Setting the topic for identification of the problematic issue:

In an effort for the Medical Center of Lewisville to be compliant with the American College of Surgeons Commission on Cancer and improve the quality of care our cancer patients receive, the Cancer Committee selected a study to review the treatment plan for neutropenic patients that are admitted to the facility. The baseline results of the study were then compared to the national benchmarks [1] and education for process improvements was initiated with the nursing staff.

The Commission on Cancer Standard 4.7 states that “the study focuses on areas with problematic quality-related issues relevant to the program and local cancer patient population”.

Patients with a poor immune system or neutropenic patients are eligible as “problematic” because they are very sick (high risk) and are not admitted that often (low frequency). In addition, many neutropenic patients are admitted from their physician’s office during their follow-up appointments as a Direct Admission instead of entering the facility through the Emergency Department. Direct Admission patient’s labs and medications are not typically time sensitive as emergency situations are and there are often delays in drawing labs and administering antibiotics; therein lays the problem. The previous hospital policy and practice did not reflect meeting the recommended benchmarks as reflected in the baseline data.

Necessity

To assist with the early intervention of a patient with Neutropenic fever that is admitted through direct admission or through the Emergency room to identify areas of opportunity for the improvement of their care.
Defining Criteria and Conducting the Study

Criterion for inclusion was abstracted utilizing an electronic reporting system available through Meditech. Specific search criteria was by diagnosis; neutropenia, fever presenting with conditions classified elsewhere. This data was recorded via an excel spreadsheet and included all of the required elements. (Addendum A: Tool for Study)

Data abstracted from Emergency and direct admit visits include:

- Arrival time to first antimicrobial administration
- Blood cultures collected prior to first antimicrobial administration
- Cancer diagnosis
- Temperature on arrival
- Admit diagnosis

Determine Opportunity for Quality Improvement:

1. Process that we use to treat patients with Neutropenic Fever
2. What protocols or policies do we have in place to implement in the treatment of patients with Neutropenic Fever that come to the Emergency Department of as direct admissions?

Data from the following sources was utilized in this study:

- Medical Center of Lewisville Laboratory Data
- Data from the ICD-9-CM Code Book as reported by North Texas Division Clinical Documentation Staff.
Literature Review:

Febrile neutropenia is a life-threatening condition that is considered an oncologic emergency for cancer patients. In order to reduce the overall mortality and length of stay for these identified patients it is imperative that anti-microbial medication be administered at the onset of fever even in the absence of a definite diagnosis of infection [1]. Mortality rate, related to a febrile neutropenic event, can be between 2% and 20% [2].

Current guidelines are to initiate antimicrobial therapy immediately or within 2 hours of arrival [1]. Blood cultures should also be drawn prior to the initiation of antimicrobial therapy [4]. ISDA (Infectious Disease Society of America) recommends that at least 2 sets of blood cultures be drawn as well [1].

References:

1. IDSA: CID 2011:52 (15 February)
First round of Patient information that it was found was only utilizing the search criteria of patients with Neutropenia and then manually searching for ones that were diagnosed with Neutropenic Fever for the time period of 01/01/2011-13/31/2013. The average time of Door to Antibiotics was 2 hours and 27 mins.
After revising the search and adding the ICD-9 Code for Fever presenting with conditions classified elsewhere it added a total of 6 more patients to the study for the time period of 01/01/2013-12/31/2014.
Graph C

This represents the overall Door to Antibiotic time for the Emergency Room Admissions and the Direct Admissions for the time period of 01/01/2013-12/31/2014. The average Door to Antibiotic time for the Emergency Room was 2 hours and 13 minutes and the average Door to Antibiotic time for the Direct Admissions was 2 hours and 42 minutes.

The average overall door to Antibiotic time for the admission types combined was 2 hours and 21 mins.
Summary of findings with comparison to Benchmark:

On initial review of the data from January 01, 2011 through December 31\textsuperscript{st}, 2013, a total number of 12 patients were admitted with a diagnosis of Neutropenic Fever. (See Graph A) After utilizing with the coding specialists and identifying the codes that comprise neutropenic fever the data was rerun. It was then found that a total of 18 patients were admitted with a diagnosis of Neutropenic Fever (See Graph B). They were admitted either through the Emergency Room or via direct admission from one of the admitting providers in our area, typically Oncologists.

From the data collected, 100\% of the patients that were admitted through the Emergency Room with a diagnosis of Neutropenic Fever had blood cultures drawn prior to receiving antimicrobial therapy. There were a total of 13 patients with this admission diagnosis for this time frame, 7 of these patients received antimicrobial therapy within 2 hours of coming through the door and 6 did not. The average door to antibiotic time for the Emergency room was 2 hours and 13 minutes. The average door to antibiotic time for Direct Admissions was 2 hours and 42 minutes. (See Graph C).

Designing the action plan:

Goals:

1. Process that we use to treat patients with Neutropenic Fever.
   a. Outcome-There is not a defined process and/or protocol for treating patients with Neutropenic Fever.

2. What protocols or policies do we have in place to implement in the treatment of patients with Neutropenic Fever the come to the Emergency Department of as direct admissions?
   a. Outcome-We do not currently have a policy that directly relates to Neutropenic Fever directly
Recommendations from the Cancer Committee including establishing follow-up:

1. Perform study to assess if our current practice is meeting benchmark Quality Outcomes Coordinator presented information on performing study to Cancer committee on February 13, 2014.

2. Recommendation by the Cancer Committee on April 10th, 2014 to amend the current Neutropenia policy to include recommendations with respect to treatment of patients with Neutropenic Fever. The policy was amended by the Quality Outcomes Coordinator and submitted to Cancer Committee for review.

3. Review of the amended Neutropenic policy brought to Cancer Committee and approved, recommending it go to the policy committee for final approval on May 8th 2014. The policy was then sent to our Vice President of Quality for any final revisions and then taken to the Policy committee for final approval on July 24th 2014 (See addendum B).

4. Recommendation by the Cancer Committee on September 11th 2014 to educate the staff regarding changes made to the Neutropenic policy (See addendum C). Education information was completed by means of a flyer created by the Quality Outcomes Coordinator. This education was sent out on October 1st 2014 to Department leaders and education for dissemination to their staff. Education was also given to Medical staff by means of a blast fax to the physician’s offices, their e-mails and additional flyers given to the Medical Staff department chairs. Re-evaluate the data after 45 days.
Monitoring for effectiveness:

Re-evaluation of the data regarding patients identified with Neutropenic Fever on admission to evaluate the effectiveness of the teaching was first completed on November 15. There were no admissions with neutropenic fever during that time. Review period was then expanded to reflect 71 days’ worth of data, completed on December 11th, but it did not return any patients either. Monitoring the effectiveness of this teaching is currently incomplete due to the low census of patients admitted with neutropenic fever.
Addendum A: Tool for Study

<table>
<thead>
<tr>
<th>NEUTROPENIC Fever Study for Cancer Committee</th>
<th>Admit Date</th>
<th>Arrival ABX time</th>
<th>ABX admin time</th>
<th>Temp on Arr or Temp on Arrival</th>
<th>Time of BC</th>
<th>Admit Dx</th>
<th>Admit Dx time</th>
<th>Age</th>
<th>gender</th>
<th>Pt initials</th>
<th>Account #</th>
</tr>
</thead>
</table>

Medical Center of Lewisville – Oncology Services – Cancer Committee – Quality Improvement Study –

Commission on Cancer Standard 4.7 & 4.8
Addendum B – Neutropenic Policy

Scope: The purpose is to prevent infection in the myelosuppressed patient.

Definitions:

Absolute Neutrophil Count (ANC): \[ \% \text{neutrophils (segs)} + \% \text{bands} \times \text{white blood cell (WBC)} \]

\[ \text{100} \]

Neutropenia: ANC <1000

Policy: Neutropenic Precautions are used for patients who are immunosuppressed with a total count of neutrophils and band forms of 1000/cu mm or less who have a decreased ability to resist infection. Additionally, acute leukemic patients are more profoundly neutropenic for a longer period of time than other immunosuppressed patients and so are at higher risk of acquiring nosocomial infections.

Procedure:

1. Patients will be placed in Neutropenic Precautions when ANC is <1000.

2. All patients who have received chemotherapy, radiation therapy, biotherapy, or multimodal therapy in the past 7 days will have ANC calculated daily and documented in nurse’s notes. If ANC remains low (<1000), this should continue to be documented in the nurse’s notes daily until no longer neutropenic (ANC >1000)
3. Nurses caring for the neutropenic patient should not care for infectious patients. This includes patients on isolation of any type.

4. When making room assignments for neutropenic patients, they should not be placed in a negative airflow room.

5. Signage will be placed on the door to instruct visitors on:
   a. Restrictions of who cannot visit:
      1. If you have symptoms of a cold or cough within the last 48 hours
      2. If you have a skin rash in the last 48 hours
      3. If you have nausea, vomiting, or diarrhea in the last 48 hours
      4. If you had a fever in the last 48 hours
      5. If you have an open and draining wound
   b. Precautions to be taken while in room:
      1. Employ strict hand washing techniques.
      2. Wear a mask if you have been exposed to someone with a cough or respiratory infection.
   c. No fresh flowers, plants or other sources of stagnant water allowed in the room.

6. Education will be provided to patient and family members.
   a. Teach personal hygiene measures to minimize the occurrence of infection:
      1. Meticulous mouth hygiene with soft tooth brush or toothettes after meals and at bedtime.
      2. Wiping the perineal area from front to back after voiding and after a stool
      3. Daily bathing with meticulous personal hygiene.
      4. Frequent hand washing, especially after using bathroom and before meals
   b. Teach patient to wear a mask when out of room
   c. Teach reason for neutropenic precautions is prevention of infection.
7. Dietary Modifications for Neutropenic Precautions Diet. Order is to be placed in Meditech.
   a. No raw fruits
   b. No raw vegetables
   c. No fresh garnish

8. Instructions for ALL staff members taking care of neutropenic patients:
   d. Use alcohol based gel upon entering and leaving room.
   e. Wear gloves for patient care.
   f. Wear a mask ANYTIME staff has the possibility of having a respiratory infection (cough, runny nose, fever). Staff who may be unsure if they have been exposed to any infections may choose to wear a mask to further prevent possible spread of infection to the neutropenic patient.
   g. Meticulous care will be given to all invasive catheters.
   h. Aseptic technique for all interventions performed on patient.
   i. Stethoscopes will be cleaned upon entering and leaving the room (alcohol pad).
   j. Encourage the patient to wear a mask when out of patient room.
   k. Avoid invasive procedures. No IM injections, enemas, suppositories, and rectal temperatures. This can lead to a mucosal tear, creating a portal for infection.
   l. Vital signs every 4 hours or more frequently if condition warrants.
   m. Monitor bowels closely. Avoid constipation and diarrhea by requesting order from the physician for stool softeners or anti-diarrheal medicine as appropriate.
   n. All equipment must be disinfected with a hospital approved cleaner prior to patient use.

9. Additional Special Considerations for Rehab, PT, and OT:
   a. Patients should wear a mask when leaving their room for any rehab treatment due to the patient’s decreased immune system.

   b. All equipment (walkers, gait belts, etc.) will be disinfected with a hospital approved cleaner prior to use by any neutropenic patient.

10. Neutropenic Precautions will be discontinued when ANC > 1000.
11. Patient diagnosed as having Neutropenic Fever on admission.

   a. Set goal to obtain two sets of blood cultures prior to antimicrobial therapy.
   b. Set goal for administration of first dose of antimicrobial therapy within two hours of patient arrival time.

References:


WE’VE MADE SOME CHANGES TO THE NEUTROPENIA AND NEUTROPENIC POLICY

Policy number 911.326