South West Strategic Clinical Network Cancer Event, Taunton, 08/07/2014

Improving hospital mortality from neutropenic sepsis: lessons learned from a District General Hospital

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BACKGROUND

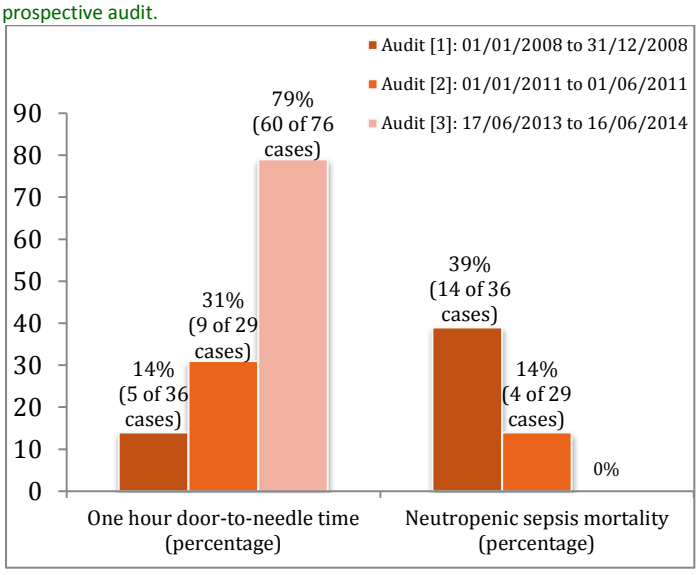
- Neutropenic sepsis is a life-threatening toxicity that can occur following chemotherapy.
- Mortality rates ranging from 2% to 21% have been reported in adults.[1]
- Delays in receiving antibiotic treatment result in increased mortality.[2]
- 'Door-to-needle time' for administration of intravenous antibiotics should be less than one hour.[3]
- NCEPOD report[4]:
  - evident shortcomings in the management of patients receiving systemic anticancer treatment
  - every hospital with either an A&E department or Medical Admissions Unit should have an Acute Oncology Service (AOS).
- Chemotherapy at Weston General Hospital:
  - given on an outpatient basis in an Oncology and Haematology Day Unit with 6 treatment chairs and 2 treatment beds
  - workload has significantly increased with chemotherapy being given to more than 100 patients each week.
- There are no oncology in-patient beds at Weston. Emergency admissions are admitted under the medical on-call team.

SERVICE DEVELOPMENTS AT WESTON

- 2009: yellow jackets on case notes of patients receiving chemotherapy
- 2009: alert cards given to patients
- October 2010:
  - posters displayed throughout the hospital displaying the urgent treatment that is needed for neutropenic sepsis
  - education to nursing and medical staff (including A&E) to improve awareness of the Trust Neutropenic Sepsis policy and protocol
- January 2011:
  - an emergency drug box containing antibiotics and a laminated A-4 sheet of guidelines (kept in essential clinic areas)
- 2011:
  - inclusion of rheumatology patients on methotrexate in the protocol
  - ensure emergency drug box is restocked after each neutropenic sepsis episode
  - ensure that intravenous fluids are administered as well as intravenous antibiotics
  - neutropenic sepsis checklist produced
  - alerts on letters to GPs
- 17 June 2013:
  - Acute Oncology Service officially launched
  - door-to-needle time audited prospectively and monthly audit figures released with learning points
  - real-time feedback to staff members: a learning rather than a blame culture
- Ongoing work:
  - Patient Guided Directive (PGD) for tazocin
  - nurse-led awareness and teaching to front-line staff (from reception staff to consultant level)
  - annual review of neutropenic sepsis policy and protocol
  - local and Network Acute Oncology Service management meetings
  - flagging system

RESULTS FROM AUDITS OF NEUTROPENIC SEPSIS MANAGEMENT

Three neutropenic sepsis audits have been performed at Weston General Hospital since 2008. Audits [1] and [2] are retrospective and Audit [3] is a prospective audit.



CONCLUSION

Despite chemotherapy treatment workload greatly increasing at Weston, significant improvements in the management of patients with neutropenic sepsis have been achieved. As can be seen in the bar chart, intravenous antibiotic door-to-needle time within one hour has improved from 14% to 79% and neutropenic sepsis mortality has decreased from 39% to 0%. In fact the last neutropenic sepsis death at Weston was in June 2012. Also of note is that two and one of the neutropenic sepsis deaths in Audit [1] and Audit [2], respectively, were in patients on methotrexate for rheumatoid arthritis. This indicates that improvements in managing neutropenic sepsis are of importance for any patient at risk of immunosuppression.

Monthly audits and real-time feedback with visible presence of the AOS team in essential clinical areas has led to a learning rather than a blame culture and achieving high standards in the management of neutropenic sepsis has become a key hospital target. While we continue to work on how to improve the process even further, we feel that other hospitals can learn from what has already been achieved at Weston.

REFERENCES

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