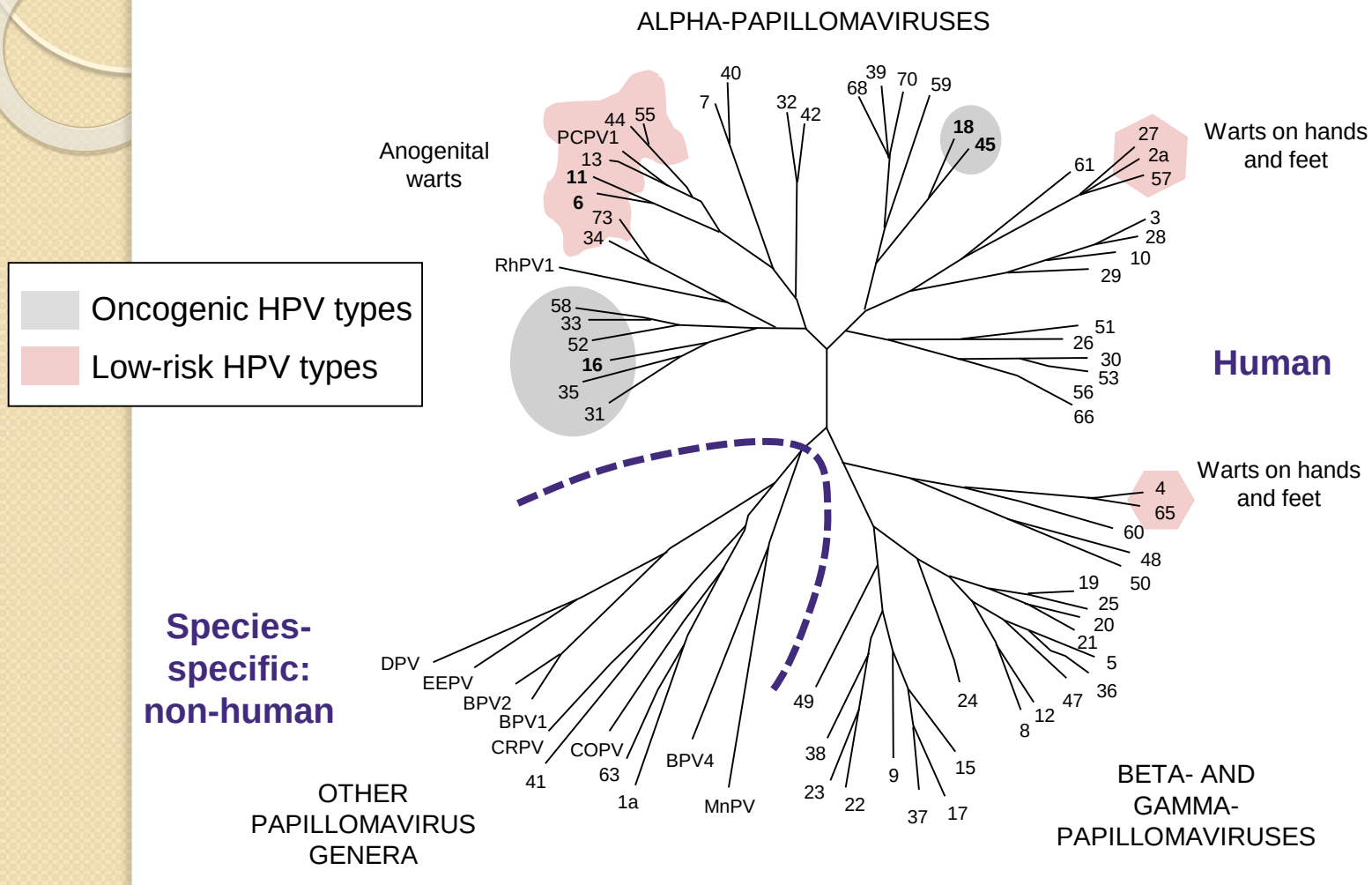
HPV Vaccination; Where are we and what is possible.

Dr Hillary mabeya ,MD,PhDc
Moi University,Kenya
WAKA Symposium,Kinshasa,DRC

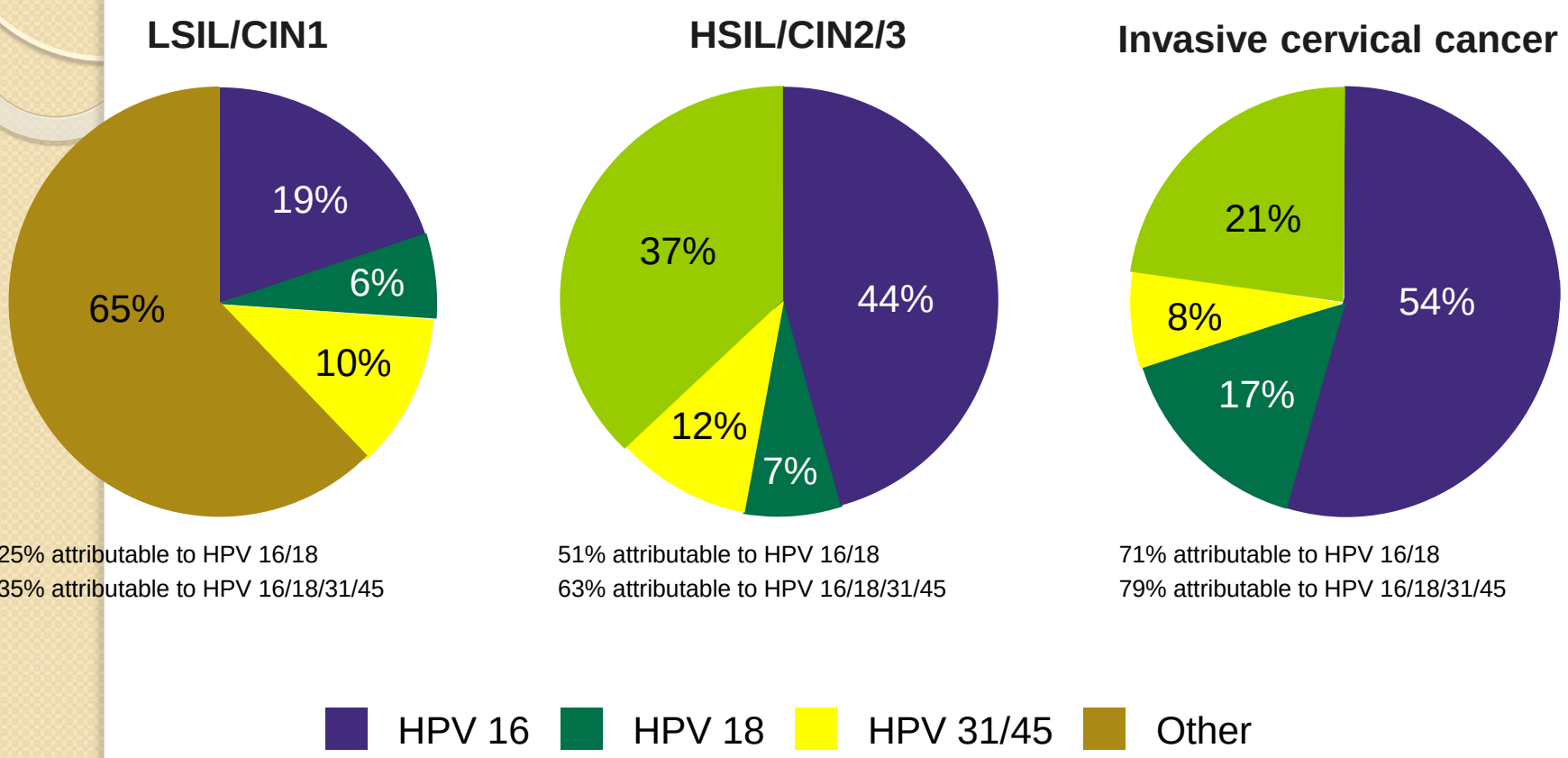
Papillomavirus phylogenetics



Papillomavirus phylogenetic tree

Figure adapted from de Villiers EM, *et al. Virology* 2004; **324:**17–27.

The most common HPV types according to grade of cervical lesion



25% attributable to HPV 16/18
35% attributable to HPV 16/18/31/45

51% attributable to HPV 16/18
63% attributable to HPV 16/18/31/45

71% attributable to HPV 16/18
79% attributable to HPV 16/18/31/45

LSIL = low-grade squamous intraepithelial lesion; HSIL =high-grade squamous intraepithelial lesion.

Adapted from: http://www.who.int/hpvcentre/statistics (accessed November 2010); de Sanjosé S, *et al*. *Lancet Oncol* 2010; **11:**1048–1056.

HPV prevalence

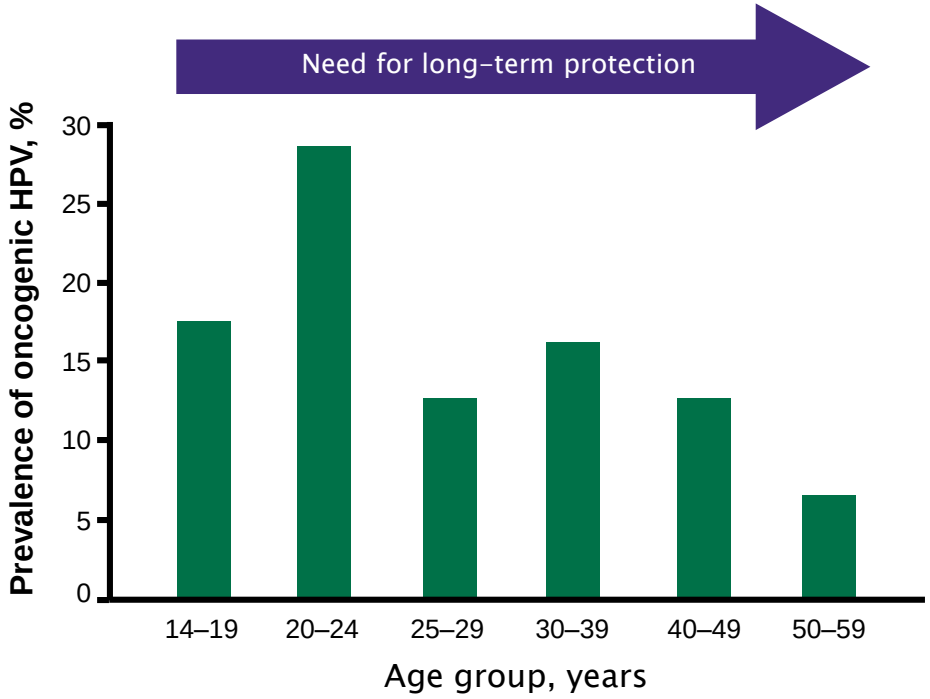
- Adjusted global prevalence of HPV[1]
  - **10.41%**
- Worldwide, an estimated 291 million women are harbouring HPV DNA at any one time
  - 23% of these infections are related to HPV 16
  - 8.5% are related to HPV 18[2]

Prevalence is the number/proportion of individuals with an infection at a given point in time *OR* within a defined interval (i.e. point or period prevalence)

1. Burchell AN, *et al. Vaccine* 2006; **24**(Suppl 3)**:**52–61; 2. de Sanjosé S, *et al. Lancet* 2007; **7:**453–459.

Women remain at risk of HPV infection throughout their lives; vaccination should provide long-term protection

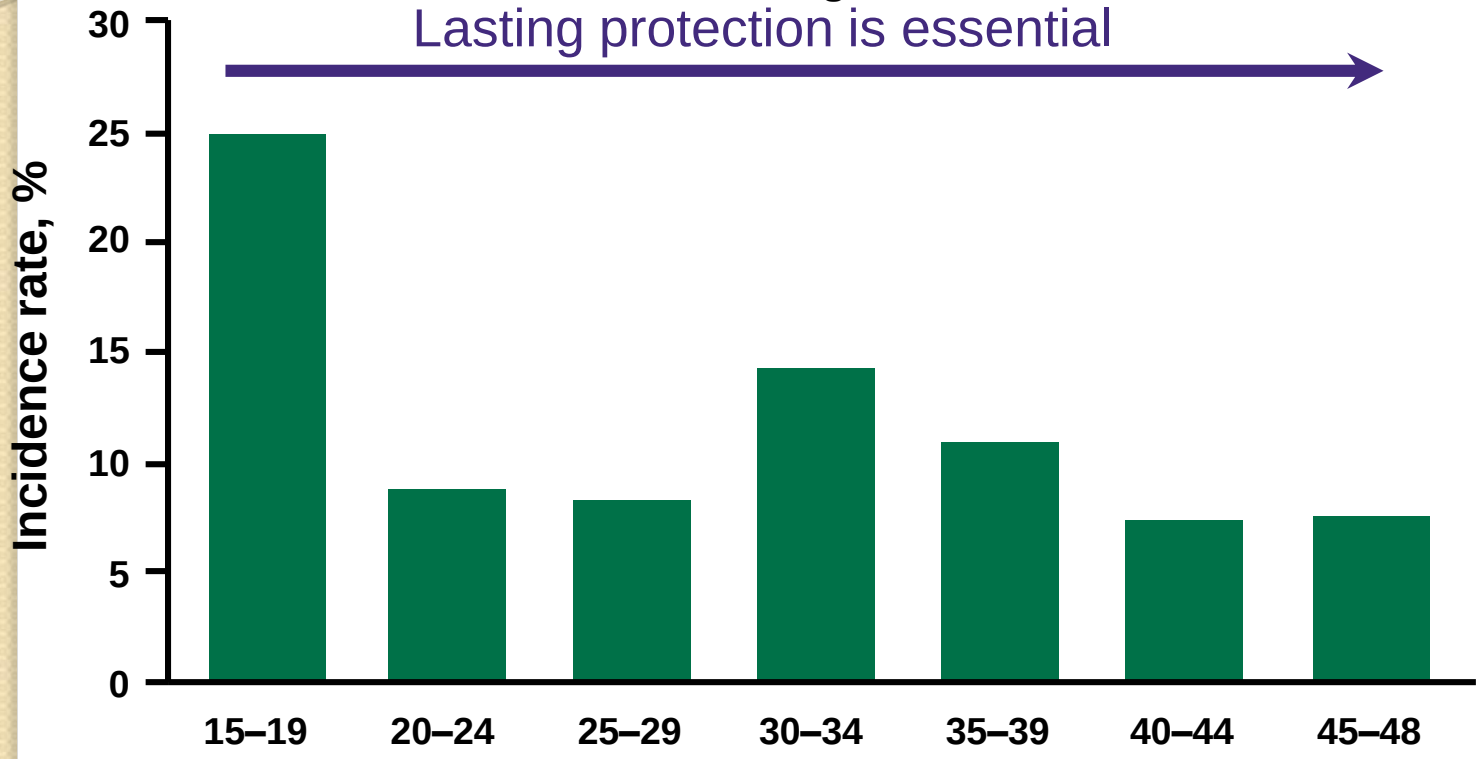
- Up to 80% of sexually active women will be infected with HPV at some point in their lifetime[1–3]
- Prior HPV infection may not always induce sufficient immunity to prevent subsequent infection[4]



1. Bosch FX & de Sanjosé S. *J Natl Cancer Inst Monogr* 2003; **31:**3–13;
2. Brown DR, *et al. J Infect Dis* 2005; **191:**182–192;
3. Koutsky L, *et al. Am J Med* 1997; **102:**3–8;
4. Viscidi RP, *et al. Cancer Epidemiol Biomarkers Prevent* 2005; **14:**283–288.
Figure adapted from Dunne EF, *et al. J Am Med Assoc* 2007; **297:**813–819.

Age and incidence of oncogenic HPV infection in women

- **Age and incidence of oncogenic HPV infection in women-Oncogenic HPV incidence is highest in young women[1,2]**
  The risk for infection remains throughout life[1,2]



Age-specific incidence of infections with oncogenic HPV types after an average interval of 14 months* – Ontario (Canada)

* Average interval between annual periodic health examinations.

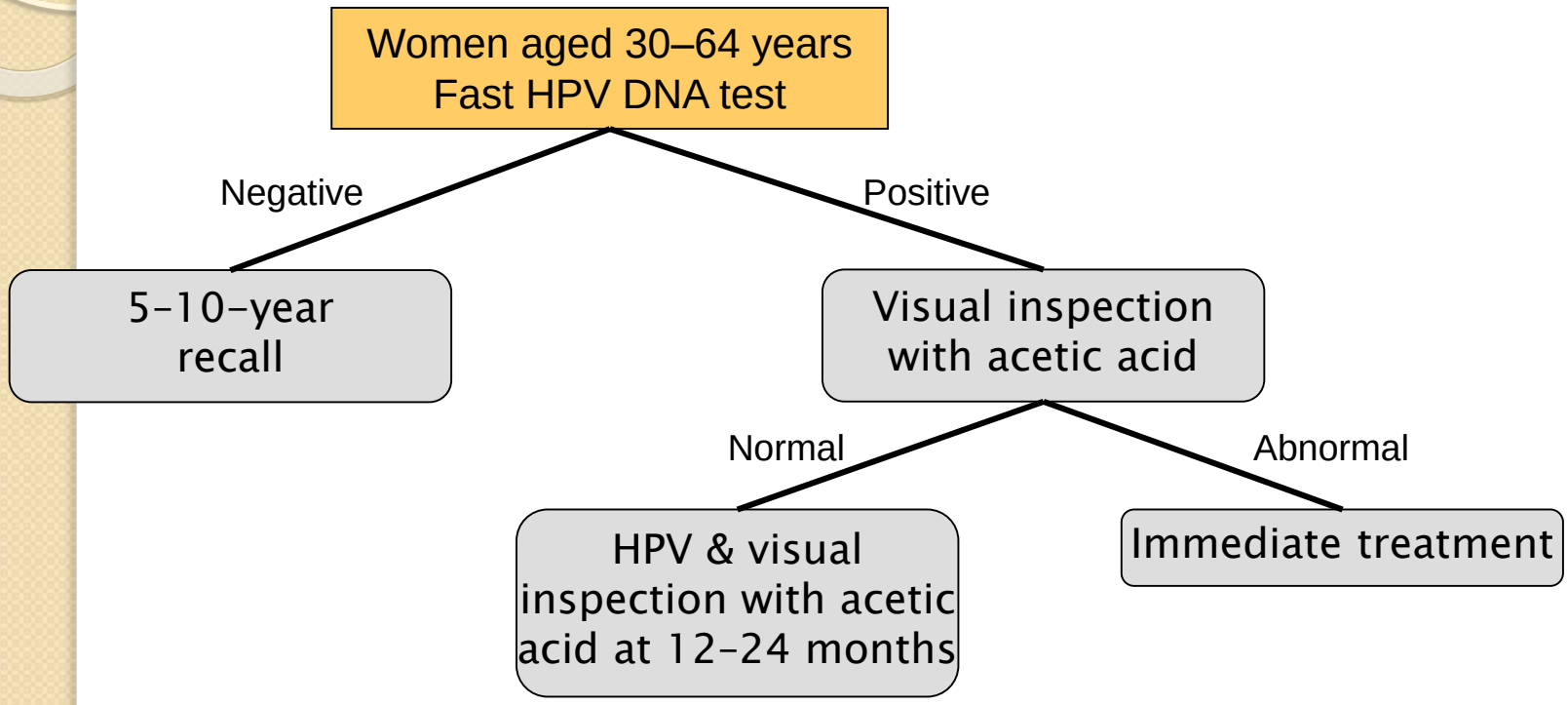
1. Sellors JW, *et al. CMAJ* 2003; **168:**421–425;
2. Castle PE, *et al. J Infect Dis* 2005; **191:**1808–1816.

Acquisition/clearance of HPV

- HPV 16 and HPV 18 acquisition rates were similar between all age groups
- For HPV 16 and HPV 18 across the age range:
  - acquisition rates were constant (2.5–5.3%)
  - clearance was ~ 90%: 10% of infections persist
- High acquisition rate does not support discontinuation of screening at age 50 years
  - **Adult women are likely to benefit from vaccination**

Grainge MJ, *et al. Emerg Infect Dis* 2005; **11:**1680–1685.

A proposed algorithm for HPV primary screening: developing countries



Cuzick J, *et al*. *Vaccine* 2008; **26S:**K29–K41.

Model showing estimated reduction in lifetime risk of cervical cancer with an HPV 16/18 vaccine

Cohort	Reduction in lifetime risk of cervical cancer, %
Full potential of cohort in 12-year-old girls	64
First cohort of 12-year-old girls vaccinated	46
24-year-old women who receive catch-up vaccination	35
30-year-old women who receive catch-up vaccination	17

Taira AV, *et al. Emerg Infect Dis* 2004; **10:**1915–1923.

Summary of national HPV vaccine recommendations and programmatic aspects in Kenya

Indicator Date Value

- Bivalent vaccine/Cervarix -2009
- Quadrivalent vaccine/Gardasil -2009

- Finance mechanism - -
- Delivery strategy - -
- Integration of vaccination and cervical cancer screening program
- Announcement date and type; and recommendation committee
- Recommendation for primary target population - -
- Recommendation for catch-up population - -
- Recommendation for vaccinating males - -
- Comments - -

Determinants of full three- dose HPV vaccination uptake in Eldoret, Western Kenya, the Gardasil Access Program

- HPV Vaccination: A Pilot Project In Western Kenya
- HPV vaccination; Where are we and what is possible?
- Way forward?

Objectives

- To Identify Barriers and facilitators associated with the adminstration of the full three-dose HPV Vaccination regimen in Eldoret, Kenya.
- To estimate Compliance of all the three doses of GARDASIL uptake.

Methods

- In Sept. 2011 Moi University received 9600 doses of GARDASIL Vaccines in a piloted HPV vaccination in Western Kenya through GAP.
- Promotion was School, Hospital and Media based targeting girls in standard 4 to 8 (9-16 years old)
- Cross-sectional survey was conducted with convenient sampling of Eldoret Municipality from 6 other divisions
- 40 schools and 4000 girls were randomly selected
- Data on no. of girls completing 1st,2nd,3rd doses collected, childhood vaccine,distance from school to health center, time elapsed between the doses

Methods

- Trainings and workshops were conducted for 12 vaccination team consisting of Obgyns, Residents, nurses,clinical officers and records clerk on cervical cancer prevention and HPV Vaccination
- Parentral support for GARDASIL Program was sort through the County Director of Education, head teachers, teachers and parents in that order .
- Data collected using a structured questionnaire, logististic regression model was fitted for bivariate analyses

Results

- 2808/2994 (93.8%) had childhood vaccines
- 1933/3026 (63.8%) received 2nd HPV dose
- 1182/3026 (39.1%) received 3rd dose.
- 71.8% of girls had a female guardian and 28.1% a male guardian.
- Median time lapse between 1st and 3rd dose was 175 days (IQR: 168-182)-Within 6-month WHO stipulated time.
- 2nd dose adminstration and HPV knowledge were strong predictors of full dose completion (OR:61.1; $p<0.001$;95% CI=40.9-99.1 and OR 1.2; $p=0.008$; 95% CI: 1.1-1.5 respectively

Results

- A Mann Whitney test found that distance to health center was statistically significant risk factor (p: 0.01)
- A 14% higher odds of admin. of all 3 doses was found for girls who had a male guardian (p=0.04;95% CI:1.0-1.3)
- Borderline significant association was observed between Pap smear knowledge of guardian and full HPV vaccine regimen(OR: 1.2; P:0.08; CI: 1.0-1.4)

Conclusion

- Lack of proximity to vaccination centers require innovative vaccine-delivery strategy
- More education of caregivers including female caregivers undergoing cytological screening to raise awareness of importance of full dose HPV vaccination regimen to be adhered to
- Local barriers and facilitators be explored and fine-tuned approach be designed for successful planning for introduction in Kenya,

Challenges

- Bad weather since this coincided with the rainy season which rendered some of the areas inaccessible.
- Financial support especially at the initial stages of the program for training, promotion and vaccination
- Long travelling distance – this was a concern raised by some of the teachers and parents regarding travelling to Moi .
- Follow up/revisits since some of the children are in distant schools. However, measures were put in place to guard against high drop-out rates.
- Teacher ,nurse and doctors strikes.

Lessons learnt

- School based HPV Vaccination program seems effective in reaching preadolescent and adolescent girls.
- There is no HPV vaccine program in the MOH routine immunization.
- Structural and social barriers like vaccine cold chain, consent, staff training, financial and policy need to be addressed.

Acknowledgement

Dr. V. Naanyu
E. Mwaliko
E. Kiprop
D. VandenBroek
S. Menon
ICRH/VRIL PROJECT BELGIUM
MERCK/GAP-AXIOS International
Musom
Medical Team, Parents/Guardians, teachers and Girls

Thank you