

The nurse's role in preventing cervical cancer: A cultural framework

By Versie Johnson-Mallard, PhD, ARNP; Tami L. Thomas, PhD, CPNP, RNC; Elizabeth A. Kostas-Polston, PhD, ARNP; Michelle Barta, MPH; Cecil A. Lengacher, PhD, RN; and Desiree Rivers, PhD, MSP

AS NEW CERVICAL CANCER prevention technologies and vaccine science evolve, so does the need for nurse expertise in these areas. Nurses are a core source of vaccine information, including the human papillomavirus (HPV) vaccine.

The cost of HPV vaccine is paid by private insurance companies for children whose families have such policies and by the Vaccines for Children Program (VCP) for noninsured and underinsured children. But not all adolescents are receiving all the recommended immunizations for their age-group. The Healthy People 2010 vaccination goal of 90% coverage for HPV vaccines among adolescents ages 13 to 15 went unmet. Although rates are rising steadily each year, only 27% of teenage girls completed the recommended three-dose series in 2009. Among teenage girls who completed it, 23.1% were Black and 23.4% were Hispanic. These findings suggest that barriers to completing the series exist for everyone, but particularly members of certain racial and ethnic groups. One barrier is insufficient knowledge of the importance of completing the three-dose vaccine regimen.

This article introduces a culturally appropriate model, called PEN-3, that nurses can use to promote the goal of increasing HPV vaccine knowledge and use. The authors envision that culturally appropriate HPV vaccination education delivered by nurses in nontraditional settings (such as schools) and reinforced at every health visit will increase HPV vaccine completion rates.

Understanding HPV vaccines

The link between HPV and cervical cancer is so strong that the International Agency for Research on Cancer (part of the World Health Organization) has officially acknowledged

Using the PEN-3 model can improve acceptance of the human papillomavirus vaccine.

HPV as a high-risk human carcinogen. In 2006, the Food and Drug Administration (FDA) approved the first quadrivalent HPV vaccine (Gardasil) targeting HPV strains 6, 11, 16, and 18 for females ages 9 to 26. In 2009, the FDA approved Gardasil for males ages 9 to 26. Cervarix, a bivalent HPV vaccine targeting strains 16 and 18, was approved in 2009. (See *Summary of HPV vaccines*.)

Low vaccine completion rates

Full HPV protection occurs after vaccine series completion. Despite 5 years of HPV vaccine availability,

Summary of HPV vaccines

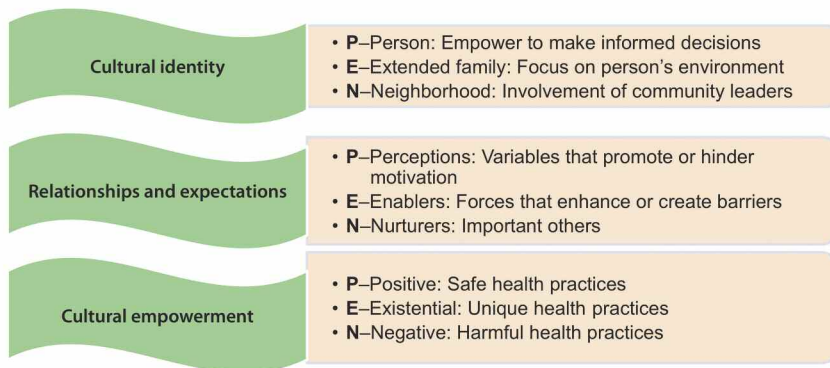
This chart compares the approved human papillomavirus (HPV) vaccines.

Vaccine name and strains targeted	Cervarix HPV 16/18	Gardasil HPV 6/11/16/18
Manufacturer	GlaxoSmithKline	Merck
Volume	0.5 mL per dose	0.5 mL per dose
Schedule	0, 1, 6 months	0, 2, 6 months
Focus	Cervical cancer	Cancer and sexually transmitted infections
Recommended age:		
• Females	Ages 9 to 26	Ages 9 to 26
• Males	Not FDA approved	Ages 9 to 26

Adapted from: Giannini SL, Hanon E, Fournau MA et al. Superior immune response induced by vaccination with HPV 16/18 L1 VLP formulated with either AS04 or aluminium salt only formulation. Poster B68 presented at: Frontiers in Cancer Prevention Research (a meeting of the American Association for Cancer Research); October 30-November 2, 2005; Baltimore, MD; and Fernandez JM, Hoeffler JP, eds. *Gene Expression Systems: Using Nature for the Art of Expression*. San Diego, CA: Academic Press; 1999.

PEN-3 model

Three dimensions of health beliefs and behavior



Adapted from: Airhihenbuwa CO. *Health and Culture: Beyond the Western Paradigm*. Thousand Oaks, CA; Sage: 1995.

vaccination completion rates in females are lower than projected by the new Healthy People 2020 objective of 80% coverage. Series completion can be a challenge for children of lower socioeconomic status, some minority populations, and the uninsured or underinsured.

For maximum effectiveness, the HPV vaccine is given as a three-shot regimen to children before onset of sexual activity; the best antibody response occurs in those age 12 or younger. At this age, children spend much of their time in the formal, structured educational environment of school. If nurses were to discuss vaccinations with both students and their parents in the school setting, vaccination decisions could be made in an enlightened environment.

But in practice, the decision-making burden for children's immunizations falls almost exclusively on parents. Many children don't know they need to protect themselves against HPV. Nurses have an opportunity to educate both parents and students about the risk of contracting HPV and ways to prevent it. Students and parents may be highly influenced by their interactions with a nurse. For maximal effectiveness in decreasing HPV and cervical cancer rates, nursing interventions must be culturally appropriate and include parental involvement.

Barriers to completing the vaccine series

The authors reviewed studies describing disparities in initiating and continuing the HPV vaccine series while understanding the important role nurses play in children's health and well-being. We performed a current review of the literature using data generated from these databases: PsychINFO (OVID), Medline, and the Cumulative Index to Nursing and Allied Health Literature.

We found that individuals from low socioeconomic status, some minorities, and those with public health insurance are more likely than others to initiate HPV vaccinations but less likely to complete the recom-

mended three-dose series. Failure to complete the series may reduce disease protection. This has raised questions about the degree to which HPV vaccination can lower cervical cancer rates in persons who don't complete the three-dose regimen. Cervical cancer protection from one or two doses of the HPV vaccine is still unclear.

From observation, full-series completion of the bivalent vaccine provides protection for up to 6.4 years; the quadrivalent vaccine, for up to 8.5 years. Nurses' informed guidance may help parents accept that early HPV immunization may protect their

children against cervical cancer during older adulthood. Nurses' instructions on and reinforcement of the need to begin and complete the HPV vaccine series are critical.

Minority parents' barriers to HPV vaccines include lack of knowledge to make informed decisions and inability to navigate the healthcare environment. Roughly 20% of minority members in this country live below the poverty line and are uninsured. Poor and uninsured persons may be less aware of their risks and more likely to be treated for cancer at later disease stages—and thus more likely to die of cancer.

Nurse's role in vaccination

Nurses are more likely than teachers, guidance counselors, or school principals to believe in vaccine usefulness and safety. Students and parents commonly seek out nurses for their health expertise. Nurses have the formal healthcare training and knowledge to advise parents and students about immunizations. Parents and students who receive correct information about vaccines may use vaccine services frequently and consistently.

As primary-care providers, nurses are responsible for promoting health and preventing illness. Because of their regular contact with students and parents, they are ideal primary contacts for immunization information and concerns. Parents' and students' natural respect for nurses' authority may enhance nurses' ability to influence vaccine decision making. Also, nurses can address real and perceived barriers to initiating and completing the HPV vaccine regimen.

Using the PEN-3 model

The theoretical model best suited to the HPV vaccine program is one that identifies the target group while exploring supporting factors and beliefs, including perceptions, enablers, and nurturers, to adapting health behaviors and maintaining a cultural awareness and

Sample survey items guided by the PEN-3 model

empowered environment. To assess vaccine acceptance by and communication with the target population, an explanatory theory based on the PEN-3 model is used.

This model, which helps align health education programs with the health beliefs and practices of a given group, has been tested and validated as culturally appropriate. Using the cultural framework of PEN-3 in planning HPV education programs targeted at minority parents and their children increases the chance that these programs will be culturally appropriate. PEN-3 has been described as “the best articulated model to date on cultural competence and healthcare.”

The PEN-3 model gets its name from three interrelated and interdependent dimensions of health. These dimensions are broadly characterized as:

- cultural identity (identification of the target audience), including the **P**erson, **E**xtended family, and **N**eighborhood
 - relationships and expectations (exploration of the target audience’s supporting factors and beliefs), including **P**erceptions, **E**nablems, and **N**urturers
 - cultural empowerment, including **P**ositive, **E**xistential, and **N**egative. (See *PEN-3 model*.)
- Within this framework, the authors survey such aspects of health education as person, extended family, and neighborhood; discuss the elements that inform an educational diagnosis of health behavior, including perceptions, enablers, and nurturers; and consider the cultural appropriateness of health behavior, examining positive, negative, and existential beliefs.
- **Perceptions** are thought to either hinder or promote family members’ motivations to change health-related beliefs. They include aspects of knowledge, attitudes, values, and beliefs.
 - **Enablers** may promote changes in perceptions or behavior—or may generate barriers to change. The VCP is an example of a positive enabler. It enables low-income parents to have their school-age children vaccinated against HPV free of charge.
 - **Nurturers** are the supporting factors a person may receive from central significant others. They may include parents’ respect for nurses, who in turn encourage parents to use their decision-making power to have their children vaccinated against HPV.

Administered to parents and students, the survey below helps nurses evaluate knowledge of and attitudes toward the human papillomavirus (HPV) vaccine.

Circle “Yes” or “No” for the three items below, or answer the question on the line provided.

Relationships and expectations (perception, enablers, nurturers)

- | | | |
|-----|----|---|
| Yes | No | ▪ I believe vaccines are important for children. |
| Yes | No | ▪ I know the Vaccines for Children Program will pay for the vaccine if my child is younger than age 19. |
| Yes | No | ▪ I have received my healthcare practitioner’s recommendation for my child to receive the HPV vaccine. |

For students:

This is what my parents say about the vaccine: _____

For students and parents:

This is what other family members say about the vaccine: _____

Cultural empowerment (positive, existential, negative)

- | | | |
|-----|----|---|
| Yes | No | ▪ Religion plays a part in my decision making about the HPV vaccine. |
| Yes | No | ▪ Prayer will protect against cervical cancer. |
| Yes | No | ▪ Folk healers can protect against cervical cancer. |
| Yes | No | ▪ HPV is not serious enough for a vaccine. |
| Yes | No | ▪ Cervical cancer is something that is meant to be. |
| Yes | No | ▪ Alternative choices (for instance, herbs, teas, rubs) play an important role in preventing cervical cancer. |
| Yes | No | ▪ I believe new vaccines are created to make money for the government. |

- **Neighborhood** is committed to promoting health and preventing disease in neighborhoods and communities. It has three subcategories—**p**ositive, **e**xistential, and **n**egative—and encompasses the cultural correctness of health beliefs. **Positives** are necessary health practices that empower individuals, families, neighbors, and communities to improve their health status. A sign of success for this category is increased awareness of the HPV vaccine. Another positive is accepting HPV vaccine use without perceiving this acceptance as giving the child permission to have sex. The **existential** category includes different health practices (such as family traditions), values, and beliefs that may influence decisions about HPV prevention and nurses’ communication of support for the vaccine. **Negatives** include myths and misperceptions that some people harbor about HPV vaccines, as well as negative behaviors, such as avoiding health screening and having unprotected sexual intercourse.

Outreach needed

Outreach is needed to improve HPV vaccination rates.

Reducing HPV infection rates and, ultimately, cervical cancer rates can't be achieved with a one-size-fits-all approach.

In particular, we need strong and culturally appropriate efforts to increase vaccination rates among underserved minorities, the socioeconomically disadvantaged, and preadolescents. Nurses guided by the PEN-3 model can play a critical role in outreach and can intervene on children's behalf. They can offer seminars to students and parents on the basics of HPV and HPV vaccines. They can use dimensions of the PEN-3 model in informing parents' and students' decision-making process. Also, they can develop a survey to evaluate parents' and students' knowledge of and attitudes toward the HPV vaccine, both before and after the seminar. (See *Sample survey items guided by the PEN-3 model.*)

A study could be designed to assess the effectiveness of nurses' educational interventions. Success could be defined as increased rates of HPV vaccination knowledge and compliance with the full course of vaccination. To determine annual HPV vaccination rates, nurses could use school vaccination records or parent-provided vaccine cards. However, know that these sources might lead to underestimation of the true vaccination rate, as some parents who have their children vaccinated at a county health department or other medical facility may not inform the school of this activity. Use of online registries could enhance information sharing, providing more accurate information about vaccination.

Collaboration is key

Evidence-based nursing practice requires that clinical decisions hinge on verified and duplicated research data, not anecdotal reports or one's past experience. A model of cultural competence such as the PEN-3 is an invaluable resource for health promotion and education. In the school setting, nurses can apply this model when instructing students and parents about HPV and the HPV vaccine.

Reducing HPV infection rates and, ultimately, cervical cancer rates can't be achieved with a one-size-fits-all approach. Nurses must impart information in a way that takes into account patients' cultural values and beliefs. Many young women consider nurses an approachable and informative resource regarding both HPV vaccination and sexually transmitted infections in

general. Nurses are well suited to educating students, patients, and parents about HPV transmission, sequelae, and prevention. Collaboration among these groups is evident in community health department outreach programs and should be encouraged among schools, primary-care practitioners, and acute-care clinics. Nurses can promote the common ideal of providing holistic care and patient advocacy. Collaboration and creative brainstorming are essential to developing education programs that can significantly reduce HPV infection and transmission and increase HPV vaccine uptake and vaccine series completion. ★

Selected references

- Airhihenbuwa CO. *Health and Culture: Beyond the Western Paradigm*. Thousand Oaks, CA: Sage; 1995.
- Centers for Disease Control and Prevention. National and state vaccination coverage among adolescents aged 13-17 years—United States, 2010. *Morbidity and Mortality Weekly Report*. August 26, 2011. 60(33):1117-23. www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a1.htm. Accessed May 28, 2012.
- Cowdery JE, Parker S, Webster JD. The application of the PEN-3 model in the development of an HIV prevention intervention aimed at reducing health disparities among African American adults. Paper presented at: National HIV Prevention Conference; June 12-15, 2005; Atlanta, GA. <http://www1.aegis.org/conferences/NHIVPC/2005/MP-099.html>. Accessed May 28, 2012.
- Fernandez JM, Hoeffler JP, eds. *Gene Expression Systems: Using Nature for the Art of Expression*. San Diego, CA: Academic Press; 1999.
- Giannini SL, Hanon E, Fournau MA et al. Superior immune response induced by vaccination with HPV 16/18 L1 VLP formulated with either AS04 or aluminium salt only formulation. Poster B68 presented at: Frontiers in Cancer Prevention Research (a meeting of American Association for Cancer Research); October 30-November 2, 2005; Baltimore, MD.
- Kahn JA, Ding L, Huang B, et al. Mothers' intention for their daughters and themselves to receive the human papillomavirus vaccine: a national study of nurses. *Pediatrics*. 2009 Jun;123(6):1439-45.
- National Association of School Nurses. Immunizations. Position Statement. Revised September 2010. www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/ArticleId/8/Immunizations-Revised-2010. Accessed May 28, 2012.
- U.S. Department of Health and Human Services. Healthy People 2020 immunization-related objectives. www.hhs.gov/nvpo/vacc_plan/2010%20Plan/appendix1.pdf. Accessed May 28, 2012.
- U.S. Food and Drug Administration. Vaccines, Blood & Biologics. Gardasil. 2010. www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm094042.htm. Accessed May 28, 2012.

Versie Johnson-Mallard is a Robert Wood Johnson Foundation (RWJF) Nurse Faculty Scholar and an assistant professor at the College of Nursing at the University of South Florida (USF) in Tampa. Tami L. Thomas, also an RWJF Nurse Faculty Scholar, is an assistant professor at the Nell Hodgson Woodruff School of Nursing at Emory University in Atlanta, Georgia. Elizabeth A. Kostas-Polston, also an RWJF Nurse Faculty Scholar, is an assistant professor at USF in Tampa. Michelle Barta is a pharmacy student at USF in Tampa. Cecile A. Lengacher is a professor at USF in Tampa. Desiree Rivers is coordinator for the Center of Equal Health at USF in Tampa. The authors have no financial interest in or other relationship with any commercial product named in this article.