HPV surveillance – present and future

Germ family reunion in the post-vaccine era:
"Grampa, tell us again how all you had to worry about was bleach and hot water."
HPV surveillance data flow

- **“NCCIAS”** Colposcopy clinical system
- **“SCCRS”** Screening system
- **CHI**
- **“CHSP-S”** Immunisation records

**Screening population**

- CIN2+ Biopsies
  - 20-24 year olds
- Incidence & Prevalence
  - HPV related Disease
- Secondary testing
  - Residual LBC
  - 20 year olds

**Abbreviations**

- SCCR S = Scottish Cervical Call and Recall System
- NCCIAS = National colposcopy clinical information and audit system
- CHSP-S = Child Health Systems Programme - School
### HPV types and cervical cancer

<table>
<thead>
<tr>
<th>HPV Type</th>
<th>Percentage of cervical cancer cases caused by HPV type</th>
<th>Cumulative total</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>58.1%</td>
<td>58.1%</td>
</tr>
<tr>
<td>18</td>
<td>15.7%</td>
<td>73.8%</td>
</tr>
<tr>
<td>31</td>
<td>4.0%</td>
<td>77.8%</td>
</tr>
<tr>
<td>33</td>
<td>4.4%</td>
<td>82.2%</td>
</tr>
<tr>
<td>45</td>
<td>2.9%</td>
<td>85.1%</td>
</tr>
<tr>
<td>58</td>
<td>1.2%</td>
<td>86.3%</td>
</tr>
<tr>
<td>52</td>
<td>0.6%</td>
<td>86.9%</td>
</tr>
<tr>
<td>35</td>
<td>1.6%</td>
<td>88.5%</td>
</tr>
<tr>
<td>56</td>
<td>1.0%</td>
<td>89.5%</td>
</tr>
<tr>
<td>39</td>
<td>0.2%</td>
<td>89.7%</td>
</tr>
<tr>
<td>51</td>
<td>0.2%</td>
<td>89.9%</td>
</tr>
<tr>
<td>68</td>
<td>0.3%</td>
<td>90.2%</td>
</tr>
<tr>
<td>59</td>
<td>0.1%</td>
<td>90.3%</td>
</tr>
<tr>
<td>Other</td>
<td>1.4%</td>
<td>91.7%</td>
</tr>
</tbody>
</table>

Vaccine types

European data adapted from: Smith et al. 2007; Int J Cancer.
Vaccine uptake – ISD*

• Girls in S2 – 90% coverage for all 3 doses since 2008/9
• Catch-up campaign
  – 74% had 1 dose
  – 71% had 2 doses
  – 65.5% had 3 doses

* Published today
All 2011 LBC Samples tested

<table>
<thead>
<tr>
<th>Location</th>
<th>Target</th>
<th>No LBC Received 2011</th>
<th>Target reached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lothian</td>
<td>186</td>
<td>393</td>
<td>Yes</td>
</tr>
<tr>
<td>Aberdeen</td>
<td>111</td>
<td>229</td>
<td>Yes</td>
</tr>
<tr>
<td>Monklands</td>
<td>135</td>
<td>193</td>
<td>Yes</td>
</tr>
<tr>
<td>Glasgow North</td>
<td>111</td>
<td>227</td>
<td>Yes</td>
</tr>
<tr>
<td>Glasgow South</td>
<td>111</td>
<td>160</td>
<td>Yes</td>
</tr>
<tr>
<td>Inverclyde</td>
<td>84</td>
<td>129</td>
<td>Yes</td>
</tr>
<tr>
<td>Forth Valley</td>
<td>65</td>
<td>102</td>
<td>Yes</td>
</tr>
<tr>
<td>Highland</td>
<td>23</td>
<td>45</td>
<td>Yes</td>
</tr>
<tr>
<td>Fife</td>
<td>65</td>
<td>133</td>
<td>Yes</td>
</tr>
<tr>
<td>Ayrshire and Arran</td>
<td>65</td>
<td>110</td>
<td>Yes</td>
</tr>
<tr>
<td>Tayside</td>
<td>74</td>
<td>223</td>
<td>Yes</td>
</tr>
</tbody>
</table>
HPV detection in anonymised LBC samples from women attending their first screening appointment in Scotland, 2009-2011

### Year-wise Analysis

- **2009**
  - Low Risk: 9.9%
  - Other HR: 18%
  - HPV 16 or 18: 28.4%

- **2010**
  - Low Risk: 8.5%
  - Other HR: 18.3%
  - HPV 16 or 18: 31.9%

- **2011**
  - Low Risk: 11.9%
  - Other HR: 23.2%
  - HPV 16 or 18: 23.8%

*Estimated vaccine coverage: 18-23%*

**(z value = 4.15, p < 0.001)**
HPV subtypes from LBC samples in non-vaccinated women
HPV subtype from LBC samples in 2011 cohort by vaccination dose
Biopsy (CIN2+) collection 2011 still to complete

<table>
<thead>
<tr>
<th>Region</th>
<th>Expected</th>
<th>Received so far (at SHPVRL)</th>
<th>Target Reached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayrshire &amp; Arran</td>
<td>36</td>
<td>36</td>
<td>Y</td>
</tr>
<tr>
<td>Dumfries &amp; Galloway</td>
<td>17</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Fife</td>
<td>33</td>
<td>33</td>
<td>Y</td>
</tr>
<tr>
<td>Forth Valley</td>
<td>27</td>
<td>26</td>
<td>Y</td>
</tr>
<tr>
<td>Glasgow</td>
<td>118</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Grampian</td>
<td>58</td>
<td>58</td>
<td>Y</td>
</tr>
<tr>
<td>Highland</td>
<td>27</td>
<td>27</td>
<td>Y</td>
</tr>
<tr>
<td>Lanarkshire</td>
<td>48</td>
<td>48</td>
<td>Y</td>
</tr>
<tr>
<td>Lothian</td>
<td>102</td>
<td>102</td>
<td>Y</td>
</tr>
<tr>
<td>Tayside</td>
<td>50</td>
<td>50</td>
<td>Y</td>
</tr>
<tr>
<td>Clyde Division</td>
<td>32</td>
<td>33</td>
<td>Y</td>
</tr>
</tbody>
</table>

413 tested – 98.5% HR-HPV positive
80% Type 16/18 positive
Introduction of Gardasil in September

- Gardasil will protect against infection with HPV 6, 11, 16 and 18 - quadrivalgent
- No change to vaccine schedule
- Expected to reduce genital and anal warts/carcinoma
- Surveillance required for genital/anal warts
- Issues with Warticon/Condylox?
Surveillance options

- Establish baseline (NaSH/STISS)
- GUM consultations
- Issues
  - NaSH system not fit for purpose
  - Hard to compare before and after
  - May be WoScotland bias to surveillance
- ISD prescribing data for Warticon/Imiquimod
  - HPS to receive historic data (2009 onwards) and new data every quarter from October
Early evidence of HPV vaccine impact
genital warts Australia

Gardasil introduced mid 2007, catch-up to 26 years – coverage ~70%

Since 2008, decline in genital warts in women <=28 years

Significant decline in heterosexual men

Fairley 2009 Sex Transm Infect
Conclusions

- Vaccine coverage in Scotland from 2009-11 >90% in routine S2 cohort
- Vaccine coverage between 45-89% in catch-up cohort
- Preliminary analysis suggests HPV prevalence increasing in non-vaccinated population
- Preliminary analysis suggests statistically significant reduction in HPV 16, 18 and other HR HPV types in catch-up cohort
- October analysis of data should be illuminating (1991)
- NCCIAS data should be illuminating for CIN 1 and 2 – Brotherton study
- Genital wart surveillance still to be refined
Acknowledgements

- Scottish cytology and pathology laboratories
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- John Love, HPS