A “Brief” History of Infection Control

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Where Do I Begin
LET'S START AT THE VERY BEGINNING....

A VERY GOOD PLACE TO START!
Early Infection Control

• Personal cleanliness
• Isolation practices
• Food hygiene
• Diagnosis and treatment of infections

“As long as he has the infection he remains unclean. He must live alone; he must live outside the camp” Leviticus 13:46
And whomsoever he toucheth that hath the issue, and hath not rinsed his hands in water, he shall wash his clothes, and bathe himself in water, and be unclean until the even” Leviticus 15:11
Early Hospitals

- Emphasis on space, use of prevailing winds
- Attendants “distinguished for purity and cleanliness of habits”
High temperature sterilization?
The Dark Ages
“He who has washed in Christ need never wash again” (Jerome (400 AD))
Did no one clue in?

Caspar Stromayr

On 6th August, 1729, the first voluntary hospital in Scotland was opened in a little house on this site, opposite the head of Robertson's Close. While still in that house in 1736, it became the Royal Infirmary of Edinburgh.
Infection Prevention: the 1800s onward

SUCCESS

WHAT PEOPLE THINK IT LOOKS LIKE

SUCCESS

WHAT IT REALLY LOOKS LIKE
Notable early successes

1. **John Pringle**: epidemiology; early studies on antisepsis; policies on spatial separation and ventilation; “germ theory”

2. **James Lind**: separate wards for the contagious, disinfection of clothes; filtration of water

3. **Archibald Menzies**: fumigation to reduce ship fever

4. **John Smyth**: carbolic acid as a possible disinfectant

5. **The Hospital Reformers**
   - J Tenon (Hotel Dieu)
   - John Howard
   - French Council of Health

6. **The Obstetricians**
   - Puerperal fever as an infectious disease [Alexander Gordon and James Simpson]
Fast Forward the 1800s

- **Oliver Wendell Holmes**: infection not “miasma”
- **Semmelweis**: hand hygiene
- **James Simpson**: wound disinfection
- **A. Ollivier**: proving Koch’s postulates on infection; surgical “asepsis”
- **Florence Nightingale**: hospital reform
- **Leeuwenhoek** “animalcules”
- **Andrew Smart** – germ theory and environmental (indirect) sources of infection
- **Koch, Pasteur**
- **Lister**
The art of hospital construction: Douglas Galton
The late 1800s early 1900s

- Quarantine regulations enacted consistently
- Immunization era begins
- Soap produced on a large commercial scale
- Pasteurization, water treatment (chlorination), sewer systems and boards of health
- Hospitals practice aseptic technique
...and now for something completely different.
An Ode to Toilet Paper

- Dysentery was a scourge
- TP is one of the first examples of “barrier protection”
- Chinese likely invented it in the 9th century
- First produced commercially in 1857 as a “Therapeutic paper”
- By 1919 it was an important commodity

Despite this – no proof that it prevents infection!

The 20th century – finally!

• Group A Streptococcus as the model for cross infection and transmission
• The importance of airborne transmission
• The antibiotic era – sulfonamides, penicillin...
• TB sanatoria and screening for TB by x-ray (1940s)
• Outbreaks of MSSA infections 1930s onwards
• Gram negative nosocomial infections 1950s...
• Drug-resistant bacteria and hepatitis B by 1960s
• Hospital legionellosis and salmonella outbreaks 1970s
• Fungal superinfections and blood borne diseases 1980s
• Norovirus, influenza outbreaks, SARS, Ebola, MRSA, VRE, CPO..... What next?
Timeline for Infection Control: 20th Century

1941: UK Control of Infection Officer
1943: First isolation ward in USA
1944: USA Infection Control Officer
1959: The first Infection Control Nurse
1960s: Antimicrobial restriction policies
1976: SENIC 1 ICP: 250 beds, importance of surveillance
1972: APIC first meeting
1976: CHICA is incorporated
1980s: APIC/CHICA standards for IC practice
• Microbiome manipulation
• The Microbiology Laboratory as diagnostic, prognostic and therapeutic provider?
• Mitigating role in environmental transmission?
• Less “hands on” patient care
• Fewer invasive procedures (microsurgery)
• Electronic surveillance
• Increasing demand for data
Self-Cleaning Surfaces

Loafers are basically the windows through which a plant receives energy. A dirty window is going to let in a lot less energy, making the plant's work harder. You may not think about nature as a very clean place, but from the plant's point of view, it's absolutely essential that leaves stay clean and free of debris. And in a world without any windows, plants have come up with an ingenious solution.

The surface of most leaves, though it may seem smooth, is actually covered in microscopic ridges. To simplify somewhat, this means that dirt and grime has a lot of trouble finding something to stick to, and usually ends up rolling smoothly off one of these ridges. To be

Shark Skin is a Great Disinfectant

Before you go grinding up sharks' Chinese wedding style, it's not the skin itself that makes shark skin so resistant to parasites, fungus and bacteria infections. It's the unique surface structure. Much like the self-cleaning pant, the diamond shaped surface of shark skin creates an environment much like the flat ones Issac to John W. cherry. There's no place for the pests to hide out, and moving around leads to bloody injury.

Scientists managed to replicate this structure on an adhesive film, which they hope to deploy to schools, hospitals and other places where deadly germs often propagate. Which is great,
Already here...

- Outpatient Therapy
- Same day discharges post-op
- Privatization?
- Changes in surveillance?
The Great Leveller

Self-disinfecting surfaces