

ACTIVITY EXAMPLE



KEY WORDS

Biology | microbiology | microbes | bacteria | pharmaceuticals | testing | antibiotics | health | threat | treatment | virus | transmission | epidemic | pandemic | outbreak | strategy | infections | organisms | disease | hygiene | respiratory system | human body | CPR

ALSO USEFUL FOR

Social studies | Health | English | History | Biology

PROGRAMME OUTLINE

3 POINTS OF CONTACT

- Staff come into classroom (x2)
- Workplace visit (x1)

EXAMPLE

1. Staff come into classroom, introduce themselves, background to St John, their careers and how science is used in the industry. Focus on microbiology
2. Workplace visit includes tour of organisation, meeting staff and hearing about different careers.
3. Staff return to the classroom – focus on circulatory and respiratory system. **Student activity:** CPR session.



ACTIVITY EXAMPLE



Vision

We step forward,
When help is needed,
For better,
For life.

Departments within St John

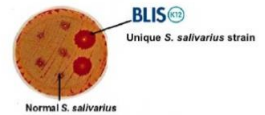
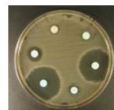
- Ambulance**
- Caring Caller**
- Clinical Control Centre**
- Clinical Development**
- Clinical Research**
- FEDs**
- Community Outreach**
- First Aid Training**
- Health Shuttle**
- Human Resources**
- Marketing**
- Medical Alarms**
- Outreach Therapy Pets**
- Telecare**
- Volunteers**
- Youth**



Microbiology

Douglas Pharmaceuticals

- *Environmental testing*
 - Air
 - Water
 - Surface
- *Antibiotic testing*



BLIS Technologies

- Worlds first oral probiotics
- *Streptococcus salivarius*
 - K12 and M18
 - 2% of population
 - Throat health
 - Tooth health

BLIS (bacteriocin-like inhibitory substances) are naturally occurring strains of bacteria that can inhibit the growth of other bacteria around them. The science world is investigating both as a benefit...and threat!

Interesting facts

- **Bacteria are everywhere**
 - Most bacteria are harmless
 - <1% cause diseases



BACTERIA	BOTH	VIRUS
Strep throat Tuberculosis Whooping cough UTI	Bronchitis Ear infection Sinus infection	Common cold Flu Sore throat
Antibiotics? YES	Antibiotics? MAYBE	Antibiotics? NO



History Microbiology

- 1665 Robert Hooke – First person to use a microscope
- 1677 Antony Leeuwenhoek – Little animals
- 1796 Edward Jenner – Small pox vaccination
- 1850 Ignaz Semmelweis – Hand washing
- 1853 John Snow – Epidemiology
- 1862 Louis Pasteur – Germ Theory
- 1867 Joseph Lister – Antiseptic surgery
- 1882 Robert Koch – Koch's postulate
- 1928 Alexander Fleming - Penicillin



ACTIVITY EXAMPLE

Methods of transmission

- Reservoir
- Direct Transmission
 - Contact
 - Droplet
 - Inoculation
- Indirect Transmission
 - Vehicle
 - Vector
 - Air
 - Fomite
 - [Cold transmission](#)

- Fomites

Epidemics and Pandemics

- 1800s Measles, Typhoid, scarlet fever
- 1890 Influenza pandemic
- 1918 Influenza pandemic
- 1971 Hepatitis A
- 1983 – HIV epidemic
- 1991 – Meningococcal B epidemic
- 1995 Rubella
- 1997 Campylobacteriosis
- 1999 - 2004 Pertussis epidemic
- 2009 - H1N1 pandemic
- Norovirus, Rotavirus
- [Flu transmission](#)



Potential outbreaks

- SARS
- Ebola

- Phases of pandemic strategy
1. Plan for It (planning and preparedness)
 2. Keep It Out (border management)
 3. Stamp It Out (cluster control)
 4. Manage It: (pandemic management)
 5. Manage It: (Response/Recovery - post peak)
 6. Recover From It: (Recovery)



Day to day

- Colds
- Flu
- Fungal infection
- Skin infection
- Other infections
- Vomiting and diarrhoea
- UTI
- Sepsis
- Septicaemia
- Immunocompromised patients
- Blood borne diseases
- Antibiotic resistant organisms



Infection control

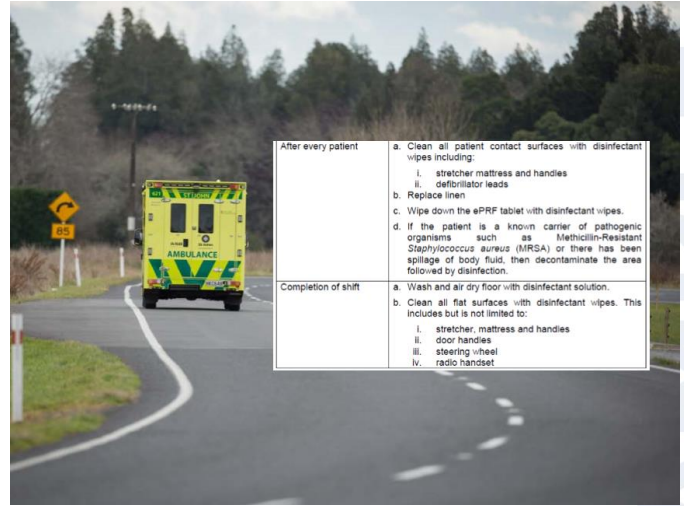
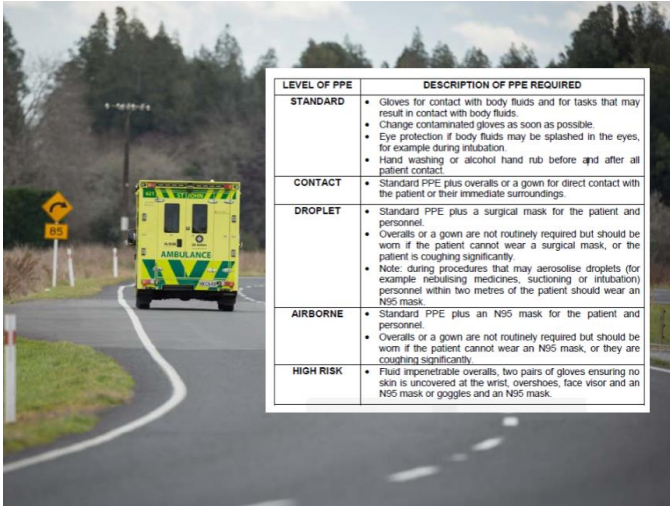
St John has developed infection control procedures in line with the nature of work and the environment its staff are exposed to.

- Personal protective equipment
- Information
 - Preparation
- Training
 - Decontamination
 - Disinfection



Disease	The primary route of transmission and level of PPE required
TB	Airborne
Extended spectrum beta-lactamase (ESBL) organisms	Contact
Gastroenteritis	Contact
Hepatitis A	Contact
Hepatitis B and C	Standard
HIV	Standard
Measles (including rubella)	Airborne
Meningococcal disease	Droplet
Methicillin resistant staphylococcal aureus (MRSA)	Contact
Rhumps	Droplet
Norovirus	Contact: Note: norovirus may become airborne during vomiting and airborne PPE is required for this.
Influenza	Droplet
Whooping cough	Droplet
Chicken pox	Droplet
Pneumonia (including Legionella)	Standard
Rotavirus	Contact
Haemorrhagic viral disease	Transmitted by contact, but high risk PPE required.

ACTIVITY EXAMPLE



CBR Paramedic

- The CBR Paramedic roles includes, but not limited to, the following:
- Respond to a HAZMAT/CBRE event;
- Provide triage and emergency medical treatment, including trauma, to members of the public during the decontamination phase of a mass casualty HAZMAT/CBRE incident.



CBR Paramedic

- Provide medical support to New Zealand Fire Service HAZMAT teams; New Zealand Police specialist teams; New Zealand Defence Force Explosive Ordnance Disposal teams.
- Provide specialist PTS with ISO-POD

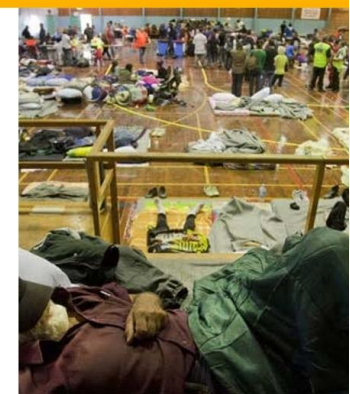


Extreme Transportation options



Christchurch Earthquake – 22 Feb 2011

- Setting up a shelter at a Community gym.
- 300 people
- What are the things you need to consider to keep the people healthy?



ACTIVITY EXAMPLE

Cleanliness



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