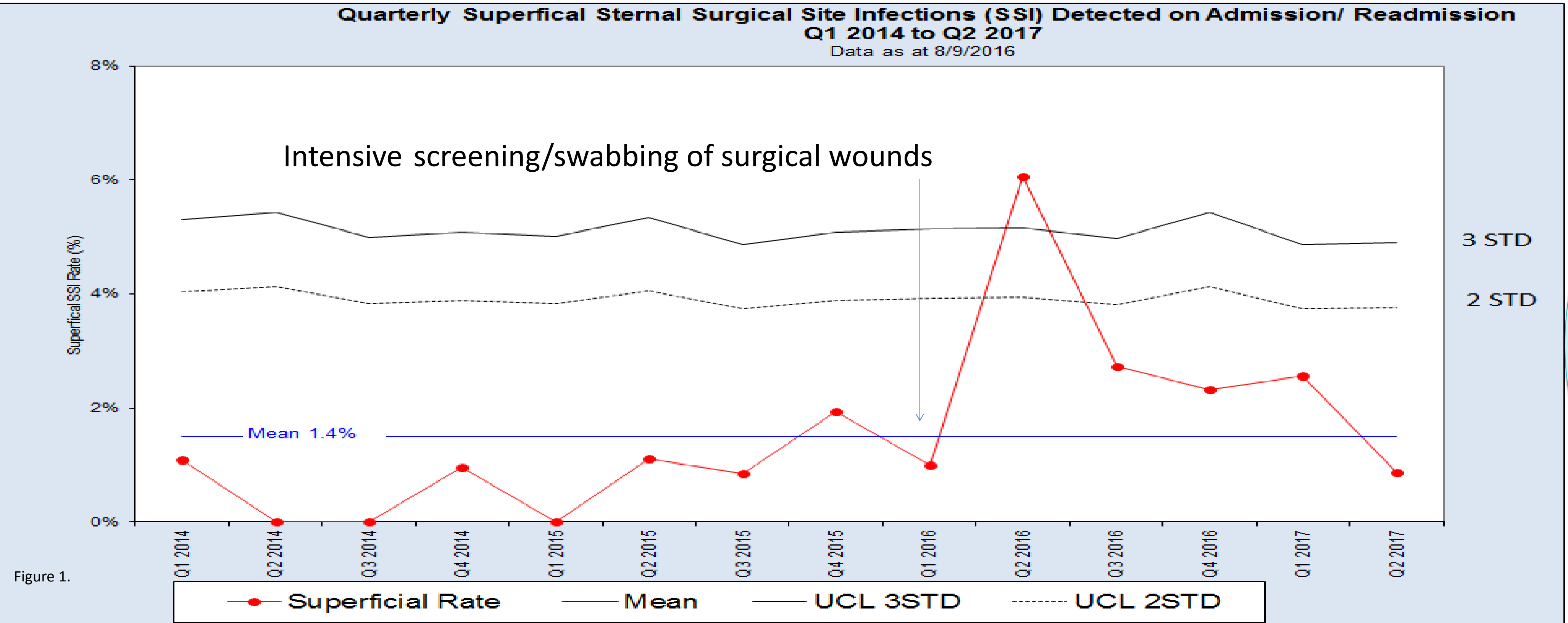




# 'That Doesn't Need Another Swab!': Protecting Surgical Wounds From Routine and Ritualised MC&S\* Sampling

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## Background:

In 2016, our hospital site experienced an outbreak of cardiac surgical site infection (SSI).

No single surgical team, theatre or practice was associated with the outbreak. The rise coincided with an intensive screening regime requested for Alert Organisms (Figure 1).

The SSI outbreak was driven by:

- 1) **Superficial incisional sternal SSI** (Figure 1, 2 and 3); the majority detected on primary admission
- 2) **Gram-positive bacteria (GNB)** (Figure 4), in sharp contrast to proceeding or subsequent years. GPB such as *Coagulase Negative Staphylococcus*, *Staph Epidermis*, *Staph Warneri* (likely endogenous /patient own) , *no common microbe identified*



Figure 2, 3: Examples of superficial incisional SSI

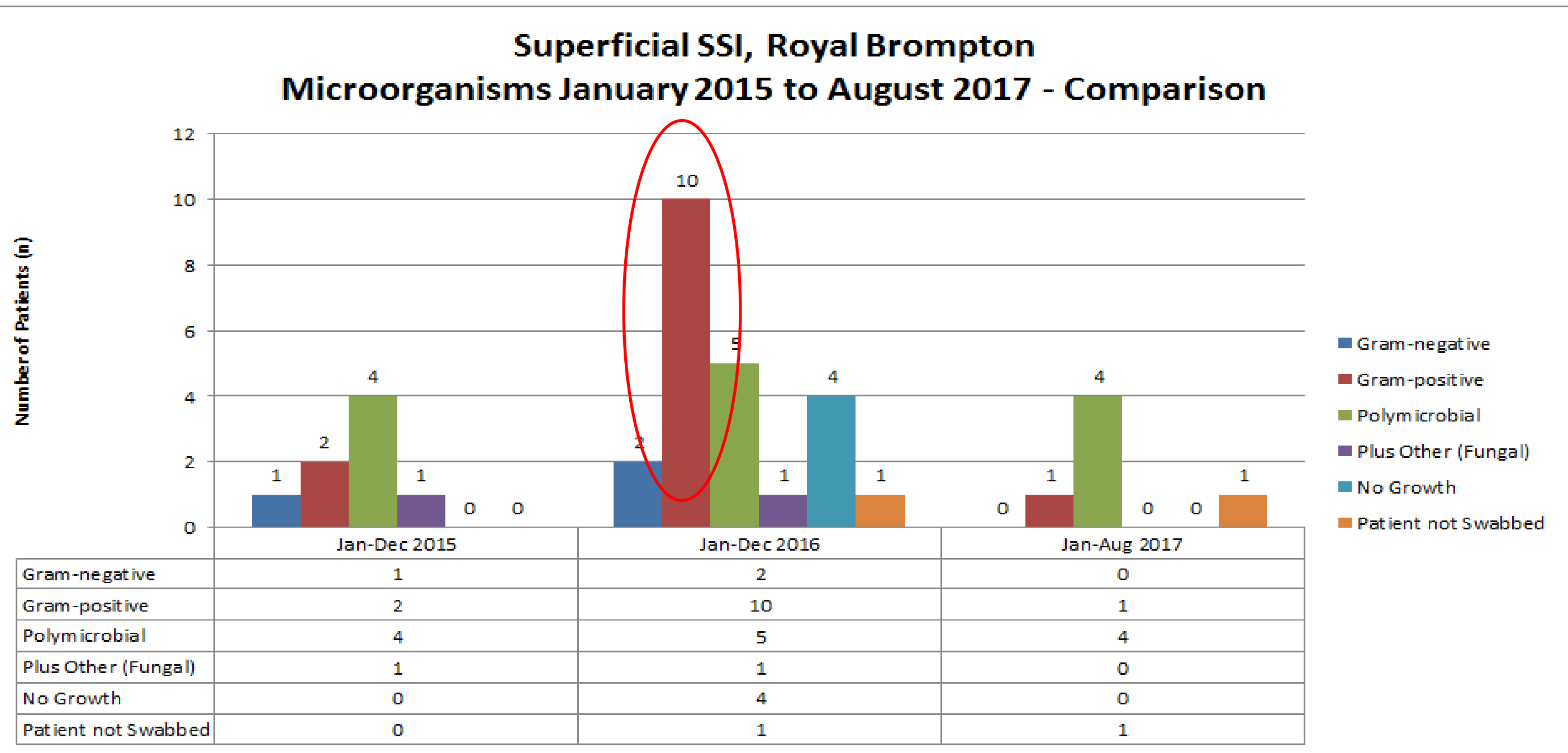
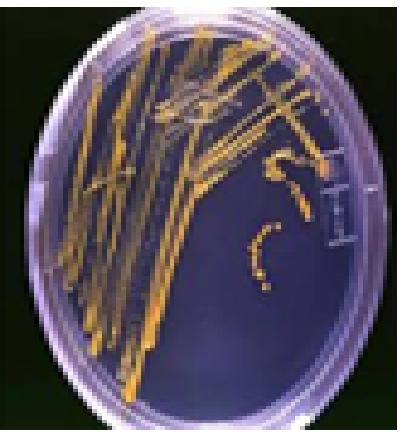


Figure 4: Increased GPB,

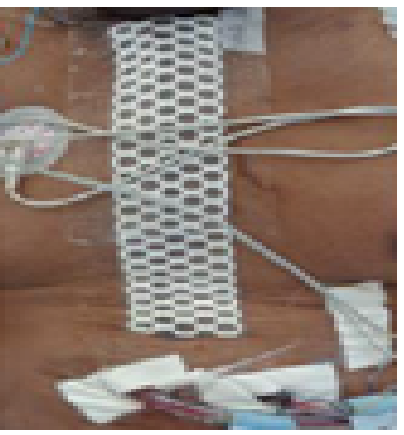
*The intensive infection control (IC) screening regime in response to Alert Organism concerns (including Candida auris and Acinetobacter):*

- *introduced early swabbing (i.e. before Day 4) of the surgical incision*
- *Implemented frequent/repeated swabbing (i.e. multiple times a week)*
- *increased the frequency of dressing changes*

## Surveillance Audit Findings



Routine swabbing of sternal incisions for IC purposes increased by **90%** (2016 vs 2015 sternal swab data of non-SSI cases)



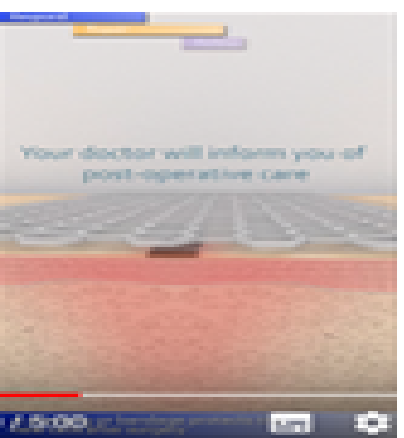
**15%** of sternal swabs were collected ≤ Day 4

0%

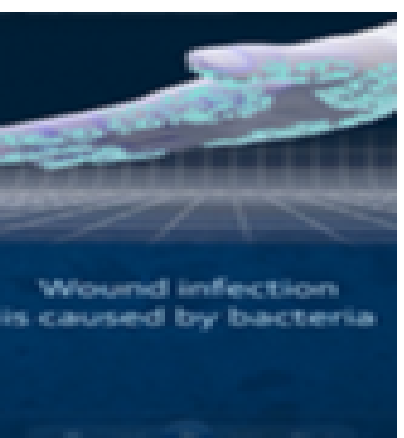
0% of sternal swabs for IC screening purposes were positive for Alert Organism



Staff swab technique varied between swabbing a section or length of the incision and as to whether to moisten swab



Dressing compliance of sealed, intact dressings was low (**30-80% compliant**)



Alcohol gel was not always available in patient zone (**70-80% compliant**)

## Learning:

- Early and frequent/repeated swabbing of a surgical wound may disrupt epithelisation /healing process , which takes place during the Repair phase (Day 3-7, depending on patient condition) <http://www.rbht.nhs.uk/patients/infection-prevention/preventing-wound-infection/>
- Our experience suggests an almost four-fold increase in superficial SSI associated with intense screening regime (mean 0.7% prior to screening regime; 2.6% mean post)
- Bacteria will rarely breach intact skin, but mechanical disruption may lead to the introduction of opportunistic pathogens , usually harmless bacteria bind to unhealthy / damaged or breached tissue in a vulnerable patient and may cause SSI. Correct dressing management and basic infection control measures will reduce the risk.
- Ritualised swabbing regimes offer little or no benefit for new surgical wounds in our hospital setting (surgical wounds covered and managed aseptically)
- There is a cost associated with the swabs, at our centre sternal screening is £4.39 (VAT inc) per sternal swab sent for MC&S, or £136.43 (VAT inc) per sternal swab for *Candida Auris* (and additional £76 per swab for typing)

## Implications for Practice:

- Exclude cardiac surgical wounds from routine screening. Swab cardiac surgical wounds only if there is **clinical indication of infection or on the specific request of a consultant microbiologist**. Our learning helped to update national guidance on suggested screening sites required for *Candida auris* (September 2017) and with associated savings of £409.29 per cardiac surgical patient by not taking 3x swabs of sternal incision for screening purposes – **this saving is equivalent to £961.41 (MC&S) - £29,878.17 (Candida auris) per month**, if 73 cardiac incisions are excluded per month (2016/17 cardiac op average).
- Similarly, repeated swabbing of a superficial incisional concern should be avoided. Consider whether the therapy appropriate for last results?; Has the therapy had time to work (two-three days); Do you think there is deterioration – if so is this deep? (i.e. tissue sample required, at theatre level).
- Our dressing guidelines have been updated. Careful drain and dressing placement in theatre to allow central dressing island to remain undisturbed if drains removed (this may not always be possible, depending on patient body habitus). Current audits and dressing compliance now >90% and alcohol gel 97-100% in all areas.

**\*Microscopy, Culture and Sensitivity (MC&S)**  
*Microscopy:* This is a non-culture method of identifying the species of bacteria based on its shape (e.g. rod-shaped, spherical, helical). The counterstain may be applied to examine the sample for evidence of pus cells ( host response reported as WBC or polymorphs).  
*Culture:* Microbes grown in a nutrient medium (such as blood agar) on a plate. Once material from the patient is inoculated (added) to the sterile medium and incubated overnight, evidence of bacterial colonies may become visible to the unaided eye.  
*Sensitivity:* Prior to intubation, antibiotic discs are arranged on the plate for bacterial culture. The growth of the bacteria is either inhibited (sensitive to the antimicrobial) or unimpeded (resistant to the antimicrobial).