HPV, vaccines and cervical cancer
Dr Amanda Tristram
Consultant Gynaecological Oncology
Cervical cancer

• Case histories
• HPV and cervical cancer
• HPV vaccination – why its safe!
Cervical cancer

• Case histories
• HPV and cervical cancer
• HPV vaccination – why its safe!
Ms AL

• Computer programmer
• Pv bleeding, pain
• Hypnosis, opiates
• Died aged 36 years old - 1852
Ms EP

- Politician
- Radical hysterectomy
- Chemotherapy
- Died aged 33 years old - 1952
Ms ER

- 26 year old mother
- Abnormal smears in pregnancy
- Radical hysterectomy
- Radiotherapy
- 2016
Has there really been so little change over the centuries?

• Understanding?
• Prevention?
Cervical cancer

- Case histories
- HPV and cervical cancer
- HPV vaccination – why it's safe!
Human Papillomaviruses

> 200 types of HPV

~ 20 anogenital types:

- **Low Risk**
  - 6, 11, 42, 43, 44, 54, 61

- **High Risk**
  - 16, 18, 45, 31, 33, 52, 58, 35, 59, 56, 39, 51, 73, 68, 66

90% warts

70% cervical cancer

90% warts

Cervical neoplasia
HPV

- Common – we all get it
- Mostly no consequences
- Can be present for years
Make protein shell

Oncogenic
Natural history cervical cancer

Diagram showing the natural history of cervical cancer, from normal to invasive cancer.
Break for Integration
Development Cancer

- DNA
- Damaged DNA
- Normal cell
- Random event
- Radiation
- Sunlight
- Virus
- P53
- Rb
- Tumour suppressor proteins
- Cell death
- Cell multiplies

HPV 16
LCR
E1
E2
L2
L1
E7
E6
E5
E4
Cancer

Random event

Radiation
Sunlight
Virus

Normal cell

Damaged DNA

Cell multiplies

Cancer

Break for Integration

HPV

E6   E7

Tumour suppressor proteins

P53
Rb

Cell death

E1
E2
L2
L1
E7
E6
E5
E4

HPV 16

LCR

Break for Integration

Cell multiplies
HR HPV DANGER CAUSES CANCER
Cervical cancer

- Case histories
- HPV and cervical cancer
- HPV vaccination – why it's safe!
HPV Vaccines

Preventative

• Antibodies
• Viral Capsid proteins L1, L2
When to vaccinate?
HPV Virus

Virus Like Particles (VLPs)
# Potential for coverage by type

<table>
<thead>
<tr>
<th>Number of Types</th>
<th>HPV Type</th>
<th>Cumulative %</th>
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<tbody>
<tr>
<td>1</td>
<td>HPV 16</td>
<td>59</td>
</tr>
<tr>
<td>2</td>
<td>HPV 18</td>
<td>74</td>
</tr>
<tr>
<td>3</td>
<td>HPV 45</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>HPV 31</td>
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<tr>
<td>7</td>
<td>HPV 52</td>
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*Munoz et al 2003  *N Engl J Med*
HPV Vaccines

Cervarix
• HPV 16, 18
• ASO4

Gardasil
• HPV 16, 18
• HPV 6, 11
• Alum
# Potential for coverage by type

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Munoz et al 2003 *N Engl J Med*
New Zealand

- Coverage approximately 50% eligible girls
- Girls and boys eligible now
Cervical cancer and HPV

• HPV – we all get it
• HPV vaccination safe
• HPV vaccination effective

• If you get asked – please don’t hesitate
Questions?