Vaccine Preventable Diseases

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Vaccine Preventable Diseases

- Anthrax
- Cervical cancer & Anogenital warts
- Diphtheria
- Hepatitis A & B
- *Haemophilus Influenza* Type B
- Herpes Zoster
- Influenza (Seasonal and H1N1)
- Japanese encephalitis
- Meningococcal (A, C, W, Y, B)
- Measles
- Mumps
- Pertussis
- Pneumococcal
- Poliomyelitis
- Rabies
- Rotavirus
- Rubella
- Smallpox
- Tetanus
- Tuberculosis
- Typhoid Fever
- Varicella
- Yellow Fever

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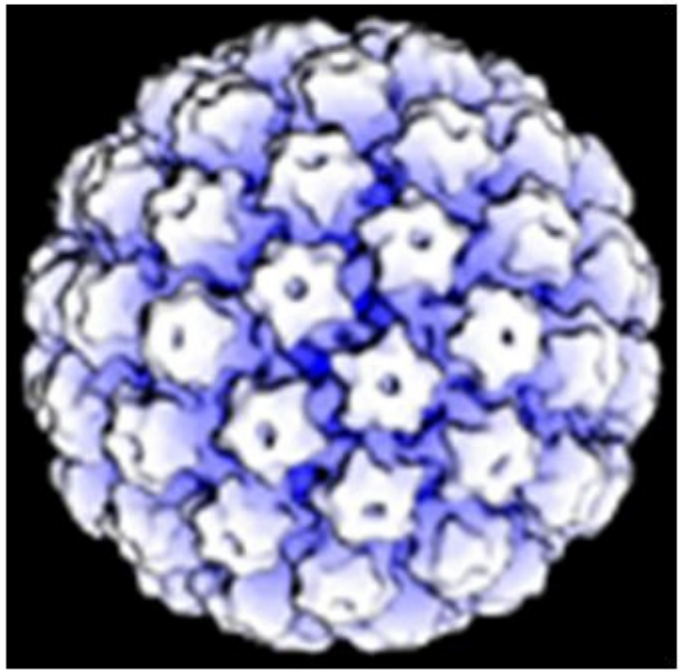
Objectives

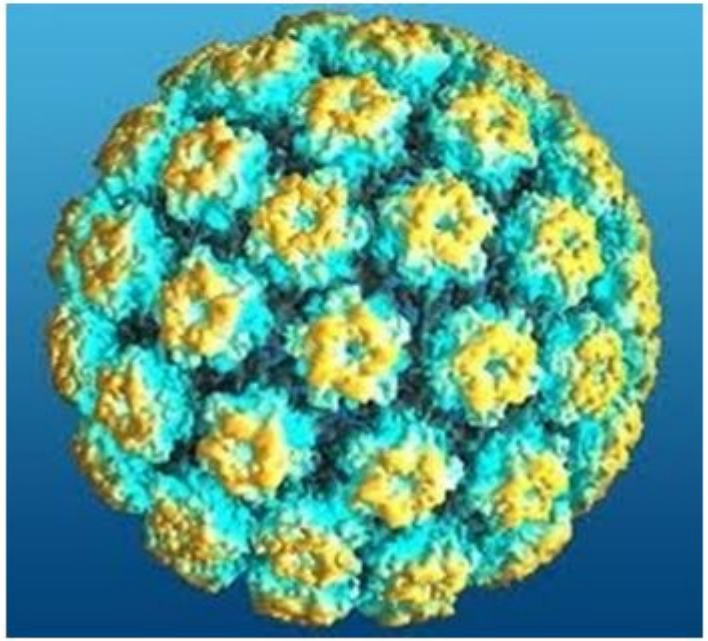
To describe vaccine preventable diseases

- Mode of transmission
- Incubation period
- Period of infectivity
- Clinical features

Human Papilloma viruses (HPV)

- DNA virus, double strand, circular, Icosahedral nucleocapsid, small size (45-55nm). No envelope





HPV - Transmission

- Transmitted:
  - Sexually
  - Vertically
- Acquisition of at least one type occurs soon after sexual debut
- Infection with multiple types
- Highly contagious

HPV - Natural History

- Majority are transient
- Median duration of a new infection is 8 months
- High and low risk types
- Persistent infection can lead to CIN and cervical cancer

HPV

- Clinical spectrum ranges from asymptomatic infection to benign warts and invasive cancer
- Persistent infection with high risk types –
  - 99% of cervical cancers
  - 90% anal cancers
  - 65% vaginal cancers
  - 60% oropharyngeal cancers
  - 50% vulvar cancers
  - 35% penile cancers

HPV

- Europe: Types 16 and 18 responsible for >70% cervical cancers
- Low risk types 6 and 11 are associated with >90% of genital warts

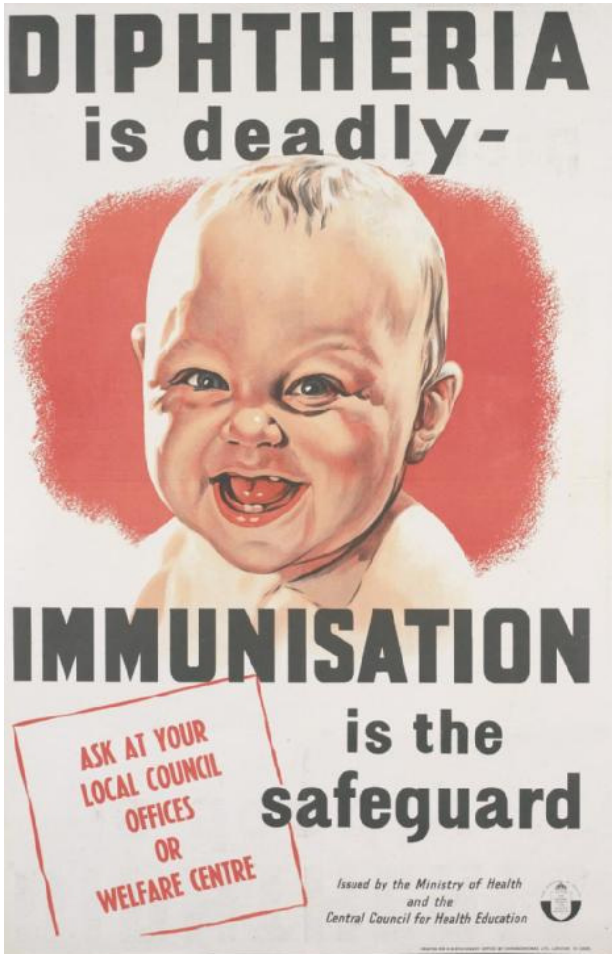
Gardasil

- GARDASIL®9 (Human Papillomavirus 9-valent Vaccine, Recombinant) helps protect girls and women ages 9 to 26 against cervical, vaginal, vulvar, and anal cancers and genital warts caused by 9 types of HPV.
- GARDASIL 9 does not prevent all types of cervical cancer, so it’s important for women to get routine cervical cancer screenings.

A success story

- On August 29th 2016, Australian Professor Ian Frazer stated that after ten years of Gardasil HPV vaccine use "*the number of new cases of cervical cancer in women has halved"* in Australia

Diphtheria


DIPHTHERIA
is deadly-
IMMUNISATION
is the
safeguard
ASK AT YOUR
LOCAL COUNCIL
OFFICES
OR
WELFARE CENTRE
Issued by the Ministry of Health
and the
Central Council for Health Education

Diphtheria

- Toxigenic strains of Corynebacterium diphtheria, C. ulcerans
- Aerobic, Gram-positive
- Reservoir – humans
- Transmission
  - Droplet spread
  - Fomites from skin lesions
- Incubation period: 2-5 days
- Period of communicability: Up to 6 weeks without antibiotics
  - Carriers may shed for longer

Diphtheria

- Insidious onset
  - Low grade fever
  - Sore Throat
- 1-2 days: patchy exudates becoming confluent over 2-3 days
- Greyish membrane
- “Bull neck”

Diphtheria

- **Laryngeal**:
  - Obstructive symptoms
  - Hoarseness
  - Croupy cough
  - Inspiratory distress
  - Extension of pseudomembrane - severe airflow limitation
- **Cutaneous**: indolent, burn or wound sites
  - Tropic's
- Rarely: conjunctival, aural and vaginal

Diphtheria

- Case fatality rate: 5 to 10%
  - Higher: Young, old and untreated
  - Deaths: myocarditis and airway obstruction
- Eliminated in Ireland

Hepatitis A

- Hepatitis A virus
- Acute, usually mild and self limiting
- No chronic liver disease or carrier state
- Ranges from mild illness lasting 1 to 2 weeks to very severe, fulminant hepatitis and death
  - Case fatality rate 2% (adults >50 yr)

Hepatitis A

- The most common symptoms:
  - fever
  - loss of appetite
  - nausea
  - fatigue
  - abdominal pain
  - Jaundice (70% in adults)

Hepatitis A

- In developed countries, hepatitis A is most commonly seen among:
  - travelers to endemic countries
  - household or sexual contacts of known cases
  - injecting drug users (IDU)
  - men who have sex with men (MSM)
- Transmission: mainly faecal-oral route (person-person)
  - Increased risk in areas of close contact: day care, residential homes
  - Food and water contamination
  - IVDU
  - Sexual contact

Hepatitis A

- Incubation period 28 to 30 days (range 15 to 50 days)
- Most infectious 1 to 2 weeks prior to jaundice onset

Hepatitis B

- DNA virus
- Can cause:
  - Acute hepatitis
  - Chronic Hepatitis
  - Cirrhosis
  - Primary Hepatocellular Carcinoma

Hepatitis B

- Incubation period: 60 to 90 days (range 45 to 180)
- Highly infectious
  - Found in virtually all body excretions and secretions
  - Can survive in the environment for a week or longer
- Transmission:
  - Sexual contact
  - Percutaneous exposure
  - Perinatal
  - Close household contacts
  - Bite injuries – rare
  - IVDU

Hepatitis B

- Clinical manifestations – age dependent
  - Acute: subclinical, flu-like
  - Insidious
    - Fatigue
    - Anorexia
    - Vague abdominal discomfort
    - Nausea and vomiting
    - Arthralgia
    - Rash
    - Jaundice (30 to 50% adults)
- Progression to chronic infection

Haemophilus Influenza

- Gram negative, coccobacillus
- Humans are the only reservoir
- Encapsulated versus non-encapsulated strains
- Transmission: droplet spread
- Nasal carriage

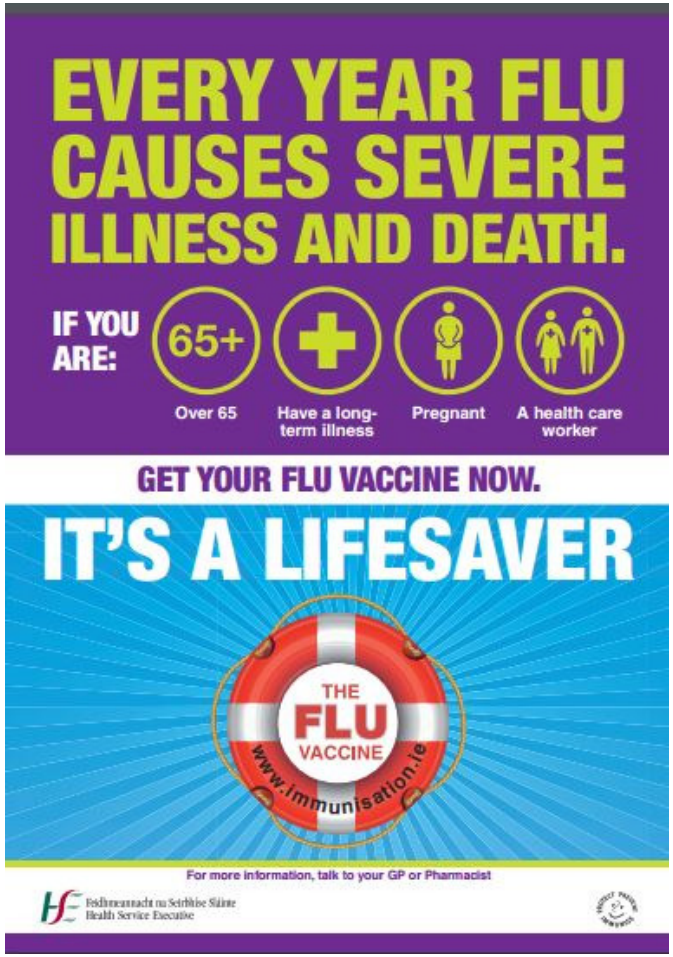
Haemophilus Influenza

- Invasive disease
  - Meningitis
    - Mortality 2 to 5%
  - Epiglottitis
  - Pneumonia, septic arthritis, cellulitis, osteomyelitis, pericarditis and otitis media

Influenza

- RNA virus – Orthomyxovirus family
- Three Types: A, B, C
- Subtypes – based on the content of virus surface antigens
  - Haemagglutinin (H) and Neuraminidase (N)
- Antigenic drift
- Antigenic shift

Flu vaccine


EVERY YEAR FLU CAUSES SEVERE ILLNESS AND DEATH.
IF YOU ARE:
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Over 65
Have a long-term illness
Pregnant
A health care worker
GET YOUR FLU VACCINE NOW.
IT'S A LIFESAVER
THE FLU VACCINE
www.immunisation.ie
For more information, talk to your GP or Pharmacist
Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Influenza

- Transmission – Person to person
  - Aerosol or droplet spread
  - Contact with contaminated surfaces
- Highly infectious
- Period of infectivity: 1 to 2 days before to 4 – 5 days after symptom onset
- Incubation Period: 1 to 4 days

Influenza

- Acute onset
- Fever, rhinitis, cough, myalgia, sore throat headache
  - Also GI symptoms: nausea, vomiting, diarrhoea
- Duration: 3 to 5 days
- Increased severity: elderly, those with chronic cardiac or respiratory disease, pregnancy, young children, those with neurodevelopmental disorders

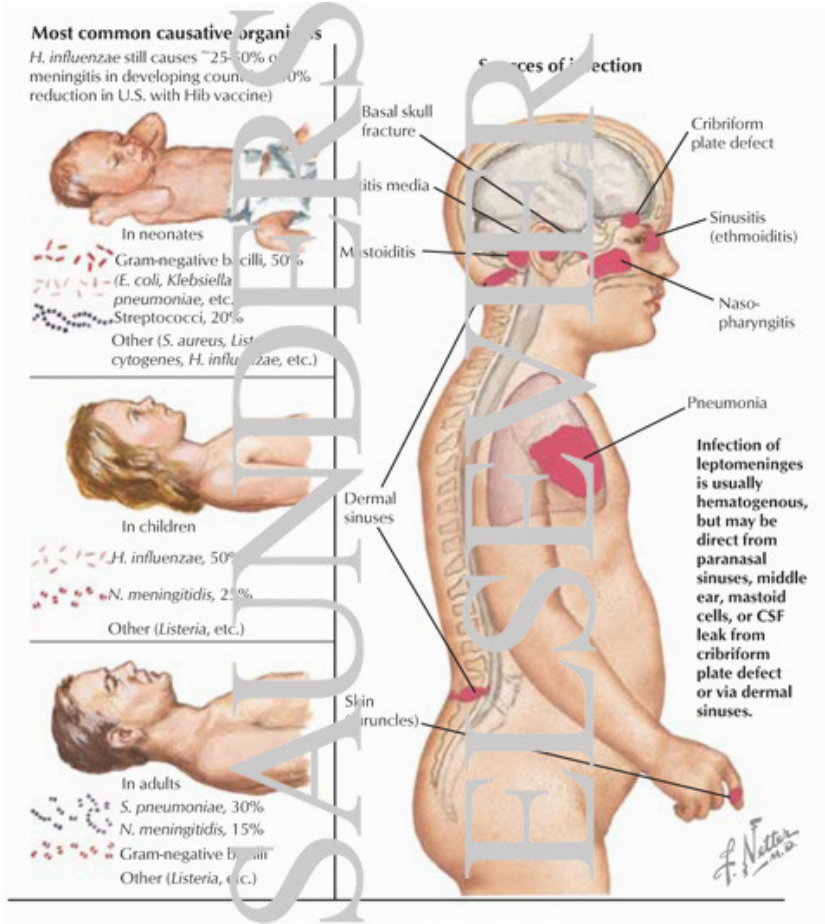
Influenza

- Complications
  - Pneumonia
  - Exacerbations of underlying conditions
  - Febrile seizures
  - Encephalopathy and encephalitis
  - Myocarditis and pericarditis
  - Ear infections

Meningitis

- Bacterial:
  - *Neisseria meningitidis*
  - *Streptococcus pneumoniae*
  - *Haemophilus influenza*
- Neonates
  - *Streptococcus agalacticae*
  - *Streptococcus pneumoniae*
  - *Listeria monocytogenes*
  - *Ecoli*

Meningitis



Meningitis - Meningococcal

- Gram negative diplococci
- 13 serogroups
  - Most disease associated strains: A, B, C, Y or W135
  - Human-only pathogen
  - Nasopharnygeal carraige: 10%
- Transmission: Person-Person
  - Respiratory droplets
  - Direct mucosal contact with respiratory secretions of a carrier

Meningitis - Meningococcal

- Incubation period: typically less than 4 days but can be 1 to 10 days
- Risk Factors:
  - Young age
  - Active and passive smoking
  - Preceding severe RTI
  - Closed or semi closed communities

Meningitis - Meningococcal

- Symptoms
  - Early: leg pains, cold extremities and abnormal skin colour
  - Headache, photophobia, neck or back stiffness
  - Lethargy, altered consciousness or behaviour
  - Irritability (infants)
  - Fever
  - Rash
  - Reduced urinary output
- Classical features can appear relatively late
- Rash in early infection is typically non-blanching erythematous macular rash
  - Early stages it may blanch

Rash in meningitis

Meningitis- Meningococcal infection

- Complications:
  - Amputation
  - Scarring
  - Seizures
  - Hearing loss
  - Chronic renal failure
  - Intellectual deficits

Thank you