

# Relevance of Use of Anaerobic Blood Culture Bottle for the Diagnosis of Bacteremia

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## Background

- Blood cultures remain the cornerstone for the diagnosis of bacteremia.
- Although an anaerobic blood culture bottle can recover facultative and obligate anaerobes, routine use of an anaerobic bottle paired with an aerobic bottle remains controversial.
- We aimed to evaluate the role of anaerobic bottle for the diagnosis of bacteremia.

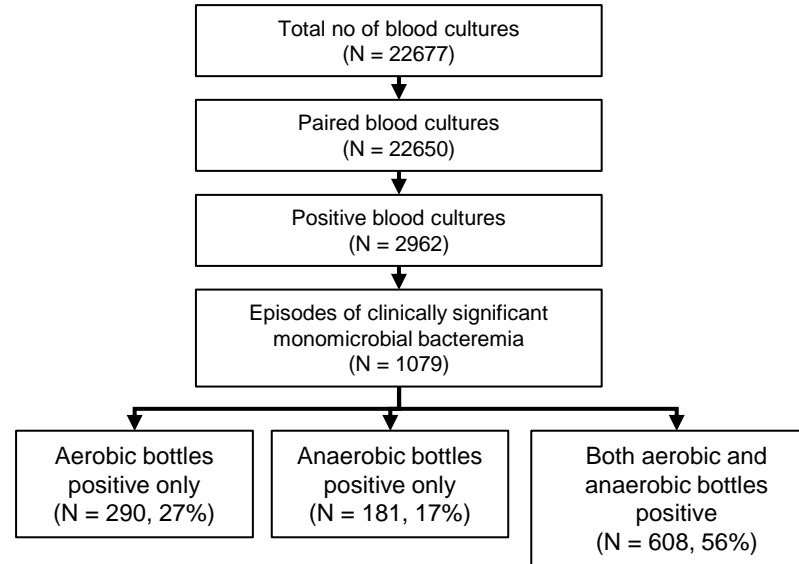
## Methods

- Microbiology laboratory records of blood cultures in a Japanese university hospital from January 2019 to September 2021.
- Blood culture incubation
  - ❑ BacT/Alert system with FAN aerobic and anaerobic media until Dec 2020
  - ❑ A Bactec system with BACTEC plus aerobic and anaerobic media from Jan 2021
- Inclusion
  - ❑ Blood cultures for which simultaneous pairs of Aerobic and anaerobic bottles were collected
  - ❑ Blood cultures recovering a single organism
  - ❑ Positive blood cultures were considered as a single episode of bacteremia when obtained within 14 consecutive days

## Results

- Among 1079 episodes of clinically significant monomicrobial bacteremia, 181 episodes (17%) were diagnosed by an anaerobic bottle (Figure 1).
- In these 181 anaerobic bottles, 146 facultative and 35 obligate anaerobes were recovered (Figure 2).
- *Escherichia coli*, followed by *Staphylococcus aureus* was the most commonly recovered organism (Table 1).

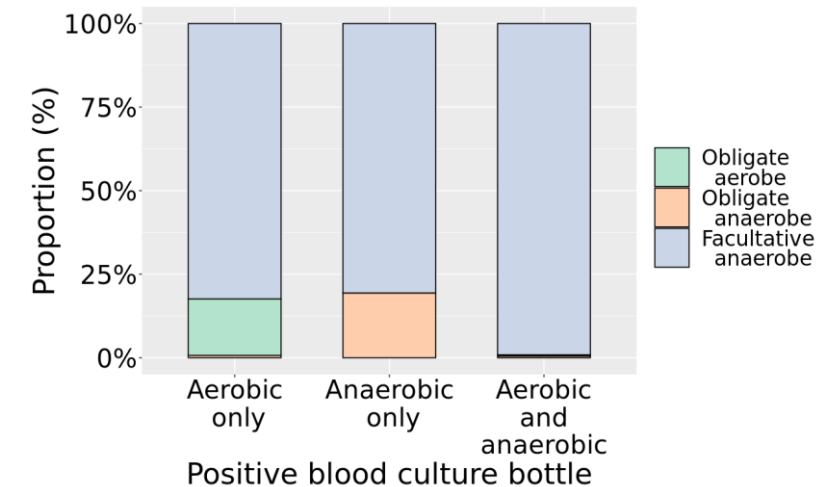
**Figure 1.** Flow diagram of episode selection



**Table 1.** Ten most common isolates recovered in anaerobic bottles only

Organism	Characteristics	N (%)
<i>Escherichia coli</i>	Facultative anaerobe	30 (17)
<i>Staphylococcus aureus</i>	Facultative anaerobe	27 (15)
<i>Klebsiella pneumoniae</i>	Facultative anaerobe	14 (8)
<i>Bacteroides fragilis</i>	Obligate anaerobe	11 (6)
<i>Enterococcus faecalis</i>	Facultative anaerobe	10 (6)
<i>Enterococcus faecium</i>	Facultative anaerobe	8 (4)
<i>Enterobacter cloacae</i>	Facultative anaerobe	7 (4)
<i>Parvimonas micra</i>	Obligate anaerobe	5 (3)
<i>Bacillus cereus</i>	Facultative anaerobe	4 (2)
<i>Campylobacter jejuni</i>	Obligate microaerobe	4 (2)

**Figure 2.** Characteristics of organism recovered in each type of blood culture bottle



## Conclusions

- In 17% of bacteremia episodes, an aerobic bottle contributed to recovery of clinically significant organisms.
- Routine collection of both aerobic and anaerobic bottles is encouraged.