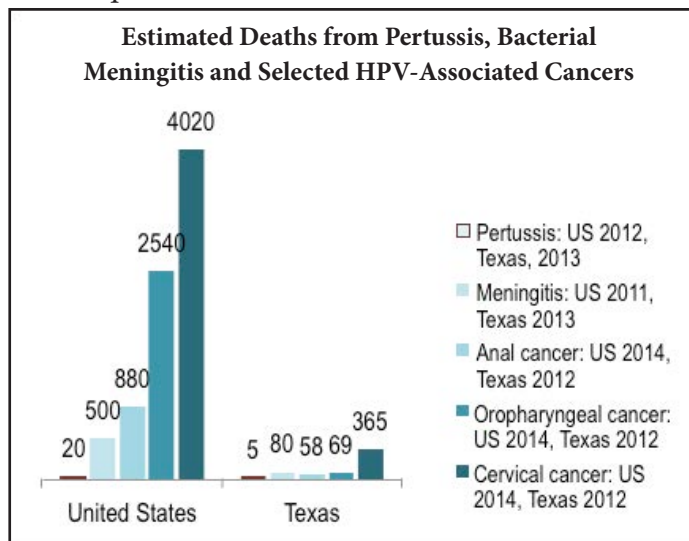


Figure 1. Estimated Deaths in the United States and Texas from Pertussis, Bacterial Meningitis and Selected HPV-Associated Cancers. HPV infection is thought to be responsible for 91% of anal and cervical cancers and 72% of oropharyngeal cancers. Source: National Cancer Institute. HPV and cancer.<sup>4,8-13</sup>

which cause 90% of genital warts. The dozen or so high-risk HPV types, including types 16 and 18, are responsible for most HPV-associated cancers.

Nearly all mucosal HPV infections resolve on their own within 2 years, but some will lead to dysplasia or cancer.<sup>14</sup> Mucosal infections associated with high-risk HPV types cause nearly all cancers of the cervix and anus and the majority of cancers of the oropharynx, vagina, vulva, and penis.<sup>14</sup> Other mucosal HPV-associated conditions include precancers, genital warts, and recurrent respiratory papillomatosis, which is a rare condition in which HPV is transmitted vertically from mother to infant during childbirth, causing

Figure 1 shows the estimated numbers of deaths from three HPV-associated cancers, as well as estimated deaths from pertussis (whooping cough) and bacterial meningitis.<sup>4,8-13</sup>

Among the more than 200 types of HPV, 40 or more are mucosal and are spread by intimate skin-to-skin contact, infecting the cervix, vagina, vulva, oropharynx (tonsils, base of the tongue, and back of the throat), anus, and penis. Mucosal HPV infections are the most common sexually transmitted infections (STIs) in the United States, affecting up to 90% of the population at some time in the human lifespan.<sup>14</sup> Of the sexually transmitted HPV types, two categories of risk associated with cancer have been identified: low and high risk. Infections with low-risk HPV types do not develop into cancers but do cause skin warts on or around the mouth, throat, genitals, and anus. These include HPV types 6 and 11,

warts to grow in the airway of the infant.

The incidence of HPV-associated cancer deaths continues to increase, with Texas cases and deaths accounting for a large proportion of the nation's statistics. Table 1 shows the number of estimated new cancer cases and deaths in the United States and Texas by anatomic site that can be attributed to mucosal HPV infection. In 2014, 429 deaths from cervical cancer in Texas<sup>13</sup> accounted for nearly 10% of the 4,020 deaths from cervical cancer nationally.<sup>5</sup> New cases of HPV-associated oropharyngeal cancers at MD Anderson increased from 169 cases in 1990 to 530 cases in 2012 and surpassed the number of new cervical cancer cases at MD Anderson during this period.

**Table 1. Estimated New Cases and Deaths from HPV-Associated Cancers**

	United States: 2014 <sup>5</sup>			Texas: 2012 <sup>13</sup>	
Cancer Site	New Cases	Deaths	Percentage of Cases Likely Caused by HPV <sup>4</sup>	New Cases	Deaths
Oropharynx	14,410* Males and females	2,540* Males and females	72	133 Males and females	69 Males and females
Anus, Anal Canal and Anorectum	7,210 Males and females	880 Males and females	91	382 Males and females	58 Males and females
Cervix	12,360	4,020	91	1156	365
Vulva	4,850	1,030	69	286	59
Vagina	3,170	880	75	82	27
Penis	1,640	320	63	119	20
<b>Total</b>	<b>43,640</b>	<b>9,670</b>		<b>2,025</b>	<b>529</b>

\* The number of cases and deaths from cancer of the pharynx is used as an approximation for number of cases and deaths from cancer of the oropharynx, a subsite of the pharynx, because it is known that some cases are misclassified as oral cavity and it is assumed that the number of pharynx cancer cases approximates the number of oropharynx cancer cases. From the table of US 2014 cancer cases and deaths estimates by Siegel et al., 34% of OC/pharynx cancer cases are in the pharynx (and 31% of OC/pharynx deaths are from cancers of the pharynx). These assumptions and percentages can be applied to the statistics regarding deaths from oral cavity/pharynx cancer in the Texas Estimated Deaths from Cancer reports from the Texas Department of State Health Services annual report on expected numbers of cancer cases and deaths, which does not separate out oropharynx as a cancer site.<sup>13</sup>

## Economic Impact of HPV-Associated Disease

Patients diagnosed as having HPV-associated disease experience heavy cost burdens from treatment and loss of income due to illness. In the United States, the annual cost burden of preventing and treating HPV-associated disease (genital warts, precancer, and cancer) is estimated to be \$8 billion.<sup>15</sup> The annual cost burden of HPV-associated diseases in Texas in 2007 was almost \$170 million.<sup>16</sup> In 2009 in Texas, Medicare payments for inpatient, outpatient, and hospice care for cervical cancer survivors was approximately \$15,600,000.<sup>17</sup>

## HPV Vaccination

### HPV Vaccines and Uptake Rates

Three vaccines are currently approved and recommended for use in the United States. The bivalent vaccine is approved for use in females, and the quadrivalent and nonavalent vaccines are approved for use in both males and females.<sup>18</sup> Each vaccine protects against specific strains of HPV and is indicated for different age ranges. Appendix B provides the ACIP guidelines. The current ACIP recommendation for preteens is to receive one dose each of Tdap vaccine, meningococcal conjugate (MenACWY) vaccine, and an HPV vaccine at the same provider visit.<sup>7</sup> The flu vaccine may also be given during the same office visit. The HPV vaccine series requires two return visits to complete the three-dose series.

According to the Centers for Disease Control and Prevention (CDC), the main reason for low uptake of HPV vaccines is “missed clinical opportunities,” which is the failure of a health care provider to give the HPV vaccination to an age-eligible child during a medical visit at which at least one other vaccine was administered, with provider hesitancy as a key contributor.<sup>19</sup> One study showed that parents had significantly higher odds of resisting vaccine recommendations when providers initiated vaccine recommendations with a question asking parents what they wanted to do about vaccinations (participatory format) rather than initiating the recommendation with a statement that a vaccine was needed (presumptive format).<sup>20</sup> A CDC analysis accompanying the 2012 NIS-Teen survey data suggests that coverage for girls with at least one dose of HPV could have been 92.6% if there were no missed clinical opportunities during visits for Tdap and MenACWY vaccinations.<sup>19</sup>

### International Comparison

Several countries have achieved significantly higher rates of HPV vaccination uptake among the female pediatric population. Figure 2 compares the HPV vaccination rate of U.S. females with the rates of females in several countries that have higher uptake rates.<sup>3,21</sup> Many of these countries have policies that permit immunization in school settings, bypassing the traditional clinical practice setting. In Rwanda, which has the highest HPV



Figure 2. Comparison of HPV Vaccination Rates of Females in Several Countries.<sup>3,21</sup>

vaccination uptake rate in the world, a successful campaign was conducted in schools to vaccinate sixth grade girls. In Australia, where school-based immunization began in 2007, recent studies have shown the benefits of HPV vaccination, including a 77% reduction in the prevalence of HPV 16 and HPV 18 infections (which cause most cervical cancers), a decrease in high-grade cervical abnormalities (the immediate precursors to cancer), and a more than 90% reduction in genital warts.<sup>22</sup> Since cervical cancer usually does not develop until 10 or more years after HPV infection, and the vaccine has been used regularly for only 9 to 10 years, a decrease in cervical cancer rates around the world is anticipated over the next few years.



## United States Vaccination Landscape

**Access to HPV vaccination services.** In the United States, due to complicated insurance coverage logistics, school-based immunization programs are not common; thus vaccines are primarily administered in clinic settings. In addition to missed clinical opportunities, another reason for lower vaccine uptake in the United States is that adolescent patients infrequently visit health care providers, which reduces the likelihood of HPV vaccine initiation and completion.<sup>23</sup> Individual states have different policies on the ages at which HPV vaccines can be administered in a pharmacy setting. Approximately one-third of states permit vaccination at retail pharmacies for children aged 13 years or older, presenting a barrier to vaccination during the recommended age range of 11 to 12 years.<sup>24</sup>

**School vaccine requirements.** Virginia, Rhode Island, and Washington, D.C., have passed legislation that requires the HPV vaccine for school entry, but these mandates have not been associated consistently with higher uptake rates.<sup>25</sup> A survey of vaccination attitudes in Virginia, where rates have not increased significantly, revealed that many parents feel that they need more information about the HPV vaccine.<sup>26</sup> Parents and caregivers can opt out of school-mandated vaccines by filing medical, religious, or personal belief exemptions in many states, although in 2015, two state legislatures repealed personal belief exemptions, and other state legislatures deliberated on legislation regarding vaccine exemptions.<sup>27</sup> Texas schools that reported nonmedical exemptions for the 2014-2015 school year indicated that 0.79% of students (40,997) had an exemption filed in order to skip required school vaccinations.<sup>27</sup>

## METHODOLOGY

### Data Collection

The environmental scan began with a literature search that identified 18 peer-reviewed articles on Texas pediatric HPV vaccination. Information obtained included state information such as vaccination rates, policies, funding (for research and vaccine coverage), and research findings. The data collected helped identify pertinent research, informational resources, and key informants to be interviewed. Analysis of the literature also provided information on questions to be included in key informant interviews and the scan survey.

Both primary and secondary data were collected for the environmental scan. Partner organizations also helped identify stakeholders in the study. Stakeholders included all levels of health care providers, public health entities, public health researchers, outreach/health education specialists, policy experts, immunization coalitions, and school administrators. In the next phase of the scan, 64 key informant interviews were conducted. The interview questions posed to stakeholders and methodology details can be found in Appendix C. In addition, a web-based survey approved by the MD Anderson Institutional Review Board was distributed to health care providers and clinical staff with the assistance of 18 professional associations (including county medical societies, medical associations, and immunization coalitions) and 36 health care systems (including public, private, military, and school-based organizations). The survey resulted in 1,132 responses from around Texas.

Key components of the environmental scan included assessment of vaccination-delivery methods, settings such as school-based vaccination access, the role of nurses and mobile delivery approaches, immunization coalitions, public health personnel, and research studies in progress. Specific attention was given to information about HPV vaccination attitudes, knowledge, and trends in underserved populations.

Figure 3 shows the locations of stakeholders who participated in key informant interviews, showing coverage of major metropolitan areas as well as some less populated areas. Figure 4 shows the geographic

locations of the respondents who submitted web-based surveys, which were returned from additional areas beyond those conducted through key informant interviews. See Appendix C for additional methodology details.

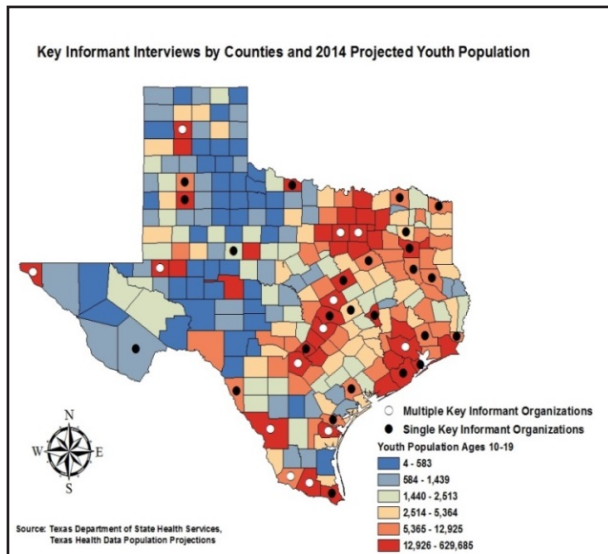


Figure 3. Map of Scan Key Informant Interviewee Locations by 2014 Projected Population of Youth Ages 10-19 Years.

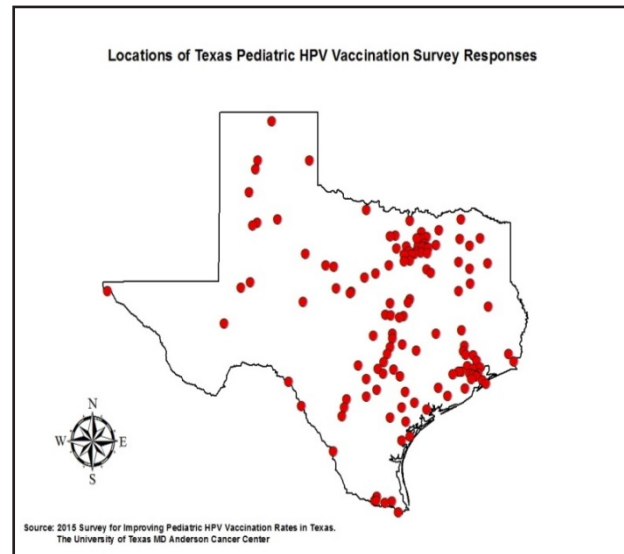


Figure 4. Map of Scan Survey Response Locations.

In the final phase of the scan, interview and survey data were analyzed with use of thematic content analysis to determine themes related to barriers and facilitators. The key findings were qualitative information collected from stakeholders working in HPV vaccination settings across the state.

## Scan Limitations

The size of the state of Texas, the second largest state in the continental U.S., with 254 counties and 11 Health Service Regions, presented challenges in reaching stakeholders, especially in less populated areas. To ensure the widest coverage, stakeholders were engaged from all 11 Texas Department of State Health Services regions. Targeted outreach was conducted to ensure representation from both rural and larger metropolitan areas. The resulting limitations of the scan include the following:

- The number of stakeholders contacted and then responding represent only a small proportion of the number of people who could potentially contribute information across the state;
- The exact response rate to the Internet survey could not be ascertained because of the unknown number of participants reached by our survey distribution methods; and,
- Immunization registry data do not capture the vaccination status of all of the children in Texas. ImmTrac does not account for duplicate entries, children who may no longer live in the state, children whose records are incomplete, or those who have not opted in.

## TEXAS LANDSCAPE

### Uptake Rates Environment

The environmental scan included an analysis of data from the National Immunization Survey-Teen (NIS-Teen) and from ImmTrac, the immunization registry maintained by the Texas Department of State Health Services (DSHS).

According to the 2014 NIS-Teen data, uptake rates for Tdap and meningococcal vaccines (which are required for adolescent school entry) were much higher than the uptake rates for HPV vaccine and even exceed the 80% Healthy People 2020 goal. Figure 5 shows that national rates for HPV series completion in 2014 were 39.7% for girls and 21.6% for boys.<sup>2</sup> In Texas, rates were estimated at 33.9% for females, a reduction from the 2013 rate of 38.9%. Rates for males in Texas increased slightly, from 15.0% in 2013 to 17.7% in 2014.<sup>2</sup> In Texas, the rates of boys and girls who received at least one dose of HPV vaccine were higher among those who received a recommendation from a provider than among those who did not receive a recommendation: 69.7% vs. 38.3% of girls and 63.5% vs. 20.1% of boys, respectively.<sup>28</sup>

As shown in Figure 6, El Paso County had higher estimated HPV vaccine completion rates than did Bexar County, the City of Houston, and the rest of the state.

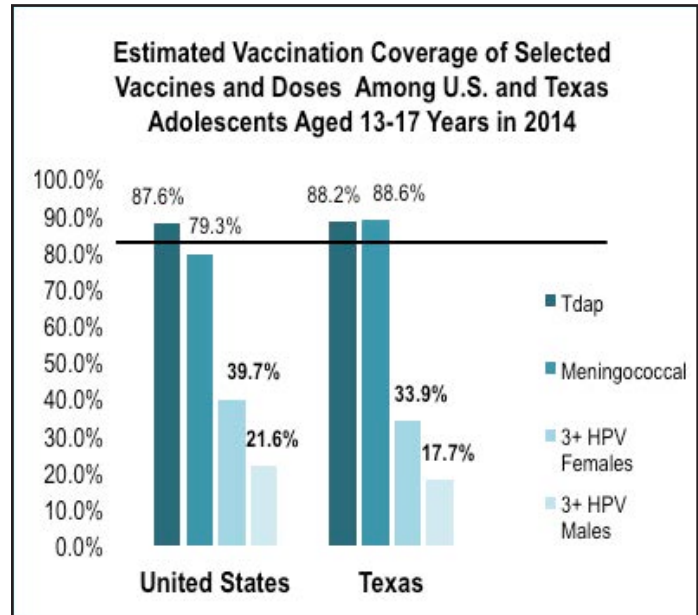


Figure 5. Estimated Vaccination Coverage with Selected Vaccines and Doses Among Texas Adolescents Aged 13-17 Years in 2014 Based on the National Immunization Survey-Teen.<sup>2</sup>

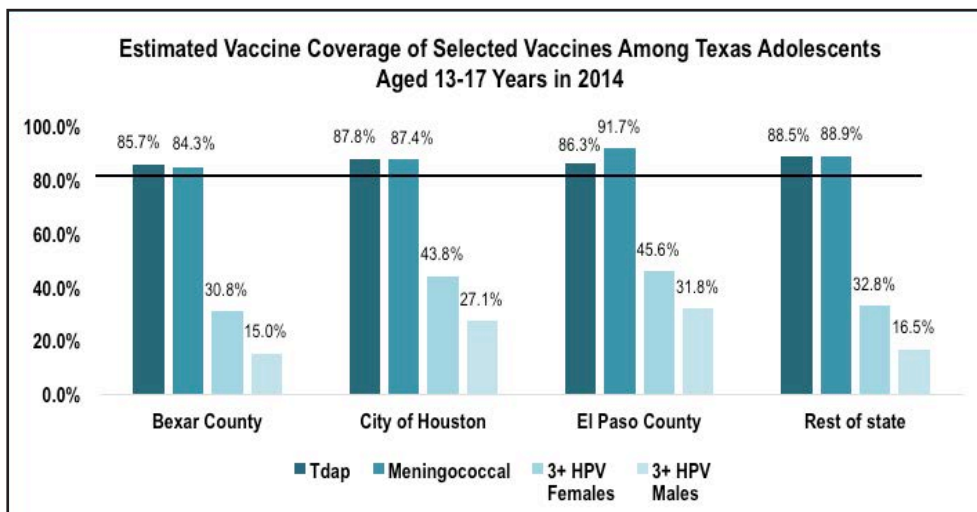


Figure 6. Estimated Vaccination Coverage with Selected Vaccines and Doses Among U.S. And Texas Adolescents Aged 13-17 Years in 2014 Based on the National Immunization Survey - Teen.<sup>2</sup>

Immunization data from ImmTrac is shown in Figure 7, however there are limitations to the ImmTrac data. One limitation is that state law defines ImmTrac as an opt-in registry, requiring providers to share only the immunization data for children whose parents have been asked and have given consent to be added to the state database.<sup>29</sup> In addition, according to the Texas DSHS, state records may be inaccurate because the database includes incomplete information, data on children who may no longer live in the state, and data on children who are deceased. As of 2011, the Texas DSHS reported that more than 94% of Texas newborns were registered for ImmTrac participation.<sup>30</sup>

Figure 7 shows the percentage of Texas children and youth who initiated and completed the HPV vaccine

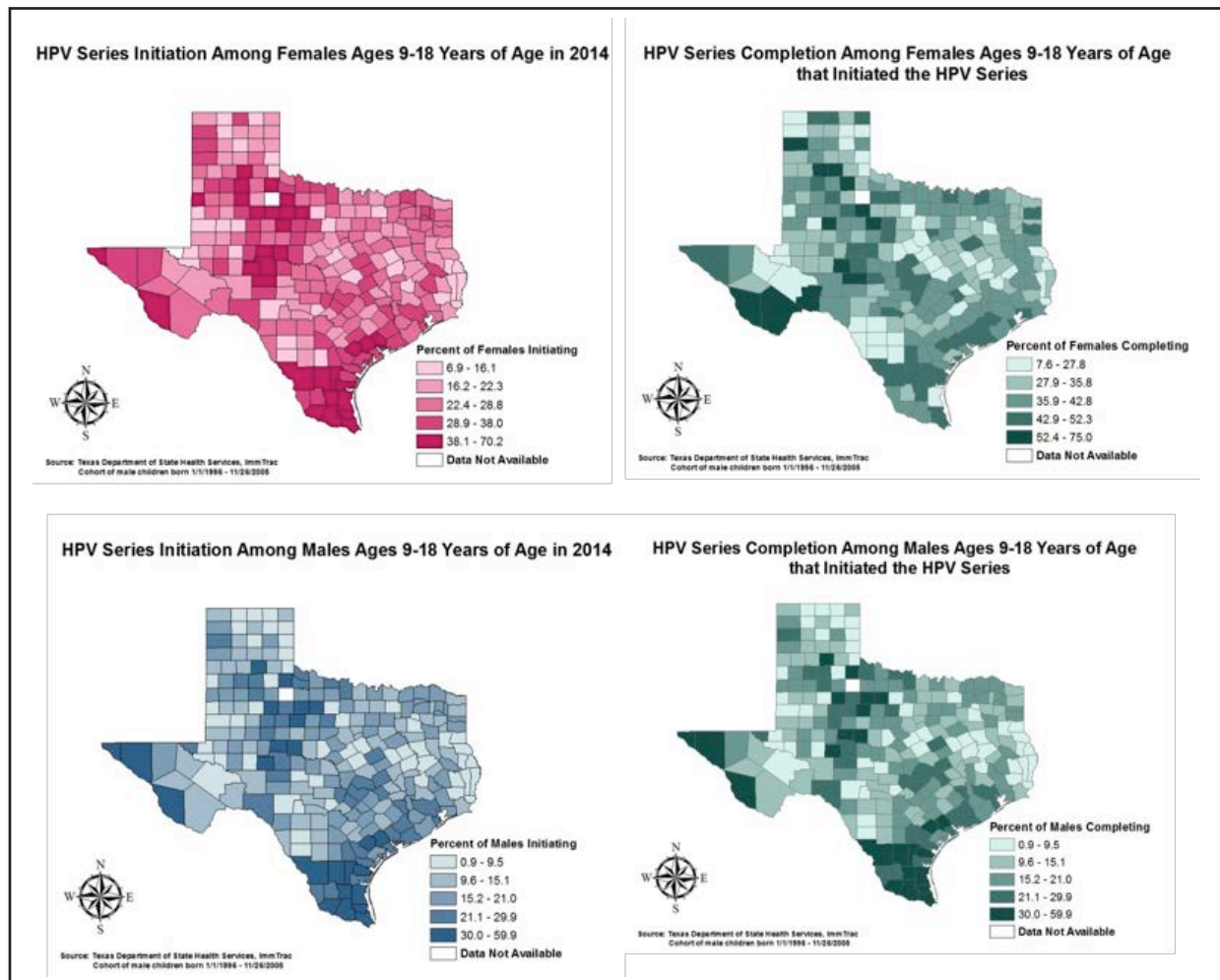


Figure 7. Estimated Child and Youth HPV Vaccine Initiation and Completion Rates by County. Source for HPV vaccine uptake rates: Texas Department of State Health Services, ImmTrac dataset for HPV vaccination in 2014.

The data in Figures 5, 6, and 7 suggest that Texas trends for HPV vaccination rates are consistent with national trends for HPV vaccination rates, with a poor rate of completion among girls and even lower initiation and completion rates among boys. Vaccination rates vary across the state, with some regions showing better uptake. Locations with relatively high uptake include west Texas, concentrated in and adjacent to El Paso County; several counties along the Texas-Mexico border, south Texas, and west central Texas; and a few counties in the panhandle. It is possible that better access to vaccinations or targeted regional efforts may be underlying reasons for the higher number of doses administered in these areas.

Counties with notably low uptake include many in northeast, east, and central Texas and the northeastern panhandle. The Dallas, Austin, and San Antonio metropolitan areas show low uptake, as do many rural counties.

For both girls and boys, completion rates are very low in most areas, likely illustrating the phenomenon of missed opportunities.<sup>31</sup> The data presented later in this scan will highlight some of the other potential barriers to vaccination uptake in Texas.

The Texas DSHS has worked with the CDC to conduct surveillance of vaccine ordering trends as a way of forecasting future vaccine uptake. A Texas DSHS report indicated that health care providers were ordering HPV vaccines at significantly less than the ideal quantity, just 1.3 times the number of Tdap or meningococcal vaccines instead of the ideal quantity of 3 times that of the quantities of single-dose Tdap or meningococcal vaccines, suggesting that many did not expect high rates of patients returning for second and third doses.<sup>31</sup> Texas DSHS staff reported regular communication with health care providers to encourage better promotion of the vaccine and ordering ratios.

Accurate tracking of vaccine uptake is vital to accelerating HPV vaccine uptake. The updated version of the ImmTrac platform holds promise for increasing the completeness and accuracy of the data regarding immunization status of Texas children via two-way communication between the state and local health care databases. The updated version contains both inventory and registry improvements, including improved coverage rate assessment reports and expanded reminder/recall capabilities.<sup>32</sup>

## Policy Environment

In 2007, the Texas legislature overturned an executive order by former Governor Rick Perry mandating HPV vaccines for girls before they enter the seventh grade.<sup>33,34</sup> Legislators voiced concern that parents needed the right to determine whether the HPV vaccine was appropriate for their daughters.<sup>35</sup> Since then, there have been no attempts to propose an HPV vaccine mandate in Texas.

However, several legislative initiatives supporting immunization in general have been proposed since 2007. During the Texas 84th Legislative Session, several immunization-related bills were proposed. One proposed bill would have relaxed the vaccine consent processes, but it did not pass. Another bill proposing a change in existing law to make ImmTrac an opt-out system was left in committee and therefore not considered for a vote. Until 2015, individual ImmTrac records were automatically expunged when enrolled children reached the age of 18; House Bill 2171 was passed in May 2015, allowing immunization records to be maintained in ImmTrac through age 26 years.<sup>36</sup> A key piece of legislation related to HPV-associated diseases, Senate Bill 200, called for the development of a statewide strategic plan to help reduce morbidity and mortality from HPV-associated cancer.<sup>36</sup> The strategic plan must be completed by December 31, 2016, in order to be submitted to the Governor and the Texas Legislature. This new legislation lays the groundwork for continued discussion of HPV-associated disease with Texas legislators. Future related initiatives may help to increase HPV vaccination rates and public awareness. See Appendix D for a list of immunization bills proposed in the most recent Texas legislative session.

Outside the Texas Legislature, various stakeholders are increasing efforts to develop actionable strategies to improve vaccination rates and generate HPV awareness. The Rice University Baker Institute for Public Policy issued a policy brief in October 2014 supporting various policy approaches to boost HPV vaccination uptake.<sup>37</sup> The paper called for policies to create awareness campaigns for physicians and parents, including the involvement of schools in sending home HPV vaccine information. An additional policy suggestion was that Texas require a minimum number of HPV vaccine doses be kept in stock in clinics, to encourage providers to heavily promote and strongly recommend the vaccine.

## Vaccine Payment and Coverage Environment

The HPV vaccine costs approximately \$108-\$134 (CDC price) or \$129-\$163 (private sector price) per dose in the United States.<sup>38</sup> The Affordable Care Act (ACA) requires health insurance plans to pay for vaccines recommended by ACIP. Excluded from this requirement are “grandfathered” insurance plans that did not cover pediatric vaccines before 2010.<sup>39</sup> In Texas, according to a report by the Texas Department of Insurance (TDI) on data from the Texas Association of Health Plans (TAHP) Survey as of July 2014, approximately 530,000 Texans were enrolled in health insurance plans that were established before the implementation of the ACA. Some of these plans are grandfathered plans and would not be required to pay for immunizations if they did not cover immunizations before the passage of the ACA.<sup>40</sup>

Texas is home to more than 800,000 uninsured children,<sup>41</sup> the highest number of any state, and 16.3% of children eligible for Medicaid or Children’s Health Insurance Program (CHIP) are not enrolled in either of these programs.<sup>42</sup> The Texas Vaccines For Children (TVFC) program provides vaccines at no cost to health care providers for families whose children are enrolled in Medicaid or CHIP or are of Native American/Alaska Native heritage, and for children whose private family health insurance policies do not cover vaccines (underinsured).<sup>43,44</sup> Children who initiate the HPV vaccination series with TVFC and do not complete the series before aging out of the TVFC program may experience a gap in insurance coverage and may not be able to afford the vaccine without insurance. Adult safety net programs are available to assist people over 18 with obtaining catch-up vaccines. For families that fall into the coverage gap and for patients who have entered the catch-up age range, other vaccine-assistance programs are available for those who qualify.<sup>45</sup> Vaccines for children of military families are covered by the military health care insurance program.

Texas is also home to more than one million unauthorized immigrants or undocumented persons.<sup>46</sup> In 2012, 13.1% of Texas students in kindergarten through grade 12 had at least one undocumented parent.<sup>46</sup> Undocumented persons are not eligible for public insurance. In addition, authorized immigrants are not eligible for insurance if they have been in the United States for less than 5 years.<sup>47</sup> These limitations may affect children’s access to vaccination services.

In 2014, some states expanded their Medicaid programs to cover all families with incomes below 133% of the federal poverty level; Texas is 1 of 22 states that did not participate in this expansion.<sup>48</sup> Some children turning age 18 years will not qualify for Medicaid as adults because the income requirements to qualify are more stringent for adults, resulting in lack of coverage for the HPV vaccine.

Providers must purchase vaccines in advance for families with private and employer-based health insurance plans. This can be a burden, and additional costs can be incurred by health care providers who are unaware of business practices that help prevent vaccine waste.<sup>49</sup>

## Texas Research Studies

Texas is fortunate to have funding resources available through the Cancer Prevention and Research Institute of Texas (CPRIT). CPRIT was established by a state constitutional amendment in 2007 to fund cancer research and prevention programs.<sup>50</sup> CPRIT has supported 12 HPV vaccination studies since 2010 and many additional HPV disease–associated investigations.<sup>51</sup> Two primary research and prevention funding opportunities targeted by the state are related to HPV vaccination and screening/early detection of cervical cancer.

Figure 8 shows CPRIT HPV vaccination studies across Texas funded as of June 2015. The CPRIT website

(<http://www.cpr.it.state.tx.us/>) details current funding opportunities and funded studies.<sup>52</sup>

Additional funding opportunities have been made available through the CDC, the National Cancer Institute, national and regional professional organizations, and foundations such as the Texas Medical Association, American Academy of Pediatrics, Episcopal Health Foundation, Methodist Healthcare Ministries, and the National Association of County and City Health Officials (NACCHO).

Numerous studies have addressed the knowledge and attitudes of families and providers that can report best practices for increasing vaccine uptake and reducing missed clinical opportunities. Texas-based research currently being conducted includes studies of provider and patient knowledge and attitudes and provider practices with multilevel interventions and assessments. See the section titled “Facilitators to Texas Pediatric HPV Vaccine Uptake” for information about studies in progress.

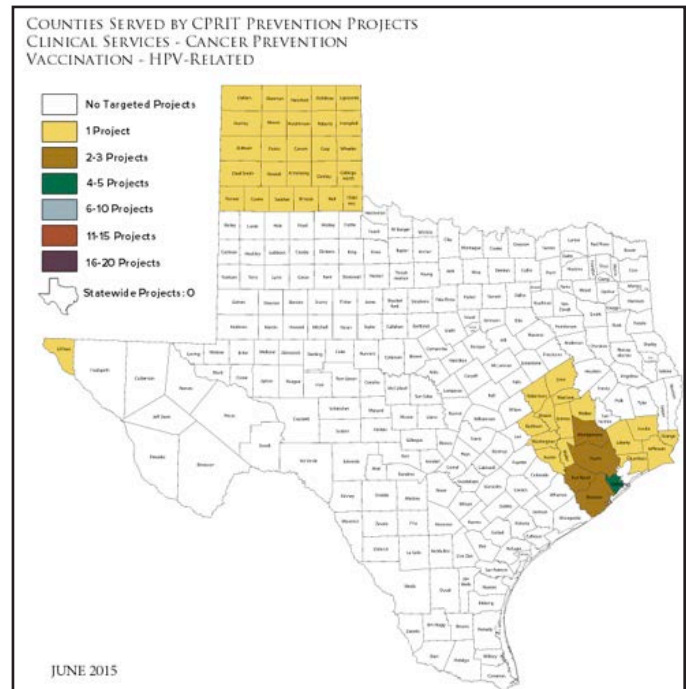


Figure 8. CPRIT June 2015 HPV Vaccination Study Map.

## Statewide Organization Efforts

**Texas Department of State Health Services (DSHS)** administers the Texas Vaccines For Children (TVFC) program and ImmTrac (the state immunization registry) and oversees local public health departments and regional offices across Texas, most of which provide immunization services. The Texas DSHS has produced HPV vaccination brochures in English and Spanish for patients.<sup>52</sup> In 2015 and 2016, the Texas DSHS and the Texas Health and Human Services Commission will collaborate with CPRIT to develop a statewide strategic plan to “significantly reduce morbidity and mortality from human papillomavirus-associated cancer,” as established by a bill passed during the 84th Legislature.<sup>36</sup> See Appendix D for more information on this legislation.

**Local Health Departments** across Texas provide a number of services for local residents. These departments are often run by cities and counties. Services can include immunizations and screenings. A list of local health departments can be found on the Texas DSHS website (<http://www.dshs.state.tx.us/regions/lhds.shtm>).<sup>52</sup>

**Metropolitan and regional immunization coalitions** across Texas focus on raising awareness, holding educational events, and bringing various stakeholders together to promote immunization in general. Increasing numbers of coalitions have started including HPV vaccination in their immunization events. See Appendix E for a list of these regional coalitions.

**The Immunization Partnership (TIP)** is a nonprofit organization that works across the state to educate parents, providers, and the public about immunizations; advocates for evidence-based public policy on immunization; and supports collaboration among individuals and groups promoting immunization. TIP works to build the capacity of immunization coalitions by providing online resources and in-person

training and support. TIP's Immunization Champions program places and trains clinic staff in reminder and recall processes. Their efforts have resulted in 50,000 immunization records screened and more than 14,000 patients recalled to clinics for immunizations, which included HPV vaccination.<sup>53</sup> TIP has provided professional educational “lunch and learn” sessions on HPV and HPV vaccination in several cities. TIP is also partnering with San Antonio Metropolitan Health to develop media messages to the community, aiming to improve HPV awareness. The biennial reports produced by TIP are a valuable resource for immunization in general and HPV vaccination in specific.

**The American Academy of Pediatrics (AAP)** funded an investigation of provider comfort level at military family clinics in multiple states including Texas (unpublished); see the “Facilitators of Increased Pediatric HPV Vaccination in Texas” section for more information. The Texas chapter of AAP is the Texas Pediatric Society (TPS). TPS has dedicated a page on its website to an HPV vaccination statement titled “A Vaccine to Prevent Cancer.”<sup>54</sup> TPS endorsed a letter to school districts suggesting that HPV and flu vaccines be added to school immunization referral letters to boost uptake of both vaccines. In addition, AAP has created a refusal form for parents who refuse any vaccination recommended by their pediatrician. See Appendix F for a copy of both letters. Both the TPS and the Texas Medical Association submitted joint testimony for House Bill 1282 sponsored by Representative John Zerwas, M.D. This bill supports the creation of the strategic plan for combatting HPV-associated cancers. See Appendix G for a copy of the joint testimony.

**The American Cancer Society (ACS)** funded a pilot study in 2008-2009 to conduct a chart review and implement prompts within the electronic health record system at Parkland Hospital and Health System Clinics in Dallas. The ACS in partnership with the CDC has developed a HPV vaccination roundtable to develop and implement pilot projects focused on addressing barriers to HPV vaccination.

**The National Cancer Institute (NCI)** funded studies related to HPV and HPV-associated cancer prevention and screening by researchers at The University of Texas Southwestern Medical Center, Baylor College of Medicine, and MD Anderson Cancer Center.

**The National Association of City and County Health Officials (NACCHO)** provided funding to the Tarrant County Public Health Department to engage with local health care providers to increase HPV vaccination rates.

**Cervical Cancer-Free Texas (CCFT)**, a member of the National Cervical Cancer Free Coalition, is led by researchers at The University of Texas Health Science Center at Houston School of Public Health.<sup>55</sup> Members of CCFT are principal investigators involved in multiple CPRIT vaccination focused studies. CCFT members have also participated in Cervical Cancer Summits held by MD Anderson.

**The Texas Medical Association (TMA)** jointly sponsors the Be Wise–Immunize initiative along with the TMA Alliance. This initiative is funded by the TMA and local grants to assist in funding local immunization events. TMA has created a HPV vaccine fact sheet in English and Spanish that can be given to parents.<sup>56</sup> The TMA has a Cancer Committee that is incorporating HPV-associated cancer prevention as part of its scope and will produce two educational videos for health care providers that will offer continuing education credits.



## PROVIDER AND SYSTEM ENVIRONMENTS

### Barriers to Increased Pediatric HPV Vaccination in Texas

This section reports our study findings on the barriers that came from key informant interviews and our web-based survey. The findings were organized according to the three critical goals of the President's Cancer Panel Report. Table 2 outlines the barriers found during the environmental scan that align with each of the PCP goals.

**Table 2. President's Cancer Panel Goals and Barriers Identified in Environmental Scan.**

President's Cancer Panel Goals		
1. Reduce missed clinical opportunities to recommend and administer HPV vaccines	2. Increase parents', caregivers', and adolescents' acceptance of HPV vaccines	3. Maximize access to HPV vaccination services
Barriers Identified in Environmental Scan		
1.1. Health care provider knowledge deficits 1.2. Health care provider communication gaps 1.3. Cost and administrative challenges 1.4. Office system gaps	2.1. Parent/caregiver/adolescent knowledge deficits 2.2. Safety concerns and negative attitudes 2.3. Cultural factors	3.1. Insurance gaps 3.2. Logistical burdens 3.3. Alternative setting gaps 3.4. Policy gaps

#### 1. GOAL: Reduce missed clinical opportunities to recommend and administer HPV vaccines.

##### 1.1. Health care provider knowledge deficits

**Limited understanding of HPV-associated diseases.** Although most health care providers are aware that HPV causes cervical cancer, some are still not aware of the other cancers caused by HPV and the prevalence of HPV infection in the community. Many are unaware of the increasing incidence of oropharyngeal cancers, especially in men. This knowledge may influence provider practice in recommending vaccination to boys as well as girls.

**Lack of awareness of HPV morbidity and mortality statistics.** Several stakeholders who were interviewed were surprised to learn that thousands of people die annually in the United States from HPV-associated cancers, compared with only 5 to 20 per year from whooping cough and about 1,000 from meningitis.<sup>8,9</sup>

**Lack of awareness of the health consequences of HPV-associated cancers.** Pediatricians do not see or treat cancers associated with HPV infection. Stakeholders suggested that if health care providers who see and treat HPV cancers would reach out to pediatric and family practice providers about the consequences of HPV infection, the sense of urgency to accelerate HPV vaccine uptake could increase. Stakeholders reported that some OB-GYN providers, who do see genital cancers, have become "HPV vaccination champions," and head and neck cancer specialists are educating peers in similar ways.

**Lack of awareness of optimal immune response data.** Many health care providers are not aware that the HPV vaccination administered before the age of 14 years is more effective because adolescents are not likely to have had prior exposure to sexually transmitted types of HPV; furthermore, the HPV vaccination administered before age 14 produces a higher level of immunity than does the vaccination given to older teens or adults. Delayed use of the vaccine as a result of provider concerns about potentially being asked to discuss sexual health at the time of HPV vaccination is one of the reasons for delay in vaccination until late teen years. This lack of knowledge and hesitancy to discuss HPV may explain why many providers recommend the vaccine more often to older teens, when it is less effective, than at the recommended age of 11 to 12 years.

**Some key informants were not aware of the numbers of deaths caused by HPV-associated cancers, and some were not aware of the fact that HPV causes oropharyngeal cancers.**

**Lack of education about HPV for health care staff.** According to the survey, only 22% of respondents reported having any in-service training about HPV in their care setting. Key informants suggested that convenient and accessible education through a variety of modes is needed.

## 1.2. Health care provider communication gaps

**Lack of awareness about “bundling.”** Many health care providers are not aware that the CDC advises “bundling” of vaccines, including the recommendation that the HPV vaccine be offered with the Tdap and meningococcal vaccine in a short and simple (presumptive) statement: “Today your child is due for Tdap, HPV, and meningococcal vaccines.”<sup>57</sup>

**Ethical concerns about bundling and presumptive statements.** Some key informants stated that they feel ethically obliged to point out to parents/caregivers that the HPV vaccine is not required for school attendance rather than focusing on the fact that it is recommended by the CDC. This communication strategy separates the vaccine from the other adolescent vaccines and can dilute the recommendation. In one study, health care providers significantly overestimated parental concerns about HPV vaccines.<sup>58</sup>

### Key Informant

“I prefer a patient-centered conversation that involves asking the parent how they feel about the HPV vaccine. I do not feel comfortable making a presumptive statement.”

**Separated vaccine recommendation.** Among health care providers responding to the scan survey, 29% (328 of 782) reported that they recommend the HPV vaccine separately from the other adolescent vaccines, stating the vaccine is “optional” or “not required but highly recommended.”

**Care team not providing the same recommendation.** In many office settings, there is inconsistent messaging about HPV vaccines among physicians, nurses, or/and office staff. Some stakeholders reported having heard members of their own staff warning parents not to vaccinate their child due to safety concerns.

**Difficulty conveying a recommendation.** A stakeholder familiar with vaccine communications noted that some providers report that they are making a strong recommendation when in actuality the recommendation can be improved. For example, a key informant noted that some providers had difficulty translating their knowledge into language that all parents can easily understand. An ongoing Texas research study is using audio recording of physician recommendations in order to evaluate the strength of the provider recommendation.

### Key Informant

“Some people are great clinicians but not great communicators.”

**Delaying recommendation.** Some providers share the parental perception that there is no need for the HPV vaccine to be given until closer to sexual debut. This delay may result in vaccines being administered to teens older than the recommended ages. In a 2009 Texas survey, 51.5% of providers serving female patients reported not always recommending the vaccination to 11- and 12-year-olds.<sup>59</sup> These findings further highlight a knowledge deficit on the importance of vaccinating at the optimal age. Key informants express concerns that the lack of knowledge among providers was due in part to the fact that pediatric providers do not treat HPV-associated diseases that occur later.

**Time limitations.** It takes time to educate parents who are concerned about vaccines, especially parents who are concerned about HPV vaccines. Providers reported difficulty in finding the time to conduct in-depth education on HPV vaccination during the well-child checkup due to competing priorities during the visit and at times due to the number of patients remaining to be seen during the day.

**Vaccine safety concerns.** Some providers expressed personal concern about HPV vaccine safety due to lack of knowledge about the results of studies on vaccine safety. In December 2013, the World Health Organization reported that more than 175 million doses of HPV vaccine had been administered with no serious adverse events being confirmed as being related to the vaccine.<sup>60</sup> Provider safety concerns affect willingness to discuss the benefits of the vaccine with parents and patients. According to the scan survey, 6% (45 of 782) of responding health care providers questioned the safety of the HPV vaccine.

#### Key Informant

“I dropped out of Vaccines for Children – too much administrative work.”

### 1.3. Cost and administrative challenges

**Cost concerns.** Of the 1,132 survey respondents, 130 commented on problems with stocking HPV vaccines; 48 (37%) of these 130 respondents said cost is a problem when patients have private insurance because the health care provider must preorder the vaccines. The cost of ordering vaccines up-front is a burden for some providers, especially when patients do not complete the series.<sup>61</sup> Several respondents stated they are not reimbursed at cost. To assist health care providers, the AAP has produced a guide to improve business practices about vaccinations.<sup>62</sup>

**Administrative frustrations.** Several key informants reported challenges with ordering HPV vaccines and with returning vaccines that are unused. Some reported that returning unused vaccines is difficult and that TVFC requires too much administrative paperwork. Others have reported ordering vaccines from TVFC but receiving incorrect numbers of doses.

**Vaccine expiration.** Some medical care providers reported having vaccine doses that expired when not enough patients returned to complete the series. There is a lack of awareness of programs designed to help avoid vaccine expiration.<sup>61,62</sup> According to one vaccine manufacturer representative, vaccines ordered directly from the manufacturer can be replaced for credit within one year after the expiration date. Health care staff need to contact individual wholesale vaccine distributors for details about return policies.

**Supply not available in non-pediatric settings.** Some less typical settings for HPV vaccination, such as OB-GYN offices, do not have certified refrigerators for storing HPV vaccines for their vaccine age-eligible patients. As a result, patients told about the vaccine would have to find another provider to administer the vaccination. This can lead to a missed opportunity for vaccination. If the practitioner is part of a multispecialty clinic, their staff or patient must leave the unit and go to the pediatric area of the facility to obtain the vaccine, which can create delays.

**Understocking.** Providers serving patients with private insurance must order and purchase vaccines in advance, which can lead to understocking of HPV vaccines due to cost concerns.

#### 1.4. Office system gaps

**ImmTrac communication gaps.** According to key informants, the state immunization registry does not allow two-way communication at this time, and any communication with the registry is minimal. Providers can upload data to ImmTrac; however, they are unable to retrieve data to obtain statistics regarding uptake rates. Due to the one-way nature of this system, practices rely on separate immunization databases or clinic records to monitor their rates. Key informants stated that they receive error reports from ImmTrac uploads and when this happens, ImmTrac does not clearly specify which records need to be corrected, leading to frustration with the system.

**ImmTrac data gaps.** Of the 782 physicians that responded to the survey, 312 (40%) reported that they do not upload immunization data to ImmTrac because it is not required (opt-in system), and those who do upload data have reported that it is challenging and time-consuming. Correcting records and resolving error reports with ImmTrac adds to the administrative burden that care settings must manage.

**Local Immunization Information System (IIS) gaps.** Some key informants in public health departments of smaller cities and counties and some mobile immunization providers reported that their systems could not distinguish between second and third doses of HPV vaccines by individual patient. Other key informants reported that they could not easily retrieve data comparing rates by gender.

**Electronic Health Record (EHR) gaps.** Many EHRs do not have vaccine-prompting capabilities for providers. Some key informants have not activated “HPV vaccine prompts” available through their EHR systems. Furthermore, it is not common practice for health systems used by key informants to document reasons for vaccine refusal within an EHR. This can lead to future missed opportunities since the provider will not have information at the next visit to help devise a different type of recommendation.

**Reminder and recall challenges.** Smaller clinical settings often do not have automated reminder/recall systems and lack the personnel required for personal reminder phone calls. Phone calls were cited most often by survey respondents as the most effective reminder method.

**2. GOAL: Increase parents', caregivers', and adolescents' acceptance of HPV vaccines.**

Health care provider responses (591 respondents) to the survey reported the following perceptions and experiences as reasons for parental vaccine refusal:

- 30.3% - Parental belief that a child is too young (179);
- 19.5% - Safety concerns from media portrayal of HPV vaccination (115);
- 16.9% - Lack of knowledge about HPV-associated diseases (100); and,
- 15.9% - Concerns about HPV vaccination causing risky sexual behavior (94).

Health care providers responding to the survey reported their perceptions about the degree of impact of various factors on HPV vaccine uptake in their practices, shown in Figures 9 and 10.

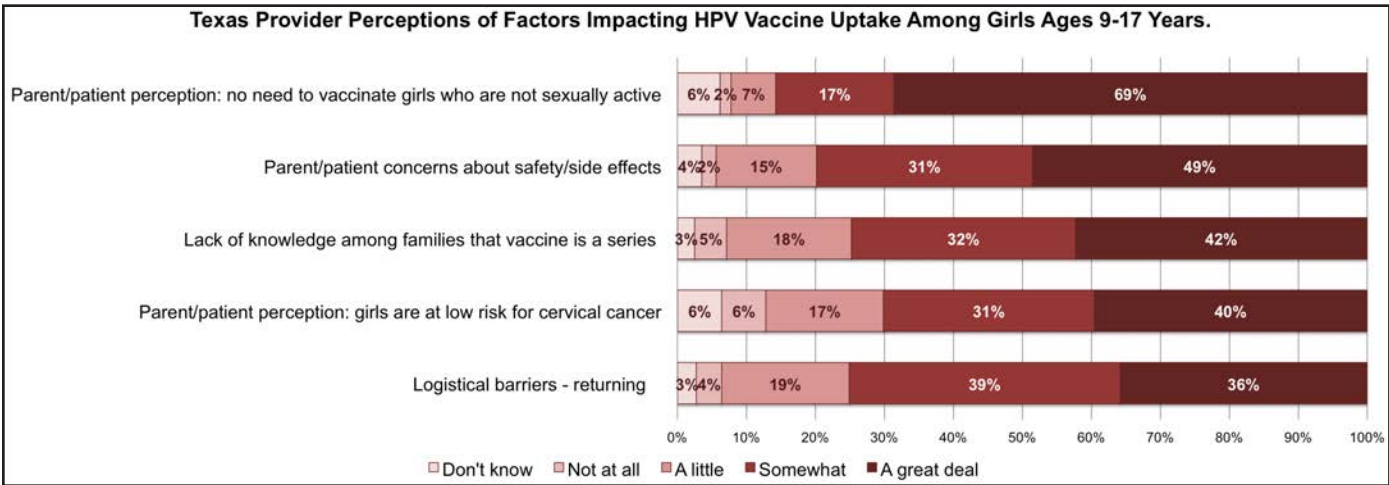


Figure 9. Texas Provider Perceptions of Factors Impacting HPV Vaccine Uptake Among Girls Ages 9-17 Years.

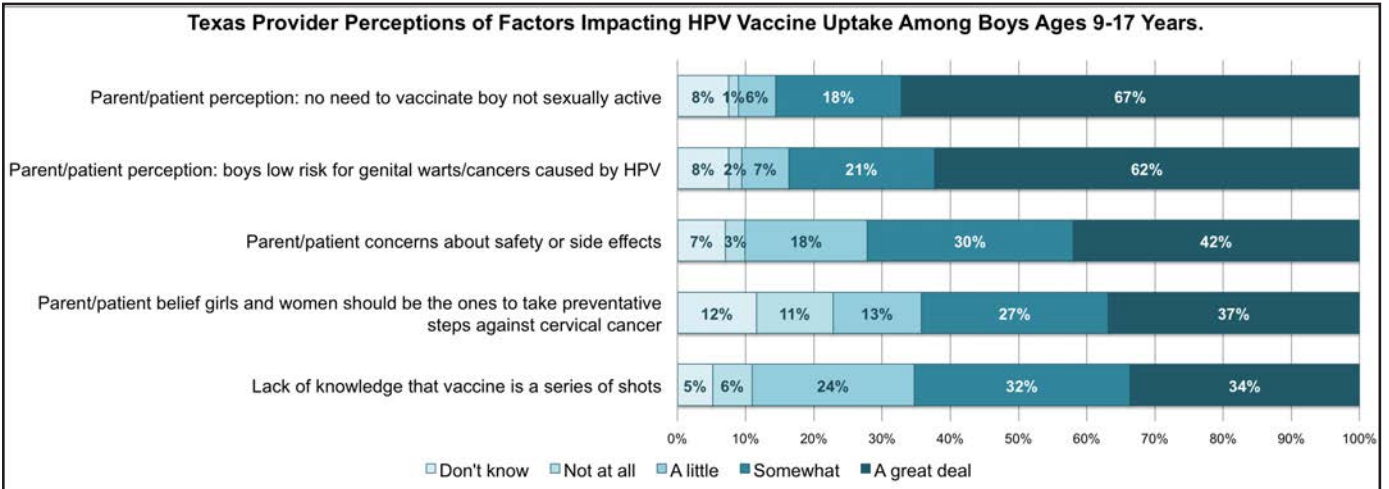


Figure 10. Texas Provider Perceptions of Factors Impacting HPV Vaccine Uptake Among Boys Ages 9-17 Years.

## 2.1. Parent/caregiver/adolescent knowledge deficits

**Lack of knowledge that HPV vaccine is for boys and girls.** Many survey respondents and key informants reported that many parents and caregivers are still not aware that the HPV vaccine is also recommended for boys.

**Lack of knowledge of the optimal age for vaccination.** Most survey respondents and key informants reported that many parents and caregivers are not aware of the reasons for vaccination at age 11 or 12 years being related to optimal immune response and that it is ideal to provide protection well in advance of sexual debut.

**Lack of knowledge that three shots are needed.** As shown in Figures 9 and 10, survey respondents perceived that the lack of knowledge about HPV vaccination as a three-shot series is one of the top five barriers for both girls and boys.

**Focus on school requirements.** Some survey respondents and key informants reported that parents and caregivers prefer that their children obtain only vaccines that are required for school attendance.

**Risky behavior concerns.** Some survey respondents and key informants reported that parents and caregivers are concerned that receiving HPV vaccines will be interpreted by children as permission to be sexually active and are unaware that research has established that there is no increase in sexual behavior after HPV vaccination.<sup>63</sup>

**Confusion of HPV, HIV, and Hep B.** Some key informants reported that parents say they have not heard of HPV and do not know what it stands for or what it causes. In addition, some parents confuse the acronym “HPV” with “HIV” and “Hep B.”

## 2.2. Safety concerns and negative attitudes

**Safety data needed.** Key informants stated that parents often remarked that the vaccine is relatively new and they would be more comfortable vaccinating their children when more safety data are available. Key informants stated that concerned parents often cite specific articles in the press, videos on the Internet, or anecdotes from friends.

**Pockets of vaccine exemptions.** The number of students with vaccine exemptions in Texas was 2,314 during the 2003-2004 school year; this number increased to 40,997 during the 2014-2015 school year, approximately 17 times higher.<sup>64,65,66</sup> Certain areas of Texas have high rates of nonmedical vaccine exemptions. Several key informants associated what they referred to as conservative areas and areas where people are followers of alternative therapies with higher vaccine refusal sentiment. The most frequently mentioned areas for vaccine refusal sentiment were North and Central Texas, San Antonio, and Austin.

**Since 2004, the number Texas students with conscientious vaccine exemptions has increased from about 3,000 to more than 40,000.<sup>64-66</sup>**

**Higher education and income.** Some key informants reported anecdotally that HPV vaccine uptake is higher in Texas Vaccines for Children (TVFC) program families and lower in families with private insurance, higher levels of education, and higher income. This idea was also found in a published study in which mothers with some college education or a college degree had lower scores on the perceived benefits of HPV vaccines.<sup>67</sup>

**Concern about multiple injections in one visit.** Key informants shared that some parents are reluctant to permit multiple vaccines during a single office visit. Often these patients need reassurance that it is safe to receive Tdap, HPV, and meningococcal vaccines at the same visit.

**HPV shots hurt more.** Some stakeholders mentioned that patients express concerns that the HPV vaccines are more painful than other immunizations and may cause their child more discomfort. The key informants suggested that this may be one reason for poor rates of return for completion doses.

### 2.3 Cultural factors

**Insufficient educational materials in some languages.** Families speak many different languages across Texas, with languages other than English spoken by more than one-third of the population.<sup>68</sup> Many parents require interpreters to help them navigate health care systems and need materials in languages other than English. Many materials are available in Spanish; however, the availability of informative pamphlets in other highly used languages in Texas, such as Asian languages, is limited and is recommended by some key informants and researchers. Often, preteens and teens coming for well-child checkups are interpreting provider information for parents who are not fluent in English.

In a study of Vietnamese-American mothers with low English proficiency in a large city in Texas, 2 in 3 had not discussed HPV vaccine with their physician, but 86% of these mothers stated they would have had their daughter vaccinated if it had been recommended.<sup>69</sup>

**Addressing health disparities.** Several Texas research studies have noted differences among white, African American, and Hispanic parents in their attitudes and beliefs about HPV vaccines. In an NCI-funded study yet to be published, letters containing HPV vaccine information that were mailed home in advance of a well-child checkup to attempt to boost HPV acceptance were effective only among Hispanic parents.<sup>70</sup> In an ongoing CPRIT-funded trial, African American parents who received HPV vaccine-specific materials had lower vaccine acceptance rates than did those who received a CDC pamphlet listing four recommended adolescent vaccines. Some key informants reported anecdotally that white, African American, and Native American parents/caregivers tend to be less accepting of the vaccine than are Hispanic and Asian parents.

**Mistrust of vaccines in some groups.** Some key informants reported that some Native American and African American parents and caregivers tend to mistrust vaccines, possibly due to a mistrust of government.

**Discomfort with topics of cancer and death.** Some key informants shared the observation that some cultural groups prefer to avoid discussing death and cancer. This can make discussion of HPV infection challenging, especially if the provider is not aware of this discomfort and not prepared to conduct the conversation.

### 3. GOAL: Maximize access to HPV vaccination services.

#### 3.1. Insurance gaps

**Medicaid/CHIP reapplication process.** Two key informants shared the opinion that the requirement to reapply for children’s Medicaid/CHIP imposes a burden on families.<sup>48</sup>

**Insurance navigation.** Many key informants commented that navigating insurance sign-up can be challenging for some parents and caregivers due to the large number of choices that can be considered. In addition, low literacy rates and lack of access to personal computers hamper insurance navigation. Some providers have trained staff to help patients with insurance navigation and believe that this can improve access to many services, including vaccines.

**Undocumented families.** Some key informants commented that undocumented parents may tend to avoid seeking medical care outside of emergencies due to fear of deportation. In other cases, some key informants reported that they administer vaccines in mobile clinics or back-to-school health fairs and assume that a number of the children served are undocumented.

**Loss of CHIP access in some settings.** One mobile immunization services provider reported losing the ability to see CHIP children, representing a loss of up to 20% of their former patient population in some areas. Some public health departments also noted that they are no longer able to provide services to children on CHIP due to changes in designated providers.<sup>71</sup> These reports may be related to changes in income limits for Medicaid that caused some children to move from CHIP to Medicaid.<sup>72</sup>

**Complex insurance rules. One key informant mentioned that their clinic cannot provide HPV vaccinations to patients during family planning visits.** In Texas, Medicaid funds for family planning cannot be applied to cover vaccinations.<sup>73</sup>

#### Key Informant

“Planned Parenthood does see some patients under age 18 for family planning, and our providers can recommend the vaccine, but if the patient is on Medicaid it is not covered as part of family planning. They have to go elsewhere for the vaccine.”

**High deductible/high co-pay insurance plans.** Some key informants mentioned that some health insurance plans do not pay for vaccines until a deductible is met. They stated that some families will therefore pay for only school-required vaccines.

**Rural care logistics.** In some Texas counties, families must travel long distances to see a health care provider. The school health services director of San Isidro Independent School District in Starr County reported that families may have to travel 40-50 miles in order to reach a clinic.



### 3.2. Logistical burdens

**Three-shot series.** The need to return for two additional doses was among the top five barriers reported by providers completing the survey. Key informants also observed this challenge and suggested a need for additional efforts to improve completion. Some key informants suggested that it is difficult for working parents to take time off from work and return to the clinic for follow-up doses.

**Consent form rules.** Several key informants mentioned that having a separate consent form for each dose of the HPV vaccine seems to be a barrier to completion. Several suggested that having a signed single consent form for all three doses on file might be helpful to improve uptake. In a Texas study of teen boys whose parents were given an opportunity to consent to school-based vaccine administration, investigators suggested that the time delay from sending and receiving consent forms to patient's homes impedes uptake rates.<sup>74</sup>

#### Key Informant

“If we are not meeting the desired vaccination rates, we can't complain about how to get it done.”

**Migrant families.** A clinic near the Texas-Mexico border serves a large number of migrant farmworker families who experience logistical burdens in obtaining health care services and maintaining a medical home. Many migrant parents face the challenges of either paying for health care out of pocket or needing to use Medicaid providers in more than one state. The Texas Association of Community Health Centers (TACHC) developed a Medicaid portability program for the Texas Migrant Care Network allowing the use of Texas Medicaid coverage in other states, which may help some families maintain health care services.<sup>75</sup>

### 3.3. Alternative setting gaps

**Lack of uptake in alternative settings.** Some key informants mentioned that HPV vaccination rates could be increased if HPV vaccinations were available in alternative settings outside of the pediatric well-child check-up in clinics. These settings include mobile clinics; adolescent gynecology offices; settings that conduct sexual assault forensic examinations; home health care settings; psychiatric facilities; juvenile detention facilities; homes for disabled children, teens, and young adults; homeless shelters; immigration detention facilities; and retail pharmacies.

**OB-GYN exams.** A pediatric OB-GYN visit is often an opportunity to recommend HPV vaccines. In addition to recommending HPV vaccines during a routine exam, gynecologists often perform a forensic examination after a sexual assault. One gynecologist who was interviewed recommends HPV vaccines to assault victims and yet is not equipped to store and administer the vaccines.

**Settings where consent is not a barrier.** In juvenile justice facilities, some psychiatric facilities, and many homes for children and teens with disabilities, consent for medical treatment is under the discretion of the facility rather than the parents. However, some key informants reported that it remains challenging to initiate and complete doses in these populations due to the lack of routine processes. In addition, even if the HPV vaccination series is initiated in these types of facilities, it is up to the families to obtain completion doses after release.

### 3.4. Policy gaps

**Negative attitudes stemming from the 2007 Texas HPV vaccine mandate attempt.** Many key informants believe that the best way to increase rates would be a mandate requiring HPV vaccination, but most believe a mandate is not possible at this time. Key informants cite this as a major barrier to increased uptake. Providers and other stakeholders often reported parents commenting that they did not like the attempted mandate in 2007.

**Lack of access to school immunization data.** Many key informants believe that schools have a very accurate database of vaccination records, since they must verify immunization records for school entry requirements. Schools conduct an annual random sample report of immunization rates among kindergartners and students entering middle school.<sup>76</sup> Nurses and other school personnel with access to the records may be able to determine HPV immunization statistics; however, at this time there is no requirement to share data on immunizations not required for school attendance.

**Opt-in requirement for ImmTrac.** Many key informants expressed that having an opt-out immunization registry would be beneficial for tracking accurate HPV vaccination rates. House Bill 465, proposing a change of existing law to make ImmTrac an opt-out system, was submitted in 2015 but was left in committee and did not reach the status of being considered for a vote. See Appendix C for more details on this bill.

**School immunization requirement documents.** One key informant suggested that the lack of the HPV vaccination listed on school immunization forms keeps parents from accepting the vaccine. School districts have varied policies about promoting HPV vaccination. Most do not include non-required vaccines on the school immunization requirements letter that goes home to parents listing immunizations due for attendance.

**Multiple consent forms needed.** According to stakeholders, the completion of consent forms for each HPV dose reduces the likelihood of completion.

**Limitations of retail pharmacy immunization.** Several key informants mentioned that HPV vaccines should be given in alternative settings, including pharmacies. In Texas, retail pharmacy administration of HPV vaccines requires the child to be at least 14 years old.<sup>24</sup> The vaccine can only be given at the recommended age of 11 or 12 years old with a prescription from the primary care provider.

## Facilitators of Increased Pediatric HPV Vaccination in Texas

This section reports our study findings on the facilitators that came from key informant interviews and our web-based survey. The findings were organized according to the three critical goals of the President’s Cancer Panel Report. Table 2 outlines the facilitators found during the environmental scan that align with each of the PCP goals.

**Table 3. President’s Cancer Panel Goals and Facilitators Identified in Environmental Scan.**

President’s Cancer Panel Goals		
1. Reduce missed clinical opportunities to recommend and administer HPV vaccines	2. Increase parents’, caregivers’, and adolescents’ acceptance of HPV vaccines	3. Maximize access to HPV vaccination services
Facilitators Identified in Environmental Scan		
1.1. Multifaceted provider education 1.2. Communicating a strong recommendation 1.3. Champions 1.4. Streamlined care coordination 1.5. Routine immunization tracking 1.6. Optimized use of Electronic Health Records (EHRs) 1.7. Reminder and recall systems	2.1. Parent/caregiver/ adolescent education 2.2. Appropriate educational materials and methods 2.3. Decision-making support 2.4. School involvement	3.1. Increased insurance coverage 3.2. Policy/institutional policy initiatives 3.3. Collaboration between stakeholders

### 1. GOAL: Reduce missed clinical opportunities to recommend and administer HPV vaccines.

#### 1.1. Multifaceted provider education

##### Scan Interview and Survey Findings

##### **Combining medical information with communication tips.**

Many key informants mentioned that health care provider education that combines HPV information with communication strategies has helped remind providers of best practices and gives providers practical tips to use in the clinic. The Immunization Partnership and some large health systems have regular provider education through in-staff trainings, increasing opportunities to keep up-to-date with current information and providing a platform for health care professionals to share best practices with each other. According to key informants, the exchange of information has helped improve clinical practice and care coordination.

##### **Key Informant**

“At our regular TVFC provider in-services, providers get to ask questions and often ask for tips from each other on dealing with vaccine resistant parents. The feedback we get is that these exchanges are very helpful.”

**Varied methods.** Survey respondents reported that the most common ways that providers seek education are through staff meetings (74%), literature and handouts (52%), online continuing education courses (39%), and speaker series attendance (34%). In addition, key informants suggested that clinic systems use TVFC training workshops and educational sessions provided by representatives of vaccine manufacturers. An internal investigation of health care provider education in pediatric HPV vaccination with office staff in military family clinics used the format of a pre-test followed by an educational video and post-test. After this training, the health care providers reported an increased comfort level in recommending HPV vaccines. Furthermore, an increased number of HPV vaccinations was observed for one month after the intervention. The investigation also suggested that ongoing education is necessary since improved uptake rates were not maintained in subsequent months.

**Tailored educational sessions.** The Immunization Partnership and several large health care systems have investigated or are investigating the creation of tailored provider education based on frequently reported concerns from parents. Several researchers in Texas are studying the use of tailored interactive video tools for parents. Results of these projects will be available at the completion of the studies.

## 1.2. Communicating a strong recommendation

**Strong bundled recommendation.** The CDC recommends providers give a strong, bundled recommendation and sandwich the HPV vaccine between Tdap and meningococcal vaccines. According to key informants, providers who give a strong, bundled recommendation and align the vaccine with cancer prevention have observed higher rates of vaccine acceptance. A clinic in Houston reported that they make a bundled presumptive recommendation that has led to a higher initiation rate, which is higher than the state average.

**Uniform recommendation.** HPV vaccine uptake rates have often increased when the entire multidisciplinary team provides a uniform bundled recommendation. Key informants shared that full staff involvement with the same recommendation helps reinforce the importance of vaccinations and provides additional opportunities to engage families in dialogue and address concerns.

**Sharing information on the optimal age for vaccine response.** Parental concerns are often eased when providers share that the 11- to 12-year-old checkup is the optimum time to vaccinate because of the stronger immune response at this age and the protection provided from HPV-associated diseases before exposure.

**Culturally sensitive care.** Providing culturally sensitive care and remaining attuned to religious concerns and language barriers can help to increase acceptance of the HPV vaccine. Some key informants shared their perceptions that Native Americans and African Americans are sometimes more skeptical of vaccines. Key informants also commented that better provider-family relationships are developed when providers remain aware of the family dynamics of their patients. At times, grandparents or other relatives may be the primary caregivers of the patient, and remaining attuned to family roles can help improve delivery of the vaccine recommendation. Also mentioned was the subject of

### Key Informant

One provider reported that training clinic staff to think of vaccinations as the “Sixth Vital Sign” and to deliver a uniform message regardless of their role in vaccination has also helped reinforce the recommendation.

### Key Informant Input

To provide a clear recommendation, one provider shared a practice of not using the words “required” or “recommended” when introducing the vaccine. Instead, the statement used is, “Your child will be receiving vaccines to protect against tetanus/lock jaw and whooping cough, meningitis and cancer today. Most parents who hear this accept the vaccine.”

some ethnic groups being less comfortable with discussion of death and cancer and that provider awareness of preferences can positively affect parent education.

### 1.3. Champions

**Clinic champions.** Some key informants reported that when they created a vaccine advocate or “champion,” their clinic vaccination rates increased. The champion can be any clinic staff member that strongly recommends the vaccine, communicates effectively, and provides education, thus reducing missed clinical opportunities. In some settings, the champion also provides navigational assistance with scheduling follow-up appointments for series completion, sends pre-clinic visit information to the family, and tracks available clinic supply of doses. Clinic staff members with a personal awareness of HPV-associated disease are especially strong advocates and keep the staff focused on giving the vaccine.

**Community champions.** Certain areas of Texas have particularly passionate advocates of HPV vaccination. These individuals, when able to build and maintain strong relationships with key decision-makers in school systems and other venues, have had a significant impact on awareness and uptake. One key informant initiated an effort, with support from the Texas Pediatric Society and the local medical society, to meet with multiple school districts and persuade them to add a recommendation for HPV and flu vaccines to the parent immunization notification letter that goes home to children entering the seventh grade. To date, one school district has agreed to include the HPV vaccine recommendation. See Appendixes F and H for a sample modified immunization letter and a letter from the Texas Pediatric Society that any stakeholder can use to initiate similar efforts in their local areas.

### 1.4. Streamlined care coordination

**Standing orders for vaccination.** Key informants, who implemented standing orders authorizing certified clinic staff to vaccinate patients before the physician consult, reported that the approach works well in reducing missed clinical opportunities. Providers who use this approach have integrated HPV into the routine immunization status check. Examples of vaccination standing orders are available from the Immunization Action Coalition and The Immunization Partnership. See Appendix I for links to organization websites where these documents can be found.

**Universal immunization status assessment.** Key informants who have started checking immunization status at all health care visits, not just at well-child visits, have helped capture additional opportunities to vaccinate patients who are due to receive the vaccine. Initiating this process in selected safety-net clinics was associated with receipt of other adolescent vaccines and chart documentation relating to vaccination.<sup>77</sup>

**Pre-visit planning protocol.** Key informants who have implemented a pre-visit planning protocol that identifies patients who are due for HPV doses before their scheduled appointment have maximized clinical opportunities in some settings. Through this approach, clinic staff use EHR reports and identify eligible patients who are due for HPV doses and are scheduled for an upcoming doctor visit. Staff will contact the patient, confirm the appointment, and reinforce the importance of receiving the vaccination. Parkland Health and Hospital System has an ongoing program that incorporates pre-visit planning and supports the building of a registry of eligible patients and reminder systems to improve HPV vaccination rates.

**Tag-team approach.** Some clinics have adopted a “tag-team” approach to recommending the vaccine. In this approach, the clinic staff introduce the vaccines that will be given before the physician/advanced practice practitioner consult and assess whether the parent/caregiver and patient are willing to receive the vaccines. If the parent/caregiver or patient refuses or is undecided, the staff relays this information to the physician who then is alerted of the need to provide education and address concerns. Key informants who have adopted this approach say it allows the patient time to consider the vaccine and also presents multiple opportunities to help resolve concerns during the visit.

**Convenient series completion processes.** Many clinics have immunization-only visits available to streamline the process of completing the series. Few clinics schedule the follow-up visits during the time of initial dose; however, some are scheduling second and third doses in advance and using existing reminder systems for these appointments. Mobile immunization providers have helped increase uptake rates in areas with limited access to care and are effective when working in tandem with school districts. Some facilities have implemented evening and Saturday hours to increase family access to services.

### 1.5. Routine immunization tracking

**Careful documentation and tracking of immunizations.** As noted in the barriers section, most key informants shared the challenges they have experienced with tracking rate data in their clinic system. Routine documentation and active tracking of immunizations have helped some clinics provide a baseline on uptake rates. Baseline rates provide the basis for quality improvement projects and are essential in order to document significant change.

**Immunization steering committees.** Some clinic systems have created immunization steering committees composed of staff who monitor clinic immunization rates. However, the formation of such committees alone is not sufficient to track rates effectively. Key informants reported that support from clinic leadership and prioritization of rate surveillance facilitates the tracking efforts.

**Intranet dashboards with provider-level rates.** Several clinic systems have recently developed or are discussing the implementation of a tracking tool or dashboard that generates provider-level vaccination rates. Key informants who have implemented dashboards believe that tracking vaccination rates and increasing transparency of individual provider rates may help increase performance of the providers.

**ImmTrac entries.** In order to obtain accurate vaccination rates for the state and make statewide improvements, inputting data into ImmTrac is imperative. Most clinics that reported few challenges with using ImmTrac had automatic electronic data entry as opposed to manual data entry. Updates to the ImmTrac registry are expected to improve both registry and inventory capabilities and allow bidirectional communication, enabling providers to submit queries, generate reports, and use expanded reminder recall features.<sup>78</sup>

### 1.6. Optimized use of Electronic Health Records (EHRs)

**EHR vaccine flags.** Some clinics have activated “flags” or “prompts” within their EHRs to notify providers of missed or appropriately timed doses of HPV vaccines. Other clinics use best practice modules to remind providers of immunization guidelines and also features that allow for quick printing of educational materials for the parent and patient to review.

**Entering refusal reasons in EHR.** In one ongoing study, the EHR was used to enter reasons for HPV vaccine refusal, with the intent to better prepare for the next visit. The results of this study have not yet been published.

**Tracking by demographic rates.** In another ongoing study, rates of various demographic groups are being analyzed in order to select the groups with the lowest rate of HPV vaccination to target for improvement in a large health care system.

## 1.7 Reminder and recall systems

**Reminder and recall method combinations.** Some key informants in Texas are using nurse/staff phone calls, automated phone dialers, or postcards as reminders. Other reminders include writing the dates of the next visits on the post-visit summary, the Vaccine Information Statements, a business card, or industry reminder magnets. Some key informants are using quick reference (QR) codes, text messages, e-mail reminders, and patient portals to remind parents and caregivers of the completion doses needed. Key informants shared that a combination of reminder and recall methods results in the greatest return for series completion, with care team-initiated phone calls being the most effective method for improving completion rates. E-mail reminders through patient portals and text messages have generated great interest with patients and need to be monitored to assess effectiveness.

**Personal phone calls.** Several key informants reported that nurses calling the parents was the most effective method in securing return visits for vaccine completion.

### Key Informant Input

A provider at a clinic with greater than 50% completion rates stated, “We proactively utilized multiple reminder strategies to improve completion. In our experience, nurse-initiated calls directly to the patient are effective in scheduling follow-up doses. The one-on-one interaction serves as another opportunity for education and the added customer service makes a difference.”

## 2. GOAL: Increase parents’, caregivers’, and adolescents’ acceptance of HPV vaccines.

### 2.1. Parent/caregiver/adolescent education

**Providers who engage families in dialogue.** Many key informants reported that engaging patients’ families in dialogue and providing education during office visit have helped reduce parental concerns.

**Early education about HPV vaccines.** Several key informants shared that they start the discussion of the HPV vaccine early. Starting the conversation early helps inform parents of the vaccine before the recommended age and reinforces the importance of the vaccine. One provider reports writing on the post-visit forms after 10-year-old checkups that the HPV vaccine will be due in one year. Another provider reported starting to notify parents of the HPV vaccine during the 4-year-old checkup.

**Onsite family education.** Several key informants reported that onsite health education from the care team and targeted education such as the use of promotora (community health care worker) models to deliver culturally appropriate patient education to eligible patients in the waiting room before the provider-patient encounter have been shown to help increase parental knowledge and acceptance. An active CPRIT-funded study is using the waiting room health education approach to inform parents of HPV and HPV vaccines and determine the impact on vaccine acceptance and uptake. A prior study found that navigation services helped boost completion rates.<sup>79</sup>

### Key Informant Input

Hispanic girls in mother-daughter educational groups with navigation support for obtaining vaccines in a community near the Texas-Mexico border had a 72.2% completion rate. Girls in mother-daughter pairs that received only a brochure achieved less than 42.5% completion.<sup>79</sup>

**Pre-visit education.** Another method to provide education outside the provider-patient encounter is

through mailing educational materials for the parent to review before administration of the first dose. This allows the parent to educate themselves in their own time and has appeared to be effective in engaging the parent in dialogue with the provider. A previous NCI-funded grant involved mailing materials home to families in the Fort Worth area several weeks ahead of the preadolescent well-child check-up.<sup>70</sup> The pre-visit information was associated with higher HPV vaccine acceptance only among Hispanic parents.

## 2.2. Appropriate educational materials and methods

### Illustrations and photographs of HPV-associated diseases.

Key informants expressed that educational materials with pictures of HPV-associated diseases have been helpful in educating families of the effects of contracting HPV, particularly with adolescent patients, and particularly with photographs of anogenital warts. Key informants felt that such pictures are effective in motivating teenagers to accept the HPV vaccine.

**Culturally appropriate materials.** According to key informants, Vaccine Information Statements (VIS), brochures, and materials in various languages can help facilitate understanding of HPV vaccines and HPV-associated diseases.

**Age-appropriate educational materials for adolescents.** Parental education is typically the focus during patient visits. However, researchers as well as other key informants have noted that the adolescent patients themselves, especially those in late adolescence, can influence the decision to receive the HPV vaccination. At times, adolescents facilitate decision-making; therefore, materials that can effectively help inform youth of HPV-associated diseases may improve HPV education and HPV vaccine uptake.

**Promoting general HPV awareness in media.** Some stakeholder organizations conduct or plan to conduct mass media campaigns using billboards, posters, and local media outlets such as television programming, which may lead to an increase in HPV awareness.

**Clinic education materials.** Key informants believe that targeted approaches such as posters, brochures, and messaging in clinic lobbies have helped educate families during well-child check-ups and encourage discussion about the vaccine. Other key informants stated that HPV brochures provided by the Texas DSHS, the CDC, the Texas Medical Association, and pharmaceutical companies are useful. Some key informants developed their own local educational documents about HPV and HPV vaccines that they believed were effective in obtaining parental acceptance.

### Key Informant

“A lot of parents in our county will say they think it is too soon for HPV vaccine when their child is 11 or 12. But we do see them tending to accept the HPV vaccine later, when they bring their son or daughter at age 16 or 17 for the precollege meningococcal vaccine.”

An in-progress CPRIT-funded HPV educational trial in a Texas Hispanic population is using two interventions to educate parents, a fotonovella and a tailored interactive video tool. Preliminary findings showed a significant increase in vaccination for children of parents using the interactive tool (M. Fernandez, PhD, unpublished data, July 2015).



**Personal stories of local people.** Texas Children’s Hospital in Houston has produced two books of personal stories around vaccination. The most recent is a book of personal stories of people who have had an HPV-associated cancer or who have lost a loved one due to HPV-associated cancer. Such books may have the potential to motivate people to support HPV vaccination. See Appendix I for more information on how to find this book.

### 2.3. Decision-making support

**Decision-making support tools.** Some clinics have partnered with researchers to develop decision-making support tools for parents such as brief educational sessions, pre-session and post-session questionnaires, tablet-based modules, and interactive videos. The questionnaires are designed to reinforce the rationale for vaccinating as opposed to simply presenting information. Results of these studies will be published in the future.

**Youth education.** Parents may rely on the child patient when making the decision to vaccinate, particularly in cultures where the child serves as the family interpreter. Therefore, it is helpful to make sure youth are informed and health literate. Key informants reported that some youth who appear to have received HPV education, possibly in high school health class or in a school-based sex education program, engage in visit discussions and advocate for receiving the vaccine.

### 2.4. School involvement

**School-based immunizations.** School-based vaccination of boys in the Galveston area resulted in initiation rates two times higher (28%) than the state average at the time of the study (14%).<sup>74</sup> The Austin Independent School District Health Services Department included an HPV Fact Sheet on its website, and is promoting HPV vaccination at its school-based clinics.

**Inclusion and promotion at back-to-school immunization fairs and clinics.** Several key informants from school districts and coalitions reported being involved in back-to-school immunization events with HPV vaccines promoted along with required vaccines. One rural school district health services director reported that the district held three back-to-school immunization clinics that resulted in HPV vaccine initiation of 70% among the 11- and 12-year-old students.

**HPV listed on school immunization letters.** Some school districts that have added HPV vaccine recommendation to the immunization notification letter sent home to parents of entering seventh grade students have found an increase in uptake. A public health department reported that a local school district had an 80% initiation rate, which they attribute to a school nurse writing a recommendation regarding HPV vaccine on the school immunization letter.

**School champions.** According to several key informant interviews, school nurses in more than one location have initiated listing HPV vaccines on the immunization referral letters that are sent home to parents. Some school nurses report providing education to parents and caregivers about HPV and HPV vaccines,

#### Key Informant

A local public health department official said, “Schools are our biggest ally. We play a large role in Student Health Advisory Committee meetings, serve as a resource on health issues and remain engaged with committee members.”

“Through our collaboration with schools we have worked with school nurses to add the HPV vaccine on the immunization information paperwork to be sent home to parents.”

#### Key Informant

In a rural school district in a county bordering Mexico, after recommendation for HPV vaccination was added to the school immunization letter for fifth grade students, more than half returned with records indicating either one or two doses of HPV vaccine received.

and also to adolescents where permitted by local policy. Several key informants who are committed to promoting HPV vaccines report cultivating strong relationships with school nurses, School Health Advisory Committees, school principals, and district superintendents. These key informants believe that their discussions with schools are influencing opinions toward initiatives that can promote HPV vaccines.

### 3. GOAL: Maximize access to HPV vaccination services.

#### 3.1. Increased insurance coverage

**More families with insurance.** Several key informants commented that more families are insured and better able to afford vaccines than in previous years. More families are reported to have signed up for insurance under the ACA in the 2014-2015 enrollment period. Several public health departments noted that fewer families were bringing their children for treatment or immunizations in general. They speculated that the decrease in services may be due to more families obtaining insurance and finding a regular medical home.

#### 3.2. Policy/institutional policy initiatives

**School-based HPV vaccine promotion.** On the regional level, institutional policies that allow school districts to inform parents about the HPV vaccine have increased HPV awareness and may have improved vaccination rates in some school districts.

**Sex education curricula.** Some stakeholders believe that establishing health and sex education consistently as part of the curriculum seems to impact local knowledge and may help improve overall health literacy of youth, which may lead to more adolescents choosing to accept the HPV vaccine.

**Mobile immunization providers and school-based immunizations.** Several key informants work with mobile immunization clinics and help to organize school-based immunization campaigns. Some campaigns are held on school campuses, whereas others are held in locations convenient for parents such as fast food restaurant parking lots. One key informant shared that one key to success has been regular scheduling at the same locations. The key informants at these locations have seen children returning for second and third doses of HPV vaccines.

**College age immunization campaigns.** Several stakeholders reported planning campaigns for immunization drives on college campuses. A pharmacy department at a Texas university has a special HPV vaccine promotion campaign and a streamlined process of obtaining pharmaceutical patient assistance funds for uninsured students. The program coordinator reported that the campaign has been successful and believes that parents and younger siblings of the students are possibly being indirectly educated by what the college student is learning. In addition, a public health department obtained funding to conduct an immunization event at a local community college, which included HPV vaccines.

#### Key Informant

In a school-based clinic in a county bordering Mexico, after the clinic staff received education about the many types of cancer caused by HPV, an effort was made to heavily promote the vaccine, and the initiation increased significantly in boys and girls.

### 3.3. Collaboration between stakeholders

#### **Public health, city government and school partnerships.**

Several public health departments have special initiatives to build relationships with local city councils and school administrators to educate them about the importance of HPV vaccination. Back-to-school immunization drives in some areas are supported by these local coalitions. One public health department along the US-Mexico border also works closely with entities across the border to promote HPV education.

**Immunization coalitions.** The Texas DSHS and The Immunization Partnership work to build the capacity of immunization coalitions in multiple locations across Texas. A key informant and leader of one coalition stated that the key to a successful coalition is convincing people to come in with common goals and understand that everybody benefits from a collective effort.

**Back-to-school events.** Back-to-school immunization events organized by school districts, immunization coalitions, and public health departments provide important opportunities for increasing access to HPV vaccination services.

#### **Key Informants – Researchers and Coalitions**

A multidisciplinary effort including researchers, providers and outreach specialists has helped increase HPV education, vaccination rates and helped integrate research tools into one clinic.

A coalition of more than 170 faith-based and other community organizations along the Texas-Mexico border in one county is increasing awareness and support of HPV vaccination.

#### **Key Informant**

“What makes our coalition successful? Convincing people to come in with common goals and understand that everybody benefits.”

## SUMMARY AND RECOMMENDATIONS

### Key Informant Recommendations about Achieving 80% Completion

Key informants were asked to give their opinions on how Texas can improve HPV vaccination rates to reach the Healthy People 2020 goal of 80% uptake. A myriad of recommendations were given, mostly related to education and access to vaccines. Some of the stakeholder recommendations are as follows:

- Provide parent education outside of the clinic and before the well-child checkup.
- Educate health care providers in order to alleviate concerns and address the variation in provider attitudes and communication styles.
- Ensure that newer nonavalent vaccine (HPV9) guidelines do not make the situation more complicated.
- Improve the participation and supply of vaccines provided by the adult safety net program.
- Implement immunization visits and extended hours to help provide more access.
- Enable increased access to immunization records.
- Payor source must be easily identifiable for the provider to reduce issues with reimbursement.
- Address consent laws to allow minors to consent to receipt of the vaccine.
- Lower the eligibility age for retail pharmacy HPV vaccine administration to age 12 years.
- Develop targeted approaches that are specifically tailored to the various regions of Texas and specific demographic groups to educate health care providers and families.

### Identified Research Needs

Researchers have provided valuable information about Texas HPV vaccination, primarily in the area of parent/caregiver education, and have offered recommendations. Researchers are aware of the urgent need to increase HPV vaccination uptake, and have upcoming studies from multiple funding sources on clinical practice, provider education and communication, systems changes, as well as parent/caregiver education, as called for by the President's Cancer Panel Report.

Literature search results and key informant interviews have suggested the following research areas:

- Providing effective reminder/recall methods.
- Communications science on what constitutes a strong recommendation and how to approach objections. The role of school nurses in promoting HPV vaccination in the community.
- The role of nurses and other care team members in vaccine education in pediatric care settings.
- Effective social media and news media campaigns to promote HPV vaccine uptake.
- Empowerment of teens to promote the vaccine by various methods such as social media.
- The role of various sex education programs and their impact on HPV vaccine uptake in local areas.
- Vaccination among military families.

- Factors related to uptake among ethnic groups beyond African American, Hispanic, and Vietnamese communities.
- Factors related to the potential influence that various religious communities and beliefs have on HPV vaccine and associated health behaviors.
- HPV vaccination uptake rates for children whose parents are lesbian, gay, bisexual, or transgender (LGBT). Incentives for obtaining HPV vaccines, including private insurance company and employer incentives.
- Incentives for providers that improve uptake.
- Knowledge and attitudes among immunization coalition members regarding HPV and HPV vaccination.
- Business system improvements and their impact on dose ordering and completion.
- Determining what constitutes effective HPV and HPV vaccine provider education. Ongoing education and other interventions to maintain improvements in rates.
- Alternative care settings such as home health services encounters, teen health clinics, juvenile detention facilities, psychiatric hospitals, homeless shelters, and immigrant detention centers.
- Uptake trends within Federally Qualified Health Centers.
- Ongoing education and other interventions to maintain improvements in rates
- Alternative care settings such as home health services encounters, teen health clinics, juvenile detention facilities, psychiatric hospitals, homeless shelters, and immigrant detention centers

### **Texas Scan Specific Recommendations to Increase Texas Pediatric HPV Vaccine Uptake**

- Train and empower the entire clinical care team to make a strong, uniform recommendation.
- Encourage care settings and coalitions to identify and train HPV vaccination champions.
- Increase the use of standing orders for authorized staff to offer and administer HPV vaccines to eligible patients.
- Internally track rates in clinical settings to identify deficient areas and enable targeted process improvement.
- Identify and use office systems for reminder/recall that are effective for each patient population.
- Input patient vaccination information directly into appropriate EMR sections rather than scanning prior records into the system, to ensure the patient history is accurately captured and able to be easily retrieved.
- Encourage office administrators and managers to implement best practices for ordering vaccines, obtaining reimbursement, and avoiding administrative cost burdens.
- Implement a variety of methods and modes of education for providers such as on-demand webinars and in-person training to enable efficient access to current information.
- Update curricula for medical schools that train providers and health educators to include up-to-date information about HPV, HPV-associated diseases, and HPV vaccination.

- Emphasize cancer prevention when speaking about the importance of HPV vaccination to alleviate safety concerns.
- Develop targeted education efforts in areas with higher numbers of non-medical vaccine exemptions.
- Use social media marketing in an effective controlled manner.
- Develop simple and factual mass media campaigns in local areas.
- Ensure that HPV and HPV vaccination are included in health and sex education curricula of all school districts.
- Encourage clinics to provide appropriate educational materials well in advance of well-child checkups.
- Ensure the availability of educational materials in languages preferred by the clinic patient population.
- Build trusting relationships and collaboration between health care providers, school districts, and parents/caregivers to impact local policies such as adding HPV vaccine recommendation to parent letters.
- Encourage school districts and state health agencies to collaborate in sharing HPV immunization data.
- Add zip code–level reporting capability to ImmTrac to obtain data at a more granular level and drive more targeted family education and clinic best practices training campaigns.
- Assess geographic data and the impact of HPV disease on underserved and disadvantaged populations to address HPV-associated disparities.
- Increase access to HPV vaccines through alternative settings, extended clinic hours, immunization-only visits, and school-based services.

## Next Steps

Those involved in pediatric HPV vaccination in Texas should consider the facilitators of and barriers to HPV vaccine uptake reported by this Texas-focused Environmental Scan and align their work with the recommendations as well as best practices identified through research.

New research should be launched to investigate the best practices reported by Texas stakeholders and to obtain information in areas where research is lacking. Systems change must focus on developing supportive policies; streamlining structures, practices, and procedures; enhancing the use of office systems to support vaccination; and increasing access to vaccination. Comprehensive educational campaigns that take into account cultural and other demographic factors are needed. MD Anderson will continue to work toward reducing the HPV-associated cancer burden through the HPV Moon Shot program and through collaborative efforts with stakeholders throughout the state and country.

**APPENDICES****Appendix A. NCI CCSG HPV Environmental Scan Awardees**

<b>State</b>	<b>Institution</b>	<b>Project Catchment Area</b>
AL	University of Alabama Comprehensive Cancer Center	State of Alabama
CA	University of Southern California, Norris Comprehensive Cancer Center	Greater Los Angeles, CA
CO	Yale University, Yale Cancer Center	State of Connecticut, especially New Haven
FL	University of South Florida, Moffitt Cancer Center	7 county area of southern Florida
HI	University of Hawaii Cancer Center	State of Hawaii
KY	University of Kentucky, Markey Cancer Center	Eastern Kentucky, including Appalachia
NC	University of North Carolina, Lineberger	State of North Carolina
NY	Rosewell Park Cancer Institute	Western New York – 8 counties and other areas of upstate New York
NY	Albert Einstein Cancer Center, Yeshiva	Bronx County and communities in Southern Westchester, NY
OH	Case Western Reserve Comprehensive Cancer Center	Cuyahoga County and Cleveland, Ohio
OH	Ohio State University Comprehensive Cancer Center	State of Ohio
SC	MUSC Hollings	State of South Carolina
TN	Vanderbilt Ingram Cancer Center	State of Tennessee, central state, extending into Kentucky and Alabama
TX	Baylor College of Medicine, Dan L. Duncan Center	Harris County, Texas
TX	The University of Texas MD Anderson Cancer Center	State of Texas
UT	University of Utah, Huntsman Cancer Institute	Utah, Idaho, Nevada, Wyoming, Montana
VA	University of Virginia and Arlington Cancer Center	Central, southern, western Virginia and portions of rural West Virginia
WI	University of Wisconsin Carbone Cancer Center	State of Wisconsin

## Appendix B. ACIP Recommendations for Human Papillomavirus Vaccines

	<b>Gardasil 9</b>	<b>Gardasil</b>	<b>Cervarix</b>
<b>HPV Types</b>	6, 11, 16, 18, 31, 33, 45, 52, 58	6, 11, 16, 18	16, 18
<b>Manufacturer</b>	Merck & Co.	Merck & Co.	GlaxoSmith-Kline
<b>Initial U.S. Licensing</b>	2014	2006	2009
<b>Approved for Prevention of</b>	Cervical cancer and precancers Vulvar cancer and precancers Vaginal cancer and precancers Anal cancer and precancers Genital warts	Cervical cancer and precancers Vulvar cancer and precancers Vaginal cancer and precancers Anal cancer and precancers Genital warts	Cervical cancer and precancers
<b>Approved for Use in</b>	Females 9 to 26 years old Males 9 to 15 years old	Females 9 to 26 years old Males 9 to 26 years old	Females 9 to 25 years old

### Sources:

U.S. Food and Drug Administration. Gardasil 9. <http://www.fda.gov/biologicsbloodvaccines/vaccines/approvedproducts/ucm426445.htm>. Updated January 9, 2015. Accessed September 17, 2015.

U.S. Food and Drug Administration. Gardasil. <http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM094042>. Updated August 5, 2015. Accessed September 17, 2015.

U.S. Food and Drug Administration. Cervarix. <http://www.fda.gov/biologicsbloodvaccines/vaccines/approvedproducts/ucm186957.htm>. Updated February 18, 2015. Accessed September 17, 2015.



## Appendix C. Methodology Details

The environmental scan included primary and secondary data collection. Secondary data was obtained by a literature review.

Primary data was obtained by key informant interviews and an online survey. The interview and survey questions were informed by the literature review and by collaboration with partners. Partners who informed the survey questions included The Immunization Partnership, and researchers at other University of Texas health science centers in Texas. The survey questions included Likert Scale items as well as open response items.

Staff conducted 64 key informant interviews. Most were audio recorded, with permission from the interviewees. Scan staff took detailed notes during interviews. Key informants included physicians, nurses, clinic administrators, public health researchers, health educators/outreach specialists, and immunization coalitions. Interviews were conducted predominantly by teleconference. Interviews were semi-structured and followed an interview guide developed by MD Anderson staff. The interview guide contained a set of core questions posed to all respondents and a component customized for particular types of stakeholders. Full-length interviews generally lasted from forty-five to sixty minutes and were conducted by two coordinators. Due to time constraints for some key informants, shorter interviews were also conducted that lasted ten to fifteen minutes.

Scan primary data was synthesized by thematic content analysis of interview notes and survey responses. Themes constituted the unit of analysis and were derived from recurring issues of interest measured by frequency of topic and vocabulary of key informant during the interview. Interview transcripts were reviewed twice and annotated using line-by-line analysis to determine themes and frequency of mention. Broad categories were determined after the preliminary review. Key findings from grouped data sets were summarized and juxtaposed with original transcripts to ensure that the context of each issue remained intact. The summaries of each subcategory were reviewed by the second coordinator and discussed to ensure accurate representation of data. The key informant findings are not representative in a quantitative statistical sense, but rather present the qualitative information collected from stakeholders working in HPV vaccination across the state.

Survey results were obtained from 1,132 respondents with 728 complete responses representing care settings in more than 30 different cities and towns. The survey response mix included 41% pediatricians, 17% Registered Nurses and 8% family practice physicians. Other respondents included office administrators and advanced practice providers (physician assistants and nurse practitioners).

## Appendix C. Survey Respondent Work Roles

Role of Respondent	Response Number	Percentage
Administrative/managerial	214	24%
Data entry	84	9%
Healthcare provider (Peds, RNs, FPs)	728	82%
Other (please specify)	106	12%
Total	1,134	100%

## Appendix C. Survey Response Locations

City/Town	Number	Percentage
Abilene	9	1%
Amarillo	5	0%
Arlington	6	1%
Austin	93	9%
Baytown	3	0%
Beaumont	5	0%
Brownsville	9	1%
Corpus Christi	13	1%
Dallas	119	12%
El Paso	28	3%
Fort Worth	28	3%
Galveston	12	1%
Georgetown	3	0%
Harlingen	4	0%
Houston	331	32%
Killeen	14	1%
Laredo	4	0%
Lubbock	18	2%
McAllen	7	1%
New Braunfels	5	0%
Odessa	12	1%
Other (please specify)	143	14%
San Angelo	3	0%
San Antonio	71	7%
San Marcos	8	1%
Temple	45	4%
Texarkana	0	0%
Tyler	8	1%
Waco	15	1%
Wichita Falls	5	0%

## Appendix C. Key Informant Interview Questions for Health Care Providers

- I. Organization Background
- II. Current Efforts in Pediatric HPV Vaccination
  - A. What vaccine is administered?
- III. Discussion of HPV vaccination initiation and completion data
  - A. How does HPV rates compare to Tdap/Mening
  - B. Major contributors that may explain this discrepancy
  - C. What is the protocol for discussing Tdap/Mening and HPV
    1. Who is involved in this recommendation (physician only, care team, both)
    2. What is the protocol for discussing HPV (physician only, care team, both)
    3. When is HPV vaccination brought up (same category or separately mentioned)
- IV. Discussion of provider approach/practices
  - A. How is HPV vaccine introduced to the parent/patient (context)
  - B. How are vaccine refusals handled for Tdap/Mening and HPV
  - C. If vaccination is rescheduled is the topic documented for next visit
  - D. Are there any provider issues that can be foreseen as contributing to HPV rates
  - E. What is the care team's role in vaccination of Tdap/Mening and HPV
  - F. How would you describe the team's comfort level when recommending Tdap/Mening and HPV.
  - G. Do you believe provider education on HPV recommendation and vaccine is adequate?
  - H. Are there any factors that can explain provider approach (personal beliefs, need for vaccine, age of provider, method of practice, discussing topics with parents)
- V. Challenges/successes to HPV vaccination administration
- VI. Documentation and immunization tracking methods
  - A. Is there a system in place to document immunizations
  - B. Do you use ImmTrac; if yes, how often?
  - C. Do you have challenges with documentation? If so, please describe.
  - D. Are reminders set for the providers for next doses?
  - E. Are reminders sent to the patient for series completion? If so, please describe the method(s) used
- VII. HPV education opportunities
  - A. Are patients informed of HPV infections, cancers? If so when? After refusal, prior to recommendation?
  - B. Is the vaccine safety discussed? If so when and how?
- VIII. HPV outreach (if applicable)
  - A. Is your organization working on any HPV-specific outreach
- IX. HPV Collaboration
  - A. Are you working with any partners on HPV initiatives?
  - B. Is there anything in place to encourage HPV vaccination and collaboration?
  - C. Would you be receptive to a statewide coalition?
  - D. What would you like to see for the coalition effort?
- X. Open Discussion
  - A. Additional comments/observations you would like us to note:
  - B. Is there a certain race/ethnicity or population you see with increased uptake?
  - C. Any differences in how you approach different populations (ethnicity, SES, education level)?
- XI. How do you think we can reach the goal 80% uptake?

## Appendix C. Key Informant Interview Questions for Researchers

- I. Input about the Scan
  - A. What is your input on our survey?
  - B. What questions do you have about our project?
- II. Organization / Research Background
- III. Tell us about your research project.
  - A. What is the funding source?
  - B. What is the purpose of the project?
  - C. What is the population?
  - D. How are you recruiting?
  - E. What methods are you using?
  - F. What are the initial results?
  - G. What follow-up do you anticipate doing?
  - H. Anything not expected being discovered?
  - I. Are there any factors that can explain provider approach (personal beliefs, need for vaccine, age of provider, method of practice, discussing topics with parents)
- IV. HPV Collaboration
  - A. Are you working with any partners on HPV initiatives
  - B. Is there anything in place to encourage HPV vaccination and collaboration
  - C. Would you be receptive to a statewide collaboration of existing coalitions and additional stakeholders?
  - D. What would you like to see for the coalition effort?
- V. Open Discussion
  - A. Additional comments/observations you would like us to note:
  - B. Is there a certain race/ethnicity or population you see with increased uptake?
  - C. Any differences in how you approach different populations (ethnicity, SES, education level)?
  - D. How do you think we can reach the goal 80% uptake?

### Appendix C. Survey Questions



#### 2015 Survey for Improving Pediatric HPV Vaccination Rates in Texas

#### 2015 Survey for Improving Pediatric HPV Vaccination Rates in Texas

This survey gathers information from people whose work involves HPV vaccination across the state of Texas. Findings from the survey will help inform local research priorities and help identify the challenges and facilitators associated with increasing HPV vaccination uptake in the pediatric care setting. The survey is completely confidential and anonymous. This survey takes approximately 10 minutes to complete. Thank you for participating.

#### Section 1. Respondent's Work

##### Section 1. Respondent's Work

1.1. In what city or town do you work?

Abilene	Corpus Christi	Houston	San Angelo	Wichita Falls
Amarillo	Dallas	Killeen	San Antonio	Other (please specify)
Arlington	El Paso	Laredo	San Marcos	
Austin	Fort Worth	Lubbock	Temple	
Baytown	Galveston	McAllen	Texarkana	
Beaumont	Georgetown	New Braunfels	Tyler	
Brownsville	Harlingen	Odessa	Waco	

1.1.a. Specify other city.

1.2. Please select the type of organization for which you work:

- Hospital-based clinic including university clinic or residency teaching practice
- Private for-profit medical practice (individual)
- Private for-profit medical practice (group)
- Public health department-operated clinic
- A public health department (not a clinic)
- Federally Qualified Health Center
- School Clinic
- School-based Health Center
- Indian Health Service-operated center, tribal health facility or urban Indian health care facility
- U.S. Military health care facility
- Rural Health Center
- Migrant Health Center
- A clinic in a correctional facility
- Other (includes funding or government agency, pharmaceutical company, public policy organization, others)

1.2.a. Specify other type of organization.

1.3. What is your gender?

 Male
  Female

1.4. What is your age?

1.5. Tell us about your care setting:

1.5.a. Number of physicians:

None	11-20	31-50
1-10	21-30	More than 50
		I don't know

1.5.b. Number of nurses: 

None	11-20	More than 50
1-10	21-50	I don't know

1.5.c. Number of administrative staff: 

None	6-10	More than 20
1-5	11-20	I don't know

1.5.d. Is your care setting a Vaccines for Children (VFC) provider?

- Yes
- No

1.5.e. Patients' insurance status:

	0-25%	26%-50%	51%-75%	76%-100%	I don't know
Approximate % of patients with private insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approximate % of patients with public insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approximate % of patients who are uninsured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1.5.f. How many patients are served by your care setting annually?

1.5.g. Provide the approximate percentage of pediatric patients served by your care setting.

1.6. What are your job responsibilities? Please check all that apply: (required)

- Administrative/managerial
- Data entry
- Healthcare provider
- Other (please specify)

1.6.a. Specify other job responsibilities.

1.6.b. If you answered "healthcare provider," please tell us what type:

1.6.c. Specify other physician specialty.

1.6.d. Specify other type of healthcare provider.

- Not applicable, I don't provide healthcare.
- Licensed Vocational Nurse
- Medical Assistant
- Nurse Practitioner
- M.D. - Family Practitioner
- M.D. - Obstetrician/gynecologist
- M.D. - Pediatrician
- M.D. - Physician (other specialty, please specify)
- Physician Assistant
- Registered Nurse
- Other (please specify)

1.7. Are you involved with any HPV-related cancer coalitions/groups?

- Yes
- No

1.7.a. If Yes, please specify which coalitions/groups in the text box.

**Section 2. Factors Influencing Rates of HPV Vaccination**

**Section 2. Factors Influencing Rates of HPV Vaccination**

2.1. In your opinion, to what extent are the following issues responsible for the low rates of HPV vaccination among girls 9 to 17?

	Not at all	A little	Somewhat	A great deal	Don't know
Adolescent girls don't receive routine medical care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge among providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge among families that vaccine is a series of shots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistical barriers to returning for series of three shots.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of provider recommendations for vaccine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication issues due to language differences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of vaccine's availability among providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of vaccine for providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of vaccine for patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient concerns about safety or side effects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient perception that girls are at low risk for cervical cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient perception that there is no need to vaccinate girls who are not sexually active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.2. Can you identify other reasons for the low rates of HPV vaccination among girls 9-17? If so, please explain.

**2.3. In your opinion, to what extent are the following issues responsible for the low rates of HPV vaccination among boys 9 to 17?**

	Not at all	A little	Somewhat	A great deal	Don't know
Adolescent boys don't receive routine medical care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge among providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge among families that vaccine is a series of shots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistical barriers to returning for a series of three shots.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of provider recommendations for vaccine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication issues due to language differences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of vaccine's availability among providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of vaccine for providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of vaccine for patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient concerns about safety or side effects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient perception that boys are at low risk for genital warts and cancers caused by HPV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient perception that there is no need to vaccinate boys who are not sexually active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent/patient belief that girls and women should be the ones to take preventative steps against cervical cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2.4. Can you identify other reasons for the low rates of HPV vaccination among boys 9-17? If so, please explain.**



2.5. Have you or your care setting used any particular strategies or educational tools that have resulted in more pediatric patients (or their families) choosing the HPV vaccine? Please select all that apply.

- Utilization of immunization information systems
- Provider assessment and feedback
- Provider reminders (Electronic Medical Record reminder prompts)
- Client reminder and recall systems
- Standing orders of vaccine
- Providing vaccination in schools
- Providing vaccination in child care settings
- Providing vaccination in WIC settings
- Providing vaccination in pharmacy settings
- Mass or small media public awareness campaigns
- Educational information sessions
- Other (please specify)

2.5.a. Specify other strategies or tools that have resulted in more patients/families choosing the HPV vaccine.

---

2.6. How effective have the following methods for recall or reminders been in your care setting?

	Not Applicable	Not effective	Somewhat effective	Very effective
Mailed reminder cards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text reminders (mobile phones)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone call reminders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Industry provided products (ex: magnets)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.7. Please specify any other recall or reminder method used and its impact on series completion.

---

2.8. What are your personal thoughts about HPV vaccination? Please check the box that best applies to each statement.

	Disagree	Agree	Unsure
I have safety concerns about the HPV vaccines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have concerns about how effective the vaccines are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am unsure when to give the vaccine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have limited time to discuss the HPV vaccination during the office visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not comfortable discussing HPV vaccination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is unnecessary for patients that are not yet sexually active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is unnecessary because most HPV infections resolve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is unnecessary because women can have Pap tests to detect cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I fully support HPV vaccination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not support HPV vaccination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 3. Documenting Immunizations

Section 3. Documenting Immunizations

3.1. How does your care setting document patients' immunizations? Please check all that apply.

- Practice Management System (billing system)
- Paper Charts
- ImmTrac
- Other Immunization Information System, please specify
- Electronic Medical Record System (EMR), please specify

3.1.a. Specify other immunization information system.

3.1.b. Specify electronic medical record (EMR) system.

3.2. Does your care setting use a local immunization information system or an electronic medical record (EMR) system to input data into ImmTrac?

- Yes
- No
- Don't know

3.3. Any challenges with exchanging of data with ImmTrac? If so, please explain.

#### Section 4. HPV Vaccine Recommendation at Your Care Setting (Healthcare provider)

##### Section 4. HPV Vaccine Recommendation at Your Care Setting (Healthcare providers only)

4.1. In your care setting, at what age do you start recommending that patients receive the HPV vaccine?

<input type="text"/>	9 years old	11 years old	13 years old	15 years old	17 years old
	10 years old	12 years old	14 years old	16 years old	18 years old

4.2. Which members of the care team are involved in ensuring vaccinations are up-to-date? Check all that apply.

- Physician
- Nurse Practitioner
- Registered Nurse
- Physician Assistant
- Medical Assistant
- Administrative Assistant
- Other (please specify)

4.2.a. Specify other type of care team members involved in ensuring vaccinations are up-to-date..

4.3. How is the HPV vaccination introduced during the pediatric patient's visit? Ex: "Your child is due for 3 vaccinations today, Tdap, meningococcal and HPV," or "Your child is due for Tdap, meningococcal vaccine and an optional HPV vaccine." Response required.

4.4. How often is HPV vaccine administered for children age 9-12 on the same day as the first recommendation?

- Never
- Seldom
- Often
- Very Often
- Always

4.5. How often is HPV vaccine administered for adolescents age 13-17 on the same day as the first recommendation?

- Never
- Seldom
- Often
- Very Often
- Always

4.6. What is the most common reason for HPV vaccine refusal among your patients?

Inadequate insurance coverage Lack of knowledge about diseases caused by HPV infection Concerns due to media portrayal of the vaccine Consent would lead to riskier sexual behaviors Belief son or daughter too young to be vaccinated Other (please specify)
--

4.6.a. Specify other most common reason.

4.7. How do you respond to HPV vaccine refusal? Check all that apply.

- Document and do not recommend in future visits
- Document and make vaccine recommendation at next visit
- Provide educational materials for patient to consider
- Other (please specify)

4.7.a. Specify other ways you respond to HPV vaccine refusal.

## Section 5. HPV Education (Healthcare provider)

### Section 5. HPV Education (Healthcare providers only)

5.1. Does your care setting provide any educational materials on HPV-associated cancers for patients and families at the time of consultation?

- Yes
- No

5.1.a. If yes, where are these materials retrieved from? Check all that apply.

- CDC materials
- The Immunization Partnership
- American Cancer Society
- Other (please specify)

5.1.b. Specify other sources of educational materials on HPV-associated cancers provided to patients and families.

5.2. Does your care setting provide any educational materials on the HPV vaccine to patients and their parents/guardians?

- Yes
- No

5.2.a. If yes, where are these materials retrieved from?

5.3. Does your care setting provide in-service training on HPV-associated cancers and the HPV vaccine?

- Yes
- No

5.3.a. If yes, how is this education given to providers? Please check all that apply.

- Staff meeting
- Online Continuing Education Course
- Literatures/Handouts
- Speaker Series
- Communication Training
- Other (please specify)

5.3.b. Specify other delivery method for training at your care setting.

---



---

## Section 6. HPV Vaccine Administration (Administrative/managerial, Provider)

### Section 6. HPV Vaccine Administration (Administrative/managerial or Healthcare providers only)

6.1. How often do you have HPV vaccines in stock at your care setting?

- Always
- Sometimes
- Never
- Don't Know
- Not Applicable

6.2. Please describe any challenges associated with maintaining the stock of HPV vaccines.

## Appendix D. 84th Texas Legislative Session Vaccination Bills and Outcomes

Proposed Legislation	Outcomes
SB 200, Section 2.32 Amendment to SB 200 directed the development of a statewide strategic plan to help reduce burdens of HPV-associated cancers.	Passed
SB 298/HB 2171 Allows extension of children's immunization records in ImmTrac through age 26 instead of automatic expunging of data at 18th birthday with the consent of the individual's parent or guardian. <sup>81</sup>	Passed; became law June 17, 2015
HB 465 Change ImmTrac from an opt-in to an opt-out system.	Not passed Left pending in committee

Senate Bill 200 section 2.32 excerpt:

- “SECTION 2.32. (a) The Health and Human Services Commission shall develop a strategic plan to significantly reduce morbidity and mortality from human papillomavirus-associated cancer.
- (b) In developing the strategic plan, the Health and Human Services Commission shall collaborate with the Department of State Health Services and the Cancer Prevention and Research Institute of Texas and may convene any necessary workgroups. The members of a workgroup may include:
- (1) health care providers specializing in human papillomavirus-associated cancer prevention, screening, treatment, or research;
  - (2) physicians specializing in primary care, pediatrics, or obstetrics and gynecology;
  - (3) mid-level health care practitioners;
  - (4) cancer epidemiologists;
  - (5) representatives of general academic teaching institutions as defined by Section 61.003, Education Code, medical and dental units as defined by Section 61.003, Education Code, and medical schools as defined by Section 61.501, Education Code;
  - (6) middle school, high school, or college health educators;
  - (7) human papillomavirus-associated cancer survivors;
  - (8) representatives from geographic areas or other population groups at higher risk of human papillomavirus-associated cancer;
  - (9) public advocates concerned with issues related to vaccine-preventable diseases;
  - (10) representatives of community-based and

faith-based organizations involved in providing education, awareness, or support relating to human papillomavirus-associated cancer; or

(11) other people the department determines are necessary.

(c) In developing the strategic plan, the Department of State Health Services shall:

(1) identify barriers to effective prevention, screening, and treatment for human papillomavirus-associated cancer, including specific barriers affecting providers and patients;

(2) identify methods, other than a mandate, to increase the number of people vaccinated against human papillomavirus;

(3) identify methods to increase use of evidence-based screening to enhance the number of people screened regularly for human papillomavirus-associated cancer;

(4) review current technologies and best practices for human papillomavirus-associated cancer screening;

(5) review technology available to diagnose and prevent infection by human papillomavirus;

(6) develop methods for creating partnerships with public and private entities to increase awareness of human papillomavirus-associated cancer and of the importance of vaccination education and regular screening;

(7) review current prevention, screening, treatment, and related activities in this state and identify areas in which the services for those activities are lacking;

(8) estimate the annual direct and indirect state health care costs attributable to human papillomavirus-associated cancers;

(9) identify actions necessary to increase vaccination and screening rates and reduce the morbidity and mortality from human papillomavirus-associated cancer and establish a schedule for implementing those actions; and

(10) make recommendations to the legislature on policy changes and funding needed to implement the strategic plan.

(d) Not later than December 31, 2016, the Health and Human Services Commission shall deliver to the governor and members of the legislature the strategic plan and recommendations on goal implementation and schedule compliance related to the strategic plan.

(e) This section expires January 1, 2017.”

## Appendix E. Texas Immunization Coalitions

Region	Partner	Contact
1	City of Amarillo Immunization Stakeholders Group C/O Amarillo Department of Public Health 10000 Martin Road Amarillo, TX 79107	Casie Stoughton Casie.Stoughton@amarillo.gov 806-378-6300
1	City of Lubbock Health Department “ Shots on Schedule “ (SOS) 1902 Texas Ave Lubbock, TX 78411	Ronda Cartwright rcartwright@mylubbock.us 806-775-2959
2/3	Immunization Collaboration of Tarrant County P.O. Box 100192 Fort Worth, TX 76185-0192	Terri Andrews terriandrews@att.net www.ictchome.org
2/3	Big Country Immunization Coalition 850 North 6th Street Abilene, TX 79601	Lynda Shirley Lynda_Shirley@bcbstx.com 972-766-5484
2/3	Denton County Immunization Coalition 2601 Trinity Terrace Corinth, TX 76210	Silver Patrick silverrinehart@hotmail.com 940-597-0780 www.dentoncic.org
4/5	Angelina County and Cities Health District Coalition	Sara Adams 936-632-1139
4/5	Northeast Texas Public Health District Immunization Coalition	Sylvia Warren 903-535-0030
6/5	Galveston County Immunization Advisory Council PO Box 939 La Marque, TX 77568	June Gonzales jgonzales@gchd.org <a href="http://www.gchd.org/councils/imminindex.htm">http://www.gchd.org/councils/imminindex.htm</a>
6/5	Immunization Coalition of Greater Houston 2223 West Loop South #631 Houston, TX 77027	Luisa Bowers lbowers@hcphes.org 832-393-5429
6/5	Meningitis Angels - Parent to Parent on Meningitis PO Box 448 Porter TX 77365	Frankie Milley Fmilley@aol.com <a href="http://www.meningitis-angels.org/">http://www.meningitis-angels.org/</a>
6/5	The Immunization Partnership P.O. Box 2709 Cypress, TX 77410	Anna Dragsbaek ACDragsbaek@immunizeusa.org <a href="http://www.immunizeusa.org/">http://www.immunizeusa.org/</a>
7	Travis County Immunization Collaboration 15 Waller Street Austin, TX 78703	Debbie Tucker Debbie.Tucker@AustinTexas.gov 512-972-5571



8	ImmuniZe San Antonio! (IZSA) Bexar County's Immunization Collaborative 332 W Commerce St. San Antonio TX 78205	Clark Petty clark.petty@sanantonio.gov <a href="http://healthcollaborative.wix.com/izsa">http://healthcollaborative.wix.com/izsa</a>
9/10	El Paso Immunization Coalition PO Box 3898 El Paso, TX 79923	Margie Padilla meperez@utep.edu <a href="http://www.ElPasoIC.org">www.ElPasoIC.org</a>
11	City of Laredo Health Coalition 2600 Cedar Ave. Laredo, TX 78040	Sister Rosemary Welsh mrgbahecsec@stx.rr.com 956-712-0037
11	Corpus Christi – Nueces County Public Health District Coalition	Lala Yerger 361-826-7238
11	San Patricio County School Health Committee 313 N Rachal Ave. Sinton, TX 78387	Virginia Longoria Virginia.Longoria@co.sanpatricio.tx.us 361-364-6208
<b>Additional Texas Resources and Health Coalitions</b>		
6/5S	Texas Children's Hospital Houston, TX	<a href="http://www.texaschildrens.org/vaccine">www.texaschildrens.org/vaccine</a>
6/5	Houston Global Health Collaborative	Kara Green <a href="http://www.HoustonGlobalHealth.org">www.HoustonGlobalHealth.org</a>
7	Texas Medical Association Resource for Physicians Austin, TX	<a href="http://www.texmed.org/bewise">www.texmed.org/bewise</a>
7	DSHS Medical Home Workgroup Austin, TX	<a href="http://www.dshs.state.tx.us/cshcn/medicalhome/mhgroup.shtm">http://www.dshs.state.tx.us/cshcn/medicalhome/mhgroup.shtm</a>
7	Coming of Age Seniors/Volunteers for Childhood Immunizations (SVCI) - Austin Metro PO Box 1748 Austin, TX 78767	Dawn Sparks Dawn.Sparks@co.travis.tx.us 512-854-5873
7	Texas Asthma Coalition Austin, TX	<a href="http://www.dshs.state.tx.us/asthma/coalitions.shtm">http://www.dshs.state.tx.us/asthma/coalitions.shtm</a>

## Source:

Texas Department of State Health Services. Texas immunization coalitions. <http://www.dshs.state.tx.us/immunize/partners/coalitions.shtm>. Updated September 4, 2014. Accessed November 10, 2014.

## Appendix F. TPS Letter Promoting Addition of HPV to School Letters



**Texas  
Pediatric  
Society**

The Texas Chapter of the  
American Academy of Pediatrics

Texas Pediatric Society, The Texas Chapter of the AAP  
401 West 15th Street, Suite 682 Austin, Texas 78701-1665  
PHONE (512)370-1506 • FAX (512) 473-8659

**Executive Director**

Tricia Hall, CAE, CMP  
(512) 370.1506  
tricia.hall@txpeds.org

**Director of Special Programs  
& TPS Foundation**

Amy White, CAE  
(512) 370.1519  
amy.white@txpeds.org

**Public Health Education Manager**

Rachel Jew, MPAff  
(512) 370.1509  
rachel.jew@txpeds.org

**Member Services Manager**

Claire Foster  
(512) 370.1517  
claire.foster@txpeds.org

**Advocacy & Health Policy Coordinator**

Clayton Travis, MSSW  
(512) 370.1516  
clayton.travis@txpeds.org

**2014 - 2015 Officers**

**President**

Jason Terk, MD

**President-Elect**

William Dirksen, MD

**Immediate Past President**

Mark Ward, MD

**Chapter Chair**

O. W. "Skip" Brown, MD

**Alternate Chapter Chair**

Kimberly Avila Edwards, MD

**Secretary-Treasurer**

Dennis Conrad, MD

**TMA Delegate**

Daniel V. Vijeswarapu, MD

**Alternate TMA Delegate**

Seth Kaplan, MD

**Chair, East Texas Region**

Carl Tapia, MD

**Chair, North Texas Region**

Joyce Mauk, MD

**Chair, S. Central Texas Region**

Allison Ziarl, MD

**Chair, West Texas Region**

Tammy Camp, MD

**Member-at-Large**

Laura Ferguson, MD

**Member-at-Large**

Ben Ralmer, MD

**Member-at-Large –**

**Department/Resident Head**

Eric Eichenwald, MD

**Early Career Physician Representative**

Lara Johnson, MD

**Resident Representative**

Lauren Gambill, MD

**Alternate Resident Representative**

Ittay Moreno, MD

June 8, 2015

Dear Texas School Administrators and School Board Leaders,

The Texas Pediatric Society is writing to you in support of a proposed program to improve rates of HPV and Flu vaccination across the state.

The Centers for Disease Control (CDC) has made increasing HPV vaccination rates a priority across the country. In Texas, only 38% of girls and 15% of boys completed the series in 2013. HPV is a virus that causes cancer. Approximately 400 women will die from cervical cancer and more than 300 men and women from other HPV-related cancers in 2015. HPV vaccination can prevent most of these cancers. The vaccine provides the strongest protection if it is given before age 15. The vaccine has been available for more than 10 years and has been shown to be very safe.

The CDC also recommends Flu vaccination for every school age child. Only about half of our children get Flu vaccine. Increasing vaccination rates for Flu not only prevents illness, it keeps kids in school during Flu season. Flu also can be deadly. In the 2014-2015 season, at least 13 children in Texas died from Flu.

Placing recommendations for these vaccines on the school vaccination letter can serve as a reminder to parents and doctors. It could also help to inform the parents that these vaccines are recommended by the CDC, the American Academy of Pediatrics and the leadership of the school district.

The program suggested can help increase and improve vaccination rates and also help to ensure that efforts are being made to protect every child from vaccine preventable cancers and diseases while also helping to improve school attendance and learning. A sample of a modified school immunization letter is on pages 2-3 of this letter.

The Committee on Infectious Diseases and Immunizations of the Texas Pediatric Society enthusiastically supports efforts of Texas school districts to increase immunization rates in all required and recommended vaccines among children. If you have any questions please feel free to contact us.

Sincerely,

Flor Munoz-Rivas, MD [florm@bcm.edu](mailto:florm@bcm.edu)  
Co-Chair, TPS Infectious Diseases and Immunization Committee

Janak A. Patel, MD [jpatel@utmb.edu](mailto:jpatel@utmb.edu)  
Co-Chair, TPS Infectious Diseases and Immunization Committee

Copy to: Jason Terk, MD, TPS President  
Lori Anderson, MD

# American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



141 Northwest Point Blvd  
Elk Grove Village, IL 60007-1019  
Phone: 847/434-4000  
Fax: 847/434-8000  
E-mail: kidsdocs@aap.org  
www.aap.org

## Documenting Parental Refusal to Have Their Children Vaccinated

All parents and patients should be informed about the risks and benefits of preventive and therapeutic procedures, including vaccination. In the case of vaccination, the American Academy of Pediatrics (AAP) strongly recommends and federal law mandates that this discussion include the provision of the Vaccine Information Statements (VISs). Despite our best efforts to educate parents about the effectiveness of vaccines and the realistic chances of vaccine-associated adverse events, some will decline to have their children vaccinated. This often results from families misinterpreting or misunderstanding information presented by the media and on unmonitored and biased Web sites, causing substantial and often unrealistic fears.

Within a 12-month period, 74% of pediatricians report encountering a parent who refused or delayed one or more vaccines. A 2011 survey of children six months to six years of age reported that 13% of parents followed an alternative vaccination schedule. Of these, 53% refused certain vaccines and 55% delayed some vaccines until the child was older. Seventeen percent reported refusing all vaccines. In a 2009 survey, 11.5% of parents of children 17 years and younger reported refusing at least one vaccine. The use of this or a similar form in concert with direct and non-condescending discussion can demonstrate the importance you place on appropriate immunizations, focuses parents' attention on the unnecessary risk for which they are accepting responsibility, and may in some instances induce a wavering parent to accept your recommendations.

Providing parents (or guardians) with an opportunity to ask questions about their concerns regarding recommended childhood immunizations, attempting to understand parents' reasons for refusing one or more vaccines, and maintaining a supportive relationship with the family are all part of a good risk management strategy. The AAP encourages documentation of the health care provider's discussion with parents about the serious risks of what could happen to an unimmunized or under-immunized child. Provide parents with the appropriate VIS for each vaccine at each immunization visit and answer their questions. For parents who refuse one or more recommended immunizations, document your conversation and the provision of the VIS(s), have a parent sign the Refusal to Vaccinate form, and keep the form in the patient's medical record. The AAP also recommends that you revisit the immunization discussion at each subsequent appointment and carefully document the discussion, including the benefits to each immunization and the risk of not being age-appropriately immunized. For unimmunized or partially immunized children, some physicians may want to flag the chart to be reminded to revisit the immunization discussion, as well as to alert the provider about missed immunizations when considering the evaluation of future illness, especially young children with fevers of unknown origin.

This form may be used as a template to document that the health care provider had a discussion with the parent signing the form about the risks of failing to immunize the child. It is not intended as a substitute for legal advice from a qualified attorney as differing state laws and factual circumstances will impact the outcome. While it may be modified to reflect the particular circumstances of a patient, family, or medical practice, practices may want to consider obtaining advice from a qualified attorney. If a parent refuses to sign the refusal form such refusal along with the name of a witness to the refusal should be documented in the medical record.

The AAP Section on Infectious Diseases and other contributing sections and committees hope this form will be helpful to you as you deal with parents who refuse immunizations. It is available on the AAP Web site on the Section on Infectious Diseases Web site (<http://www2.aap.org/sections/infectdis/resources.cfm>), and the Web site for the AAP Childhood Immunization Support Program (<http://www2.aap.org/immunization/pediatricians/refusaltovaccinate.html>).

Sincerely,

/s/ /s/

Dennis Murray, MD, FAAP

Chairperson

AAP Section on Infectious Diseases

Ed Rothstein, MD, FAAP

AAP Section on Infectious Diseases

James M. Perrin, MD, FAAP

**President-Elect**

Sandra G. Hassink, MD, FAAP

Thomas K. McInerney, MD, FAAP

Errol R. Alden, MD, FAAP

Carole E. Allen, MD, FAAP  
Arlington, MA

Danielle Laraque, MD, FAAP  
Brooklyn, NY

David I. Bromberg, MD, FAAP  
Frederick, MD

Jane M. Foy, MD, FAAP  
Winston Salem, NC

Marilyn J. Bull, MD, FAAP  
Indianapolis, IN

Pamela K. Shaw, MD, FAAP  
Kansas City, KS

Anthony D. Johnson, MD, FAAP  
Little Rock, AR

Kyle Yasuda, MD, FAAP  
Seattle, WA

Stuart A. Cohen, MD, MPH, FAAP  
San Diego, CA

Sara H. Goza, MD, FAAP  
Fayetteville, GA

## Refusal to Vaccinate

Child's Name \_\_\_\_\_ Child's ID# \_\_\_\_\_

Parent's/Guardian's Name \_\_\_\_\_

My child's doctor/nurse, \_\_\_\_\_ has advised me that my child (named above) should receive the following vaccines:

Recommended	Declined
<input type="checkbox"/> Hepatitis B vaccine	<input type="checkbox"/>
<input type="checkbox"/> Diphtheria, tetanus, acellular pertussis (DTaP or Tdap) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Diphtheria tetanus (DT or Td) vaccine	<input type="checkbox"/>
<input type="checkbox"/> <i>Haemophilus influenzae</i> type b (Hib) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Pneumococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
<input type="checkbox"/> Inactivated poliovirus (IPV) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Measles-mumps-rubella (MMR) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Varicella (chickenpox) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Influenza (flu) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Meningococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
<input type="checkbox"/> Hepatitis A vaccine	<input type="checkbox"/>
<input type="checkbox"/> Rotavirus vaccine	<input type="checkbox"/>
<input type="checkbox"/> Human papillomavirus (HPV) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Other _____	<input type="checkbox"/>

- That some vaccine-preventable diseases are common in other countries and that my unvaccinated child could easily get one of these diseases while traveling or from a traveler.
- If my child does not receive the vaccine(s) according to the medically accepted schedule, the consequences may include
  - Contracting the illness the vaccine is designed to prevent (the outcomes of these illnesses may include one or more of the following: certain types of cancer, pneumonia, illness requiring hospitalization, death, brain damage, paralysis, meningitis, seizures, and deafness; other severe and permanent effects from these vaccine-preventable diseases are possible as well).
  - Transmitting the disease to others (including those too young to be vaccinated or those with immune problems), possibly requiring my child to stay out of child care or school and requiring someone to miss work to stay home with my child during disease outbreaks.
- My child's doctor and the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all strongly recommend that the vaccine(s) be given according to recommendations.

Nevertheless, I have decided at this time to decline or defer the vaccine(s) recommended for my child, as indicated above, by checking the appropriate box under the column titled "Declined." I know that failure to follow the recommendations about vaccination may endanger the health or life of my child and others with whom my child might come into contact. I therefore agree to tell all health care professionals in all settings what vaccines my child has not received because he or she may need to be isolated or may require immediate medical evaluation and tests that might not be necessary if my child had been vaccinated.

I know that I may readdress this issue with my child's doctor or nurse at any time and that I may change my mind and accept vaccination for my child any time in the future.

I acknowledge that I have read this document in its entirety and fully understand it.

I have been provided with and given the opportunity to read each Vaccine Information Statement from the Centers for Disease Control and Prevention explaining the vaccine(s) and the disease(s) it prevents for each of the vaccine(s) checked as recommended and which I have declined, as indicated above. I have had the opportunity to discuss the recommendation and my refusal with my child's doctor or nurse, who has answered all of my questions about the recommended vaccine(s). A list of reasons for vaccinating, possible health consequences of non-vaccination, and possible side effects of each vaccine is available at [www.cdc.gov/vaccines/pubs/vis/default.htm](http://www.cdc.gov/vaccines/pubs/vis/default.htm). I understand the following:

- The purpose of and the need for the recommended vaccine(s).
- The risks and benefits of the recommended vaccine(s).

Parent/Guardian Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Witness: \_\_\_\_\_ Date: \_\_\_\_\_

I have had the opportunity to rediscuss my decision not to vaccinate my child and still decline the recommended immunizations.

Parent's Initials: \_\_\_\_\_ Date: \_\_\_\_\_ Parent's Initials: \_\_\_\_\_ Date: \_\_\_\_\_

**Parental Refusal to Accept Vaccination: Resources for Pediatricians**

The following are some of the resources available to help pediatricians develop a productive dialogue with vaccine-hesitant parents and answer questions about vaccine risks and benefits:

**Web Sites**

1. **AAP Childhood Immunization Support Program (CISP)**  
Information for providers and parents.  
[www.aap.org/immunization](http://www.aap.org/immunization)  
[www2.aap.org/immunization/pediatricians/refusaltovaccinate.html](http://www2.aap.org/immunization/pediatricians/refusaltovaccinate.html)
2. **Immunization Action Coalition (IAC)**  
The IAC works to increase immunization rates by creating and distributing educational materials for health professionals and the public that enhance the delivery of safe and effective immunization services. The IAC "Unprotected People Reports" are case reports, personal testimonies, and newspaper and journal articles about people who have suffered or died from vaccine-preventable diseases.  
[www.immunize.org/reports](http://www.immunize.org/reports)
3. **Centers for Disease Control and Prevention (CDC) National Immunization Program**  
Information about vaccine safety.  
[www.cdc.gov/vaccines/hcp.htm](http://www.cdc.gov/vaccines/hcp.htm)
4. **National Network for Immunization Information (NNii)**  
Includes information to help answer patients' questions and provide the facts about immunizations.  
<http://www.immunizationinfo.org/professionals>
5. **Vaccine Education Center at Children's Hospital of Philadelphia**  
Information for parents includes "Vaccine Safety FAQs" and "A Look at Each Vaccine."  
[www.vaccine.chop.edu](http://www.vaccine.chop.edu)
6. **Institute for Vaccine Safety, Johns Hopkins Bloomberg School of Public Health**  
Provides an independent assessment of vaccines and vaccine safety to help guide decision-makers and educate physicians, the public, and the media about key issues surrounding the safety of vaccines.  
[www.vaccinesafety.edu](http://www.vaccinesafety.edu)
7. **Immunize Canada**  
Immunize Canada aims to meet the goal of eliminating vaccine-preventable disease through education, promotion, advocacy, and media relations. It includes resources for parents and providers.  
[www.immunize.cpha.ca/en/default.aspx](http://www.immunize.cpha.ca/en/default.aspx)
8. **Sample office policy/letter to parents about refusal to vaccinate**

**Journal Articles**

1. Offit PA, Jew RK. Addressing parents' concerns: do vaccines contain harmful preservatives, adjuvants, additives, or residuals? *Pediatrics*. 2003;112(6 Pt 1):1394–1397
2. Offit PA, Quarles J, Gerber MA, et al. Addressing parents' concerns: do multiple vaccines overwhelm or weaken the infant's immune system? *Pediatrics*. 2002;109(1):124–129
3. Diekema DS, American Academy of Pediatrics Committee on Bioethics. Responding to parental refusals of immunization of children. *Pediatrics*. 2005;115(5):1428–1431

**Books**

1. American Academy of Pediatrics. *Red Book: 2012 Report of the Committee on Infectious Diseases*. Pickering LK, Baker CJ, Long SS, Kimberlin DW, eds. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012
2. Marshall GS. *The Vaccine Handbook: A Practical Guide for Clinicians*. 4th ed. West Islip, NY: Professional Communications, Inc; 2012

**Handout**

1. Immunization Action Coalition. Reliable sources of immunization information: where to go to find answers! <http://www.immunize.org/catg.d/p4012.pdf>. Accessed October 17, 2012

**Reliable Immunization Resources for Parents****Web Sites**

1. **Centers for Disease Control and Prevention (CDC) Vaccine Information Statements**  
Provide possible health consequences of non-vaccination and possible side effects of each vaccine.  
[www.cdc.gov/vaccines/pubs/vis/default.htm](http://www.cdc.gov/vaccines/pubs/vis/default.htm)
2. **AAP Childhood Immunization Support Program (CISP)**  
Information for providers and parents.  
[www.aap.org/immunization](http://www.aap.org/immunization)
3. **Why Immunize?**  
A description of the individual diseases and the benefits expected from vaccination.  
[www2.aap.org/immunization/families/faq/whyimmunize.pdf](http://www2.aap.org/immunization/families/faq/whyimmunize.pdf)
4. **Pennsylvania Immunization Education Program of Pennsylvania Chapter, AAP**  
Includes answers to common vaccine questions and topics, such as addressing vaccine safety concerns; evaluating anti-vaccine claims; sources of accurate immunization information on the Web; and talking with parents about vaccine safety.  
[www.paiep.org](http://www.paiep.org)
5. **CDC For Parents: Vaccines for Your Children**  
Information about vaccine safety.  
[www.cdc.gov/vaccines/parents/index.html](http://www.cdc.gov/vaccines/parents/index.html)
6. **National Network for Immunization Information (NNii)**  
Includes information to help answer patients' questions and provide the facts about immunizations.  
[www.immunizationinfo.org/parents](http://www.immunizationinfo.org/parents)
7. **Vaccine Education Center at Children's Hospital of Philadelphia**  
Information for parents includes "Vaccine Safety FAQs" and "A Look at Each Vaccine."  
[www.vaccine.chop.edu](http://www.vaccine.chop.edu)
8. **Institute for Vaccine Safety, Johns Hopkins Bloomberg School of Public Health**  
Provides an independent assessment of vaccines and vaccine safety to help guide decision-makers and educate physicians, the public, and the media about key issues surrounding the safety of vaccines.  
[www.vaccinesafety.edu](http://www.vaccinesafety.edu)
9. **Immunize Canada**  
Immunize Canada aims to meet the goal of eliminating vaccine-preventable disease through education, promotion, advocacy, and media relations. It includes resources for parents and providers.  
<http://immunize.cpha.ca/en/default.aspx>
10. **Vaccinate Your Baby**  
This Every Child By Two site serves as a central resource of vaccine information for parents. The site links to the latest research and studies about vaccines, an interactive timeline on the benefits of vaccines, information about vaccine safety and ingredients, and the importance of adhering to the recommended schedule.  
[www.vaccinateyourbaby.org](http://www.vaccinateyourbaby.org)

**Books**

1. American Academy of Pediatrics. *Immunizations and Infectious Diseases: An Informed Parent's Guide*. Fisher MC, ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006
2. Myers MG, Pineda D. *Do Vaccines Cause That?! A Guide for Evaluating Vaccine Safety Concerns*. Galveston, TX: Immunizations for Public Health; 2008
3. Offit PA. *Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure*. New York, NY: Columbia University Press; 2008
4. Offit PA. *Deadly Choices: How the Anti-Vaccine Movement Threatens Us All*. New York, NY: Basic Books; 2011
5. Mnookin S. *The Panic Virus: A True Story of Medicine, Science, and Fear*. New York, NY: Simon and Schuster; 2011
6. Offit PA, Moser CA. *Vaccines and Your Child: Separating Fact from Fiction*. New York, NY: Columbia University Press; 2011

## Appendix G. Testimony by Texas Medical Association and Texas Pediatric Society on Strategic HPV Plan

**Testimony by TMA and the Texas Pediatric Society  
House Public Health Committee  
House Bill 1282 by Rep. John Zerwas, MD  
March 17, 2015**

Chair Crowner and members of the committee, representing 48,000 physician and medical student members, the Texas Medical Association and the Texas Pediatric Society wish to express our support for House Bill 1282 by Rep. John Zerwas. With the leadership and guidance of the Texas Department of State Health Services (DSHS) and the Cancer Prevention and Research Institute of Texas (CPRIT), we believe this is a thoughtful approach to addressing the increasing incidence of human papillomavirus (HPV)-associated cancers in Texas.

In 2006-07, several TMA members worked with DSHS to develop a strategic plan addressing Texas' lack of progress in reducing cervical cancer morbidity and mortality. DSHS brought together health professionals, public and community health experts, the academic community, and other interested stakeholders to plan for a reduction and elimination of cervical cancer deaths. Working together in this planning process, we assessed the various factors contributing to cervical cancer and the most effective prevention methods. We decided upon the most effective and efficient options for Texas, and we came to greatly value this strategic partnership in addressing a preventable cancer. And while we know there is still much to do to eliminate cervical cancer, we also recognize that Texas must and can do more to prevent the other many HPV-related cancers that are being diagnosed in our patients.

While physicians are working to promote HPV vaccination in our state, we know that multiple factors are contributing to HPV-cancer incidence. A strategic plan for HPV-related cancers as proposed in HB 1282 will again enable DSHS to convene a workgroup to include CPRIT, organized medicine, educators, researchers, and community-based representatives. There will be much work to do to learn more about HPV-associated cancers and identify effective prevention strategies. We also believe it will be critical that the workgroup developing this strategic plan consider the great cultural and geographic diversity in our state in making recommendations to address these cancers.

Texas has great expertise in public and community health, prevention, medicine, and the like. We believe bringing this expertise together will move Texas forward in the work to more strategically prevent HPV-related cancers. We urge you to positively consider HB 1282, and we ensure our participation in providing support for this initiative. We appreciate Dr. Zerwas' efforts to bring public attention to this issue and his work in this regard.

- See more at: <http://www.texmed.org/Template.aspx?id=33124&terms=HPV#sthash.l6DkpVgS.dpuf>

## Appendix H. Sample Modified School Immunization Letter with HPV/Flu Vaccines Listed

Date \_\_\_\_\_ Teacher \_\_\_\_\_ Grade \_\_\_\_\_

Student \_\_\_\_\_ Birth Date \_\_\_\_\_ I.D. # \_\_\_\_\_

School \_\_\_\_\_ Telephone Number: \_\_\_\_\_

Dear Parent/Guardian:

*Our records show that your child is now due an immunization that is required by state law. Please return this letter to the school nurse, signed and dated by the City-County Health official or your physician, showing receipt of the immunization. If your child has already received the required immunization, please provide a record. This information is required by \_\_\_\_\_ in order for your child to remain in school.*

(Date)

*Thank you for your prompt attention to this matter.*

*Sincerely,*

\_\_\_\_\_  
Principal

\_\_\_\_\_  
School Nurse

Immunization	Check (✓) required immunization dose.	Date received and signature from Clinic or Physician (Please administer and document any additional required immunizations you may note.)
DTP/DTaP/ DT/Td/Tdap	1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ]	
Polio (IPV) (OPV) Measles, Mumps, Rubella (MMR)	1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 1 [ ] 2 [ ]	
Hib CV	1 [ ] 2 [ ] 3 [ ]	
Hepatitis A (HAV)	1 [ ] 2 [ ]	
Hepatitis B (HBV)	1 [ ] 2 [ ] 3 [ ]	
Varicella	1 [ ] 2 [ ]	
PCV	1 [ ] 2 [ ] 3 [ ] 4 [ ]	
Meningococcal (MCV)	1 [ ]	
HPV	1 [ ] 2 [ ] 3 [ ] recommended	
Influenza	[ ] recommended yearly	

### Important Facts about Immunization requirements:

- Receipt of the dose up to (and including) 4 days before the birthday will satisfy the school entry immunization requirement.
- Five doses of a **Diphtheria-tetanus-pertussis** vaccine, one dose must have been received on or after the 4th birthday; however, 4 doses meet the requirement if the 4th dose was given on or after the 4th birthday including one dose on or after the 4th birthday or 7 years or older three doses meet the requirement if one dose is received on or after 4th birthday. **Seventh (7<sup>th</sup>) grade students will be required to have a booster dose of Tdap only if it has been five years since their last dose of Tetanus vaccine.** Grades 8<sup>th</sup>-12<sup>th</sup> students are required one dose of Tdap when ten years have passed since their previous dose of Tetanus vaccine. Td is acceptable, in lieu of Tdap, if a contraindication to pertussis exists.
- Four doses of **Polio** vaccine, one dose must have been received on or after the 4th birthday; however, 3 doses meet the requirement if the 3rd dose was given on or after the 4th birthday.
- Two doses of **MMR** vaccine for students in grades K-5<sup>th</sup> with the 1st dose on or after the 1st birthday; 6<sup>th</sup>-12<sup>th</sup> grade students are required to have two doses of a measles vaccine, and one dose each of mumps and rubella vaccine.
- Two doses of **Hepatitis A** vaccine received with the 1<sup>st</sup> dose received on or after the 1<sup>st</sup> birthday for students in grades K-5<sup>th</sup>.
- Two doses of **Varicella** vaccine received with the 1<sup>st</sup> dose on or after the 1<sup>st</sup> birthday for students in grades K-5<sup>th</sup> and 7<sup>th</sup>-12<sup>th</sup>. One dose is required for 6<sup>th</sup> grade. A student who receives 1<sup>st</sup> dose of Varicella vaccine after 13 years of age requires two doses.
- One dose of **Meningococcal** vaccine for students in Grades 7<sup>th</sup>-12<sup>th</sup>. Booster recommended 5 years after the first dose
- Please refer to [www.ImmunizeTexas.com](http://www.ImmunizeTexas.com) for more information.
- **HPV and Flu immunization is recommended by the CDC, the American Academy of Pediatrics, and the American Academy of Family Physicians**

Information was obtained from the Texas Department of State Health Services' 2014-2015 Texas Minimum State Vaccine Requirements for Students Grades K-12.

## Appendix I. Useful Internet Resources

### Statement on HPV Vaccination by American Congress of Obstetricians and Gynecologists.

See <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Adolescent-Health-Care/Human-Papillomavirus-Vaccination>.

### Immunization Standing Orders.

Standing orders and an FAQ sheet about standing orders are available at <http://www.immunize.org/standing-orders/>.

### Texas Cancer Information Website.

This website provides Continuing Education resources and past and future HPV Summit information. <http://www.texasancer.info/education.html>

### Texas Children's Hospital HPV Book.

Vaccine-Preventable Disease: Human Papillomavirus (HPV) is a book of personal stories published in June 2015 about 10 people who have had HPV or who lost a loved one to HPV-related cancer, written by Rachel Cunningham, MPH, and Julie A. Boom, MD. <http://www.tchorderprocessing.com/>.

### Immunization Handouts and Vaccine Information Statements in Multiple Languages.

Handouts with HPV vaccine information are available for parents/caregivers at [www.immunize.org/handouts](http://www.immunize.org/handouts). Many pieces are translated into Spanish, and some into six additional languages: Chinese, Korean, Vietnamese, Russian, Arabic, French). HPV Vaccine Information Statements (VIS) are available in many languages at <http://www.immunize.org/vis/?f=9>.

### Research Funding Sources.

More than 50 foundations in Texas offer grants for cancer-related research and/or services See <http://www.texasancer.info/pdfs/cancerfunding2009.pdf>.

The Texas Cancer Information website has links to national and state sources of funding for projects at <http://www.texasancer.info/planning/cancerfunding.html#directory>.

### HPV Information Resources.

<http://www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html>

<http://www.cdc.gov/vaccines/who/teens/products/web.html>

<https://www2.aap.org/immunization/illnesses/hpv/hpv.html>

### Print Resources.

<http://www.cdc.gov/vaccines/who/teens/products/print-materials.html>

<http://www.immunize.org/handouts/>

### Video and Audio Resources.

<http://www.cdc.gov/vaccines/who/teens/products/video-audio.html>

### Ready-to-Use Articles.

<http://www.cdc.gov/vaccines/who/teens/products/matte.html>

### Create Your Own Print Items.

<http://www.miyoworks.org/>



**Free or Low-Cost Training and Continuing Education.**

<http://www.animmunize.org/Main-Menu-Category/nurse-education/CE/default.aspx>

<http://www.immunize.org/resources/contedu.asp>

**Where to Get Vaccinated – Locator by Zip Code.**

<http://www.vaccines.gov/getting/where/>

<http://www.211texas.org/>

**Capacity Building Resources.**

<http://www.immunizeusa.org/media/45943/TIP-Coalition-Toolkit.pdf>

<http://www.immunizeusa.org/media/45946/TIP-Media-Toolkit-for-Coalitions.pdf>

**GLOSSARY**

<b>ACIP</b>	Advisory Committee on Immunization Practices
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CPRIT</b>	Cancer Prevention and Research Institute of Texas
<b>DSHS</b>	Texas Department of State Health Services
<b>EHR</b>	Electronic Health Record
<b>FQHC</b>	Federally Qualified Health Center
<b>HPV</b>	Human papillomavirus
<b>IIS</b>	Immunization Information System
<b>KII</b>	Key informant interview
<b>MenACWY</b>	Meningococcal vaccine
<b>NCI</b>	National Cancer Institute
<b>NIS-Teen</b>	National Teen Immunization Survey
<b>PCP</b>	President's Cancer Panel
<b>QR Code</b>	Quick reference code
<b>RRP</b>	Recurrent Respiratory Papillomatosis
<b>Tdap</b>	Tetanus, diphtheria and pertussis vaccine
<b>VFC</b>	Vaccines for Children

## REFERENCES

1. Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer. A Report to the President of the United States from the President's Cancer Panel. Bethesda, MD: National Cancer Institute; 2014.
2. Centers for Disease Control and Prevention. National and state vaccination coverage among adolescents aged 13-17 years—United States, 2014. *MMWR Morb Mortal Wkly Rep.* 2015 July 31. 64(29);784-792. <http://stacks.cdc.gov/view/cdc/32465>. Accessed September 8, 2015.
3. Centers for Disease Control and Prevention. HPV-associated cancers statistics. <http://www.cdc.gov/cancer/hpv/statistics/index.htm>. Updated September 2, 2014. Accessed September 3, 2015.
4. Siegel, R, MA J, Zou Z, Jemal AI. Cancer statistics, 2014. *CA: A Cancer Journal for Clinicians.* 2014;64:9-29. doi:10.3322/caac.21208.
5. De Martel C, Ferlay J, Franceschi S, Vignat J, Bray F, Forman D, et al. Global burden of cancers attributable to infections in 2008: a review and synthetic analysis. *Lancet Oncol.* 2012;13(6):607-15.
6. Strikas RA, Advisory Committee on Immunization Practices (ACIP), ACIP Child/Adolescent Immunization Work Group. Advisory Committee on Immunization Practices recommended immunization schedules for persons aged 0 through 18 years—United States, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64(4):93–94. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6404a5.htm>. Updated February 6, 2015. Accessed September 11, 2015.
7. Centers for Disease Control and Prevention. Pertussis outbreak trends. 2012. Available at <http://www.cdc.gov/pertussis/outbreaks/trends.html>. Updated March 11, 2015. Accessed August 31, 2015.
8. Centers for Disease Control and Prevention. Bacterial meningitis. <http://www.cdc.gov/meningitis/bacterial.html#reference>. Updated April 1, 2014. Accessed August 31, 2015.
9. American Cancer Society. Cancer Facts & Figures 2014. Atlanta: American Cancer Society; 2014. [http://d2j7fjepcxuj0a.cloudfront.net/wp-content/uploads/2014/02/2014\\_ACS\\_Statistics.pdf](http://d2j7fjepcxuj0a.cloudfront.net/wp-content/uploads/2014/02/2014_ACS_Statistics.pdf). Accessed September 1, 2015.
10. Texas Department of State Health Services. Pertussis. <http://www.dshs.state.tx.us/idcu/disease/pertussis/>. Updated August 28, 2015. Accessed August 31, 2015.
11. Texas Cancer Registry. 2012. Age-adjusted cancer incidence and mortality rates in Texas; anus, anal canal, and anorectum, 2012. <http://www.cancer-rates.info/tx/>. Accessed September 11, 2015.
12. Texas Department of State Health Services. 2014 Texas expected numbers of cancer cases and deaths. February 2014. Updated June 29, 2015. Accessed August 31, 2015. Available at: <http://www.dshs.state.tx.us/tcr/statisticalData/2014expected/2014-Texas-Expected-Numbers-of-Cancer-Cases-and-Deaths.aspx>.
13. National Cancer Institute. HPV and cancer. <http://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-fact-sheet>. Revised February 19, 2015. Accessed September 4, 2015.
14. Chesson HS, Ekwueme DU, Saraiya M, Watson M, Lowy DR, Markowitz LE. Estimates of the annual direct medical costs of the prevention and treatment of disease associated with human papillomavirus in the United States. 2012. *Vaccine*; 30:6016-6019.
15. Fonseca V. Cervical cancer and HPV-related disease in Texas. In: Proceedings of the 82nd Annual Texas Public Health Association Conference; February 2007; Galveston, Texas, United States.
16. Eberth JM, Prarelkar P, Nguyen H, Sun C, Irvin-Vidrine J, Elting LS. The human and economic burden of cervical cancer in Texas. *Tex Pub Health.* 2013;65(2):51-55.
17. Centers for Disease Control and Prevention. HPV vaccines. <http://www.cdc.gov/hpv/vaccine.html>. Updated January 26, 2015. Accessed September 8, 2015.
18. Centers for Disease Control and Prevention. National and state vaccination coverage among adolescents aged 13–17 years—United States, 2012. *MMWR Morb Mortal Wkly Rep.* 2013;62:685–693.

19. Opel DJ et al. The architecture of the provider-parent vaccine discussions at health supervision visits. *Pediatrics*. 2013;132(6):1037-1046. doi:10.1542/peds.2013-2037.
20. Centers for Disease Control and Prevention. Human papillomavirus (HPV) vaccine safety. <http://www.cdc.gov/vaccinesafety/vaccines/hpv-vaccine.html>. Updated August 28, 2015. Accessed September 1, 2015.
21. Markowitz LE et al. Human papillomavirus vaccine introduction—the first five years. *Vaccine*. 2012;30(Suppl 5):F139-F148. doi:10.1016/j.vaccine.2012.05.039.
22. Garland SM. The Australian experience with the human papillomavirus vaccine. *Clin Ther*. 2014;36(1):17-23. doi: 10.1016/j.clinthera.2013.12.005.
23. Nordin JD, Solberg LI, Parker ED. Adolescent primary care visit patterns. *Ann Fam Med*. 2010;8(6):511-516. doi:10.1370/afm.1188.
24. U.S. Department of Health and Human Services. Human Papillomavirus Vaccine – The Pharmacists’ Perspective. [http://www.hhs.gov/nvpo/nvac/meetings/pastmeetings/2014/hpv\\_the\\_pharmacists\\_perspective\\_nvajune.pdf](http://www.hhs.gov/nvpo/nvac/meetings/pastmeetings/2014/hpv_the_pharmacists_perspective_nvajune.pdf). Published June 2014. Accessed September 15, 2015.
25. National Conference of State Legislatures. HPV vaccine policies. <http://www.ncsl.org/research/health/hpv-vaccine-state-legislation-and-statutes.aspx>. Accessed September 9, 2015.
26. Pitts, MJ, Tufts, KA. 2013. Implications of the Virginia human papillomavirus vaccine mandate for parental vaccine acceptance. *Qual Health Res*.2013;23(5):605-617.
27. National Conference of State Legislatures. States with religious and philosophical exemptions from school immunization requirements. <http://www.ncsl.org/research/health/school-immunization-exemption-state-laws.aspx>. Published July 6, 2015. Accessed September 11, 2015.
28. Centers for Disease Control and Prevention. Human papillomavirus (HPV) vaccination report. January 2015; Report 2. [http://www.texmed.org/uploadedFiles/Current/Advocacy/Public\\_Health/Cancer/TexasHPVReport\\_Jan2015.pdf](http://www.texmed.org/uploadedFiles/Current/Advocacy/Public_Health/Cancer/TexasHPVReport_Jan2015.pdf). Accessed September 17, 2015.
29. Texas Department of State Health Services. ImmTrac FAQs. <http://www.dshs.state.tx.us/immunize/immtrac/FAQs.shtm>. Updated August 31, 2015. Accessed September 10, 2015.
30. Texas Department of State Health Services. Provider information. 2011. <http://www.immtracforeveryone.com/assets/downloads/E11-12152.pdf>. Accessed September 10, 2015.
31. Texas Department of State Health Services. Texas population downloads. <http://www.dshs.state.tx.us/chs/popdat/downloads.shtm>. Accessed May 1, 2015.
32. Texas Department of State Health Services. Immunization Branch 2014-2015 update. Presented to The Immunization Partnership Summit. November 2014. <http://www.immunizeusa.org/media/85357/RitterandPorterPPT.pdf>. Accessed September 15, 2015.
33. State of Texas. Executive Order Number RP 65. <http://www.lrl.state.tx.us/scanned/govdocs/Rick%20Perry/2007/RP65.pdf>. Published February 2, 2007. Accessed September 8, 2015.
34. Texas Legislature Online. House Bill 1098. <http://www.legis.state.tx.us/BillLookup/BillSummary.aspx?LegSess=80R&Bill=HB1098>. Published May 8, 2007. Accessed September 8, 2015.
35. Elliott J. Perry yields on HPV vaccines, chides lawmakers. *Houston Chronicle*. May 9, 2007. <http://www.chron.com/news/article/Perry-yields-on-HPV-vaccines-chides-lawmakers-1830709.php>. Accessed September 24, 2015.
36. Legiscan. Bill Text: TX SB200, 2015-2016, 84th Legislature, Enrolled. <https://legiscan.com/TX/text/SB200/id/1240493/Texas-2015-SB200-Enrolled.html>. Accessed September 15, 2015.
37. Matthews KRW, Matsumoto MM. Human papillomavirus vaccine: A public health opportunity for Texas. Houston, TX: Rice University’s Baker Institute for Public Policy; October 6, 2014. <http://>

- bakerinstitute.org/research/human-papillomavirus-vaccine-public-health-opportunity-texas/. Accessed August 30, 2015.
38. Centers for Disease Control and Prevention. CDC vaccine price list. <http://222.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/index.html>. Updated August 3, 2015. Accessed August 31, 2015.
  39. The Henry J. Kaiser Family Foundation. Preventive services covered by private health plans under the affordable care act. <http://kff.org/health-reform/fact-sheet/preventive-services-covered-by-private-health-plans/>. 04 August 2015. Accessed September 16, 2015.
  40. Texas Department of Insurance. Presentation presented at: Texas House of Representatives Insurance Committee; December 3, 2014; Austin, Texas.
  41. Kaiser Family Foundation. Health insurance coverage of children 0-18. 2013. <http://kff.org/other/state-indicator/children-0-18/>. Accessed August 25, 2015.
  42. Medicaid. Texas. <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-State/texas.html>. Accessed September 8, 2015.
  43. Texas Department of State Health Services. About the TVFC program. DSHS website. Updated November 4, 2014. Accessed September 1, 2015. [http://www.dshs.state.tx.us/immunize/tvfc/tvfc\\_about.shtm](http://www.dshs.state.tx.us/immunize/tvfc/tvfc_about.shtm).
  44. Centers for Disease Control and Prevention. VFC detailed questions and answers for parents. <http://www.cdc.gov/vaccines/programs/vfc/about/index.html>. Updated: February 19, 2013. Accessed August 30, 2015.
  45. Merck Helps. <http://www.merckhelps.com/GARDASIL>. Accessed September 11, 2015.
  46. Passel J and Cohn D; Pew Research Center. Unauthorized immigrant totals rise in 7 states, fall in 14: decline in those from Mexico fuels most state decreases. [http://www.pewhispanic.org/files/2014/11/2014-11-18\\_unauthorized-immigration.pdf](http://www.pewhispanic.org/files/2014/11/2014-11-18_unauthorized-immigration.pdf). Published November 18, 2015. Accessed September 17, 2015.
  47. The Henry J. Kaiser Family Foundation. Five basic facts on immigrants and their health care. <http://kff.org/disparities-policy/issue-brief/five-basic-facts-on-immigrants-and-their/>. Accessed September 15, 2015.
  48. Kaiser Family Foundation. Fact sheet: where are states today? Medicaid and CHIP eligibility levels for adults, children, and pregnant women. <http://files.kff.org/attachment/fact-sheet-where-are-states-today-medicaid-and-chip-eligibility-levels-for-children-and-non-disabled-adults-as-of-january-2015>. Published February 2015. Accessed August 30, 2015.
  49. American Academy of Pediatrics. The Business Case of Pricing Vaccines. [https://www.aap.org/en-us/Documents/immunization\\_thebusinesscase.pdf](https://www.aap.org/en-us/Documents/immunization_thebusinesscase.pdf). Revised March 2012. Accessed September 25, 2015.
  50. The Cancer Prevention and Research Institute of Texas. About CPRIT. <http://www.cprit.state.tx.us/about-cprit/>. Accessed September 16, 2015.
  51. The Cancer Prevention and Research Institute of Texas. Funded grants. <http://www.cprit.state.tx.us/funded-grants/>. Accessed September 16, 2015.
  52. Texas Department of State Health Services. Human papillomavirus (HPV). <http://www.dshs.state.tx.us/hivstd/info/hpv/default.shtm>. Updated July 15, 2015. Accessed September 17, 2015.
  53. The Immunization Partnership. Immunization champions. <http://www.immunizeusa.org/best-practices/immunization-champions/?ecode=101>. Accessed September 17, 2015.
  54. Texas Pediatric Society. A vaccine to prevent cancer. <https://txpeds.org/vaccine-prevent-cancer>. Accessed September 17, 2015.

55. Cervical Cancer Free Coalition. Texas. <http://www.cervicalcancerfreecoalition.org/partners/partner-states/texas/>. Accessed September 15, 2015.
56. Texas Medical Association. The facts about HPV vaccination. <http://www.texmed.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=24590&libID=22226>. Accessed September 16, 2015.
57. Centers for Disease Control and Prevention. HPV vaccine resources for healthcare professionals. <http://www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html>. Updated July 24, 2015. Accessed September 15, 2015.
58. Healy CM, Montesinos DP, Middleman AB. Parent and provider perspectives on immunization: are providers overestimating parental concerns? *Vaccine*. 2014;32(5):579-584. doi:10.1016/j.vaccine.2013.11.076.
59. Kahn, JA, Cooper, HP, Vadaparampil, ST, Pence, BC, Weinberg AD, LoCoco, SJ, Rosenthal, SL. Human papillomavirus vaccine recommendations and agreement with mandated human papillomavirus vaccination for 11-to-12-year-old girls: a statewide survey of Texas physicians. *Cancer Epidemiol Biomarkers Prev*. 2009;18:2325-2332. doi:10.1158/1055-9965.EPI-09-0184.
60. World Health Organization. Human papillomavirus vaccines safety (HPV). Extract from report of GACVS meeting of 11-12 December 2013, published in the WHO Weekly Epidemiological Record on 14 February 2014. World Health Organization. [http://www.who.int/vaccine\\_safety/committee/topics/hpv/dec\\_2013/en/](http://www.who.int/vaccine_safety/committee/topics/hpv/dec_2013/en/). Accessed September 24, 2015.
61. Centers for Disease Control and Prevention. Vaccine storage and handling toolkit. <http://www.cdc.gov/vaccines/recs/storage/toolkit/>. Updated July 11, 2014. Accessed September 15, 2015.
62. American Academy of Pediatrics. Immunization Training Guide & Practice Procedure Manual. [https://www.aap.org/en-us/Documents/immunizations\\_training\\_guide.pdf](https://www.aap.org/en-us/Documents/immunizations_training_guide.pdf). Published 2013. Accessed September 24, 2015.
63. Mayhew A, Mullins TL, Ding L, Rosenthal SL, Zimet GD, Morrow C, Kahn JA. Risk perceptions and subsequent sexual behaviors after HPV vaccination in adolescents. *Pediatrics*. 2014; 133(3):404-11. doi: 10.1542/peds.2013-2822.
64. Texas Department of State Health Services. Reducing vaccine-preventable disease in Texas: Strategies to increase vaccine coverage levels. September 2012. <http://www.dshs.state.tx.us/WorkArea/DownloadAsset.aspx?id=8589973989>. Updated January 10, 2013. Accessed September 15, 2015.
65. Texas Department of State Health Services. Conscientious exemptions data, 2010-2015. <http://www.dshs.state.tx.us/immunize/coverage/Conscientious-Exemptions-Data.shtm>. Updated July 16, 2015.
66. Texas Department of State Health Services. 2014-2015 annual report of immunization status. <http://www.dshs.state.tx.us/immunize/coverage/schools.shtm>. Updated August 31, 2015. Accessed September 10, 2015.
67. Berenson AB, Laz TH, Hirth JM, McGrath CJ, Rahman M. Effect of the decision-making process in the family on HPV vaccination rates among adolescents 9-17 years of age. 2014; *Human Vaccine Immunotherapy*;10(7):1807-1811. doi:10.4161/hv.28779.
68. Modern Language Association. Most spoken languages in Texas in 2010. [http://www.mla.org/cgi-shl/docstudio/docs.pl?map\\_data\\_results](http://www.mla.org/cgi-shl/docstudio/docs.pl?map_data_results). Accessed September 9, 2015.
69. Yi JK, Lackey SC, Zahn MP, Castaneda J, Hwang JP. Human papillomavirus knowledge and awareness among Vietnamese mothers. *J Community Health*. 2013;38(6): 1003-1009. doi:10.1007/s10900-013-9709-6.
70. Tiro JA, Sanders JM, Pruitt SL, Stevens CF, Skinner CS, Bishop WP, Fuller S, Persaud D. Promoting HPV Vaccination in Safety-Net Clinics: A Randomized Trial. *Pediatrics*. 2015; 136(5): 850-9. doi: 10.1542/peds.2015-1563.

71. Centers for Disease Control and Prevention. How Medicaid and VFC work together. <http://www.cdc.gov/vaccines/programs/vfc/providers/medicaid.html>. Updated March 9, 2013. Accessed September 25, 2015.
72. Texas Health and Human Services Commission. In Touch. January/February 2014. <http://www.hhsc.state.tx.us/stakeholder/2014/jan-feb/1.shtml>. Accessed September 15, 2015.
73. Kaiser Family Foundation. State Medical Coverage of Family Planning Services: Summary of State Survey Findings. <https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8015.pdf>. Published 2009. Accessed September 25, 2015.
74. Rickert VI, Auslander BA, Cox DS, Rosenthal SL, Rickert JA, Rupp R, Zimet GD. School-based vaccination of young US males: impact of health beliefs on intent and first dose acceptance. *Vaccine*. 2014;32(17):1982-1987.
75. Texas Association of Community Health Centers. Outreach for Texas Migrant Care Network. <https://www.tachc.org/programs-services/outreach/outreach-for-texas-migrant-care-network>. Accessed September 17, 2015.
76. Texas Department of State Health Services. Vaccination coverage levels in Texas schools. <http://www.dshs.state.tx.us/immunize/coverage/schools.shtm>. Updated August 31, 2015. Accessed September 15, 2015.
77. Tiro JA, Pruitt SL, Bruce CM, Persaud D, Lau M, Vernon SW, Morrow J, Skinner CS. Multilevel correlates for human papillomavirus vaccination of adolescent girls attending safety net clinics. *Vaccine*. 2012;30(13):2368-75. doi:10.1016/vaccine.2011.11.031.
78. The Immunization Partnership. 2014 Summit. <http://www.immunizeusa.org/media/85357/RitterandPorterPPT.pdf>. Accessed September 1, 2015.
79. Parra-Medina D, Morales-Campos DY, Mojica C, Ramirez AG. Promotora outreach, education and navigation support for HPV vaccination to Hispanic women with unvaccinated daughters. *Journal of Cancer Education*. 2014;30:353-359. doi.10.1007/s13187-014-0680-4.

