

Technology to trace source of outbreaks

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SOUTH African scientists have developed new technology, known as Polymerase Chain Reaction (PCR), which can swiftly and accurately identify a bacterial outbreak and trace the source of the outbreak.

The technology could help curb outbreaks in hospitals, such as the *Klebsiella* infection which killed 22 babies at the Mahatma Gandhi Memorial Hospital in Phoenix recently.

Hospitals are a breeding ground for bacteria, many of which are harmless to healthy individuals, but deadly to the sick.

Babies, the elderly and adults with weakened immune systems are highly vulnerable to infection, which can spread due to poor hygiene practices.

Another source of infection is medical personnel who work shifts at a variety of institutions.

Sometimes referred to as "molecular photocopying", PCR can characterise, analyse and synthesise pieces of DNA or RNA.

It also works on complicated mixtures, seeking out, identifying and duplicating a particular bit of genetic material from blood, hair or tissue specimens, microbes, animals or plants.

Dr Gerhard Weldhagen, a member of the National Pathology Group and a molecular biologist, said that PCR-enabled clinics were needed urgently to test for outbreaks on a molecular level. They provided results much more rapidly than the traditional bacterial culture tests.

"Using PCR techniques can reduce the waiting period for the result from weeks to days. In addition, traditional bacterial cultures can only identify the organism, not its generic source."

"PCR tests can be absolute about the genetic background of the infection. This tells you whether the disease is being spread by one person or one infected batch of equipment, or whether it is multisourced," he said.

Weldhagen added that the rise of superbugs, which are immune to antibiotics, had made treatment much more difficult.

"This phenomenon makes it all the more important to identify the culprit bacteria as early as possible. In certain cases, PCR also enables us to test the drug sensitivity of the organism at a molecular level to determine the most effective course of treatment" he said.