A Multi-faceted Approach to improving the Door to Needle Time for Neutropenic Sepsis in a District General Hospital

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Introduction
Neutropenic Sepsis is a medical emergency with mortality ranging from 2-21%.
In 2009, the National Chemotherapy Advisory Group recommended antibiotic administration within one hour of presentation.
Now, most NHS Trusts have protocols in place to achieve this one hour ‘door to needle’ time. Despite such protocols, the one hour target is often poorly met and continues to remain elusive.

Aim
To improve the percentage of suspected Neutropenic Sepsis patients receiving antibiotics within one hour of admission to >80% by December 2017, at Royal Blackburn Teaching Hospital, a District General Hospital.

Method
A prospective audit was carried out from 2013-2017 to measure the percentage of suspected Neutropenic Sepsis patients administered antibiotics within one hour of admission. We re-audited every month and documented when any change was implemented.

Results

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<tbody>
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<td>IV antibiotics within 1 hr of arrival</td>
<td>85% (321/376)</td>
<td>75% (178/236)</td>
<td>80% (172/213)</td>
<td>53% (86/159)</td>
<td>46% (29/62)</td>
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<td>Deaths from Neutropenic Sepsis</td>
<td>6.4% (5/77)</td>
<td>10.8% (9/86)</td>
<td>11.4% (9/79)</td>
<td>28.6% (10/35)</td>
<td>17.4% (8/46)</td>
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Discussion
By implementing change and re-auditing, we have successfully increased the percentage of patients receiving antibiotics within one hour from 46% in 2013, to 85% in 2017.

Multiple approaches to improving ‘door to needle’ time include:

- A prospective audit allowing real time and focused education to target specialties.
- Completing incident forms for every delay leading to regular root cause analyses, thus contributing to better performance.
- Having a pathway where suspected Neutropenic Sepsis patients are directly admitted, ensuring timely treatment.
- Extending the Acute Oncology CNS service provision leading to an increase in compliance.

All these factors have helped contribute to a reduced number of deaths from Neutropenic Sepsis in the Trust.

Recommendations
We aim to carry out the following changes going forward to help further improve the ‘door to needle’ time.

- Audit Neutropenic Sepsis Bundle compliance to see if this could be improved.
- Further increase Acute Oncology staffing levels to provide a consistent 7 day service.
- More education to encourage patient use of Chemotherapy Helpline.

References:
3. Clarke RT. Warrick J, Stretton K, Littlewood TJ. Improving the immediate management of