Isolation & Quarantine: A Primer

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CDC Definitions

**Isolation** is used to separate *ill* persons who have a communicable disease from those who are healthy. Isolation restricts the movement of ill persons to help stop the spread of certain diseases.

**Quarantine** is used to separate and restrict the movement of *well* persons who may have been exposed to a communicable disease to see if they become ill. These people may have been exposed to a disease and do not know it, or they may have the disease but do not show symptoms.
WHO Definitions

“Isolation” means separation of ill or contaminated persons or affected baggage, containers, conveyances, goods or postal parcels from others in such a manner as to prevent the spread of infection or contamination.

“Quarantine” means the restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods in such a manner as to prevent the possible spread of infection or contamination.
Restriction of Movement & Directed Health Measures

- Isolation +
- Quarantine +
- Travel Restrictions +
- Enforced Social Distancing +
- Other Directed ICP Measures
  - mandated use of PPE
  - directed decontamination
Federal Isolation & Quarantine Law

42 USC § 264
Gives SG & Sec’y, DHHS authority to:
Make & enforce regulations necessary to prevent…transmission of communicable diseases…
- from International sources
- from State-to-State

EO 13295, 13375, 13674
Stipulate diseases subject to Federal quarantine
States may add to list

Title 42 CFR Parts 70 & 71
Provides details and mechanics
Diseases Subject to Federal Quarantine
EO 13295, 13375, 13674

<table>
<thead>
<tr>
<th>BCU</th>
<th>Maybe BCU</th>
<th>No BCU</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHFs</td>
<td>TB</td>
<td>Cholera</td>
</tr>
<tr>
<td>SARS</td>
<td>Plague</td>
<td>Diphtheria</td>
</tr>
<tr>
<td>MERS</td>
<td>Influenza</td>
<td>Yellow Fever</td>
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<tr>
<td>Smallpox</td>
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Measles quarantine orders soar to more than 900 at L.A. universities

Los Angeles County health officials told more than 900 college students and staff members who may have been exposed to measles to stay home this week in one of the largest quarantine orders in state history.

The declaration has raised questions about how exactly the orders will be implemented at UCLA and Cal State Los Angeles, where students have been diagnosed with the disease.
How contagious is Ebola?

How the Ebola virus compares with other contagious viruses. The reproduction rate or $R_0$, calculates the number of people likely to be infected by one person who has a disease.

<table>
<thead>
<tr>
<th>REPRODUCTION RATE ($R_0$)</th>
<th>DISEASE</th>
<th>HOW IT SPREADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 4 people</td>
<td>Ebola</td>
<td>Bodily fluids</td>
</tr>
<tr>
<td>2 to 4</td>
<td>SARS</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>4 to 7</td>
<td>Mumps</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>5 to 7</td>
<td>Polio</td>
<td>Fecal-oral route</td>
</tr>
<tr>
<td>5 to 7</td>
<td>Smallpox</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>6 to 7</td>
<td>Rubella</td>
<td>Airborne droplets</td>
</tr>
<tr>
<td>12 to 18</td>
<td>Measles</td>
<td>Airborne</td>
</tr>
<tr>
<td>12 to 17</td>
<td>Pertussis (Whooping cough)</td>
<td>Airborne droplets</td>
</tr>
</tbody>
</table>

Initial infected patient ● — Person he or she has infected

Sources: Michigan Center for Public Health; WHO; Transmission Dynamics and Control of Severe Acute Respiratory Syndrome, Nature; Understanding the Dynamics of Ebola Epidemics, National Institute of Health

### Diseases that are Contagious before they are Symptomatic

<table>
<thead>
<tr>
<th>Disease</th>
<th>Days before symptom onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>1 day</td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>1 day</td>
</tr>
<tr>
<td>Varicella</td>
<td>2 days</td>
</tr>
<tr>
<td>Measles</td>
<td>4 days before rash</td>
</tr>
</tbody>
</table>
Diseases Subject to Quarantine: The Role of Countermeasures
Candidates for Quarantine

Unvaccinated
Under-vaccinated
Vaccine Refusers
Non-compliant
Superspreaders?
Carriers?
Ethics: The Thirty Year Quarantine

"Typhoid Mary"

The Extraordinary Predicament of Mary Mallon, a Prisoner on New York's Quarantine Hospital

It is probable that Mary Mallon is a prisoner for life and will never be released from the isolation of an infirmary or without a conviction. She has never been found guilty of any crime or offense, and has never been held in any institution for the insane. She is herself a patient in a hospital for the insane, and has never been found guilty of any crime or offense. She is herself a patient in a hospital for the insane, and has never been found guilty of any crime or offense.

Mary Mallon has been in New York's Quarantine Hospital for more than two years. She has been a prisoner in this hospital for more than two years, and has been held in this hospital for more than two years.

By Dr. Wm. H. Park, New York Board of Health.

The Extraordinary Predicament of Mary Mallon, a Prisoner on New York's Quarantine Hospital.

The extraordinary predicament of Mary Mallon, a prisoner on New York's Quarantine Hospital, has been the subject of much discussion and controversy. Mary Mallon has been in this hospital for more than two years, and has been held in this hospital for more than two years. She has been a prisoner in this hospital for more than two years, and has been held in this hospital for more than two years.
The Gray Zone Between Quarantine and Isolation (Recovery Care)

Leprosaria
TB Sanitaria
Isolation

**Airborne**
- TB, Varicella, Measles

**Droplet**
- Strep, Influenza, Mumps, Adenovirus, Meningococcus, many others

**Contact**
- MRSA, VRE, Clostridium difficile, Shigella, Hepatitis A, Lice, Scabies, many others
The Full Spectrum of High-Level Containment Care

- Exposed but asymptomatic persons may require quarantine
- Ill persons may require high-level containment care in a BCU
- Quarantined persons may have routine primary care needs
- Quarantined persons may develop illness unrelated to their exposure
- Quarantined persons may become PUIs
- Ill persons may be PUIs without having been in quarantine

With some diseases, recovering patients may remain infectious and require ongoing isolation.
Isolation: The Pathogens of Concern

Infectious, Communicable, Highly Hazardous

Pathogens that might warrant care in a BCU or HLCC Unit

Synonyms—

Special Pathogens
Highly Infectious Diseases
High Consequence Infectious Diseases
Highly Hazardous Communicable Diseases
Pathogens of Concern
Infectious, Communicable, Highly Hazardous

- Anthrax
- Botulism
- Nipah
- Tularemia
- EBOLA
- Norovirus
- Rubella
- Mumps
- Brucella
- Q-Fever
Pathogens of Concern: The Role of Countermeasures
Pathogens of Concern

VHF Viruses capable of PTP Transmission (Ebola, Marburg, Lassa, others)

Airborne Agents Causing Severe Respiratory Syndromes (SARS, MERS, Flu)

Certain Orthopoxviruses (SPOX & MPOX)

A Few Miscellaneous Pathogens (Nipah, Hendra, Plague, XDR-TB)

Pathogens Raising Political or Assuredness Concerns

“Andromeda” or “Disease X”
Outbreaks of Diseases Subject to Isolation or Quarantine 2017-2019

- Lassa
- Monkeypox
- Monkeypox
- Marburg
- XDR-TB
- MERS
- Cholera
- Plague
- Ebola
- Ebola
Caveat

All ‘Special Pathogens’ have been successfully managed in conventional clinical settings and all ‘Quarantine-able Diseases’ have been handled without need for quarantine.

Marburg Fever Confirmed In Colorado Patient

by Sam Savage

Authorities at the U.S. Centers for Disease Control and Prevention (CDC) reported that the country's first case of Marburg hemorrhagic fever has been confirmed in a patient in Colorado.

The patient contracted the illness during a trip to Uganda, and has since recovered from the rare disease, which is caused by a virus indigenous to Africa. The virus is spread through contact with infected animals or the bodily fluids of infected people.
Other Communicable Diseases of Public Health Concern

- Malaria
- Typhoid
- Varicella
- Rabies
- Measles
- Meningococcal disease
- Legionellosis
- Polio
- Dengue
- Zoonotic poxviruses
- Pertussis
- Mumps
- Rubella
- Infectious diarrhea

Based on their ability to spread and cause significant illness or death
How to tell when a disease is serious:
There is a heavy metal band named after it