

# HPV VACCINE

Dr Rayneel Singh (MBBS)  
General Practitioner  
Oceania Hospital Pte Ltd

# Outline:

- ▶ Burden of Cervical CA in Fiji
- ▶ Vaccines Available
- ▶ Vaccine History Fiji
- ▶ Current Schedule

# Burden of Cervical CA

- ▶ Cancer of the cervix uteri is the 3rd most common cancer among women worldwide, with an estimated 569,847 new cases and 311,365 deaths in 2018 (GLOBOCAN). The majority of cases are squamous cell carcinoma followed by adenocarcinomas.

## KEY STATS.

About **124 new cervical cancer cases** are diagnosed **annually in Fiji** (estimates for 2018).

Cervical cancer **ranks\* as the 2<sup>nd</sup> leading cause** of female cancer in Fiji.

Cervical cancer is the **2<sup>th</sup> most common** female cancer in **women aged 15 to 44 years in Fiji**.

Table 3: Cervical cancer incidence in Fiji (estimates for 2018)

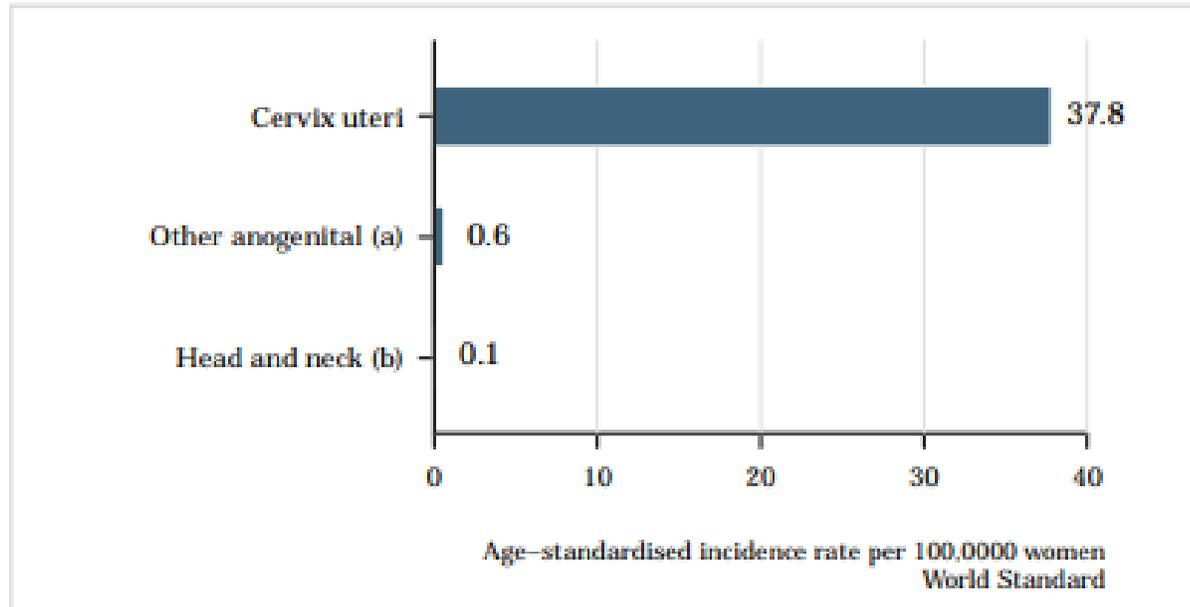
Indicator	Fiji	Melanesia	World
Annual number of new cancer cases	124	1,254	569,847
Crude incidence rate <sup>a</sup>	27.6	24.3	15.1
Age-standardized incidence rate <sup>a</sup>	25.9	27.7	13.1
Cumulative risk (%) at 75 years old <sup>b</sup>	3	3	1

Data accessed on 05 Oct 2018.

# Burden of Cervical CA

- ▶ HPV is the cause of almost all cervical cancer cases and is responsible for an important fraction of other anogenital and head and neck cancer.

Figure 4: HPV-related cancer incidence in Fiji (estimates for 2012)



# Burden of Cervical CA

## KEY STATS.

About **94 cervical cancer deaths occur annually in Fiji** (estimates for 2018).

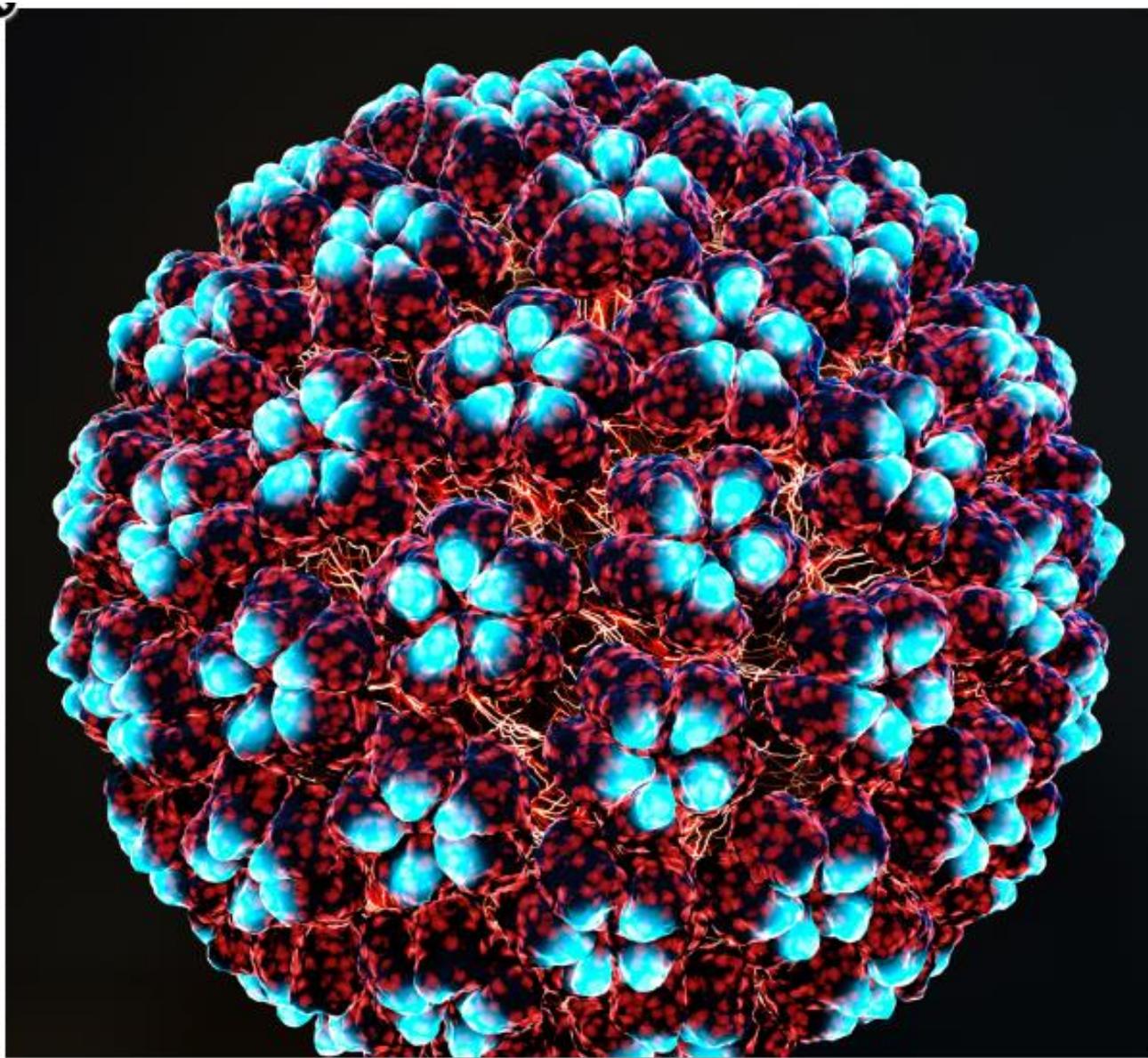
Cervical cancer **ranks\* as the 2<sup>nd</sup> leading cause** of female cancer deaths in **Fiji**.

Cervical cancer is the **2<sup>nd</sup> leading cause of cancer deaths** in women aged 15 to 44 years in **Fiji**.

Table 6: Cervical cancer mortality in Fiji (estimates for 2018)

Indicator	Fiji	Melanesia	World
Annual number of deaths	94	825	311,365
Crude mortality rate <sup>a</sup>	20.9	16.0	8.2
Age-standardized mortality rate <sup>a</sup>	19.7	19.0	6.9
Cumulative risk (%) at 75 years old <sup>b</sup>	2.1	1.9	0.8

Data accessed on 05 Oct 2018.



**Figure 4 - Human Papillomavirus Type 16**

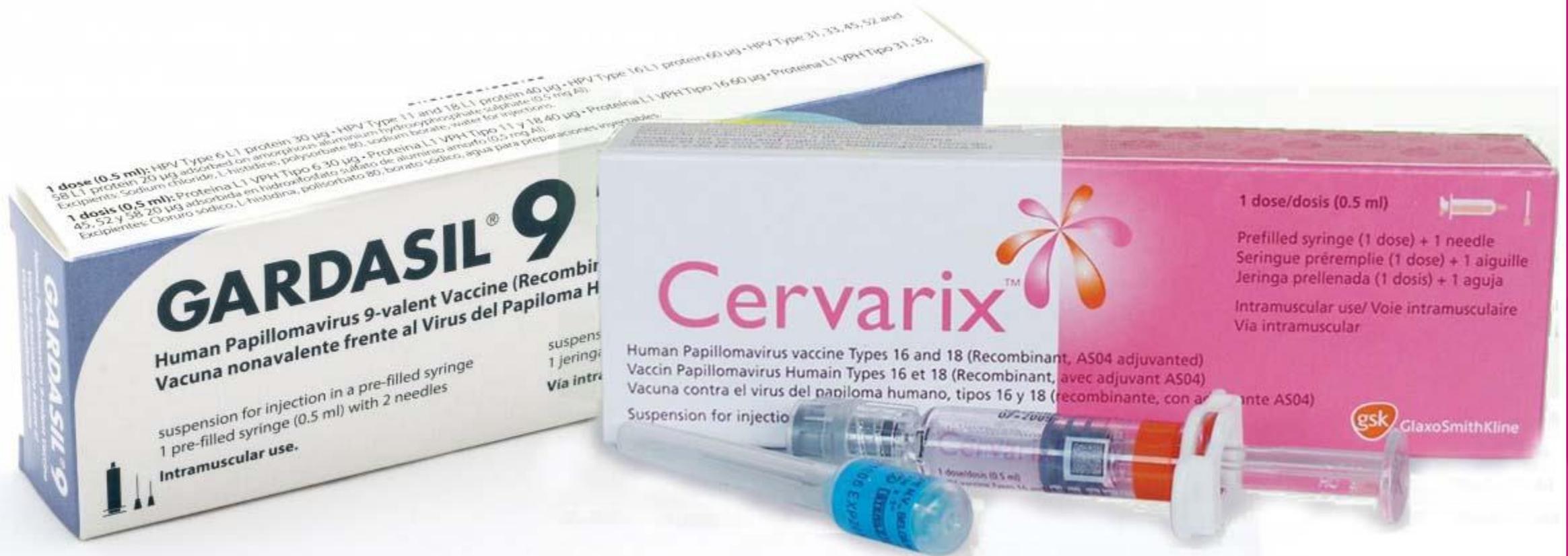
Human papillomavirus is a small, non-enveloped, double-stranded DNA virus that is approximately 55 nm in diameter. The virus has an icosahedral shell primarily consisting of 360 molecules of the L1 major capsid protein arranged as surface 72 pentamers (light blue). The outer shell also contains the L1 minor protein. This illustration shows the structure for human papillomavirus type 16.

Illustration by 306/Shutterstock.com. Image used under license from Shutterstock.com.

# Available Vaccines:

- ▶ There are currently two licensed HPV vaccines.
- ▶ Gardasil® (Merck & Co., USA) is a quadrivalent vaccine that protects against four HPV genotypes (6, 11, 16 and 18)
- ▶ The other vaccine is Cervarix® (GlaxoSmithKline, UK), a bivalent vaccine with the adjuvant AS04 (made up of an aluminum salt and monophosphoryl lipid A) that protects against infection with HPV 16 and 18.
- ▶ Both vaccines are given as a three-dose schedule intramuscularly; Gardasil® vaccine is administered at 0, 2 and 6 months, while Cervarix® vaccine is administered as a 0, 1 and 6 month schedule.
- ▶ Both vaccines are highly efficacious against the genotypes included in the vaccines, and both stimulate long-lasting neutralizing antibodies that persist for at least 5 and 8.4 years post vaccination with Gardasil® and Cervarix® vaccine, respectively (Romanowski, 2011).

# Available Vaccines:



# Available Vaccines:



# Vaccine History Fiji:

- ▶ In 2008/9, the MoH in Fiji accepted a one-off donation of 110,000 doses of quadrivalent HPV vaccine (Gardasil®, Merck & Co.) based on the high cervical cancer disease burden.
- ▶ There was enough vaccine to vaccinate four birth cohorts of girls (30,338 girls aged 9-12 years old) with a three-dose schedule via a school-based program.
- ▶ However, not all the girls received the three-dose schedule, mainly due to absence from school on the day the school health team were visiting.
- ▶ The Gardasil® vaccine coverage following the initial and the subsequent mop-up campaign was: 62%, 56%, and 55% for doses one, two, and three respectively.
- ▶ In 2013, the Fiji MoH with Australian Aid support introduced the Cervarix® vaccine as a three-dose schedule (0, 1 and 6 months) to be given to all girls in the last year of primary school as part of the national immunization program.

# Fiji Vaccine Schedule:

- ▶ The high cost of the HPV vaccine, represented a substantial cost to the Fiji MoH budget, and the issues surrounding the implementation and maintaining high coverage of a three-dose schedule is challenging.
- ▶ As a result, in line with other countries such as Panama, Chile, Canada, Pakistan, Bangladesh and European countries, together with WHO recommendation, in 2016, Fiji stepped down to a 2-dose schedule.
- ▶ The revised dosing schedule allows for school aged girls (Class 8) to get 2 doses of the vaccine at a 6-month interval.

**Table 1: Summary of WHO Position Papers - Recommendations for Routine Immunization**

Antigen		Children (see Table 2 for details)	Adolescents	Adults	Considerations (see footnotes for details)
<b>Recommendations for all immunization programmes</b>					
<b>BCG<sup>1</sup></b>		1 dose			Birth dose and HIV; Universal vs selective vaccination; Co-administration; Vaccination of older age groups Pregnancy
<b>Hepatitis B<sup>2</sup></b>		3-4-doses (see footnote for schedule options)	3 doses (for high-risk groups if not previously immunized) (see footnote)		Birth dose Premature and low birth weight Co-administration and combination vaccine Definition high-risk
<b>Polio<sup>3</sup></b>		3-4 doses (at least one dose of IPV) with DTPCV			bOPV birth dose Type of vaccine Transmission and importation risk criteria
<b>DTP-containing vaccine (DTPCV)<sup>4</sup></b>		3 doses	2 boosters 12-23 months (DTPCV) and 4-7 years (Td/DT containing vaccine, see footnote)	1 booster 9-15 yrs (Td)	Delayed/interrupted schedule Combination vaccine Maternal immunization
<b>Haemophilus influenzae type b<sup>5</sup></b>	<b>Option 1</b>	3 doses, with DTPCV			Single dose if > 12 months of age Not recommended for children > 5 yrs old Delayed/interrupted schedule Co-administration and combination vaccine
	<b>Option 2</b>	2 or 3 doses, with booster at least 6 months after last dose			
<b>Pneumococcal (Conjugate)<sup>6</sup></b>	<b>Option 1</b>	3 doses (3p+0) with DTPCV			Schedule options (3p+0 vs 2p+1) Vaccine options HIV+ and preterm neonate booster
	<b>Option 2</b>	2 doses before 6 months of age, plus booster dose at 9-15 mos of age (2p+1) with DTPCV			
<b>Rotavirus<sup>7</sup></b>		2-3 doses depending on product with DTPCV			Vaccine options Not recommended if > 24 months old
<b>Measles<sup>8</sup></b>		2 doses			Combination vaccine; HIV early vaccination; Pregnancy
<b>Rubella<sup>9</sup></b>		1 dose (see footnote)		1 dose (adolescent girls and women of child-bearing age if not previously vaccinated; see footnote)	Achieve and sustain 80% coverage Combination vaccine and Co-administration Pregnancy
<b>HPV<sup>10</sup></b>				2 doses (females)	Target 9-14 year old girls; Multi-age cohort vaccination; Pregnancy Older age groups ≥ 15 years 3 doses HIV and immunocompromised