Laboratory-Acquired Infections: History of Prevention

Three incidences of infection in healthcare workers led to the Department of Health and the British Government setting up a number of working parties, recommendations and legislation concerning the prevention of laboratory-acquired infections (LAIs).

**The Path of Legislation**

The methods of hepatitis B and leptospirosis mentioned in Putin 1 were not included in the prompted legislation. In 1957, Frick noted the incidence of TB in laboratory workers. The highest incidence was in those who handled suction endoscopes. A breakdown of figures is shown below:

- 28/1000 among all staff
- 15/1000 among chief technicians
- 4/1000 in basic-grade technicians
- 1/1000 in junior technicians
- 0/1000 in student technicians
- 9/1000 in animal attendants

**Thomson Report (1959)**

- Focused on the sources of incidence of TB mortality in laboratory and PM men, staff, who also had the highest rate of doubling TB.
- Gave advice on the infection prevention procedures to be taken in laboratories, PM men and in animal attendants.

**Rosemberg Report (1972)**

- The investigation of the Edinburgh hepatitis B outbreak led to a review of the precautions to be taken in blood disposal units to prevent the spread of infection. It included advice on the precautions to be taken in laboratories.
- The report was published in 1973 by the Scottish Office. It included further updated advice.
- It was updated and expanded in 2002 to include hepatitis C and HIV.

**Safety in Pathology Laboratories (1973)**

- If Hepatitis B was widespread, guidance on the use of rubber gloves was recommended.
- The report was further developed by the Public Health Laboratory Society, which published additional guidelines in 1979.


- This report contained advice on the safety precautions to be taken in staff handling, including the use of gloves and the use of Category A and B explosions.
- Recommended the classification of other pathogens as category B or C.
- Promoted the use of latex gloves and the use of Category A pathogens.
- The Department of Health began to take the incidence of LAIs seriously and set up a working party led by Professor Sir James Hitchcock.

**Health and Safety at Work Act (1974)**

- The formation of the Health and Safety Executive (HSE) which had the power to ensure legislation was created in the workplace.
- In 1978, the act extended to laboratory workers.
- Safety representatives introduced. These had to be employees of a trade union.

**Howne Report and Code of Practice (1978)**

- The report contained advice on the use of gloves, surgical equipment and laboratory equipment.
- Recommended the use of gloves and the use of Category A pathogens.
- The HSE gave regular guidance and advice on the classification of pathogens and new information on the use of gloves.

**Prevention of LAIs (1971)**

- In 1979, the laboratory safety manual published in Germany by Frick recommended:
- Wearing of laboratory gowns to prevent contamination of the laboratory.
- The use of gloves in the laboratory.
- The use of masks to prevent contamination of the laboratory.
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**Causes and Prevention**

**Needles and Syringes**

- Danger from aerosols from pressure in the syringe, and needle injuries.
- Waring (1975) suggested using hand-held needles.
- Removal of needles with tweezers was recommended before introduction of sharp containers with needle-removing devices.

**Bacteriological Loops**

- Risk of spreading when loops were contaminated with aerodynamically dispersed material.
- Before the introduction of disposable plastic loops and needles, it was recommended:
- That loops be no more than 5 cm long.
- The use of aerosol-tight vials in the laboratory.

**Biological Safety Cabinet (BSC)**

- Cabinets were developed to protect workers from aerosols.
- In 1965, the first was described by Robert Koch in Paris.
- In 1979, the first cabinet available commercially was released.
- In 1984, an inward-out published first form of description of the BSC.
- In 1989, introduction of stainless steel cabinets, with a glass viewing panel and exhaust fan.
- Not widely used in Britain until 1980.

In the laboratory the highest incidence of LAIs occurred with the handling of contaminated sputum and other discharges.

**Design of the Laboratory Coat**

- Frick's coat was not widely adopted in Britain.
- Generally, the white coat used in laboratories gave little protection to workers. "The chaps could not keep their visors on to keep the smoke out."

**Personal Protection Equipment (PPE)**

- In addition to EPI, the report referred to the use of gloves and masks.
- Chlorine gauze and iodine gauze were used in the laboratory.

Early personal protective clothing.