Goals of Web Cast

• Discuss the principles of infection control
• Describe how germs can be spread
• Describe infection control practices for the CF clinic, the hospital and non-healthcare settings
What is Infection Control?

• Study where germs come from and how they are spread
• Develop ways to prevent spread of germs
• Teach how to avoid getting infections
Infection Control is part of CF Care
How can Infection Control help People with CF?

• Keeps you healthy
• Try to prevent lung infections which affect:
  – Lung health
  – Treatments
  – Lung transplantation
• Avoiding germs
How are CF Infection Control Guidelines developed?

• Expert committee reviews published research
• Committee develops evidence-based guidelines for the hospital, CF clinic and non-healthcare settings
• Guidelines are revised as new knowledge is gained from research
Changes in CF that Affect Infection Control

- Increased life expectancy for people with CF
  - Average life expectancy over 37 years of age and increasing
  - Over 45% of people with CF are adults
  - As people with CF live longer, they may be at risk for new germs
Changes in CF that Affect Infection Control

• Delivery of care shifted from hospitals to clinic and at home
  – Separate clinics for children and adults
• Repeated courses of antibiotics - by mouth, inhaled and IV
  – Germs become more difficult to kill or resistant to antibiotics
How are germs spread in CF?

How do people with CF get these infections and where are they found?
Spread by Direct Contact

• Direct contact of infected respiratory secretions from another person:
  – Kissing

• Direct contact between people with CF
Spread by Indirect Contact

• Indirect contact with an object or person with infected respiratory secretions
  – Shaking hands
  – Drinking glass
  – Respiratory equipment
  – Toys
  – Staff clothing

• Germs can live for hours on surfaces
Spread by Droplets

- Respiratory droplets that are infected with germs and spread by coughing, sneezing, or singing
- Droplets travel short distances - about 3-6 ft.
- Germs within droplets can live for hours on surfaces
Important Germs in CF

- *Pseudomonas aeruginosa* (PA)
- *Burkholderia cepacia* complex (*B. cepacia*)
- *Staphylococcus aureus* (Staph)
  - MRSA: methicillin-resistant *S. aureus*
- Respiratory viruses
Respiratory Infections vs. Age

Overall Percentage in 2007:
- P. aeruginosa 54.4%
- S. aureus 51.4%
- H. influenza 17.1%
- B. cepacia 2.9%
- S. maltophilia 12.6%
- MRSA 21.2%
Finding Germs in People with CF

- Laboratories use special processing for respiratory cultures from people with CF
- Recommend respiratory cultures every 3 months
- Know your culture results!
We still don’t always know how people with CF become infected…

But…there is strong evidence that people with CF can get germs from each other and from healthcare and non-healthcare settings

And…infection control can reduce the risk of getting germs from others with CF and from other settings
DNA Fingerprinting to Detect Spread

- Germs (bacteria) can be “typed” to tell if people may be infected with the same strain
**Pseudomonas aeruginosa (PA)**

- Most common cause of respiratory infection in CF
- Usually causes chronic infection
- Found in hospitals, clinics and the natural environment
- Can live for hours on surfaces
Potential Sources of PA: Healthcare Setting

- Found on hands of CF patients and CF staff and in air within 3 feet of person with CF, and…these are the SAME as in people with CF
- Found on dental equipment
  - Dental equipment can be sterilized
Spread of *P. aeruginosa* between People with CF

- Described in CF clinics in Europe and Australia with spread of multi-antibiotic-resistant strains
- Not clear how much spread occurs in U.S.
Potential Sources of PA: Leisure Environment

• Found in swimming pools, hot tubs
• But:
  – Pools can be adequately chlorinated
• However:
  – Hot tubs cannot be adequately chlorinated
**Burkholderia cepacia Complex**

* (B. cepacia)

- Can quickly lower lung function
- Can cause chronic infection
- Consists of 17 different species
Burkholderia cepacia complex

- Most infection in CF is due to *B. cenocepacia* and *B. multivorans*
- Less common are *B. vietnamiensis, B. dolosa* and *B. cepacia*
- *B. gladioli* is not part of the *B. cepacia* complex, but also is found in CF
**Burkholderia cepacia complex**

- Found in soil and on plant roots - risk is not clear
- Known spread via indirect contact and droplet transmission in hospital
  - Same hospital room
  - Contaminated respiratory equipment
  - Contaminated sink/shower
  - Handshaking
  - Poor hand washing
Spread of *B. cepacia* Complex

- Spread between siblings
- Non-healthcare setting:
  - Kissing
  - Sharing a toothbrush
  - Exercise class
  - Long car rides
  - In CF camps
- Can spread among people with CF socializing together
Staphylococcus aureus (Staph) & Methicillin-resistant S. aureus (MRSA)

• *S. aureus* known to be common in CF
• Methicillin-resistant *S. aureus* or MRSA since 1970’s
• MRSA first caused infections in people without CF who were hospitalized or had surgery
MRSA continued to change

- In 1990’s, MRSA more common in people with CF
- In late 1990’s, community-acquired MRSA caused infections in people without CF
- In 2000’s, MRSA increasingly common in people with CF
MRSA in CF

• Increasingly common ~ 17% all people with CF
• Most common in ages 11-17 years old
• Some people with CF do have community-MRSA
• May cause worse lung function in CF
MRSA can Spread between People

• MRSA spreads between people without CF usually from skin contact
  – Skin infections (direct and indirect contact)

• MRSA spreads between people with CF
  – From infected respiratory secretions (contact and droplet)

• MRSA can spread between people without CF and with CF
Respiratory Viruses

• Viruses can cause pulmonary exacerbations in people with CF
• Influenza - “the flu”
• Rhinovirus – “the common cold”
• RSV - respiratory syncytial virus
  – Causes bronchiolitis and wheezing in babies and young children with and without CF
Spread of Respiratory Viruses

• Spread easily between people
• Spread by indirect contact, for example, touching an object with flu virus then touching mouth, nose, or eyes
• Spread by droplets, for example, when a person with the flu coughs or sneezes near another person
Get all Vaccinations (People with CF and their Families and Friends)

- Diphtheria, Tetanus, Pertussis (DPT)
- Haemophilus B (Hib)
- Hepatitis A & B
- Influenza (flu)
- Measles, Mumps, Rubella (MMR)
- Pneumococcal (Prevnar)
- Polio
- Varicella (Chickenpox)
- Meningococcal
- Rotavirus
Preventing Spread of Germs
Basic Principles for Successful Infection Control in CF

• Everyone with CF may have germs in their lungs that could spread to others with CF

• Staff (clinic and hospital), people with CF, families and friends educated about infection control

• New research could lead to new information that could change guidelines
Hand Hygiene is the Most Important part of Infection Control!

- Must be done by EVERYONE
  - Staff, people with CF, family members and friends
- Hand hygiene reduces infections
- Use alcohol-based hand gels or soap and water
- Make hand hygiene routine
- Educate others
When should Hand Hygiene be done?

- After coughing, sneezing, nose blowing
- After touching public items, e.g., ATM, grocery carts, public telephones, handrails
- At shared play areas and gyms
- Before and after respiratory treatments
- When entering and leaving CF clinic
- Before and after pulmonary function testing
Healthcare Providers should do Hand Hygiene...

• Before and after:
  – Touching patients
  – Touching surfaces in patient rooms
  – Touching respiratory tract secretions
  – Putting on gloves

• Don’t be afraid to ask your care providers to clean their hands - sometimes they forget!
Respiratory Hygiene is also Key

• Respiratory hygiene is what you do to contain respiratory secretions
  – Cough or sneeze into a tissue
  – Throw tissue into a trash can
  – Do hand hygiene
• To be done by EVERYONE
• Educate others
Containment of Germs

Team CF

Team CF

Gel
Good Practices for CF Clinic Visits

- Limit time in waiting room
- Bring own toys, book and magazines
- Do frequent hand hygiene
- Do respiratory hygiene
- No hand shaking
Good Practices for CF Clinic Visits (continued)

• Don’t socialize
• Remember ‘A wink and a nod’ will do
• Stay at least 3-feet from others with CF
• Practice these in other areas too e.g., PFT lab, cafeteria, x-ray, etc.
Should people with CF wear masks in CF clinic?

• No scientific evidence that masks prevent spread of germs between people with CF
• BUT…some clinics do use masks for everyone
  – MAY stop spread of germs if worn properly
  – MAY help people with CF know who else has CF
• Must still do hand and respiratory hygiene
Containing Germs in the Hospital

• People with CF (and without CF) are placed on Isolation Precautions if infected with certain germs (MRSA, B. cepacia, flu)
  – Single room
  – Staff & visitors wears gowns and gloves
  – Staff & visitors wears masks (if flu)
  – Patients only leave room when medically necessary
Psychosocial Impact and Coping with Isolation Precautions

• Separation from friends
  – Encourage visitors
  – Have a phone/computer available

• Boredom, loneliness, depression
  – Bring activities to do in room

• Change in physical activities
  – Ask for room activities
Good Practices for Non-Healthcare Settings

- Do frequent hand hygiene
- Do respiratory hygiene
- No socializing with others with CF
- Educate friends and families about infection control
- Ask them to stay away from the person with CF if they are sick
Care of Nebulizer Equipment

• Clean

• Disinfect by:
  – BOILING for 5 min OR
  – Microwave for 5 min OR
  – Dishwasher for 30 min at 158°F OR
  – Soak in disinfectant such as:
    • 1:50 dilution of household bleach for 3 min
    • 70% isopropyl (rubbing) alcohol for 5 min
    • 3% hydrogen peroxide for 30 min
  – After soaking, RINSE with sterile water

• Air dry
Care of Nebulizer Equipment

- Have a routine schedule
- Have two sets of nebulizer equipment
- Replace nebulizer regularly
- Replace if cracked
Coping with Infection Control

- Educate others - teachers, classmates, friends, family members
- Educate about doing hand hygiene, using tissues & minimize contact when sick
- Encourage lots of friends (without CF)
- Always carry alcohol-based hand gel and tissues
Why doesn’t everyone do infection control all the time?

? Never received education
? Forgot infection control principles
? Disagree with recommendations or believe they are ineffective
? Desire to socialize outweighs perceived health risk
? Inconvenient and time consuming to do hand hygiene or use gowns, gloves
Infection Control & Germs

August 11, 2009

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Good Infection Control Practices

• Do frequent hand hygiene
• Do respiratory hygiene
• No socializing with others with CF
• Educate friends and families about infection control
• Ask them to stay away from people with CF if they are sick
**Staying Healthy**

**Make a Plan to Stay Healthy**

Most people with cystic fibrosis—regardless of the severity of their disease—with regular doctor visits, treatment, and other healthcare services can live long, healthy lives. Staying healthy is crucial for reducing the risk of complications from cystic fibrosis.

Staff at CF Foundation-accredited care centers partner with people with CF to develop individual treatment plans. These plans typically include high-calorie, high-fat diets, therapies to loosen the clogged mucus from their airways, and mucus-thinning drugs and antibiotics when needed.

By following a treatment plan developed with their CF care center team, many people with CF can slow down the progression of their disease. A healthier body is better able to deal with bacteria and chronic lung infection.

**Avoid the Spread of Germs**

Cystic fibrosis puts the airways at risk for lung infections. There are, however, effective ways to lessen the risk. One way is to limit contact with known germ sources.

Although germs are everywhere and cannot be avoided, one of the best ways to keep from catching or spreading germs is through effective hand-washing, whether with soap and water or hand gel.

Everyone with CF should avoid unnecessary contact with people who have a cold or any other contagious illness, and should cough and sneeze into a tissue.

Learn more about *methicillin-resistant Staphylococcus aureus* (MRSA). It’s all about good hand hygiene!
H1N1 Flu

Novel H1N1 Flu (Swine Flu)

Vaccination Recommendations
With the new H1N1 virus continuing to cause illness, hospitalizations and deaths in the US during the normally flu-free summer months and some uncertainty about what the upcoming flu season might bring, CDC's Advisory Committee on Immunization Practices has taken an important step in preparations for a voluntary novel H1N1 vaccination effort to counter a possibly severe upcoming flu season. On July 29, ACIP met to consider who should receive novel H1N1 vaccine when it becomes available.

Learn More >>

More on the Situation
- Background
  Learn about the emergence of the novel H1N1 virus in the United States and WHO's declaration of a novel H1N1 pandemic.
- General Information
  Basic information about H1N1 flu and you, including how to take care of a sick person and what to do if you get sick.
- Facts and Figures
  A summary of key novel H1N1 disease characteristics.
- FluView
- CDC Response
  A summary of CDC activities
- International Situation Update
  The Southern Hemisphere is in the middle of its flu season, and we have reports of what is happening there.
- Guidance
Infection Control in Healthcare Settings

The Division of Healthcare Quality Promotion (DHQP) protects patients, protects healthcare personnel, and promotes safety, quality, and value in the healthcare delivery system by providing national leadership for nine key areas. More about DHQP...

Infection Control Guidelines

This collection of guidelines pertains to keeping patients and healthcare workers in healthcare settings protected from infectious diseases.

Featured Items:

State HAI Plan Template
In response to the increasing concerns about the public health impact of healthcare-associated infections (HAIs), the US Department of Health and Human Services (HHS) has developed an Action Plan to Prevent Healthcare-Associated Infections (HHS Action Plan).

The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention
This report uses results from the published medical and economic literature to provide a range of estimates for the annual direct medical hospital cost of treating healthcare-associated infections (HAIs) in the United States.

WHO Launches Global Initiative to Address Hand Hygiene on May 5, 2009
CDC promotes hand hygiene in healthcare settings

Clostridium difficile
Over the past 2 years, several states have reported
Infection control recommendations for patients with cystic fibrosis: microbiology, important pathogens, and infection control practices to prevent patient-to-patient transmission.


An outbreak of methicillin-resistant Staphylococcus aureus in a neonatal intensive care unit.


Infection control recommendations for patients with cystic fibrosis: microbiology, important pathogens, and infection control practices to prevent patient-to-patient transmission.


Can diagnostic evaluations to "rule out" endocarditis be improved?


Evaluation of MicroSeq 16S PathoSeq for identification of Pseudomonas aeruginosa isolates from cystic fibrosis patients.
Find a Clinical Trial

Search by state, age of participants needed, type of therapy, and other key features for those CF clinical trials and studies that are currently recruiting. Contained in each clinical research summary are words that are hyperlinked to a glossary. Should you click on a hyperlink, you will need to use the back button in your browser to return to the summary.

The clinical trials and studies contained on this Web site have been reviewed and sanctioned by the CF Foundation’s Clinical Research Committee, Data Safety Monitoring Board and/or the Therapeutics Development Network’s Protocol Review Committee.

To learn more about CF clinical research and the benefits of participating in a clinical trial for CF, click here.

OR limit search results...

Enter state of patient’s location: Select State
Select patient’s age: Select Age
Limit to post lung transplant trials/studies: ◐ No ◐ Yes

☑ Limit by type of therapy  
☐ Restore Airway Surface Liquid
☐ CFTR Modulation
☐ Anti-inflammatory Therapies
☑ Anti-infection Therapies
☐ Nutrition/GI Therapies
Please complete the evaluation!
Thank You

- ...for watching
- John LiPuma and Lisa Saiman
- Rick Vasta & the technical crew
- Genentech
- Melissa Chin and the CF Foundation