Impact and effectiveness of national immunisation programmes

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Session objectives

• Immunisation planning and implementation
• The impact and effectiveness of immunisation programmes in the UK
• Opportunities for improvement
• Questions
People, places and our population are at the centre of what we do
Vaccination programmes

- Vaccine delivery - supply, clinics
- Budget & resource
- Vaccine development
- Training
- Communication
- PLANNING
- Surveillance of population susceptibility
- Surveillance of diseases
- Predicting the future - modelling
- Vaccination
- Adverse events surveillance
### Does immunisation work?

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Disease</th>
<th>Cases</th>
<th>% Reduction</th>
<th>Geography</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942</td>
<td>Diphtheria (Pre vaccine year 1941)</td>
<td>50,804*</td>
<td>99.9%</td>
<td>England and Wales</td>
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<tr>
<td>1957</td>
<td>Pertussis (whooping cough) (Pre vaccine year 1956)</td>
<td>92,407*</td>
<td>98%</td>
<td>England and Wales</td>
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<tr>
<td>1968</td>
<td>Measles (Pre vaccine year 1967)</td>
<td>460,407*</td>
<td>99.9%</td>
<td>England and Wales</td>
</tr>
<tr>
<td>1992</td>
<td>Haemophilus influenzae type b (Pre vaccine year 1991)</td>
<td>862**</td>
<td>99%</td>
<td>England</td>
</tr>
<tr>
<td>1999</td>
<td>Group C invasive meningococcal disease (Pre vaccine year 1998/99)</td>
<td>883**</td>
<td>97%</td>
<td>England</td>
</tr>
<tr>
<td>2006</td>
<td>Invasive Pneumococcal disease caused by 13 vaccine serotypes (Pre vaccine year 2005/06)</td>
<td>3552**</td>
<td>76%</td>
<td>England and Wales</td>
</tr>
</tbody>
</table>

* notified cases of disease
** confirmed cases of disease
^ 2014/15
^^ 2013/14
Immunisation against measles
Congenital rubella syndrome births and rubella-associated terminations

- Universal MMR immunisation from 1988
- Selective rubella immunisation from 1970
“Sense was founded in the ‘50s by parents affected by rubella. Their voice, coupled with research into vaccination, shaped a public health challenge to eradicate rubella and eliminate Congenital Rubella Syndrome.”

“So it is a cause for celebration that in the UK there is no endemic rubella, and Congenital Rubella Syndrome births are now rare thanks to the childhood immunisation programme and high levels of MMR uptake.”

Joff McGill, Head of Information, Advice and Research at Sense, 27th January 2016
https://www.sense.org.uk/content/rubella-susceptibility-screening-england-will-come-end-april
Effect of MenC immunisation on invasive MenC disease England and Wales

MenC immunisation from 1999
Weekly rotavirus laboratory reports, 2009-10 to 2014-15 (England and Wales)

Source: Public Health England

84% reduction in rotavirus during 2015/16 compared to average seen from 2003 to 2013
Effect of pneumococcal vaccine in children

Live attenuated influenza vaccine
Flu vaccine pilot success
In flu vaccine pilot areas (2014/15) where primary school age children were given the nasal spray vaccine we saw:

- **Primary school aged children:**
  - GP influenza like illness consultation rates 94% lower
  - A&E respiratory attendances 74% lower
- **Primary school aged children:** Hospital admissions due to confirmed influenza 93% lower
- **Adults:** GP influenza like illness consultation rates 59% lower

Uptake and impact of vaccinating school age children against influenza during a season with circulation of drifted influenza A and B strains, England, 2014/15
Why are we still using LAIV when the USA have stopped?

• In the US, the Advisory Committee on Immunization Practices (ACIP) recommended in June 2016 that use of LAIV should stop because of low efficacy during 2015/16 season, in children aged 2-17 years (3%, 95% CI -49 to 37).

• Instead ACIP have recommended use of inactivated flu vaccine for children aged 2 to 17 years

• In the UK, vaccine effectiveness was 57.6% (95% CI 25 to 76) during 2015/16 season in children aged 2-17 years

• In light of the UK data and evidence from Finland and Canada, the UK JCVI have recommended continue use of LAIV
Deaths from pertussis in infants, England 2001-2016

Antenatal immunisation started Oct 2012

* Up to 31/03/2016
Pertussis vaccine given in pregnancy: effectiveness in preventing neonatal pertussis

- 91% Amirthalingam G et al. Lancet 2014
- 93% Dabrera G et al. Clinical Infectious Disease 2014
- Previously offered from 28 weeks gestation
- Based on new research (Eberhardt et al 2016), maternal pertussis immunisation can now take place from week 16 of pregnancy (optimum time is 16 to 32 weeks)
- For operational reasons, vaccination is probably best offered on or after the foetal anomaly scan at around 20 weeks.
- Can be given after 32 weeks but may not be as effective
Invasive meningococcal disease by age

England & Wales (2006/07 - 2010/11)
Men B vaccine coverage evaluated at 6 months of age for one dose and two doses, and the % of GP practices reporting: England, Nov 2015 to April 2016

Source: Health Protection Report Vol 10, number 18, 26th May 2016
Laboratory confirmed cases of invasive meningococcal disease, England and Wales, 1998-2014
Men W by age group, England, mid 2013-2015
Emergency MenW programme

- Aim is to protect teens and interrupt transmission to others
- Meningococcal disease types A, C, W and Y (school year 9/10 and 17 & 18 year olds)
- First time university entrants up to the age of 25 years
Uptake of MenACWY vaccine

- In financial year, 2015/16 there was a MenACWY programme targeted at 17/18 year olds (born between 01/09/1996 and 31/08/1997). Uptake as of July 2016 is 36%.

- For financial year 2016/17, the MenACWY programme is again targeted at 17/18 years olds (born between 01/09/1997-31/08/1998). Uptake as of July 2016 is 11% (range 6% to 36% by area teams).

What may explain this modest uptake?

- Emergency programme started with little notice.
- Initial vaccine supply restrictions.
- Cohorts are difficult to target.
- Both cohorts remain eligible until aged 25 years.
- Social media campaign is getting lots of “hits”.
- GP call and re-call is important.
Opportunities for improvement
Q58. Please tell me how much you personally agree or disagree with each statement. I trust the advice on immunisation given by... (% strongly agree)

Trust in all sources has significantly increased since 2010

Base: Parents of 0-2s - 2015 (1130), previous years c.1000
Opportunities to improve immunisations

The flu vaccination
Who’s eligible for the 2015/16
SHINGLES VACCINES

AGE:
The age you will be on
1 September 2015

X NO! 69 or under
I.e. born on or after
1 September 1946

X NO! 73 to 77
I.e. born between
2 September 1941 and
1 September 1945

YES! 70
I.e. born between
2 September 1944 and
1 September 1948

YES! 71
I.e. born between
2 September 1945 and
1 September 1949

YES! 72
I.e. born between
2 September 1946 and
1 September 1950

YES! 78
I.e. born between
2 September 1938 and
1 September 1942

YES! 79
I.e. born between
2 September 1939 and
1 September 1943

NO! 80 or over
I.e. born on or before
1 September 1935

All age groups are being vaccinated and the most effective age group are adults aged 70 to 77 years.

Flu Immunisation 2014/15
Helping to protect everyone, every winter

For more information go to
www.nhs.uk/vaccination
I feel that the greatest reward for doing is the opportunity to do more.

(Jonas Salk)