

Quarantine and Ethics

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Infectious Disease Preparedness' "Public
Health & Ethics in an Age of Terrorism" class**

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Quarantine

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Outline

- **Definitions**
- **Ethical Considerations**
- **CDC's Quarantine Authority**
- **CDC Quarantine Station Functions**



Definitions

- **Isolation:** Separation and restriction of movement of ill/symptomatic people to stop the spread of disease to others
- **Quarantine:** Separation and restriction of movement of exposed/not yet ill people to stop the spread of disease to others



Definitions

- **Quarantine of Groups:** Separation and restriction of movement of people exposed to the same source of illness
- **Working Quarantine:** Separation and restriction of movement of employees at their homes or designated facilities during off-duty hours based on the occupational risk



Definitions

- **Community-wide Quarantine:** Closing community borders or erecting real or virtual barriers around a defined geographic area (*cordon sanitaire*)

– Cetron M, Landwirth J. Yale J Biol Med
2005;78(5):329-34



Quarantine Balance



“Human Nature”

Thomas Hobbes

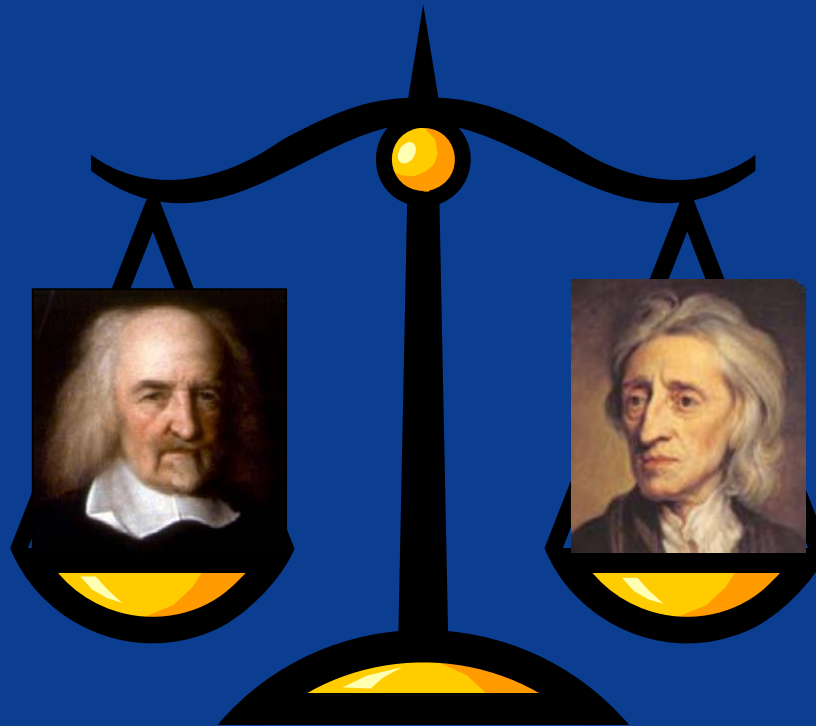
Human beings
are by nature:

- Unrestrained
- Selfish
- Dishonest

John Locke

Human beings
are by nature:

- Reasonable
- Tolerant



Key Considerations in Quarantine Decisions

- Public health and medical justifications
- Implementation and maintenance feasibility
- Benefits vs. adverse consequences

– Barbera, J. et al, JAMA 2001;286(21):2711-7



Quarantine Ethical Principles

1. Harm Principle
2. Proportionality Principle
3. Reciprocity Principle
4. Transparency Principle

– Upshur RE. Principles for the justification of public health intervention. *Can J Public Health* 2002;93:101-3



Harm Principle

- **Clear and measurable harm if unchecked**
- **Justifiable**
- **Benefits would surpass the harm**



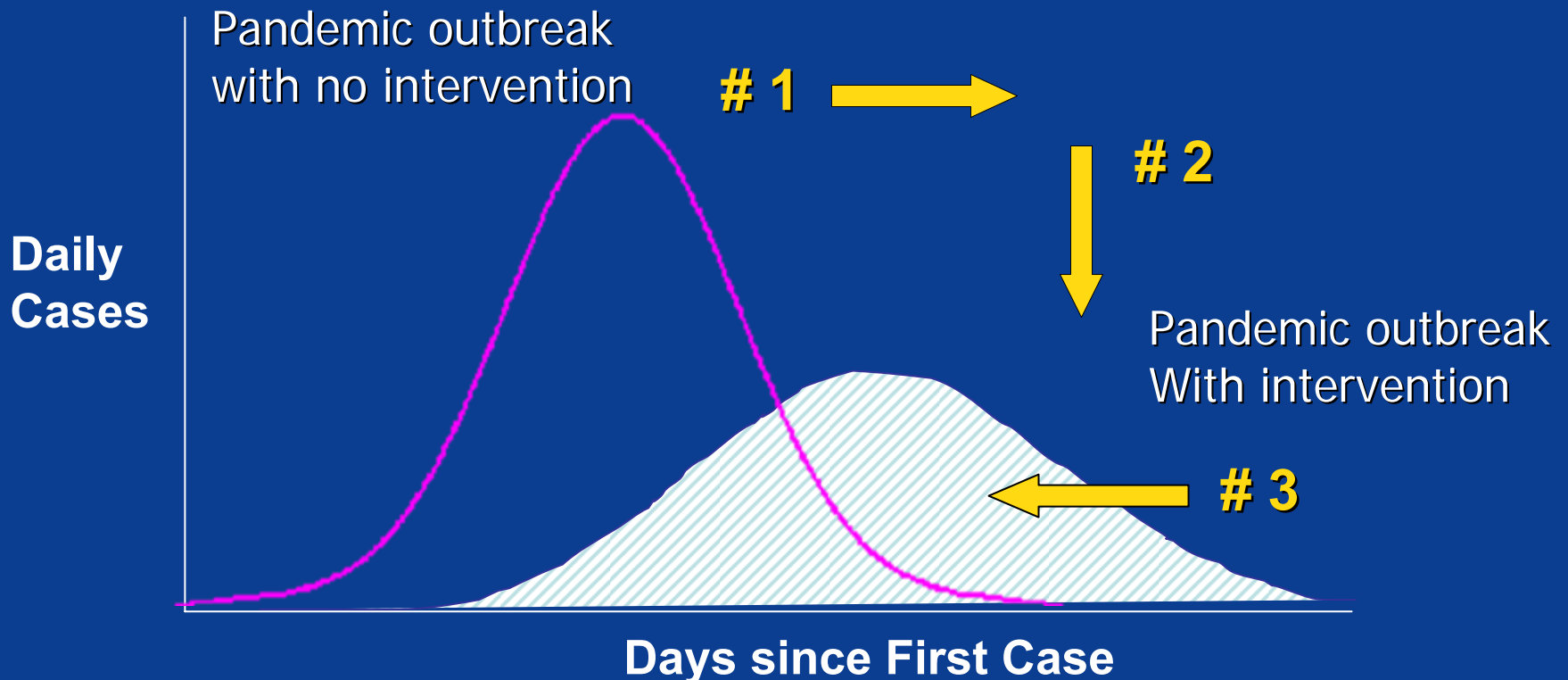
Reproductive Number, R_0

- $R_0 = p.c.d$
 - R_0 : Basic Reproductive Number
 - p : **Probability** of Transmission per Contact
 - c : **Contacts** per Unit Time
 - d : **Duration** of Infectiousness
- Quarantine and isolation reduce c , thus reducing R_0



Goals of Community Mitigation During Pandemic Flu

1. Delay disease transmission and outbreak peak
2. Decompress peak burden on healthcare infrastructure
3. Diminish overall cases and health impacts



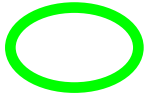
Who Infects Who?

	To Children	To Teens	To Adults	To Seniors	Total From
From Children	21.4	3.0	17.4	1.6	43.4
From Teenagers	2.4	10.4	8.5	0.7	21.9
From Adults	4.6	3.1	22.4	1.8	31.8
From Seniors	0.2	0.1	0.8	1.7	2.8
Total To	28.6	16.6	49.0	5.7	

Likely sites of transmission



School



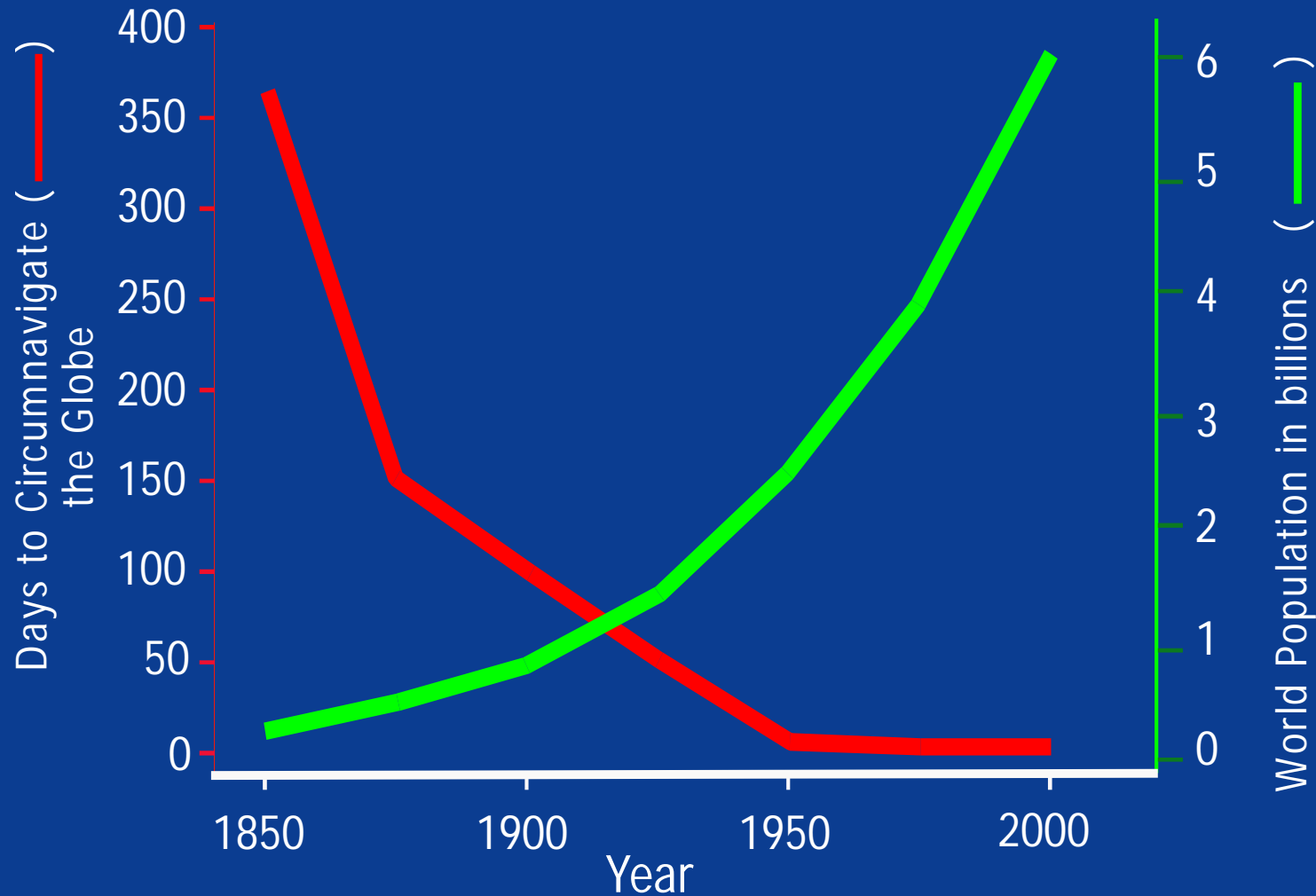
Household



Workplace

Demographics {
 Children/Teenagers 29%
 Adults 59%
 Seniors 12%

Speed of Global Travel Compared With World Population Growth



From: Murphy and Nathanson Sems. Virol. 5, 87, 1994

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Proportionality Principle

- Least restrictive means
- Voluntary quarantine
- Contemplating harsher measures only if absolutely necessary



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Reciprocity Principle

- In return for curtailing individual liberties, societies assist by:
 - Providing food and shelter
 - Assuring access to needed goods and services
 - Preventing discrimination and stigmatization



HHS Pandemic Influenza Plan

- Incorporates guidelines for ensuring that those in quarantine are not placed at increased risk
 - Quarantined individuals will be closely monitored and provided with all support services
 - Isolated individuals will be among the first to receive disease intervention measures

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Transparency Principle

- **Clear communication of quarantine and isolation justifications**
- **Provide/make available a mechanism for appeal**



Further Considerations

- **Duty to provide care**
- **Privacy**
- **Equity**
- **Trust**
- **Solidarity**
- **Accountability**



Evaluating Quarantine Effectiveness

Key Questions

- Was quarantine applied to the appropriate population? (*efficiency*)
- Did quarantine use limit progression of the outbreak? (*efficacy*)
- Was the implementation of quarantine humane?



CDC's Quarantine Authority

- Title 42 United States Code, Section 264
- The Department of Health and Human Services (HHS) has the responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries **into the United States** and within the United States and its possessions



CDC's Quarantine Authority

- 42 USC 264 is implemented through regulations found in 42 Code of Federal Regulations Parts 70 and 71
- Under its delegated authority, CDC, through the **Division of Global Migration and Quarantine**, is empowered to implement these regulations



CDC's Quarantine Authority

- **CDC is empowered to:**
 - **Detain**
 - **Medically examine**
 - **Conditionally release**

**persons suspected of carrying a
communicable disease**



Foreign Quarantine Regulations: Title 42 CFR Part 71

- **Reporting of “ill persons” defined by**
 - Fever ($\geq 100^{\circ}\text{F}$ or 37.8°C) persisting ≥ 48 hours
 - Fever ($\geq 100^{\circ}\text{F}$ or 37.8°C) AND rash, glandular swelling, or jaundice
 - Diarrhea (≥ 3 stools in 24 hours or greater than normal amount)
- **Medical surveillance of arriving persons**
- **Sanitary measures over inbound carriers, cargo**
- **Quarantine of arriving persons**

Executive Order 13295

Revised List of Quarantinable Communicable Diseases

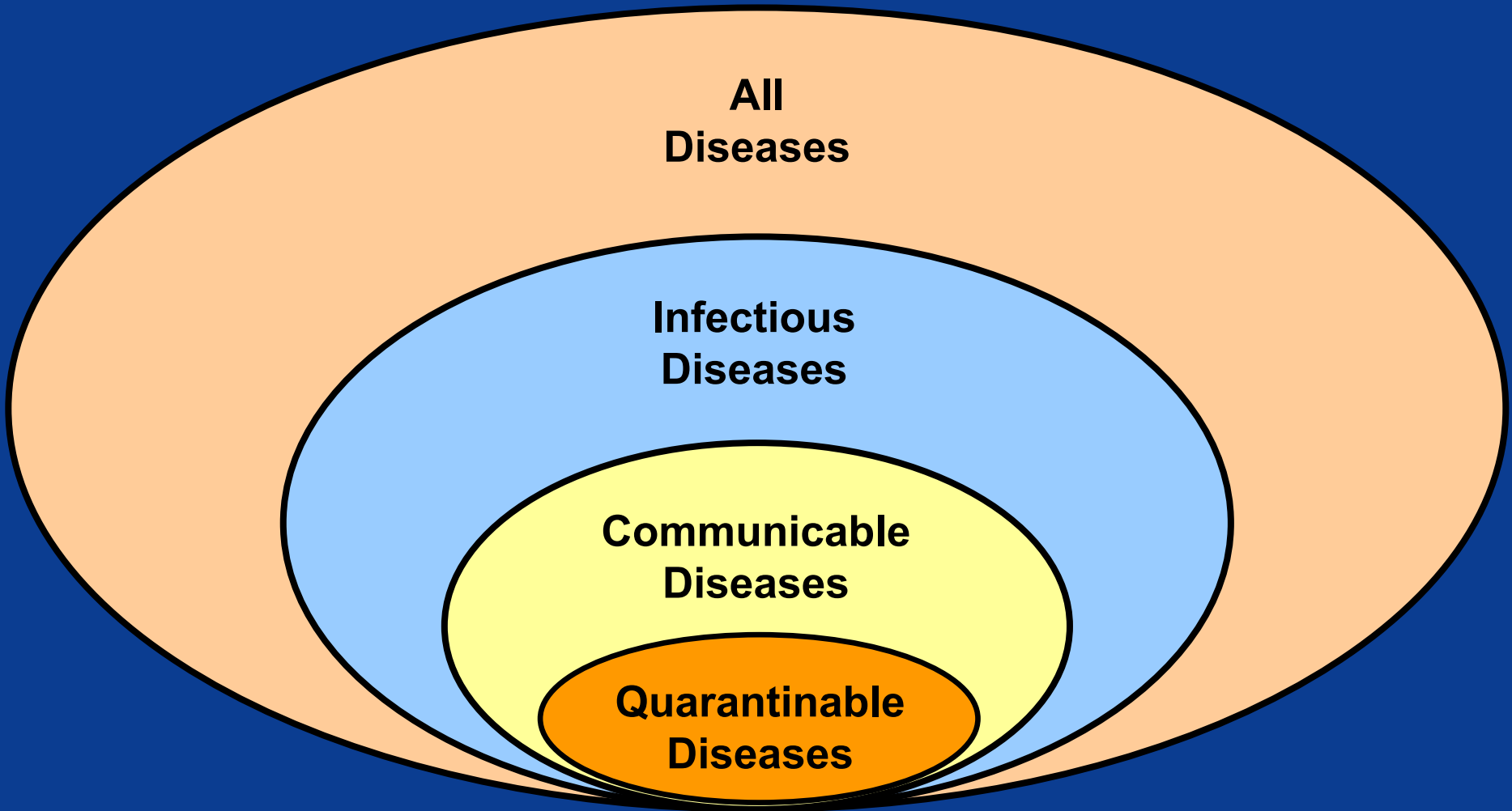
- Cholera; diphtheria; infectious tuberculosis; plague; smallpox; yellow fever; and viral hemorrhagic fevers (Lassa, Marburg, Ebola, Crimean-Congo, South American, and others not yet isolated or named)
- Severe acute respiratory syndrome (SARS)
- Influenza caused by novel or reemergent influenza viruses that are causing, or have the potential to cause, a pandemic



President George W. Bush
April 1, 2005



Disease Spectrum



**Not all diseases are infectious and
not all infectious diseases are communicable**

Division of Global Migration and Quarantine

- The Division of Global Migration and Quarantine is committed to reducing morbidity and mortality due to infectious diseases among immigrants, refugees, international travelers, and other mobile populations that cross international borders



Quarantine and Border Health Services Branch Mission



To protect the health of the public from communicable diseases through science, partnerships, and response at U.S. ports



CDC Quarantine Stations 2007 Jurisdictions



Quarantine Station Functions

- Respond to reports of illnesses on maritime vessels (cruise, cargo), airplanes, and at land border crossings
- Perform inspections of animals, cargo, and hand-carried items
- Conduct emergency planning and preparedness



Quarantine Station Functions, *cont.*

- Distribute life-saving immunobiologics and investigational drugs
- Provide travelers with essential health information

Did You Travel To Germany?

(World Cup June 9 - July 9, 2006)



If Yes...

then you may have been exposed to measles.

Following an exposure, unprotected people of any age may get measles. You are most likely protected from measles if you—

- have had measles,
- were born in the United States before 1957, or
- have had 2 doses of measles or MMR vaccine.

If you have a fever AND a red, raised rash; cough; runny nose; or red eyes:

- See your doctor right away.
- Tell your doctor that you have traveled in an area where there is a measles outbreak.
- Limit your contact with other people.
- Do not travel, unless you are traveling locally for medical care.



For more information, visit www.cdc.gov/travel



Quarantine Station Functions, *cont.*

- Monitor health and collect medical information of new
 - immigrants,
 - refugees,
 - asylees, and
 - parolees
- Respond to mass migration emergencies



Quarantine Station Functions, *cont.*

- Build partnerships for disease surveillance and control



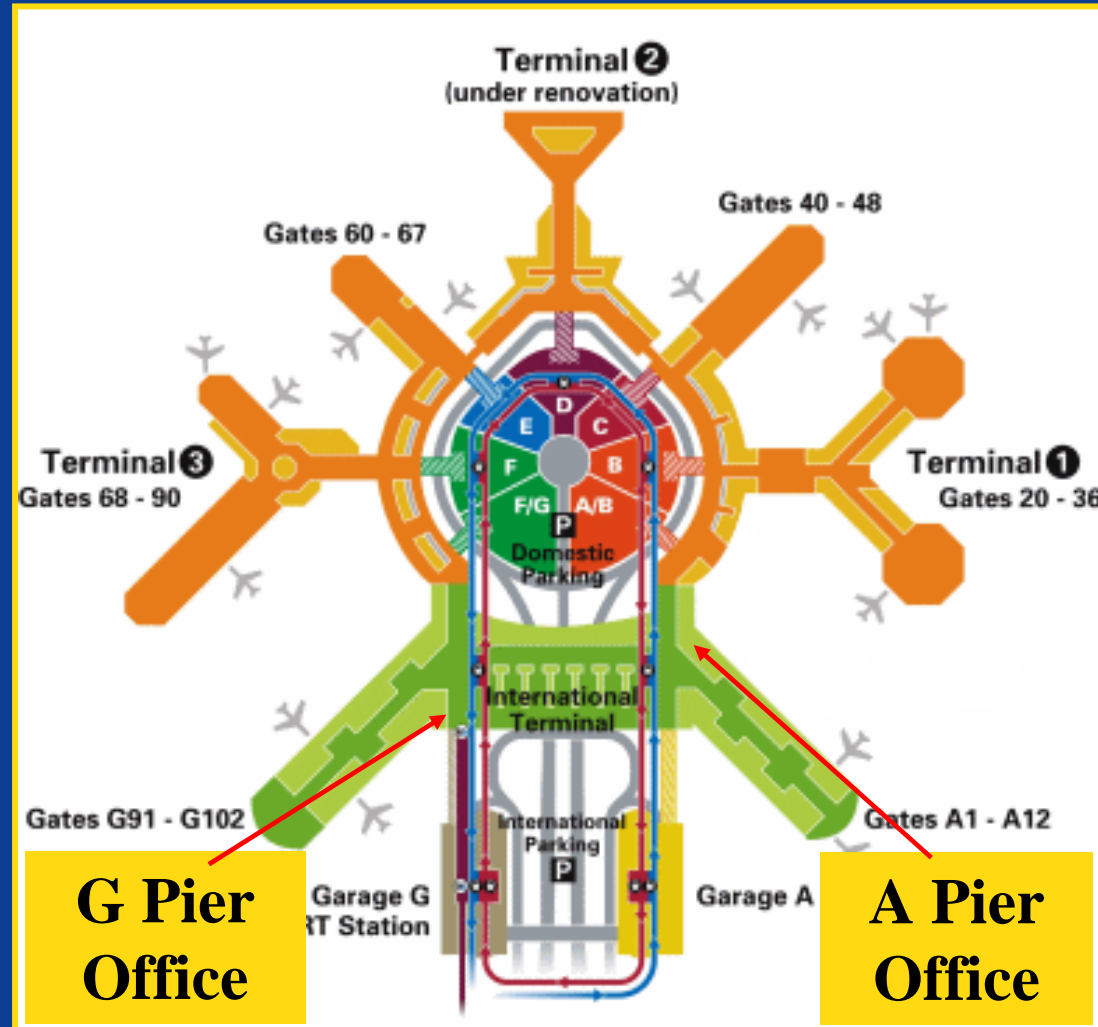
Quarantine Station Functions, *cont.*



Quarantine

CDC San Francisco Quarantine Station

- Located inside SFO Federal Inspection Service Area
- Team of four officers



Contact Information

CDC San Francisco Quarantine Station

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Fax: 650-876-2796

<http://www.cdc.gov/ncidod/dq/>

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Questions?



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