

Catheter Related Blood Stream Infections in ICU- SJH Experience

Dr R. Gaind, Dr.D.Kasana,
R. Kushwaha, A. Sharma

CRBSI

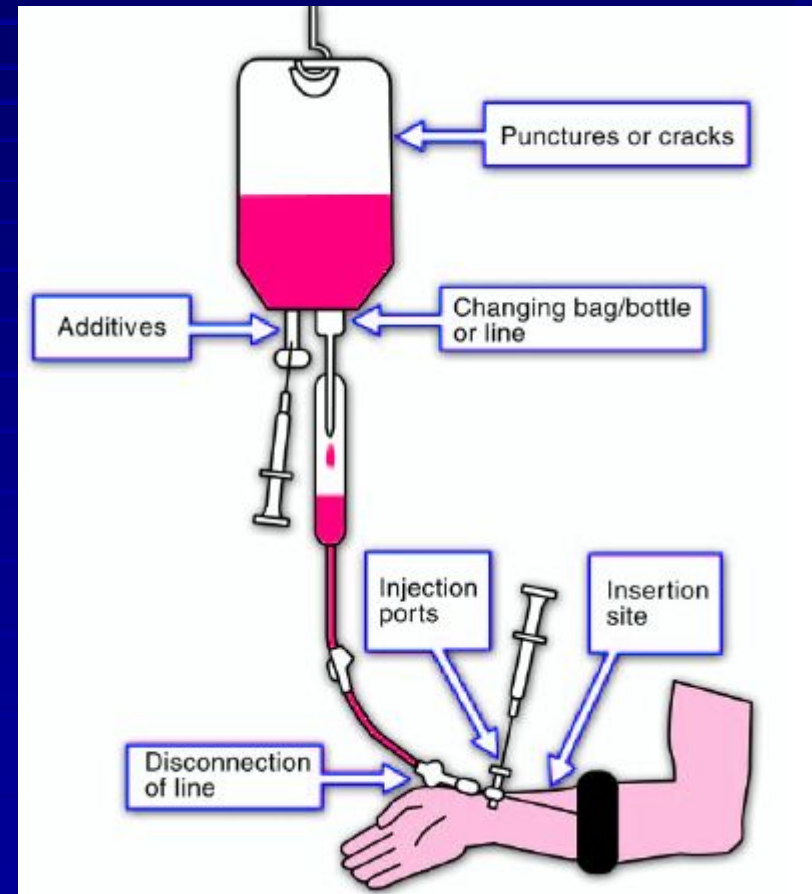
- Catheter-related bloodstream infections (CRBSI) resulting from bacterial colonization of an intravascular catheter is a significant clinical problem,
- Magnified in recent years by the increasing
 - use of intravascular catheters in intensive care,
 - chemotherapy and
 - Total parental nutrition (TPN).

Cont.

- According to the National Nosocomial Infections Surveillance (NNIS) system of the Centers for Disease Control and Prevention (CDC),
- the median rate of catheter-related bloodstream infection in ICUs of all types ranges from 1.8 to 5.2 per 1000 catheter-days.

Blood stream infections

- Catheter /device related
- Translocation of bacteria from gut
- Systemic sepsis



Catheter Related Infections

Colonization / Sepsis

- **Microbial growth occur**
 - **Endoluminal**
 - **External catheter surface under skin**
- **Semiquantitative culture: ≥ 15 CFU segment**
- **Quantitative: ≥ 100 CFU**

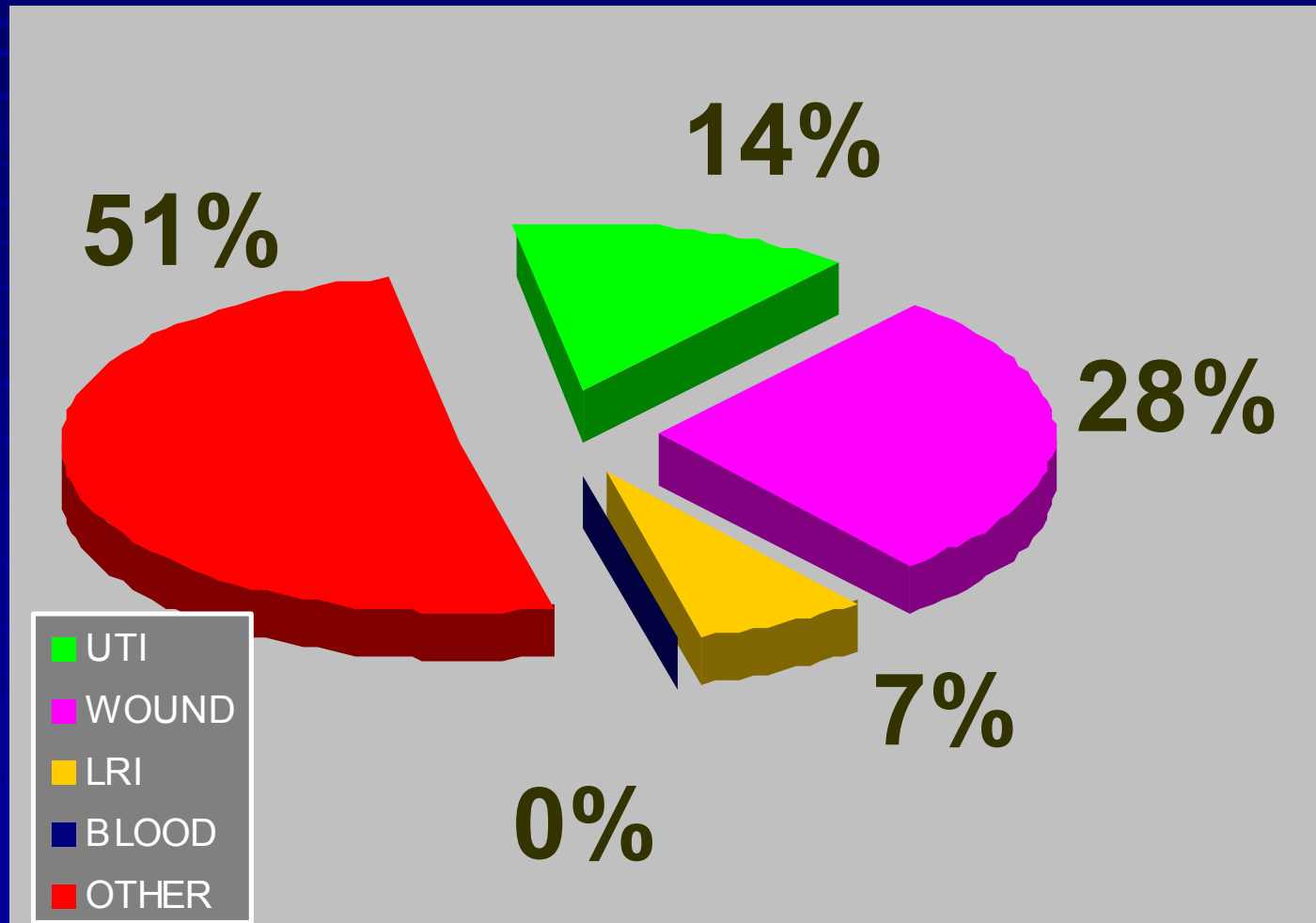
HAI surveillance data of SJH

- Incidence of **blood stream infections** were increasing

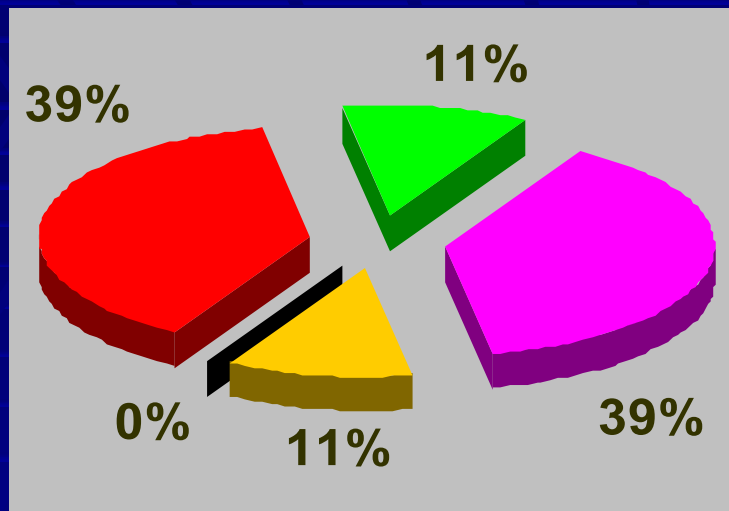
0	1999
3.2%	2000
1.8 %	2001
12.8%	2002
9%	2003
10.0%	2004
13.7%	2005
8.6%	2006

Clinical Presentation of HAI

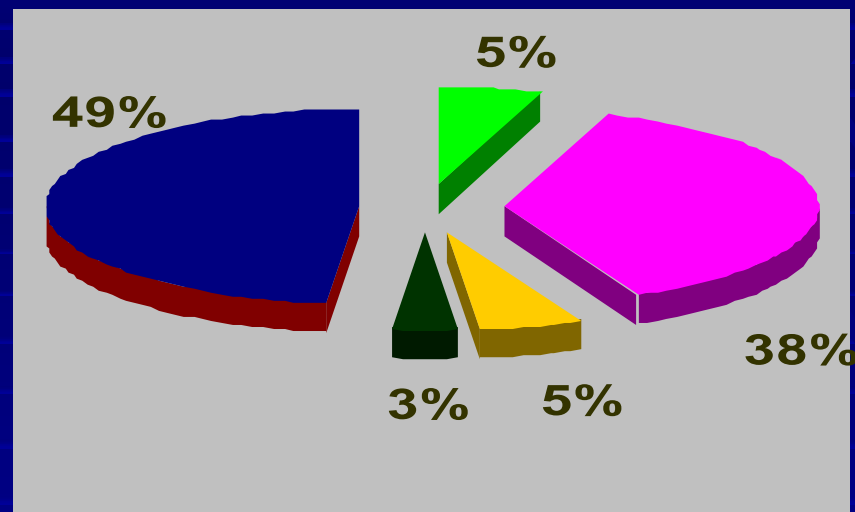
1998



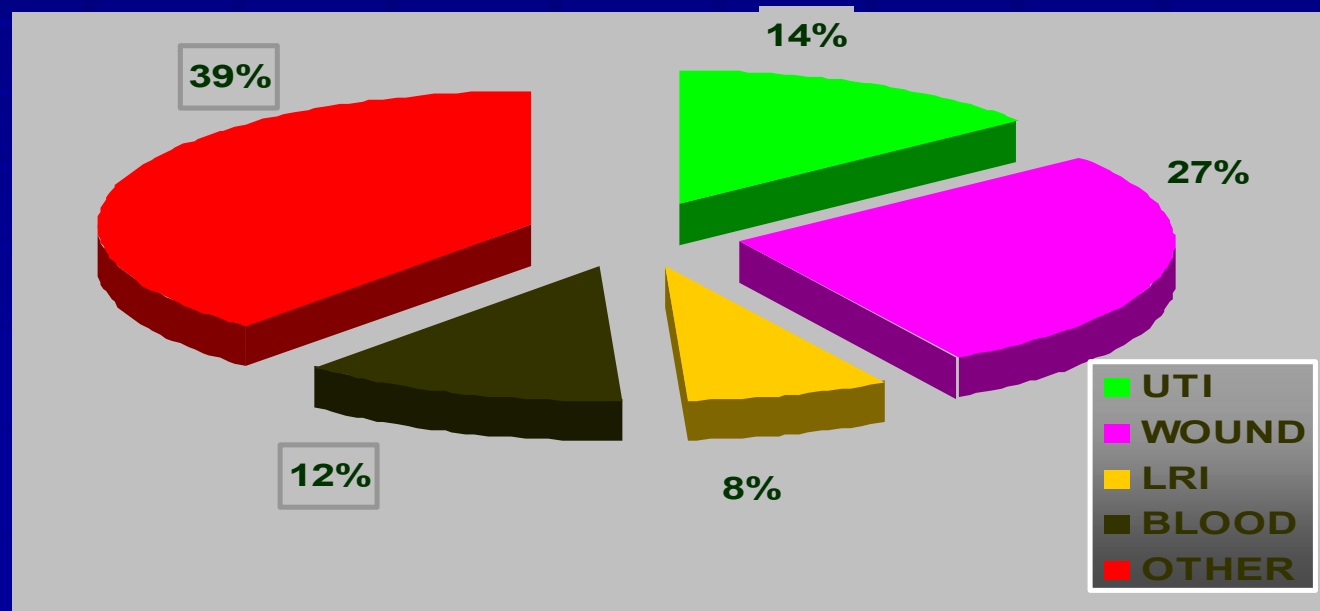
1999



2000



2002



■ UTI
 ■ WOUND
 ■ LRI
 ■ BLOOD
 ■ OTHER

AIMS

- Contribution of Catheter related sepsis to BSI
- To establish the base line data for catheter related infections
- To identify and characterize the organism so that therapeutic decisions can be made.
- Preventive strategies –Formulate guidelines

Present study

- Conducted in the Medical –Surgical ICU
- Period 15 months -Nov 2006- March 2008
- Active surveillance
 - Paired blood culture : Central venous catheter (CVC) and peripheal site on day 3,5 and 7 after insertion of the CVC.
 - Cultures were performed in Bact-Alert
 - If the time to positivity of CVC culture at least 2 hours less than that of peripheral culture, followed by isolation of identical organism –**CR-BSI (along with at least one clinical sign of sepsis/ local infection)**

Microbiological investigation for CRBSI

- **Without removal of the catheter**
 - Paired blood cultures
- **With removal of the catheter**
 - Catheter tip culture (roll plate method)

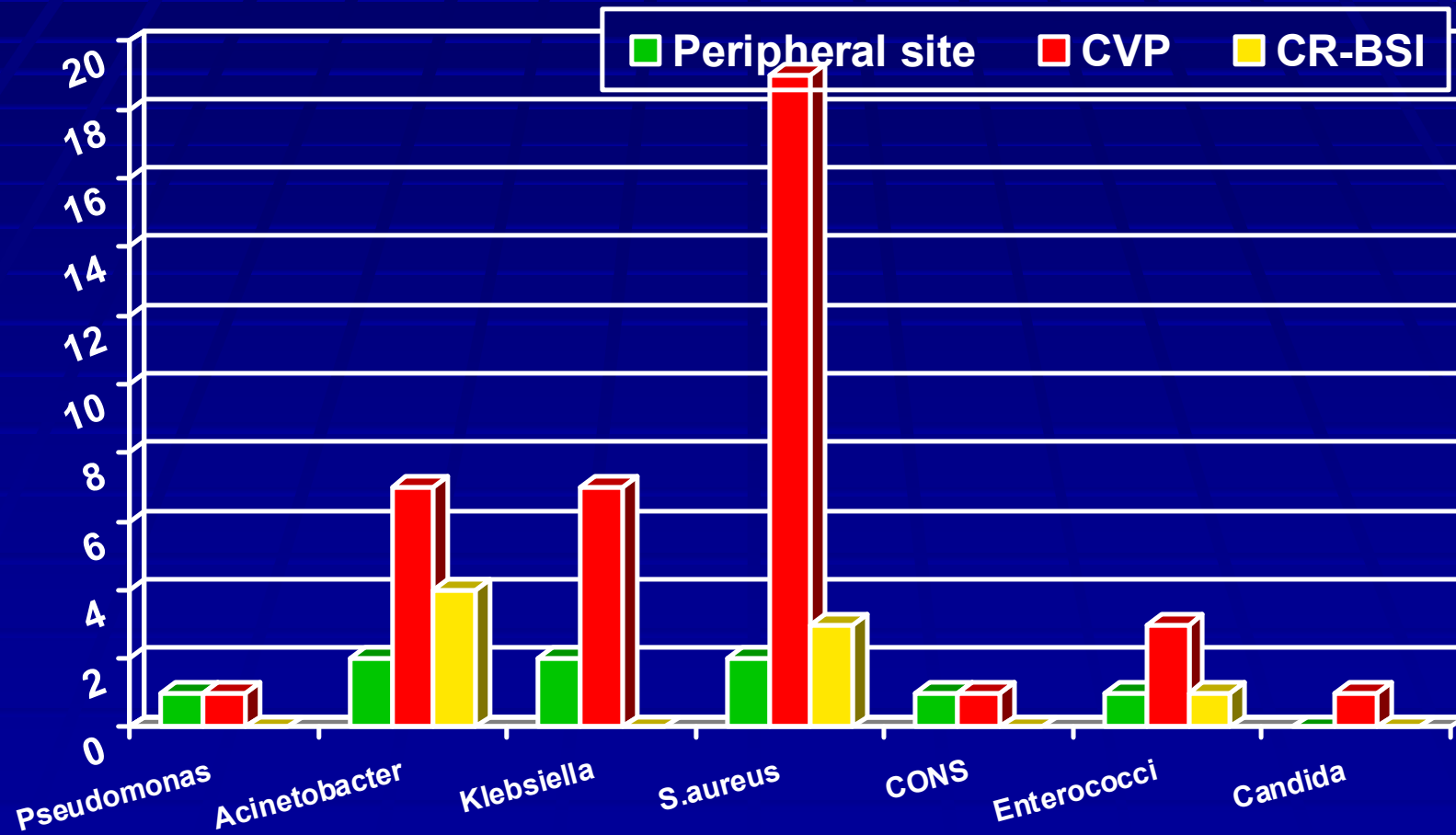
Results

Total Patients	CVC Positive	Peripheral Site Positive	CVP + Peripheral
147	39(26%)	09 (6%)	08 (5.4%) CR-BSI

Results Cont.

- 8 cases of culture positive by Peripheral site and CVP
 - 6 cases (4%) positive within 2 hrs with clinical signs
 - The remaining 2 were positive within 4 hours
?Probable CR-BSI
 - Most of the CR-BSI were positive 5 and 7th day

Pathogens isolated



NNIS (CDC) Data

■ CR-BSI Agents

• Staph. epidermidis (coag neg)	37%
• Enterococci	26%
■ Staph. aureus	13.5%
■ Candida	5.0 %
■ Enterobacter	4.9%
■ Pseudomonas	3.8%
■ • Klebsiella	3.4%

■ Association cath colonization

■ • Candida	68%
■ • S. aureus	60%
■ • S. epi	32%

Strategies for Prevention

- **5 Key “Best Practice” Issues**
 - Remove Unnecessary Lines
 - Hand Hygiene
 - Use of Maximal Barrier Precautions
 - Chlorhexidine for Skin Antisepsis
 - Avoid femoral lines

MMWR. 2002;51:RR-10



Conclusions

- CR-BSIs remain a major problem for hospitalized patients.
- Rate of CRBSI can be modified by following best practices/ following check list before catheter insertion.
- Constant surveillance after implementation of the recommended changes is necessary

THANK YOU

