

Line infection in patients with haematological malignancies

R Godfrey¹, E Demertzi², V Jayakar³, L Chamberlain⁴

¹Core Medical Trainee, Brighton & Sussex University Hospital Trust, ²Microbiology Consultant, Kingston Hospital, ³Haematology Consultant, Kingston Hospital, ⁴Haematology Specialist Nurse, Kingston Hospital

Kingston Hospital 
NHS Foundation Trust

BACKGROUND

- Kingston Hospital is a district general hospital with a busy haematology day unit & inpatient service caring for patients with haematological malignancies
- Many patients require Central Venous Catheters [CVCs] for chemotherapy
- These lines are notoriously susceptible to infection, and a recent death from a line associated septicaemia put a spotlight on how these infections are recognised & managed
- The British Society of Haematology [BSH] gives a standard of care for prevention & management

AIMS

- To assess if we are meeting the standards of care in preventing infection with routine line care
- To measure the infection rate / 1000 catheter days
- To identify which organisms are causing line infections
- To compare management of infected CVCs to the BSH standard
- To consider what can be changed to better prevent & manage line infections

METHODS

Retrospective observational study

- Case note audit
- All haematology patients with CVC
- Jan 2015-Aug 2016
- 22 lines in 13 patients

Audit of routine line care

- Info for patients on risks, benefits & care
- VIP scoring
- Regular flushes
- Duration in situ

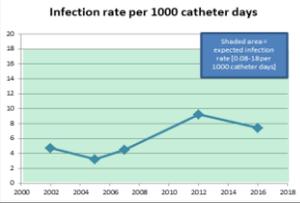
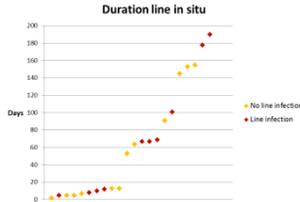
Audit of line infections

- 11 infections in 13 patients
- Definition of infection type
- Management
- Communication between clinicians
- Rate of infection

Analysis & recommendations

- Comparison to BSH standard
- Meeting with haematology doctors & nurses and microbiology
- Recommendations to prevent & manage line infection

RESULTS:

2 Definite line-associated blood stream infections	<i>Staphylococcus epidermidis</i>	Line pain, redness, fever, BCs +ve → removed after 48h [no tip sent]	
	<i>Staphylococcus epidermidis</i>	Peripheral & CVC BCs +ve → CVC not removed; teic down line → advised repeated CVC BCs until -ve	
6 Probable line-associated blood stream infections	<i>Staphylococcus epidermidis</i>	Fever, BCs & line site swab +ve → not removed; teic down line	
	<i>Pseudomonas aeruginosa</i>	Fever, BCs +ve → line removed after 5 days	
	<i>Pseudomonas spp</i>	Fever, line BCs +ve → 7 days cipro PO → Day 8 fever; plan to remove Not removed; further abx	
	<i>Enterobacter aerogenes</i>	CVC BCs +ve → not removed; abx down line	
	<i>Staph. epidermidis, Brevundimonas diminuta</i>	Day 1: fever ? CVC line as source → Not removed; abx down line Day 12: BCs +ve <i>S. epidermidis</i> → Not removed; abx down line Day 15: 'if worse stop using line; d/w micro' Day 18: CVC BCs <i>B. diminuta</i> → not removed; abx down line	
After 6 weeks SAME CVC LINE: <i>S. maltophilia, Alcaligenes faecalis, Staph. epidermidis, E. coli ESBL (+)</i>	Day 1: fever, rigors after CVC use Day 2: CVC & peripheral BCs +ve <i>S. maltophilia, A. faecalis, S. epidermidis</i> (prior colonization of <i>E. coli</i> in urine) → Not removed; meropenem + septrin down line Day 13: CVC flushed; septicaemia with <i>E. coli</i> ESBL; cardiac arrest	Line not removed	

CVC line infections (BSH guidelines)

- CVC related blood stream infection [8 cases]**
= 2 blood cultures [BCs] +ve for the same organism From 2 sites at different times & evidence CVC colonised with the same organism [definite vs probable]
 - Exit site infection [1 case]**
= erythema, discharge, tenderness CVC
 - Tunnel infection [2 cases]**
= pain, induration along CVC track
- All infections require 10-14 days antibiotics Remove the CVC line if:**
Not needed
Cultures remain +ve after 48h therapy
Proven staph aureus / pseudomonas spp / mycobacterium spp / fungi

CONCLUSION

Line infection rates are within the expected range & comparable to previous years

But line infection is incredibly common

- 11/13 patients developed infection
- One patient died from line associated septicaemia
- Many patients had long hospital stays, often in the last months of life
- High prevalence of depression, suicidal thoughts & actions

Uncertainty regarding what to do if a line is infected

- Duration of antibiotic therapy
- Continued use of the line
- Line removal

RECOMMENDATIONS

BSH guidance:

- Units should audit complications associated with CVCs & use the data to develop preventative measures
- Close liaison with the local micro department is essential to monitor trends in infection

- Protocol for insertion and use
- Involve patients in line care
- Training for nurses and doctors

Simplified / standardised protocol for infected lines

- What samples should be sent [including line tip if removed]
- Type & duration of antibiotics if sensitivities pending
- Whether or not to remove or use the line