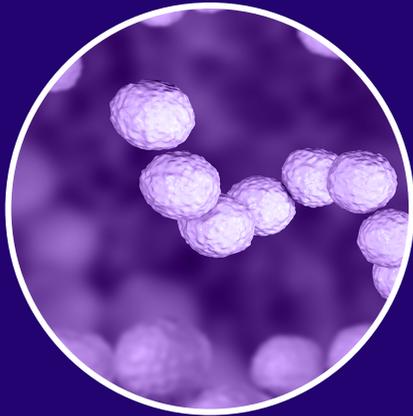




**MICROBIAL THREAT: *STREPTOCOCCUS PYOGENES***



***Streptococcus pyogenes***

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***Streptococcus pyogenes* causes group A *Streptococcus* (GAS) infections and is in the top ten list of pathogenic infections.**  
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“  
***Streptococcus pyogenes* can survive on surfaces for extended periods of time and remain infectious in the form of biofilm.**  
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## WHAT IS *STREPTOCOCCUS PYOGENES*?

*Streptococcus pyogenes* is a Gram-positive bacterium responsible for over 700 million infections yearly both in children and adults worldwide (Carapetis et al., 2005). *S. pyogenes* is often called group A *Streptococcus* (GAS) and is an exclusively human pathogen (Ermer and Laabei, 2019). Although other Streptococci species belonging to group A exist, it is predominantly *S. pyogenes* which causes GAS infections. According to Carapetis et al. (2005), GAS is in the top ten list of pathogenic infections, among HIV, malaria, tuberculosis and hepatitis B, responsible for the highest number of deaths worldwide. In June 2019, Essex, UK experienced an outbreak of GAS infection.

## WHY IS *STREPTOCOCCUS PYOGENES* A MICROBIAL THREAT?

*S. pyogenes* is a major global health problem. It is known for mild illnesses such as strep throat and impetigo ('skin sores') (CDC, 2018). In certain cases, however, GAS can lead to an invasive infection (iGAS) which can be life-threatening. iGAS infection occurs when the bacterium enters the bloodstream or a normally sterile body part such as an organ. The invasive diseases resulting from iGAS include bacteraemia, necrotising fasciitis, pneumonia, osteomyelitis, septic arthritis, and toxic shock syndrome (Ochi et al., 2018). An abnormal immune response to the infection can lead to post-streptococcal sequelae. These include Acute Rheumatic Fever (ARF) and Acute Post-Streptococcal Glomerulonephritis, which can further lead to Rheumatic Heart Disease and chronic kidney disease. The latter two account for most of the global disease burden attributed to *S. pyogenes* (Carapetis et al., 2005).

## HOW IS GAS TRANSMITTED?

Infected people produce GAS bacteria in the nose and throat which can be spread during sneezing, kissing and touching. GAS bacteria can enter the body through lesions and wounds and cause iGAS. A person may become infected with iGAS from either their own GAS bacteria if it enters their own skin lesions or from contact with an infected person (NHS, 2016).

Transmission through skin-to-skin contact and via droplets is not the only way GAS can be transferred. Marks et al. (2014) found that Streptococci including *S. pyogenes* can survive on surfaces for extended periods of time and remain infectious in the form of biofilm. These findings suggest that GAS may survive in the environment and be transferred from person to person via fomites contaminated with oropharyngeal secretions containing Streptococci biofilm.

## WHO IS AT RISK OF GAS?

Very young or elderly people, postpartum mothers, immunocompromised and hospitalised individuals are especially vulnerable to GAS and iGAS infections. The elderly are at the highest risk of severe iGAS infections. Invasive GAS infections tend to often occur within nursing homes where elderly people, often with other illnesses, reside (Auerbach et al., 1992).

Nanduri et al. (2019) investigated a GAS infection within a nursing home in Illinois, USA and found that inadequate infection control was one of the causes which likely led to the 28-month long outbreak. Outbreaks of GAS infections among residents of long-term care facilities are not unusual and have been described in literature. GAS tends to be introduced into these facilities by residents, staff or visitors, and is often spread by inadequate infection control practices and crowding (Jordan et al., 2007, Chalker et al., 2016). Nanduri et al. (2019) observed poor hand hygiene and poor disinfection practices and no clear separation of dirty/contaminated wound care supplies from clean supplies to be the factors which would have increased the risk of GAS transmission and would have been likely to cause the outbreak.

In June 2019, Essex in Eastern England, UK experienced an outbreak of GAS infection resulting in twelve deaths (Mahase, 2019). In October 2019, the BBC reported that the number of deaths increased to fifteen. Those affected were elderly people in care homes



**Using disinfectants proven bactericidal, such as Tristel infection prevention products, can help prevent GAS infections saving patients' lives and protecting staff.**



**Infection prevention is crucial in reducing the risks of pathogenic infections. Appropriate device and surface disinfection are important to ensure a safe environment for patients and staff.**



## PREVENTION AND CONTROL OF GAS INFECTION

Infection prevention is crucial in reducing the risks of pathogenic infections. Good hand hygiene and appropriate device and surface disinfection are both important to ensure a safe environment for patients and staff. The disinfectant of choice should be bactericidal in accordance with relevant required test methods for disinfectants efficacy.

In Europe, these would be bactericidal efficacy test methods EN 16615, EN 14561 or EN 13697 depending on the product application as prescribed within EN 14885:2018. In addition, efficacy testing can be performed specifically on *S. pyogenes* to ensure microbiological action against this pathogen.

Environmental decontamination is important in reducing the risk of GAS spread and infection. Particles containing *S. pyogenes* are dispersed by infected individuals through sneezing and coughing which deposit on surfaces and can survive in the form of biofilms. Poor infection control results in an increased number of infections. It is therefore crucial that near-patient surfaces are cleaned and disinfected regularly with a non-fixating disinfectant to avoid biofilm formation.

## TACKLING STREPTOCOCCUS PYOGENES

GAS is a major health concern affecting millions of people worldwide. One of the ways GAS infections can be minimised is through appropriate infection control measures. Surfaces in hospitals and nursing homes especially can harbour *Streptococcus pyogenes* biofilm which can cause further infections if not removed. Tristel surface disinfectants are bactericidal in accordance with the European requirements and are proven effective in destroying *Streptococcus pyogenes*. Using disinfectants proven bactericidal, such as Tristel infection prevention products, can help prevent GAS infections saving patients' lives and protecting staff.



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