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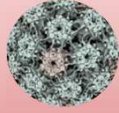


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HUMAN PAPILLOMAVIRUS



- VIRUS THAT CAUSES SKIN OR MUCOUS MEMBRANE GROWTHS (WARTS)
- THERE ARE OVER 100 VARIETIES OF HPV
- SOME TYPES CAUSE WARTS, SOME TYPES CAUSE DIFFERENT FORMS OF CANCER
- INFECTIONS ARE TRANSMITTED SEXUALLY OR THROUGH SKIN TO SKIN CONTACT

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SYMPTOMS OF HPV

- IN MOST CASES, THE IMMUNE SYSTEM DEFEATS HPV INFECTION BEFORE IT CREATES WARTS
- WHEN WARTS DO APPEAR, THEY VARY IN APPEARANCE ACCORDING TO WHICH HPV TYPE IS INVOLVED
 - **GENITAL:** SMALL AND FLAT, CAULIFLOWER LIKE BUMPS. NO PAIN, BUT CAN ITCH/ FEEL TENDER :
 - FEMALE - VULVA, ANUS, CERVIX AND VAGINA
 - MALE - PENIS, SCROTUM AND ANUS
 - **COMMON:** ROUGH AND RAISED. USUALLY ON HANDS/FINGERS. UGLY AND CAN BE PAINFUL- SUSCEPTIBLE TO INJURY
 - **PLANTAR:** HARD, GRAINY GROWTHS ON HEELS OR BALLS OF FEET. UNCOMFORTABLE AND PAINFUL
 - **FLAT:** FLAT TOPPED, SLIGHTLY RAISED LESIONS. OFTEN ON FACE, BEARD, LEGS

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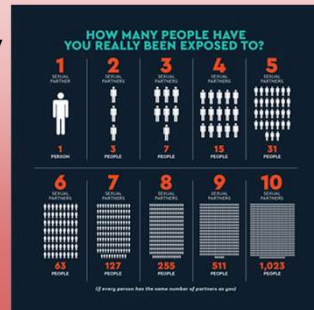
CAUSES OF HPV

- INFECTION OCCURS WHEN THE VIRUS ENTERS THE BODY THROUGH A CUT OR SMALL TEAR IN THE SKIN (SKIN TO SKIN CONTACT)
- GENITAL INFECTIONS ARE CONTRACTED THROUGH SEXUAL INTERCOURSE, ANAL SEX, AND GENERAL SKIN TO SKIN CONTACT IN THE GENITAL REGION
- SOME HPV INFECTIONS THAT RESULT IN ORAL OR UPPER RESPIRATORY LESIONS ARE CONTRACTED THROUGH ORAL SEX
- PREGNANT WOMEN WITH HPV HAVE A SMALL CHANCE OF PASSING THE INFECTION ON TO THE BABY. LESIONS ARE COMMONLY NON-CANCEROUS AND FOUND IN THE BABY'S VOICE BOX

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RISK FACTORS OF HPV

NUMBER OF SEXUAL PARTNERS
AGE
IMMUNOCOMPROMISED
DAMAGED SKIN
PERSONAL CONTACT



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COMPLICATIONS OF HPV

- ORAL AND UPPER RESPIRATORY LESIONS
 - TONGUE, TONSILS, SOFT PALATE, LARYNX AND NOSE
- CANCER
 - CERVICAL, GENITAL, ANUS, MOUTH AND UPPER RESPIRATORY TRACT

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PREVENTION OF HPV INFECTION

- **COMMON HPV** – DIFFICULT TO PREVENT. IF A PATIENT HAS A COMMON WART, SPREAD CAN BE PREVENTED BY NOT PICKING THE LESIONS AND NOT BITING NAILS
- **PLANTAR HPV** – WEAR SHOES OR SANDALS IN PUBLIC PLACES, POOLS
- **GENITAL HPV** – REDUCE RISK BY BEING IN A MONOGAMOUS RELATIONSHIP, REDUCING # OF PARTNERS, USING CONDOMS

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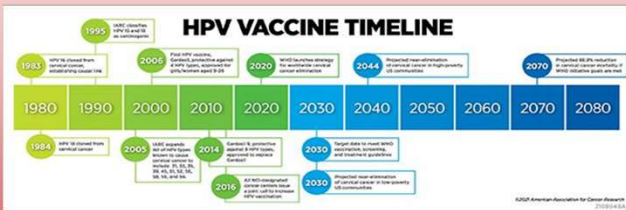
HPV INFECTION

- MOST COMMON STI WORLDWIDE
- OVER 40 HPV TYPES SPREAD BY SEXUAL CONTACT
- 2 TYPES CAUSE GENITAL WARTS
- ABOUT 1 DOZEN CAUSE CANCERS OF THE CERVIX, ANUS, OROPHARYNX, PENIS, VULVA, AND VAGINA



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HPV VACCINE TIMELINE



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HOW DO THE VACCINATIONS WORK?



- VACCINES STIMULATE THE BODY TO PRODUCE ANTIBODIES THAT, IN FUTURE HPV ENCOUNTERS WITH HPV, BIND TO THE VIRUS AND PREVENT IT FROM INFECTING CELLS
- VACCINES ARE BASED ON VLP'S (VIRUS LIKE PARTICLES) THAT ARE FORMED BY HPV SURFACE COMPONENTS
 - VLP'S ARE NOT INFECTIOUS BECAUSE THEY DO **NOT** CONTAIN THE VIRAL DNA
- VLP'S CLOSELY RESEMBLE THE NATURAL VIRUS THUS INITIATE GOOD PROTECTIVITY TO THE NATURAL HPV VIRUS
- VLP'S ARE STRONGLY IMMUNOGENIC; MEANING THEY PRODUCE HIGH LEVELS OF ANTIBODY PRODUCTION.

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RECAP

- VLP'S = STRONGLY EFFECTIVE VACCINE

HOWEVER!

- HPV VACCINATION DOES **NOT** PREVENT OTHER STI'S
- HPV VACCINE DOES **NOT** TREAT EXISTING HPV INFECTIONS OR HPV CAUSED DISEASE



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CURRENT VACCINES AVAILABLE

WHAT THEY PROTECT AGAINST
(WHY THE VACCINE IS IMPORTANT)



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3 VACCINES AVAILABLE WORLDWIDE

- GARDASIL
- GARDASIL 9
- CERVARIX
- SINCE 2016, **ONLY** GARDASIL IS AVAILABLE IN THE US

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GARDASIL 9

PREVENTS INFECTION OF 9 HPV TYPES

HPV 6 & 11

CAUSE 90% OF GENITAL WARTS

HPV 16 & 18

HIGH RISK HPV'S THAT CAUSE 70% OF CERVICAL CANCERS AND HIGH PERCENTAGE OF OTHER HPV CANCERS

HPV 31, 33, 45, 52 & 58

HIGH RISK HPV'S THAT CAUSE AN ADDITIONAL 10-20% OF CERVICAL CANCERS

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VACCINE SIDE EFFECTS

- SORENESS, REDNESS, OR SWELLING AT THE INJECTION SITE
- FEVER OR HEADACHE AFTER VACCINATION
- TEENAGERS ARE MORE LIKELY TO **FAINT** AFTER ANY VACCINATION
- VERY REMOTE CHANCE OF CAUSING A **SEVERE ALLERGIC REACTION, OTHER SERIOUS INJURY OR DEATH**

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WHO SHOULD BE VACCINATED?

- VACCINE RECOMMENDATIONS ARE MADE BY THE CDC ADVISORY COMMITTEE OF IMMUNIZATION PRACTICES (ACIP)
- AGES 9-26
 - RECOMMENDATION IS FOR ALL PERSONS IN THIS AGE GROUP NOT PREVIOUSLY VACCINATED
 - CAN START AT AGE 9, BUT ROUTINELY STARTED AT AGES 11-12
- AGES 27-45
 - CAN DISCUSS WITH PATIENT IF NOT ALREADY VACCINATED.
 - PROVIDES LESS BENEFIT AS MOST HAVE ALREADY BEEN EXPOSED.

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HOW MANY DOSES?

- BEFORE AGE 15
 - 2 DOSES – AT LEAST 6 MONTHS APART
- 15 AND OLDER OR IMMUNOCOMPROMISED
 - 3 DOSES TO BE FULLY IMMUNIZED
 - 4 WEEKS BETWEEN DOSE 1 AND 2
 - AT LEAST 12 WEEKS BETWEEN DOSE 2 AND 3
 - INTERVAL BETWEEN DOSE 1 AND 3 HAS TO BE AT LEAST 5 MONTHS



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HOW EFFECTIVE ARE THE VACCINES?

STUDIES SHOW THAT THE VACCINES ARE HIGHLY EFFECTIVE IF GIVEN BEFORE 1ST EXPOSURE

TRIALS THAT LED TO APPROVAL OF GARDASIL 9
FOUND THE FOLLOWING:

- NEARLY **100%** EFFECTIVE IN PREVENTING CERVICAL, VULVAR, AND VAGINAL INFECTIONS IN ALL TYPES THAT IT TARGETS
- NEARLY **100%** EFFECTIVE IN PREVENTING PRE-CANCERS IN ALL TYPES THAT IT TARGETS



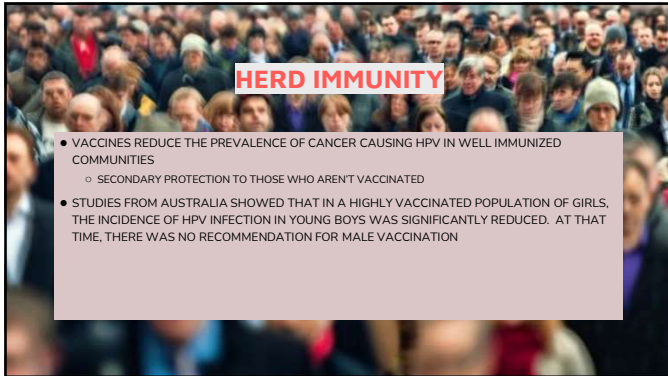
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VACCINE + CERVICAL CANCER SCREENING PROVIDES THE GREATEST PROTECTION AGAINST CERVICAL CANCER

ALSO REDUCES CANCERS CAUSED BY HPV AT SITES OTHER THAN THE CERVIX

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HERD IMMUNITY

- VACCINES REDUCE THE PREVALENCE OF CANCER CAUSING HPV IN WELL IMMUNIZED COMMUNITIES
 - SECONDARY PROTECTION TO THOSE WHO AREN'T VACCINATED
- STUDIES FROM AUSTRALIA SHOWED THAT IN A HIGHLY VACCINATED POPULATION OF GIRLS, THE INCIDENCE OF HPV INFECTION IN YOUNG BOYS WAS SIGNIFICANTLY REDUCED. AT THAT TIME, THERE WAS NO RECOMMENDATION FOR MALE VACCINATION

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REDUCED HEALTHCARE EXPENSE

- FULL VACCINATION REDUCES THE NEED FOR SCREENING
- REDUCES THE NEED FOR SUBSEQUENT MEDICAL EVALUATIONS
 - BIOPSIES
 - INVASIVE PROCEDURES FROM POSITIVE SCREENS
 - REDUCES ANXIETIES RELATED TO FOLLOW UP CARE

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MORE FACTS TO CONSIDER:

AS CERVICAL CANCER HAS DECLINED IN THE US, HPV OROPHARYNGEAL, VULVAR AND ANAL CANCERS HAVE BEEN INCREASING!

2012-2016 HPV CAUSED MORE OROPHARYNGEAL CANCER THAN CERVICAL

THERE ARE **NO** FORMAL SCREENS FOR THE OTHER HPV CANCERS

VACCINATION CAN HAVE HUGE OVERALL HEALTHCARE IMPACT

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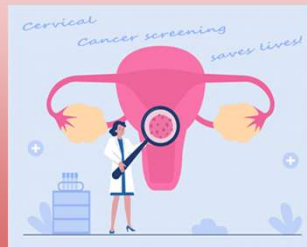
HPV & CANCER

- NEARLY ALL ARE CERVICAL CANCER
- SOME CANCERS OF THE VULVA, PENIS, ANUS, OROPHARYNX (BACK OF THROAT, BASE OF TONGUE, TONSILLAR)
- 90% OF ANAL AND CERVICAL CANCERS ARE CAUSED BY HPV
- 70% OF VULVAR AND VAGINAL CULTURES ARE CAUSED BY HPV
- 60% OF PENILE CANCERS ARE CAUSED BY HPV
- 60-70% OF THROAT CANCERS MAY BE LINKED TO HPV (FORMERLY TOBACCO & ALCOHOL)
- HPV DNA HAS BEEN FOUND IN CANCEROUS CELLS FROM MANY SPECIMENS OBTAINED IN SURGERY

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CERVICAL CANCER

- 90% CAUSED BY HPV
- CAN TAKE 20 YEARS OR LONGER TO DEVELOP AFTER INITIAL INFECTION
- EARLY CERVICAL CANCER DOES NOT CAUSE SYMPTOMS
- REGULAR SCREENING IS VITAL TO DETECT PRECANCEROUS LESIONS IN THE CERVIX



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GUIDELINES FOR CERVICAL CANCER SCREENING

AGES 21-29

MUST HAVE A PAP TEST EVERY 3 YEARS

AGES 30-65

HAVE A PAP TEST EVERY 3 YEARS **OR** EVERY 5 YEARS IF THEY HAVE THE HPV DNA TEST AT THE SAME TIME AS CERVICAL SCREEN

OVER 65

CAN STOP CERVICAL CANCER SCREENING IF THEY HAVE 3 NORMAL SCREENS OR IF THEY HAVE HAD 2 NEGATIVE HPV DNA TESTS

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NATURAL COURSE OF INFECTION

- MOST OF THE TIME, HPV GOES AWAY WITHIN 2 YEARS AND DOES NOT CAUSE PROBLEMS
 - LIKE OTHER VIRUSES, THE IMMUNE SYSTEM CAN TYPICALLY FIGHT OFF HPV NATURALLY
- WHEN IT STAYS IN THE BODY FOR MANY YEARS, IT CAN CAUSE CANCER
- IT IS NOT KNOWN WHY HPV GOES AWAY IN MOST, BUT CAUSES CANCER IN OTHERS
- THERE ARE NO TESTS FOR HPV INFECTION
- WE CAN TEST CANCEROUS CELLS FOR HPV VIRAL DNA

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TIMING OF VACCINATION




- PREVENTION OF HPV INFECTION PROVIDES THE GREATEST PROTECTION TO HPV RELATED MEDICAL PROBLEMS.
- THE BEST PREVENTION INVOLVES BEING FULLY VACCINATED **BEFORE** HAVING ANY CONTACT WITH THE VIRUS

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HPV=SEX

NOT MY CHILD!

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PARENTS ARE WORRIED ABOUT...

- VACCINE CONTINUES TO RIAL UP CONTROVERSY BECAUSE IT PROVIDES PROTECTION FROM A SEXUALLY TRANSMITTED DISEASE
- MOST PARENTS DONT UNDERSTAND WHY THE STARTING AGE IS 9-11
- MOST PARENTS ARE ALSO CLUELESS ABOUT WHEN THEIR CHILDREN START TO HAVE SEX AND OTHER INTIMATE ENCOUNTERS.



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TEENAGERS LOVE TO TRY NEW THINGS!

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TEENAGERS...SIGH!

- 10% OF GIRLS ARE INFECTED BY AGE 15
- 20% OF GIRLS ARE INFECTED BY AGE 17
- 12.5 % OF MALES AGED 14-19
- 38.2% OF MALES AGED 20-24
- SEXUAL HABITS ARE CHANGING. INTERCOURSE IS NOT PREFERRED, BUT EVERYTHING ELSE IS!

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NAVIGATING VACCINE HESITANCY

DECISION MAKING AROUND VACCINATION

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BASIC VACCINE FACTS

- VACCINATION IS ONE OF THE MOST SUCCESSFUL PUBLIC HEALTH INTERVENTIONS
- VACCINATION HAS LED TO THE ELIMINATION AND CONTROL OF MANY DISEASES THAT WERE ONCE COMMON IN THE USA.
- RECENT OUTBREAKS OF VACCINE PREVENTABLE DISEASE (VPD) INDICATE THAT CONTINUED VIGILANCE IS NEEDED

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IMPORTANCE OF VACCINE VIGILANCE

- HERD IMMUNITY IS NEEDED TO PREVENT PERSON TO PERSON TRANSMISSION OF DISEASES
- UNDER VACCINATED COMMUNITIES HAVE THE HIGHEST INCIDENCE OF VPD
- GROWING INCIDENCE OF ANTIBIOTIC RESISTANCE AND GLOBAL TRAVEL IS MAKING VACCINATION EVEN MORE IMPORTANT

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PARENTAL CONCERNS ARE ON THE RISE

TOP REASONS FOR NOT VACCINATING INCLUDE:

1. NECESSITY
2. SAFETY
3. SIDE EFFECTS
4. AUTISM
5. VACCINE ADDITIVES
6. LONG TERM HEALTH PROBLEMS
7. TOO MUCH FOR THE IMMUNE SYSTEM TO HANDLE



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DECISION MAKING AROUND VACCINATION INVOLVES A COMPLEX MIX OF SPIRITUAL, POLITICAL, CULTURAL, PSYCHOSOCIAL AND COGNITIVE FACTORS

MOST FIT INTO 3 GENERAL CATEGORIES:

VACCINE CONFIDENCE

LACK OF EFFECTIVENESS
SAFETY
VACCINE SYSTEM IN GENERAL
GOVERNMENT

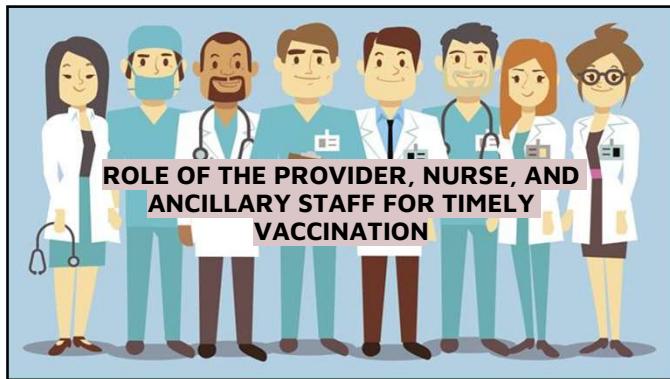
COMPLACENCY

FOR MOST PARENTS, THE PERCEIVED RISK OF INFECTION FROM VPD'S IS RELATIVELY LOW

LACK OF CONVENIENCE

VACCINE AVAILABILITY
VACCINE ACCESSIBILITY
VACCINE APPEAL: INCLUDES TIMING, PLACE, CULTURAL AND LANGUAGE CONCERNS


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WHEN THEY HAVE QUESTIONS, PARENTS WILL SEEK INFORMATION!

- PARENTS WILL SEARCH THE INTERNET!
 - MANY SITES ARE INACCURATE AND PROVIDE VACCINE NEGATIVE INFORMATION
 - THERE ARE A LARGE NUMBER OF "VACCINE" WEBSITES THAT LOOK VERY PROFESSIONAL
- PARENTS WILL CONSIDER INFORMATION PROVIDED TO THEM FROM TRUSTED HEALTHCARE PROVIDERS
 - 66% OF PARENTS BELIEVE THAT THEIR PROVIDER IS THE MOST VALUABLE SOURCE OF INFORMATION
 - 23% CONTINUE TO BELIEVE THE INTERNET



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PARENTS WHO RECEIVE INFORMATION FROM THEIR PROVIDER ARE LESS LIKELY TO HAVE CONCERNS THAN THOSE THAT GET INFORMATION FROM THE INTERNET, FAMILY, OR FRIENDS

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EARLY, HONEST COUNSELING IN THE OFFICE CAN MAKE A SIGNIFICANT DIFFERENCE WITH VACCINE HESITANT PARENTS AND INCREASE VACCINE CONFIDENCE

- HOW YOU DISCUSS NEEDED VACCINES
 - KNOW HOW TO ADDRESS COMMONLY ASKED QUESTIONS:
 - BE KNOWLEDGEABLE ABOUT VACCINE COMPONENTS, ESPECIALLY MERCURY, ALUMINUM.
 - KNOW WHAT A CHILD'S IMMUNE SYSTEM CAN DO AND BE ABLE TO TALK ABOUT "OVERWHELMING THE IMMUNE SYSTEM"
- BE ABLE TO PROVIDE ONLINE RESOURCES
 - AAP.ORG
 - CDC.GOV

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START EARLY

- DISCUSS VACCINATIONS IN A SAFE AND NON-JUDGEMENTAL SPACE
- PROVIDE INFORMATION THAT YOU KNOW AND BE TRUTHFUL
- DON'T BE AFRAID TO SAY "I DON'T KNOW THAT ANSWER, BUT I WILL GET THAT INFORMATION FOR YOU."

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PRESENT THE VACCINATIONS WITH A "DEFAULT APPROACH"

- STATE THE VACCINATION RECOMMENDATION AS IT IS
 - DO NOT USE WORDS LIKE "OPTIONAL" OR SAY THINGS LIKE "YOU CAN GET THESE IF YOU WANT"
- PRESENTING VACCINES THIS WAY HAS BEEN SHOWN THAT PARENTS HAVE HIGHER VACCINE ACCEPTANCE WITH THIS, EVEN IF INITIALLY DESCRIBED AS A LOWER RATING WITH VISIT EXPERIENCE

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BE HONEST ABOUT SIDE EFFECTS

- VACCINE RELATED ADVERSE REACTIONS (VAER'S) ARE EXTREMELY RARE
- DISCUSSING COMMON SIDE EFFECTS OF VACCINES BEING GIVEN HELPS WITH VACCINE CONFIDENCE WHEN THEY DO OCCUR



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PROVIDE PERSONAL EXPERIENCE

- I WAS CONCERNED AS WELL, BUT....
- I WAS SCARED WITH MY CHILD'S FIRST VACCINES AS WELL
- HERE'S WHAT I COMMONLY SEE AFTER VACCINATIONS

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BUILD TRUST WITH PARENTS

- SPEND EXTRA TIME, IF NEEDED, DISCUSSING VACCINES
- ADDRESS PARENTAL CONCERNS WITH AN OPEN MIND
 - ASK WHAT MADE THEM HAVE THE CONCERN, WHERE THEIR INFORMATION CAME FROM
- PROVIDE GOOD KNOWLEDGE
 - KNOW WHAT THE VIS SHEETS SAY, HAVE SOME BACKGROUND KNOWLEDGE ON THE DISEASES BEING VACCINATED FOR
- PROVIDE HONEST ANSWERS
 - DON'T BE AFRAID TO SAY THAT YOU ARE NOT SURE ABOUT THEIR QUESTION. TAKING TIME TO LOOK SOMETHING UP AND RESPOND TO THE PARENTS MEANS A LOT TO THEM

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FOCUS ON THE PROTECTION OF THE CHILD AND THE COMMUNITY

- TALKING ABOUT THE DISEASES THAT ARE BEING PREVENTED AND SUBSEQUENT SIDE EFFECTS IS VERY HELPFUL
 - HOSPITALIZATION
 - INCREASED HEALTH CARE, MORE OFFICE VISITS
 - LONG TERM EFFECTS OF VPD'S
 - DEATH
- DISCUSS HOW VACCINATION HELPS THE COMMUNITY
 - FAMILY AND FRIENDS THAT ARE IMMUNOCOMPROMISED AND CANNOT RECEIVE VACCINATION
 - THE IMPORTANCE OF HERD IMMUNITY AND THE REDUCTION OF DISEASE AND DISEASE SPREAD

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IN SUMMARY

- HPV IS A VERY COMMON INFECTION THAT CAN LEAD TO WARTS AND CANCER
- THERE IS A WELL TOLERATED VACCINE THAT, WHEN GIVEN ON TIME AND BEFORE FIRST EXPOSURE, IS VERY EFFECTIVE AND CAN PREVENT INFECTION
- THE RELATIONSHIP THAT THE ENTIRE HEALTHCARE TEAM BUILDS WILL HELP BUILD CONFIDENCE WITH PARENTS AND SUBSEQUENTLY IMPROVE VACCINATION RATES
- IMPROVED VACCINATION RATES WILL LIMIT VACCINE RELATED ILLNESS AND REDUCE HEALTHCARE COSTS AS WELL AS OUTBREAKS OF VACCINE PREVENTABLE ILLNESS.

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QUESTIONS???

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Post-Test

- Post-test
 - Nurses interested in continuing education credit, visit https://ndhealth.co1.qualtrics.com/jfe/form/SV_8qvcYiFVgk2LXti
 - Successfully complete the five-question post-test to receive your certificate
 - Credit for this session will not expire until June 13, 2023.
- This presentation will be posted to our website: www.hhs.nd.gov/immunizations