EPIDEMIOLOGY AND PREVENTION OF VACCINE-PREVENTABLE DISEASES
13TH EDITION

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On the cover
This illustration depicts the influenza virus.
Graphic created by Dan J. Higgins, Division of Communication Services, CDC

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“He just thought it up and did it.” – Apocalypse Now

Milestones in the History of Vaccination

400 BCE
Hippocrates describes diphtheria, epidemic jaundice, and other conditions

1100s
Variolation for smallpox first reported in China

1721
Variolation introduced into Great Britain

1796
Edward Jenner inoculates James Phipps with cowpox, and calls the procedure vaccination ("vacca" is Latin for cow)
# Milestones in the History of Vaccination

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>Louis Pasteur creates the first live attenuated bacterial vaccine (chicken cholera)</td>
</tr>
<tr>
<td>1884-85</td>
<td>Pasteur creates the first live attenuated viral vaccine for use in humans</td>
</tr>
<tr>
<td>1900</td>
<td>Paul Ehrlich formulates receptor theory of immunity</td>
</tr>
<tr>
<td>1901</td>
<td>First Nobel Prize in Medicine to von Behring for diphtheria antitoxin</td>
</tr>
<tr>
<td>1909</td>
<td>Theobald Smith discovers a method for inactivating diphtheria toxin</td>
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</table>
## Milestones in the History of Vaccination

<table>
<thead>
<tr>
<th>Year</th>
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<tbody>
<tr>
<td>1919</td>
<td>Calmette and Guerin create BCG, the first live attenuated bacterial vaccine for humans</td>
</tr>
<tr>
<td>1923</td>
<td>First whole-cell pertussis vaccine tested by Gaston Ramon develops diphtheria toxoid</td>
</tr>
<tr>
<td>1926</td>
<td>Ramon and Christian Zoeller develop tetanus toxoid</td>
</tr>
<tr>
<td>1931</td>
<td>Goodpasture describes a technique for viral culture in hens’ eggs</td>
</tr>
<tr>
<td>1936</td>
<td>Thomas Francis and Thomas Magill develop the first inactivated influenza vaccine</td>
</tr>
</tbody>
</table>
Milestones in the History of Vaccination

1948
John Enders and colleagues isolate Lansing Type II poliovirus in human cell line

1954
Enders and Peebles isolate measles virus
Francis Field Trial of inactivated polio vaccine

1955
Inactivated polio vaccine licensed

1961
Human diploid cell line developed

1963
Measles vaccine licensed Trivalent oral polio vaccine licensed
### Milestones in the History of Vaccination

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<tbody>
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<td>1965</td>
<td>Bifurcated needle for smallpox vaccine licensed</td>
</tr>
<tr>
<td>1966</td>
<td>World Health Assembly calls for global smallpox eradication</td>
</tr>
<tr>
<td>1967</td>
<td>Maurice Hilleman develops Jeryl Lynn strain of mumps virus</td>
</tr>
<tr>
<td>1969</td>
<td>Stanley Plotkin develops RA 27/3 strain of rubella vaccine virus</td>
</tr>
<tr>
<td>1971</td>
<td>MMR vaccine licensed</td>
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1989
Two-dose measles vaccine recommendation

1990
First polysaccharide conjugate vaccine licensed (Haemophilus influenzae type b)

1994
Polio elimination certified in the Americas

1995
Varicella vaccine licensed
Hepatitis A vaccine licensed
First harmonized childhood immunization schedule published

1996
Acellular pertussis vaccine licensed for infants
Milestones in the History of Vaccination

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Milestones in the History of Vaccination

1997
Sequential polio vaccination recommended

1998
First rotavirus vaccine licensed

1999
Exclusive use of inactivated polio vaccine recommended
Rotavirus vaccine withdrawn

2000
Pneumococcal conjugate vaccine licensed for infants

2003
Live attenuated influenza vaccine licensed
2004
Indigenous transmission of rubella virus interrupted

2005
Acellular pertussis vaccines licensed for adolescents and adults

2005
MMR-varicella (MMRV) licensed

2006
Second generation rotavirus vaccine licensed
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Milestones in the History of Vaccination

2006
First human papillomavirus
vaccine licensed

2006
First herpes zoster
vaccine licensed

2009
H1N1 influenza
pandemic declared

2010
Influenza vaccine
recommended for all persons
6 months and older

2013
First quadrivalent influenza
vaccine licensed