
	<b>NHS Lanarkshire Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	1 of 11	
	<b>SECTION Y – Guideline for the Management of Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

### **Guideline Objective**

This guideline aims to ensure that systems are in place to prevent and control infection and communicable disease by underpinning national polices. It outlines the criteria, responsibilities and systems required to manage specific conditions/ infections. The goal of this guideline is to protect patients, staff and the public by effective prevention and control of infection and communicable disease.


***Compliance with this guideline is best practice. If you have any concerns please discuss with your line manager who will consult the local Infection Control/Health Protection Team for advice***

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	2 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

## SECTION Y

### CONTENTS

		<i>Page Nos.</i>
<b>Guideline For The Management Of Invasive Group A Streptococcal Infection</b>		<b>Y 1 - 11</b>
1	INTRODUCTION	Y 3
2	CASE DEFINITION OF iGAS INFECTION	Y 3
3	RISK FACTORS FOR iGAS INFECTION	Y 4
4	INFECTION CONTROL PROCEDURES	Y 4
4.1	TYPE OF ISOLATION	Y 4
4.2	MAIN INFECTION SOURCE	Y 4
4.3	PATHOLOGY SPECIMENS	Y 4
4.4	PROTECTIVE CLOTHING	Y 5
4.5	DISPOSAL OF FAECES AND URINE	Y 5
4.6	DISPOSAL OF CLINICAL WASTE	Y 5
4.7	CUTLERY, CROCKERY AND JUGS	Y 5
4.8	MEDICAL/NURSING EQUIPMENT	Y 5
4.9	LINEN	Y 5
4.10	ROOM CLEANING	Y 5
4.11	TERMINAL DISINFECTION	Y 5
5	HOSPITAL MANAGEMENT OF iGAS CASES	Y 6
6	PUBLIC HEALTH ACTION AND WHOM TO INFORM	Y 6
6.1	MANAGING CONTACTS OF CASES	Y 6
6.2	CHEMOPROPHYLAXIS	Y 7
6.3	MANAGING CONTACTS IN NURSING HOMES OR HOSPITAL WARDS	Y 7
6.4	MANAGING CONTACTS IN INTRAVENOUS DRUG USING POPULATIONS	Y 8
7	CLUSTERS OF IGAS INFECTION	Y 8
8	REFERENCES	Y 8
Appendix 1	GROUP A STREPTOCOCCUS FACT SHEET	Y 9

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	3 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

## 1. INTRODUCTION

Invasive group A streptococcal (iGAS) disease is a rare but serious illness. The incidence of iGAS in the UK is around 4 per 100,000 population.

Asymptomatic carriage of Group A streptococci (GAS) is common. The prevalence of pharyngeal carriage ranges between 5 and 30% of the general population. Linked cases of iGAS disease have been described within families and other close communities. The absolute risk of developing iGAS disease among family members of index cases has been difficult to quantify, but is probably around 1 in 2,000 exposed persons. This is around 200 times the risk among the general population.

This guideline describes the infection control measures, which are required when a patient is admitted with iGAS infection. It also describes the procedures, which should be followed to manage the risk of iGAS infection developing in close contacts of the index case.


GAS can also cause rheumatic fever, acute glomerulonephritis and scarlet fever. Although these illnesses are not classified as iGAS infections they are serious infections, which can be life-threatening. GAS can also cause milder infections such as sore throat, impetigo and cellulitis without tissue necrosis. These illnesses are not covered in the current guidelines. For further information on infection control procedures for these GAS infections (*see Section C: Care of the Infectious Patient*).

## 2. CASE DEFINITION OF iGAS INFECTION

iGAS disease is defined as an infection associated with the isolation of GAS from a normally sterile body site (e.g. from blood or deep tissue). The diagnosis of confirmed iGAS disease is therefore a microbiological diagnosis, which requires culture of GAS bacteria. There are three clinical syndromes which are associated with iGAS infection:

- **Streptococcal toxic shock syndrome:** This is a syndrome of hypotension and multi-organ failure frequently including renal and hepatic impairment, adult respiratory distress syndrome, disseminated intravascular coagulation and central nervous system dysfunction.
- **Necrotising fasciitis:** This is characterised by extensive local necrosis of skin and sub-cutaneous soft tissues.
- **Other infections:** iGAS can also be isolated from a sterile site without an aseptic focus being identified or in association with meningitis, pneumonia, peritonitis, puerperal sepsis, osteomyelitis, septic arthritis, myositis or a wound infection, without fulfilling the definition of toxic shock syndrome or necrotising fasciitis.

Toxic shock syndrome can also be caused by *Staphylococcus aureus*, but in that illness there is more frequently a generalised desquamating rash. Necrotising fasciitis can also be caused by

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	4 of 11	
	<b>SECTION Y – Guideline for the Management of Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

anaerobic streptococci, *Staphylococcus aureus*, *Bacteroides* species and mixed anaerobic flora. Therefore the above clinical presentations are not indicative of iGAS infection in the absence of confirmatory microbiological results. However if GAS is isolated from an appropriate nonsterile site, such as a wound swab, throat swab or vaginal swab and the patient has clinical evidence of toxic shock syndrome or necrotising fasciitis the patient can be regarded as having probable iGAS infection. The infection control measures and notification procedures described in this guideline should be applied to patients with probable iGAS infection as well as those with confirmed iGAS infection.

### 3. RISK FACTORS FOR iGAS INFECTION

Risk factors for iGAS infection include: age >65 years, recent varicella virus infection, HIV infection, diabetes, heart disease, cancer, corticosteroid therapy and intravenous drug use. The risk to household contacts of patients with iGAS infection is currently uncertain. Data from the international Strep-Euro database identified five household contacts who had acquired iGAS infection. Three pairs of cases were mother-neonate pairs and two were husband-wife pairs. This suggests that infections occurring during the neonatal period (first 28 days after birth) carry a high risk of further cases in the mother or baby. In other household settings the risk to contacts is probably around 1 in 2,000 infections per exposed contact.

### 4. INFECTION CONTROL PROCEDURES

All patients with clinically-suspected toxic shock syndrome or necrotising fasciitis or with a confirmed iGAS infection should be admitted to a single room. The advice of the infection prevention and control team should be sought as soon as possible.

Standard Infection Control Precautions (SICPs), and in addition, Transmission Based Precautions (TBPs) – Contact Precautions should be used (*refer to Section C, Infection Control and Patient Care, Control of Infection manual(CIM)*).

#### 4.1. TYPE OF ISOLATION


Patients must be nursed in a single room, under neutral or negative pressure. If not available, contact the Infection control team for advice. Use isolation notice. Isolation is required for 24 hours from commencement of appropriate antibiotic therapy.

#### 4.2. MAIN INFECTION SOURCE

The main infection sources are respiratory secretions and direct contact.

#### 4.3. PATHOLOGY SPECIMENS

Normal procedure should be followed.

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	5 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

#### 4.4. PROTECTIVE CLOTHING

Gloves and a disposable apron or gown should be worn by anyone entering the patient's room. Surgical masks and eye protection are recommended for any procedure, which may result in exposure to respiratory droplets, until the patient has received 24 hours of appropriate antibiotic treatment. This includes airway management during resuscitation, and close contact (less than 3ft) with a patient with a cough.

#### 4.5. DISPOSAL OF FAECES AND URINE

The patient should use an en-suite toilet or commode, which must be decontaminated on removal from the room. Any bedpans which are used should be macerated or decontaminated in a washer-disinfector.

#### 4.6. DISPOSAL OF CLINICAL WASTE

All clinical waste should be discarded into designated clinical waste bag or sharps bin (where sharps are used). Household waste should be disposed of in a black bag.

#### 4.7. CUTLERY, CROCKERY AND JUGS

Use normal ward issue and machine-wash.

#### 4.8. MEDICAL/NURSING EQUIPMENT

Wherever possible medical/nursing equipment should be dedicated to the patient. If this is not achievable the equipment must be decontaminated on removal from the room.

#### 4.9. LINEN

Change bed linen and clothing (pyjamas/night-dress and day clothes) daily wearing protective clothing as above. Linen should be treated as 'infected linen'. (*see Section D – laundry, CIM*). Removing and bagging linen should be performed so as to minimise dispersal of GAS from the bed linen and clothes.


The patient's own clothes should be sealed securely in a plastic bag and relatives should be requested to wash the clothes at home at the highest temperature that will not damage the fibre (*see leaflet appended in Section D, Laundry, CIM*). They should dispose of the plastic bag in a dustbin.

#### 4.10. ROOM CLEANING

Rooms must be cleaned at least daily (*Refer to Section I, Decontamination of Equipment and the Environment (including the use of single-use and single-patient use items, CIM)*).

#### 4.11. TERMINAL DISINFECTION

The standard terminal cleaning procedure is followed.

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	6 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

## 5. HOSPITAL MANAGEMENT OF iGAS CASES

It is the responsibility of the clinicians caring for the patient to determine the appropriate management. Due to the complexity of iGAS infections a multidisciplinary approach involving physicians, intensive care specialists, plastic surgeons and other specialists is often required. It is advisable to seek the advice of an infectious diseases physician or a microbiologist regarding the choice of antibiotics and whether or not immunoglobulin therapy should be used.

## 6. PUBLIC HEALTH ACTION AND WHOM TO INFORM

### 6.1. MANAGING CONTACTS OF CASES


The Health Protection Team (HPT) or on-call CPHM must be informed, as soon as possible, by the medical staff in charge of any patient, presenting with necrotising fasciitis or toxic shock syndrome. The Health Protection Team (or CPHM on-call) should be informed by the microbiologist, of any patient in whom GAS is isolated from a normally-sterile body site.

In some cases it is necessary to treat close community contacts of iGAS patients with prophylactic treatment. It is the responsibility of the HPT, (or on call CPHM) to discuss the case with the clinical doctor and agree whether the case fits the case definition for iGAS. The HPT will identify whether any contacts need prophylaxis and make arrangements for the provision of that prophylaxis. If appropriate, the hospital will provide prophylaxis on request of the HPT staff.

Decisions on prophylaxis for health care workers, who may consider themselves as contacts, should be made by the Infection Control Team or Occupational Health, in conjunction with the Health Protection Team.

Close contacts are defined as those who have had prolonged close contact with a case in a household setting during the seven days preceding the onset of illness. Those who have had transient close contact should only be considered as close contacts if they have been exposed to large droplet particles from the patients respiratory tract (e.g. during intubation), around the time of hospital admission. Work and school colleagues and those who have travelled in the same train, bus or car are not regarded as close contacts.

Antibiotics can successfully eradicate GAS from the upper respiratory tract. In theory antibiotics could prevent the development of iGAS in persons who have newly acquired GAS colonisation. Antibiotics could also prevent the spread of GAS from established carriers who could transmit the organism to others. However it is not known whether a policy of giving antibiotics to contacts of GAS patients actually does prevent iGAS. Administration of antibiotics carries the risk of adverse effects, changes the normal human microbial flora and contributes to the development of drug-resistant organisms. Due to this, the current UK policy is to provide antibiotic prophylaxis only to those in the highest risk category for the development of iGAS infection as indicated in Table 1 below.

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	7 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

**Table 1: Management of close contacts of patients with iGAS infection**

Individuals Requiring Antibiotic Prophylaxis	Individuals Requiring a Contact Information Letter and Q&A Leaflet
A mother whose baby develops iGAS infection during the first 28 days of life	Those with prolonged close contact in a household setting who <b>do not</b> have symptoms suggesting GAS infection.
A neonate whose mother develops iGAS infection during the first 28 days after giving birth.	Health care workers who have been exposed to droplet particles from the patient's respiratory tract (e.g. during intubation).
Close contacts who develop symptoms suggestive of GAS infection such as sore throat, fever or skin infection	Injecting drug users following a case occurring in a local injecting drug user.

Close contacts who are not in the highest risk category should be given a GAS information leaflet (e.g. the Q&A leaflet in *appendix 1*) and advised to seek immediate medical attention via the Accident and Emergency Department if they become unwell. A heightened index of suspicion for iGAS infection should be maintained for 30 days after the diagnosis is made in the index patient. The on-call CPHM will determine if anyone requires antibiotic prophylaxis.

## 6.2. CHEMOPROPHYLAXIS


Appropriate prophylaxis consists of a 10 day course of Penicillin V 250-500mg qds.

For those with penicillin allergy, a suitable alternative is 5 days of azithromycin 12mg/kg/day (maximum 500mg/day). If azithromycin is used then susceptibility to erythromycin/azithromycin in the index case should be confirmed.

## 6.3. MANAGING CONTACTS IN NURSING HOMES OR HOSPITAL WARDS

Several outbreaks of GAS infection have been reported in nursing home residents. If a single case of iGAS infection occurs in a nursing home or hospital ward, close contacts should only be given antibiotic prophylaxis if they have symptoms suggestive of GAS infection. If close contacts have symptoms suggesting iGAS infection they will need immediate hospital assessment.

If more than one case of iGAS occurs in a nursing home, the Area Control Communicable Disease Committee (ACDC) will determine whether it is necessary to set up an outbreak control team. If more than one case of iGAS occurs in a ward setting, suggesting the possibility of hospital transmission, a hospital outbreak control group will be set up.

	<b>NHS Lanarkshire Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	8 of 11	
	<b>SECTION Y – Guideline for the Management of Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

#### 6.4. MANAGING CONTACTS IN INTRAVENOUS DRUG USING POPULATIONS

Injecting drug users are at increased risk of iGAS. If iGAS infection occurs in an intravenous drug user, local drug action teams should be notified of this. Information regarding the symptoms of iGAS infection should be circulated among injecting drug users (e.g. using the information sheet in *appendix 1*).

General practitioners and Accident and Emergency Departments should be alerted to the occurrence of outbreaks of iGAS infection among injecting drug user populations.


#### 7. CLUSTERS OF IGAS INFECTION

Clusters of iGAS infection are difficult to define due to uncertainties regarding appropriate temporal and geographic boundaries. It will be the responsibility of the ACCDC to determine when an outbreak control group is required to determine the appropriate public health response.

#### 8. REFERENCES

Health Protection Agency, Group A Streptococcus Working Group, **Interim UK guidelines for management of close community contacts of invasive group A streptococcal disease**, Commun Dis Public Health (2004); 7:354-361.

Health Protection Agency, **Information leaflet for close community contacts of patients with invasive group A streptococcal infections**, [http://www.hpa.org.uk/infections/topics\\_az/strepto/guidelines.htm](http://www.hpa.org.uk/infections/topics_az/strepto/guidelines.htm)

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	9 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

## Appendix 1

### GROUP A STREPTOCOCCUS FACT SHEET

Group A streptococcus, or Group A strep, is a bacterium commonly found in the throat and on the skin. Group A strep bacteria can cause a range of infections, from relatively mild sore throats and skin infections to life-threatening invasive disease.

- Group A strep bacteria are spread by direct person-to-person contact.
- Group A strep infections can usually be treated with antibiotics.
- Two types of rare, but very serious Group A strep infections are necrotizing fasciitis and streptococcal toxic shock syndrome.

#### What is Group A streptococcus (Group A strep)?

Group A streptococcus (Group A strep) is a bacterium that is commonly found in the throat and on the skin. The letter "A" refers to a classification of bacteria in the genus *Streptococcus* according to the makeup of the organism's cell wall. Group A strep bacteria might cause no symptoms of disease, but they can also cause infections that range from mild to very serious.

#### Where is Group A strep found?

Group A strep bacteria are found worldwide.

#### How do people get Group A strep infections?

Group A strep bacteria are spread by direct person-to-person contact. The bacteria are carried in discharges from the nose or throat of an infected person and in infected wounds or sores on the skin. The bacteria are usually spread when infected secretions come in contact with the mouth, nose, or eyes of an uninfected person. They can also enter the body through a cut or a scrape.


The risk of spreading the infection is highest when an infected person is ill or has an infected wound. Infected persons who have no symptoms are much less contagious. Household objects like plates, cups, and toys do not play a major role in the spread of Group A strep.

#### What kinds of illnesses does Group A strep cause?

Group A strep usually causes relatively mild illnesses, such as streptococcal sore throat (strep throat) and streptococcal skin infections (impetigo). Group A strep can also cause more serious illnesses such as scarlet fever, rheumatic fever, postpartum fever, wound infections, and pneumonia.

Occasionally, a very serious type of group A strep bacteria can invade the blood, muscle and fat tissue, or lungs and cause a serious and often life-threatening type of infection called invasive group A strep. Two rare, but very severe, forms of invasive Group A strep infections are necrotizing fasciitis and streptococcal toxic shock syndrome.

Necrotizing fasciitis is an infection that attacks the deep layers of tissue (fascia). It is usually caused when a strain of Group A strep infects an opening in the skin. For unknown reasons, the strain becomes very aggressive and releases a toxin (poison) that quickly destroys flesh and muscle. Doctors often must remove skin, large groups of muscle to save a person's life.

	<b>NHS Lanarkshire</b> <b>Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	10 of 11	
	<b>SECTION Y – Guideline for the Management of  Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

Streptococcal toxic shock syndrome, another type of rapidly progressing strep infection, causes a dangerous drop in blood pressure, shock, and damage to the kidneys, liver, and lungs. As in necrotizing fasciitis, the toxin very quickly damages the tissues and organs.

### **What are the signs and symptoms of Group A strep infection?**

Signs and symptoms depend on the type of illness caused by group A strep. Strep throat causes fever, sore throat, and swollen lymph glands. Strep skin infection causes red, weeping skin sores. Scarlet fever causes all the symptoms of strep throat plus a characteristic rash on the neck, chest, skin folds, and inner thighs.

Early signs and symptoms of the rare and more serious infections:

- Necrotizing fasciitis are fever and severe pain, swelling, heat, and redness at a wound site. It is known for the speed with which it attacks and destroys muscle and flesh.
- Streptococcal toxic shock syndrome often include fever, dizziness, and confusion.

### **How soon after exposure do symptoms appear?**

Symptoms appear quickly, usually within 1 to 3 days.

### **How is Group A strep infection diagnosed?**

The infection is diagnosed by culture of the organism in a laboratory.

### **Who is at risk for Group A strep infections?**

Anyone can become infected with Group A strep. However, people with long-term illnesses like cancer, diabetes, and kidney disease, and those who use medications such as steroids, are at higher risk for invasive disease. Breaks in the skin, like cuts and surgical wounds can also provide an opportunity for the bacteria to enter the body.

### **What is the treatment for Group A strep infection?**


Group A strep infections are treated with antibiotics. Early treatment may reduce the risk of serious infection.

### **How can group A strep infections be prevented?**

- Wash hands thoroughly and often with soap and warm water, especially after coughing and sneezing, before preparing foods, and before eating.
- Persons with strep throat should stay home from work, school, or day care until 24 hours after taking an antibiotic.
- Keep all wounds clean, and watch for possible signs of infection: rapidly increasing redness, swelling, drainage, and pain at the wound site.

### **What are the important actions for contacts of known cases?**

- Any contacts of a known case with a sore throat, fever and /or skin infection should see their GP right away.
- Any contacts with a very high temperature, severe muscle aches, localised tenderness and/or redness at the site of a wound/ cut should attend A&E as a matter of urgency.

	<b>NHS Lanarkshire Health Protection Committee</b>	<b>Section</b>	<b>Y</b>
		Effective From	Jan 2010
		Replaces	Mar 2009
	Pages	11 of 11	
	<b>SECTION Y – Guideline for the Management of Invasive Group A Streptococcal Infection</b>	Review Date	Mar 2012
Note: Completion of Review			

**This sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with your doctor. If you have any questions about the disease described above, contact your own doctor or a member of the Health Protection or Infection Control Team.**

Uncontrolled when printed