Clinical significance of clostridial bacteraemia a retrospective three-year analysis in a French University Hospital Center

University Hospital Center, Nancy, France

F. Mory and A. Lozniewski – Dept. Microbiology
C. Robert, C. Rabaud and T. May – Dept. Infect. Diseases

- **Background**
  - *Clostridium* **spp. are isolated from ca. 0.5%-3% of hospitalized bacteremic patients**
  - **Clinical significance of clostridial bacteraemia is still controversial**
    - **Woo PCY et al. – J Clin Pathol, 2006**
      - **Clinical relevance : 63.3% (54/80)**
      - **Criteria : Weinstein MP – Clin Infect Dis, 1997**
    - **Benjamin et al. - Clin Microbiol Infect, 2006**
      - **Clinical relevance : 67.5% (38/68)**

- **Objective**
  - **To evaluate the clinical significance of *Clostridium* bacteraemia and to determine indicators that might assist in assessing clinical relevance**

- **Setting**

  - **University Hospital Center of Nancy is a 1900-bed teaching hospital (Northeast of France).**

- **Patients and methods**

  - **Consecutive inpatients**

    - **_Clostridium_ isolated from ≥1 blood culture**

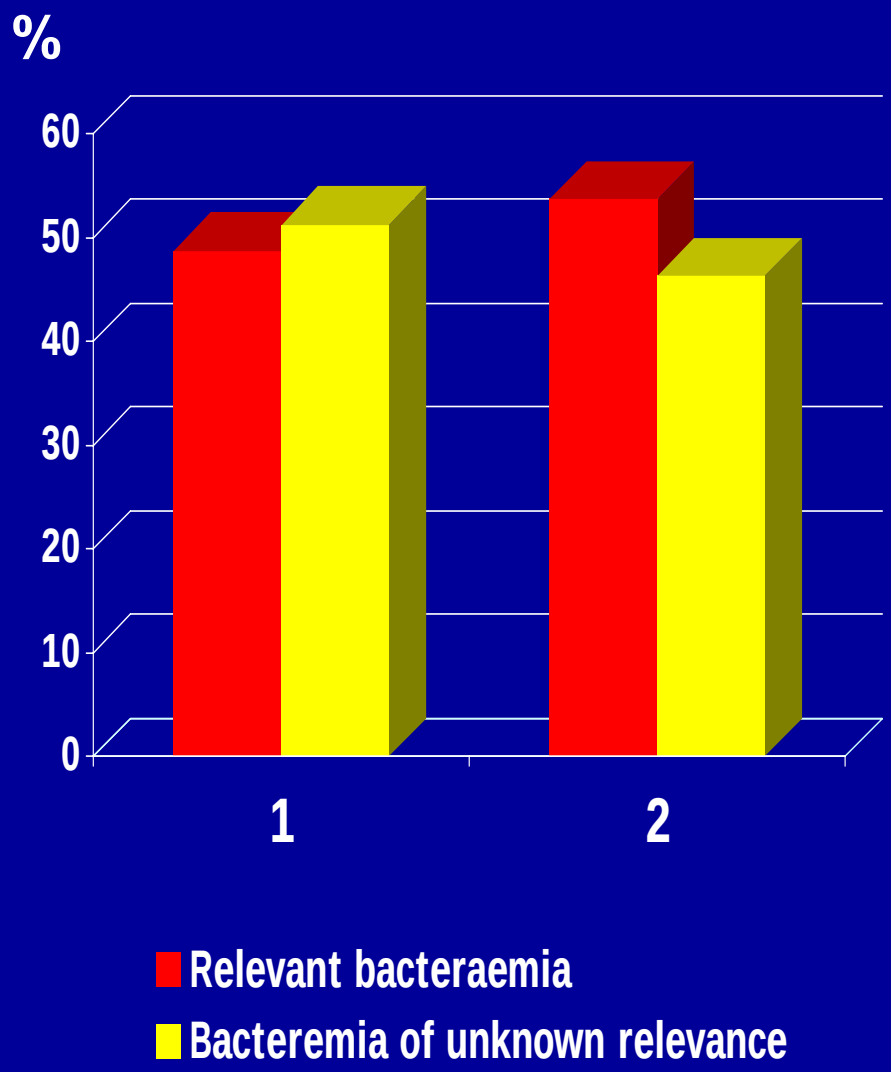
      - **Bactec Plus Anaerobic/F bottles (5 days)**

      - **Identification : conventional methods + 16S rRNA gene sequencing**

    - **Jan. 2004 – mid-Nov. 2006 : 41 patients**

- **Medical chart review (infectious disease physician)**
  - **Criteria A** : identification of a focus of infection compatible with the involvement of *Clostridium* spp.
  - **Criteria B :** clinical presentation of severe sepsis in the absence of a clear focus of infection making *Clostridium* spp. involvement unlikely

- **Results**



Definition of medical Relevance

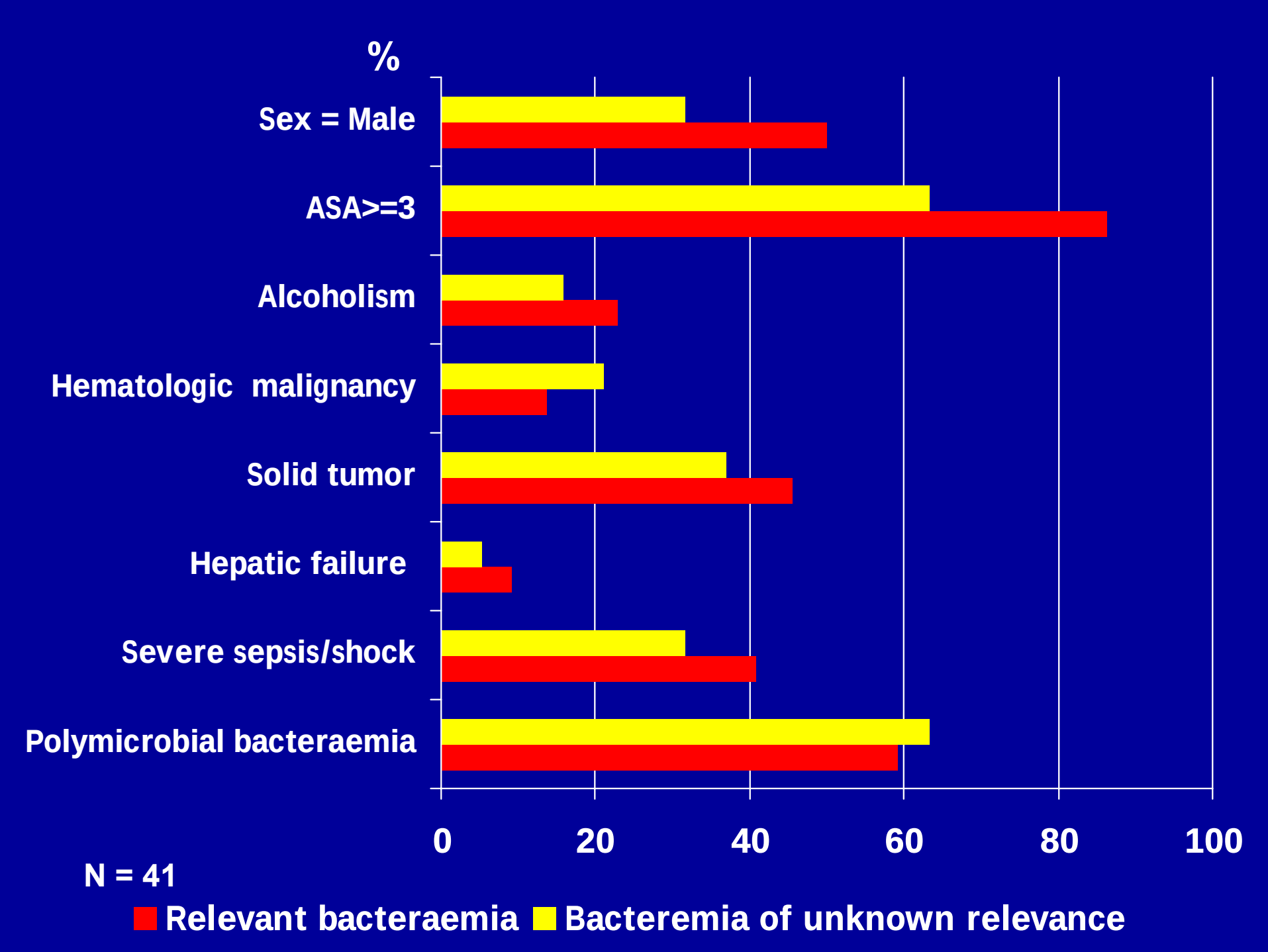
1 : criteria A and/or B and ≥ 1 blood culture positive

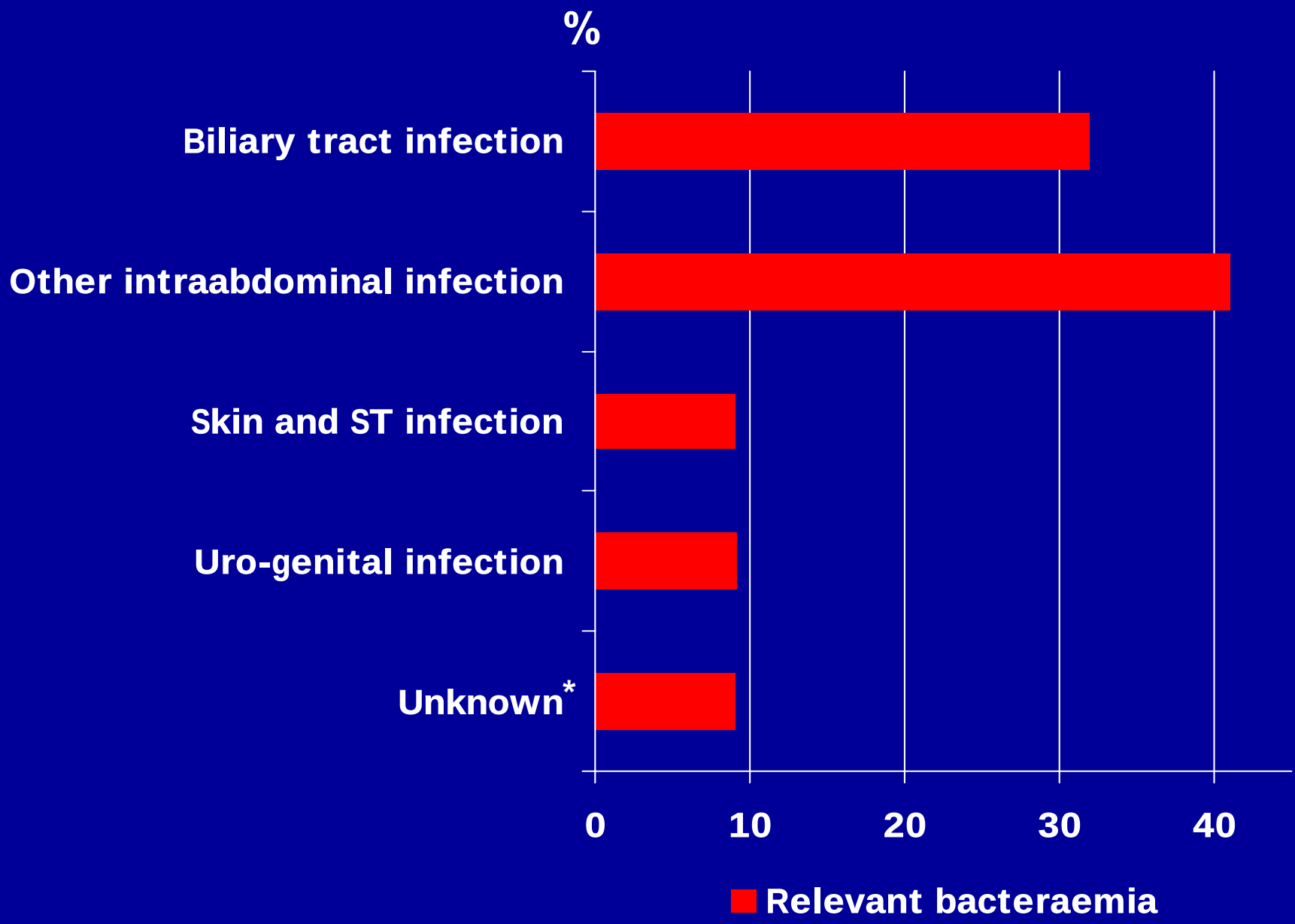
2* : criteria A and/or B and ≥ 1 blood culture positive

or

≥ 2 blood cultures positive for *Clostridium*

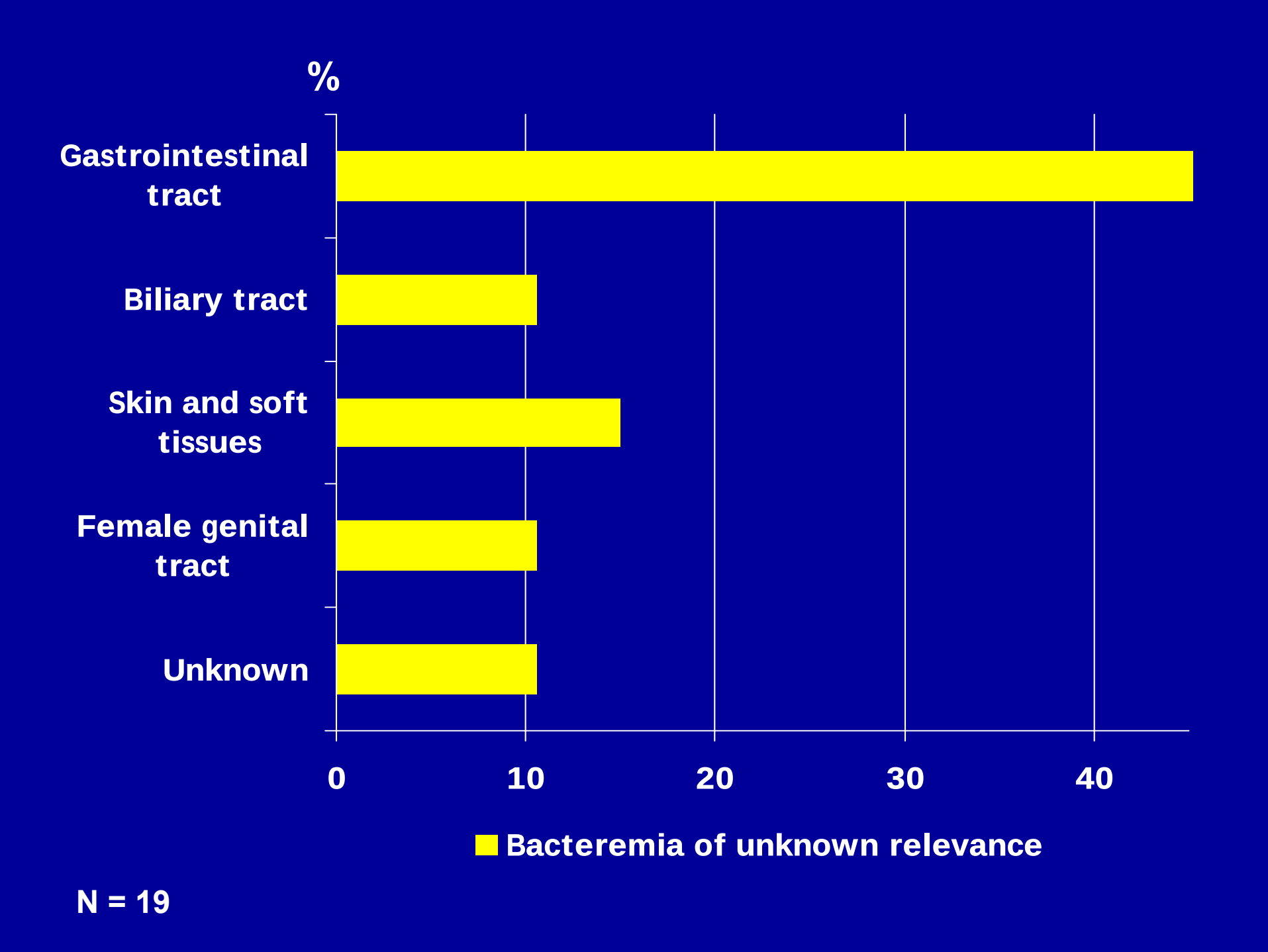
*** Benjamin et al. - Clin Microbiol Infect, 2006**

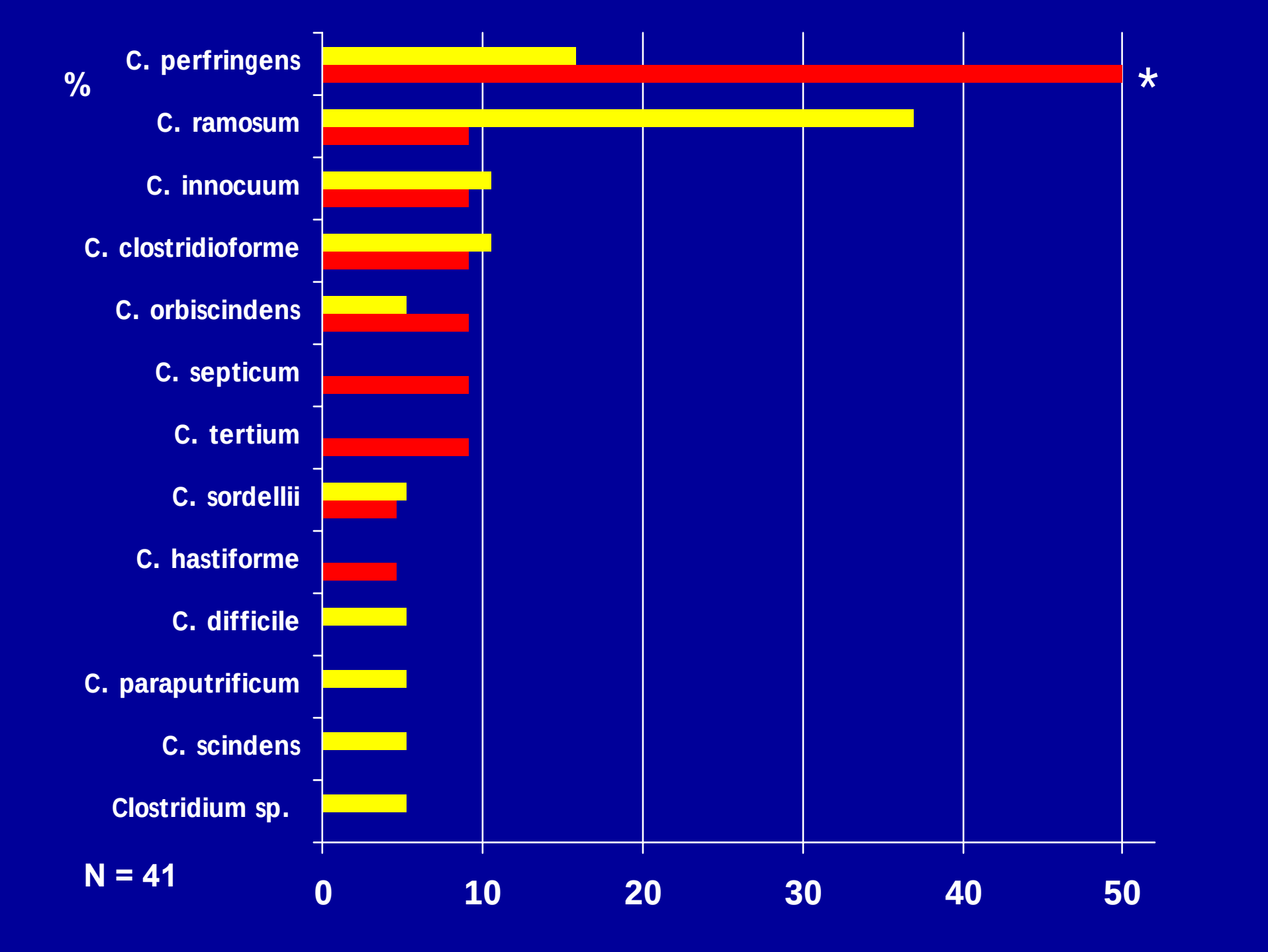

%
Sex = Male
ASA>=3
Alcoholism
Hematologic malignancy
Solid tumor
Hepatic failure
Severe sepsis/shock
Polymicrobial bacteraemia
0
20
40
60
80
100
N = 41
Relevant bacteraemia
Bacteremia of unknown relevance

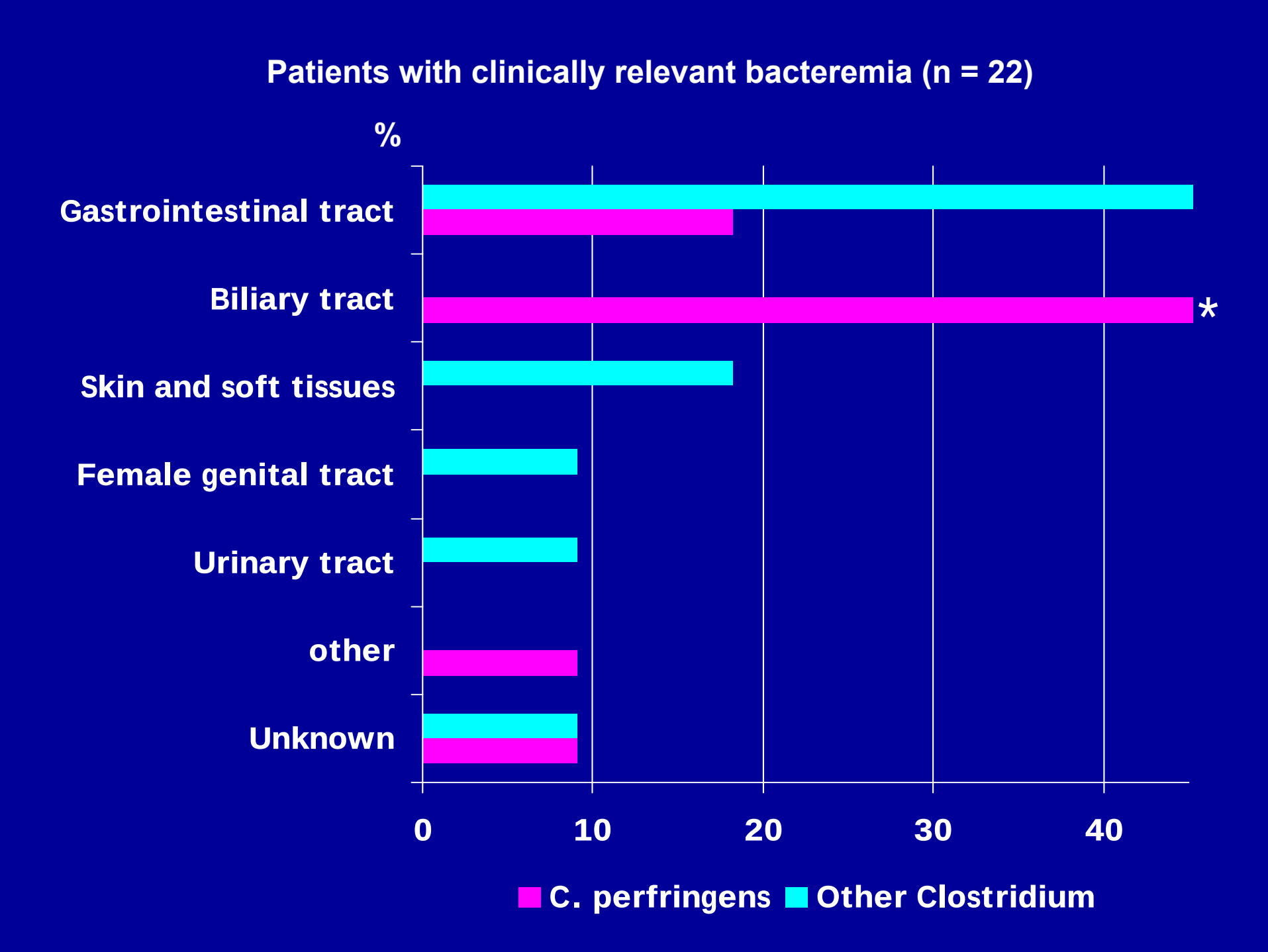


N = 22

* Fulfilling criteria B


%
Gastrointestinal tract
Biliary tract
Skin and soft tissues
Female genital tract
Unknown
0
10
20
30
40
Bacteremia of unknown relevance
N = 19


%
C. perfringens
C. ramosum
C. innocuum
C. clostridioforme
C. orbiscindens
C. septicum
C. tertium
C. sordellii
C. hastiforme
C. difficile
C. paraputrificum
C. scindens
Clostridium sp.
*
N = 41
0
10
20
30
40
50


Patients with clinically relevant bacteremia (n = 22)
%
Gastrointestinal tract
Biliary tract
*
Skin and soft tissues
Female genital tract
Urinary tract
other
Unknown
0
10
20
30
40
C. perfringens
Other Clostridium

No. of anaerobic blood cultures		No. of patients with	
Performed	Positive	Clinically relevant bacteraemia	Pseudobacteraemia
1	1	8	6
2	1	1	7
2	2	5	0
3	1	0	3
3	2	3	0
3	3	1	0
4	1	0	2
4	2	1	0
4	3	1	0
4	4	2	0
6	1	0	1

Conclusions

Clostridium **bacteraemia may have a major clinical impact which warrants adapted therapy.**

The isolation of *C. perfringens* **from blood is significantly associated with clinical relevance and in this case the major portal of entry is the hepatobiliary tract.**

The systematic use of at least two anaerobic blood cultures would be preferable to ensure proper clinical interpretation.

→ **prospective study**