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For contributing centres, please see the end of this document.

**Background**
In September 2012, the National Institute for Clinical Excellence (NICE) published a guideline (CG151) entitled ‘Neutropenic sepsis: prevention and management of neutropenic sepsis in cancer patients’. The aim of the guideline is to ‘improve outcomes by providing evidence-based recommendations on the prevention, identification and management of this life-threatening complication of cancer treatment’ for children, young people and adults.

Audits of febrile neutropenia (FN) practice in paediatric oncology centres prior to the publication of the NICE guidance have demonstrated variation in definitions for paediatric FN and its management. Fewer than half of oncology centres use risk stratification to safely reduce the intensity and/or duration of therapy required in specific groups. The adoption of a national policy on neutropenic sepsis management based on the best available evidence of clinical effectiveness and cost-effectiveness requires local implementation but should improve outcomes.

**Audit Methods**
The CCLG supportive care group carried out a national audit of the management of febrile neutropenia throughout the UK in March 2015 comparing centres management to the recommendations of the NICE guideline. This involved asking centres to respond with key information about centre policies, and record their management of febrile neutropenia admissions over a 2 week period. Particular areas assessed were provision of febrile neutropenia information, criteria for febrile neutropenia and risk stratification, investigations performed routinely, assessment and review of patients, upfront antibiotic use and discontinuation of antibiotics.

Key results are presented from the audit, using waterfall plots. These rank the centres from ‘most’ to ‘least’ compliant with the relevant NICE recommendation. On plots with ‘zero’ data points, a small red bar indicates each centre with one or more episodes returned.

**Results**
Centres
45 centres (including 14 CCLG principal treatment centres) provided information. 28 (63%) centres document that written information regarding febrile neutropenia is given to families. Of these centres, 19% (3/28) have it in more than English. 19 of 45 (42%) centres use risk stratification at admission (mostly using a modified Alexander approach, as mentioned in the NICE guideline, with one centre using the SPOG model and two setting up a system).

Definitions
The definitions of fever and neutropenia varied between the centres: 34 centres (76%) use 1 temperature of 38 degrees centigrade as definition of febrile with 8 (18%) using 38.5 and the remainder a combination of the two. 25 (56%) centres use a neutrophil count of < 0.5 as definition of neutropenia, 6 (13%) use < 0.5 or < 1 and falling, 9 centres (20%) < 0.75 and 5 (11%) centres < 1. The NICE suggested definition (38 degrees centigrade and neutrophil count of <0.5) is used by 21/43 (49%) of centres.

Episodes
Data was recorded from 108 episodes from 30 centres (including 14 CCLG principal treatment centres) with a range of 0-10 episodes per centre. Two centres specifically returned “no episodes” of FN in the audit period: the other 28 centres are plotted on the graphs below.

Investigations
Investigations varied between centres more than within centres. Commonly, FBC, U&E and blood cultures were sent on admission (over 90% of episodes) with 80-85% having LFTs and CRP.

Lactate was only analysed in 15% of admissions with 6 centres appearing to routinely test lactate up front. 19% episodes had peripheral blood cultures performed, occasionally due to lack of central line and specifically indicated paired testing, with two centres routinely perform paired blood cultures up front.
As expected, routine daily review performed in every episode of FN.

Risk stratification was used in 11 centres, with the vast majority of those using it using it on every episode. 44 (40%) episodes were assessed as low risk at 48hrs with an appropriate switch (IV to Oral Switch of Therapy – IVOST) being made in most cases. It appears that this is not always happening at those units where risk stratification was undertaken.

No centre routinely continues antibiotics in the absence of fever or microbiological indication until neutrophil recovery. Antibiotics were continued beyond resolution in fever infrequently a clear reason (e.g. to treat an identified organism or source).
Initial antibiotic choice carried between and within centres. On an episode-by-episode basis, tazocin alone was used in 37%, tazocin and aminoglycoside in 34%, single agent meropenem in 13% with other combinations making up the remainder.

Time to antibiotics delivery was reported in 25/28 centres that returned information. Overall, 62% of patients received their antibiotics within 60 minutes of admission or febrile episode if already an inpatient. 9 of 17 centres with multiple admissions managed to administer first antibiotic within 60 minutes in 80% of occasions. The figure demonstrates the proportion of antibiotics administered within one hour, and if data were reported, the minimum, maximum and mean values for time-to-antibiotic.

**Technical notes**
The Supportive Care Group was pleased with the range of centres and degree of data returned, despite some technical challenges with Trust firewalls blocking data entry onto the online forms. Repeating the audit in 2016 is planned, along with provision of better ‘off-line’ data entry systems and consideration of a longer entry period for POSCU to enable a better assessment of their processes, and requesting a contact email for direct return of the audit data.
References


Contributing centres
St Peters, Luton, Newcastle, RBHSC, Lister, QMC Nottingham, Kings College, Broomfield, Southampton, QEH, RBH, Surrey and Sussex Hospital, William Harvey, Coventry, Raigmore Hospital, Kingston Surrey, Leeds, Plymouth, Edinburgh, Manchester, Birmingham, Epsom, Sheffield, Wexham, RMH, Tunbridge Wells, Leicester, West Suffolk, UCLH, Aberdeen, and East Lancashire