Balancing what we know and what we do : A collaborative approach to improve the management of neutropenic sepsis in the emergency department.

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Neutropenic Sepsis

- Life threatening complication of bone marrow dysfunction and cancer therapies
- Medical emergency
- Associated mortality 2 - 21 %
- Evidence suggests inadequacies in emergency department management

Neutropenic Sepsis

Neutrophil count of 0.5 x 10^9 per litre or lower and EITHER

temperature higher than 38 C

OR

signs and symptoms consistent with sepsis

(Nice Guidelines, 2014).

Background

- 65 year old female , 1st cycle chemotherapy, malignancy.

Presentation 1 **ATS 3**	Day 4 post chemo	2/7 diarrheoa “exhausted”	Discharged with loperimide
Presentation 2 **ATS 3**	Day 7 -1955 post chemo	Sore throat, D & V, “not coping” T- 37.9, BP: 105 HR:110 Neutrophils 0.1	Discharged with advice to monitor temperature
Presentation 3 **ATS 1**	Day 8 -0700 post chemo	Cardiac arrest Neutropenic sepsis ICCU 6 days	Deceased

Next steps

Collaborative Practice
Literature review
Retrospective research
Identifying clinical risk
Pathways and checklists
Changing practice
Audit / KPI’s


NFLUENCE

The Network Secrets of Great Change Agents

by Julie Battilana and Tiziana Casciaro

FROM THE JULY–AUGUST 2013 ISSUE

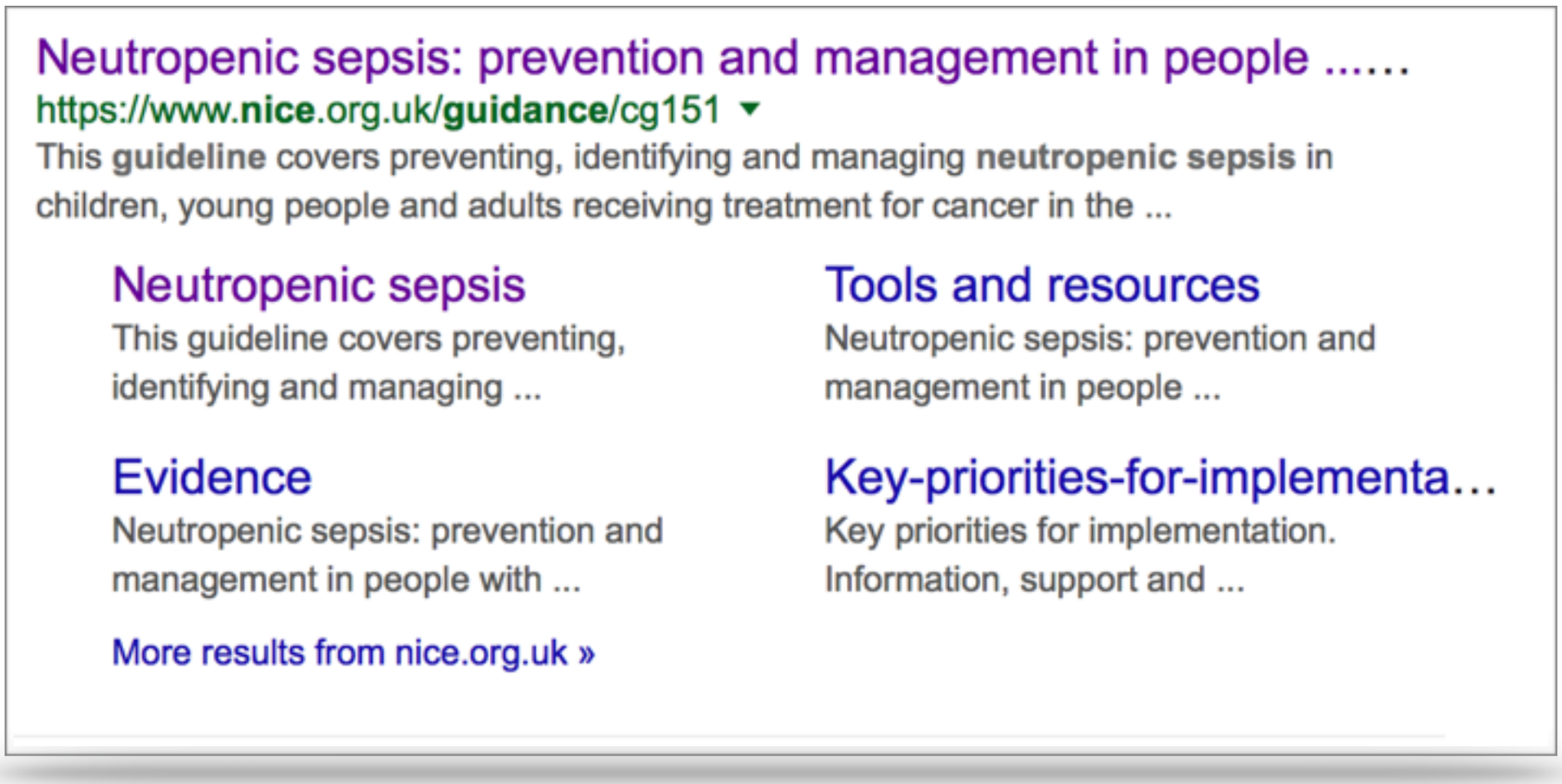
SUMMARY SAVE SHARE COMMENT 0 TEXT SIZE PRINT

ARTWORK: JESSICA SNOW, LOUIS II, 2010, ACRYLIC ON PAPER, 13.5" X 11.5"

Change is hard, especially in a large organization. Numerous studies have shown that employees tend instinctively to oppose change

The Evidence -

understanding what we know.



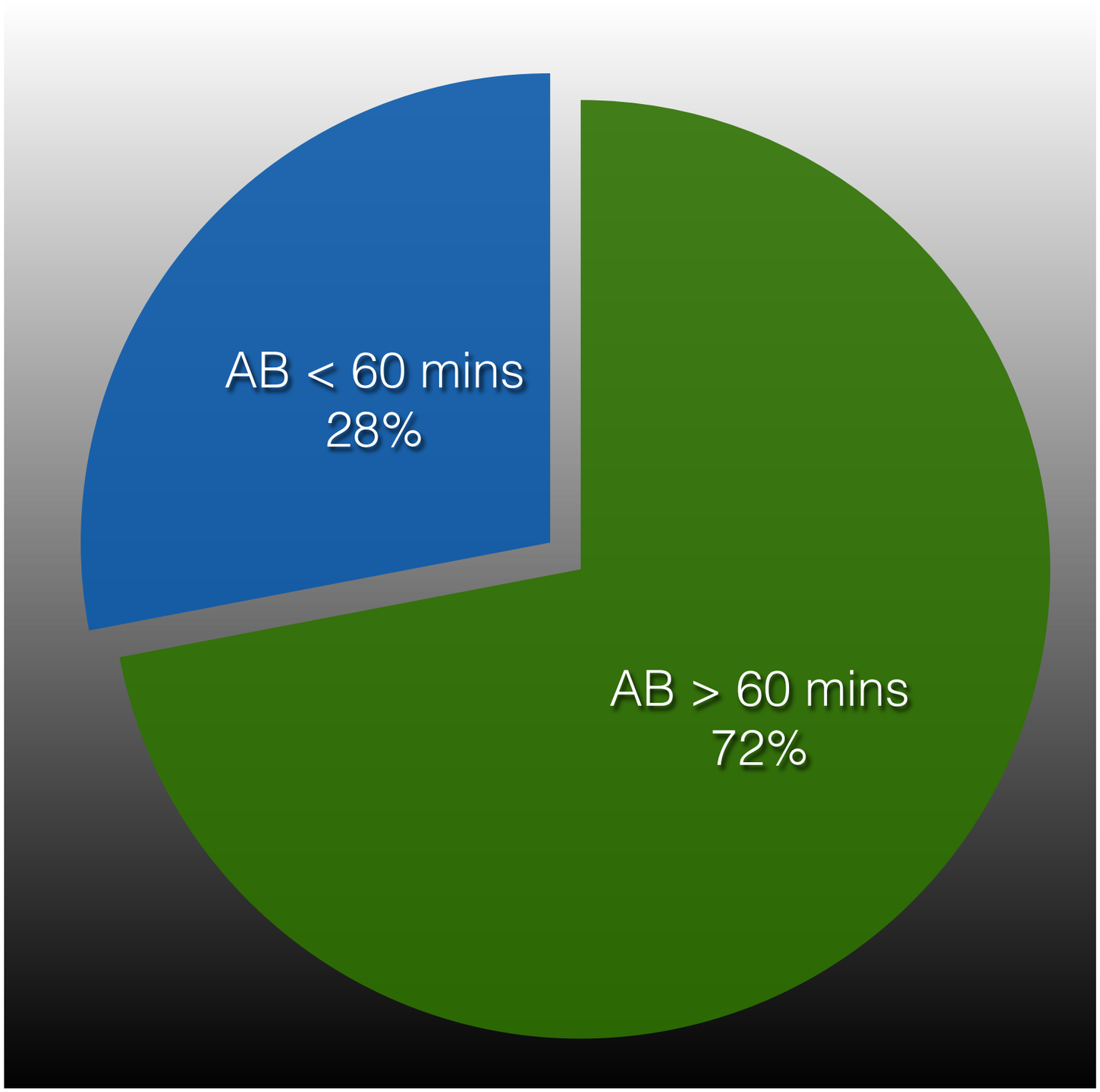
Retrospective Audit

–understanding what we do.

Door-to-Needle time

Antibiotic Target < 60 minutes (n=20)

pre pathway



Retrospective Audit

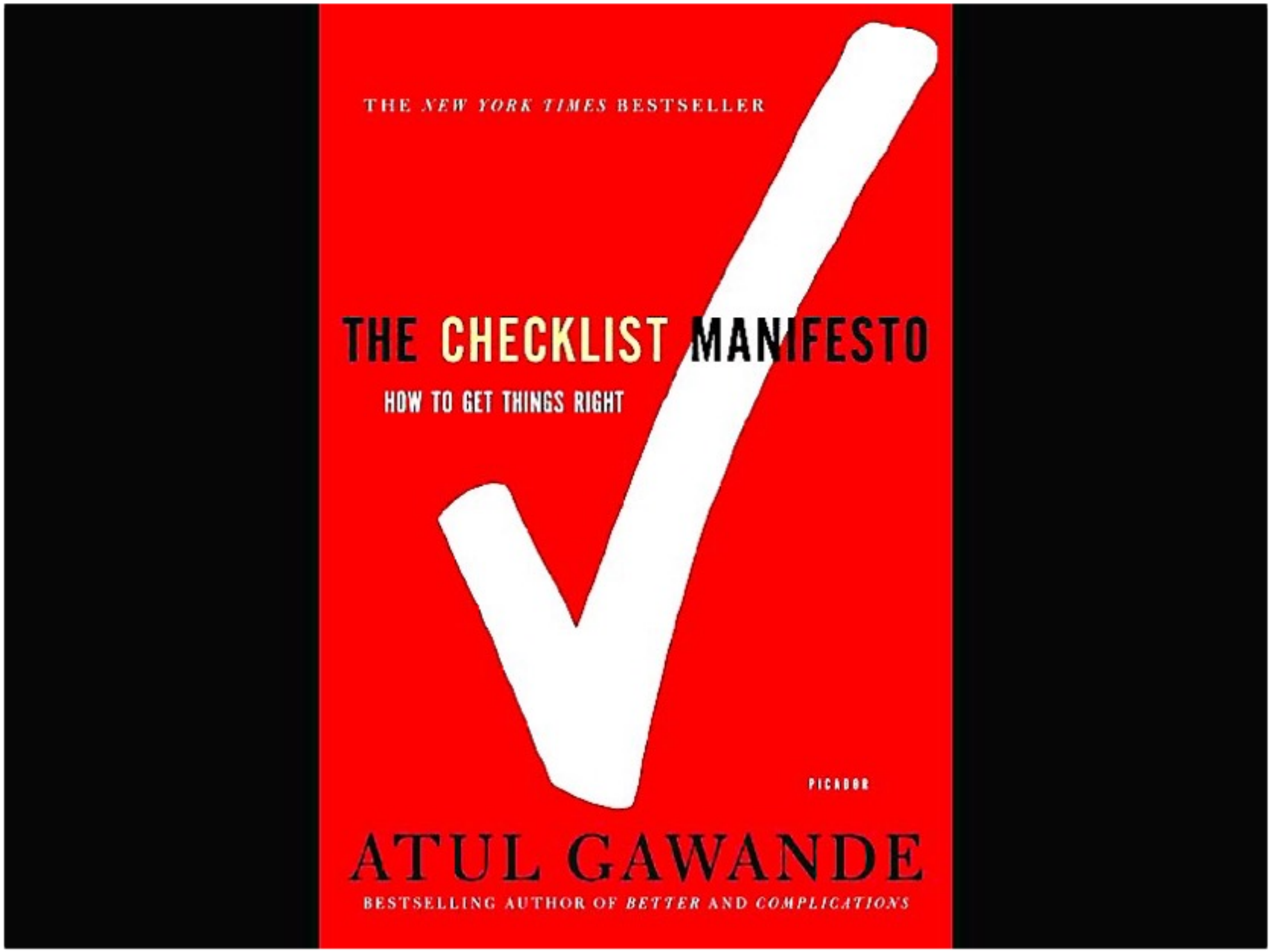
– *understanding what we do.*

- Triage process inconsistent
- Triage not meeting ATS guidelines - Triage 2
- Inconsistencies in identifying patients at risk
- Assumptions that symptoms were complications of chemotherapy
- Immunosuppressed oncology cards not followed

- Barriers for primary care to access ED
- Clinical guidelines
- Temperature as an indicator of sepsis
- Clinician dependant practice
- Reluctance to administer antibiotics without blood results
- Lack of urgency in antibiotic administration
- Senior medical oversight

Checklists and Pathways ....

"We train longer, specialise more, use ever advancing technologies and still we fail " Atul Gawande, 2009.


THE NEW YORK TIMES BESTSELLER
THE CHECKLIST MANIFESTO
HOW TO GET THINGS RIGHT
PICADOR
ATUL GAWANDE
BESTSELLING AUTHOR OF BETTER AND COMPLICATIONS

Safety nets
Consistent practice
Decision making tool

“ensure the stupid but critical stuff is not overlooked.”

ED NEUTROPENIC PATHWAY

Date: **Time:**

- **ALL patients who have had chemotherapy in last 6 weeks**
- **Receiving immunosuppressive drugs or has a disease process affecting the bone marrow (myelodysplasia, leukaemia, lymphoma)**
- **Neutrophils < 0.5 x 10^9/L or < 1.0 x 10^9 /L and likely to fall**
- **Carries an immunosuppressed card**

Triage 2

Place in ED bed

EWS / Monitoring / IV access

FBC, Us&Es ,LFTs, CRP, serum lactate, blood cultures, U/A, MSU

DO NOT WAIT FOR LAB RESULTS

TREAT ANY SUSPECTED NEUTROPENIC SEPSIS AS A MEDICAL EMERGENCY.

Sepsis Criteria – (any 3) of following - suspected infection, temp >38 or < 35, heart rate > 100, RR >20, Sys BP < 90, SaO_2 < 90, altered mental state.

MEETS SEPSIS CRITERIA

Initiate 1st line antibiotics

IV Fluids

Severe Sepsis Pathway

SENIOR ED MEDICAL REVIEW

DOES NOT MEET SEPSIS CRITERIA BUT HAS ANY CLINICAL SIGN OF INFECTION, DIARRHEA OR GENERALLY UNWELL.

Initiate 1st line antibiotics

Consider IV fluids

SENIOR ED MEDICAL REVIEW

NO FEATURES OF INFECTION EWS-0

Urgent WBC

RESULT < 60 MINS

Phone lab 7632, request urgent neutropenic bloods, stamp form.

IF NEUTROPHILS < 0.5

SENIOR ED MEDICAL REVIEW

1st Line Antibiotics

PIPERACILLIN and TAZOBACTAM 4 + 0.5G

IV every 8 hours

Mild penicillin allergy ***CEFEPIME*** *2g 8 – hourly*

Severe penicillin allergy **CIPROFLOXACIN** 500mg orally 12-hourly (or IV 400mg in 200mL IV over 1 hour 8-hourly if unable to take oral meds)

Plus **VANCOMYCIN** 1.5 g IV 12-hourly (1 gm 12-hourly if GFR <90[2])

NEUTROPENIC PATHWAY

ED NEUTROPENIC PATHWAY

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Nelson Marlborough District Health Board

Immunosuppressed Haematology/Oncology Patient Card

Name: _____ **NHI:** _____

This patient is immunosuppressed either from:

- receiving chemotherapy in the last 6 weeks
- blood or bone marrow disease
- recent bone marrow transplant

If the patient presents to ED unwell with this card

→ **Triage 2** and initiate **NMDHB Neutropenic Pathway**

Post Pathway Audit (n=30)

– 3 months

- 30 patients placed on pathway at triage - Triage 2
- 8 patients identified as meeting sepsis criteria on admission
- 11 other patients identified as having markers of infection
- 20 received antibiotics
- 13 received Tazocin / 7 received other antibiotics
- 7 patients had neutrophils < 0.5×10^{9} / L
- Laboratory response time positive
- 1 patient's management did not follow pathway

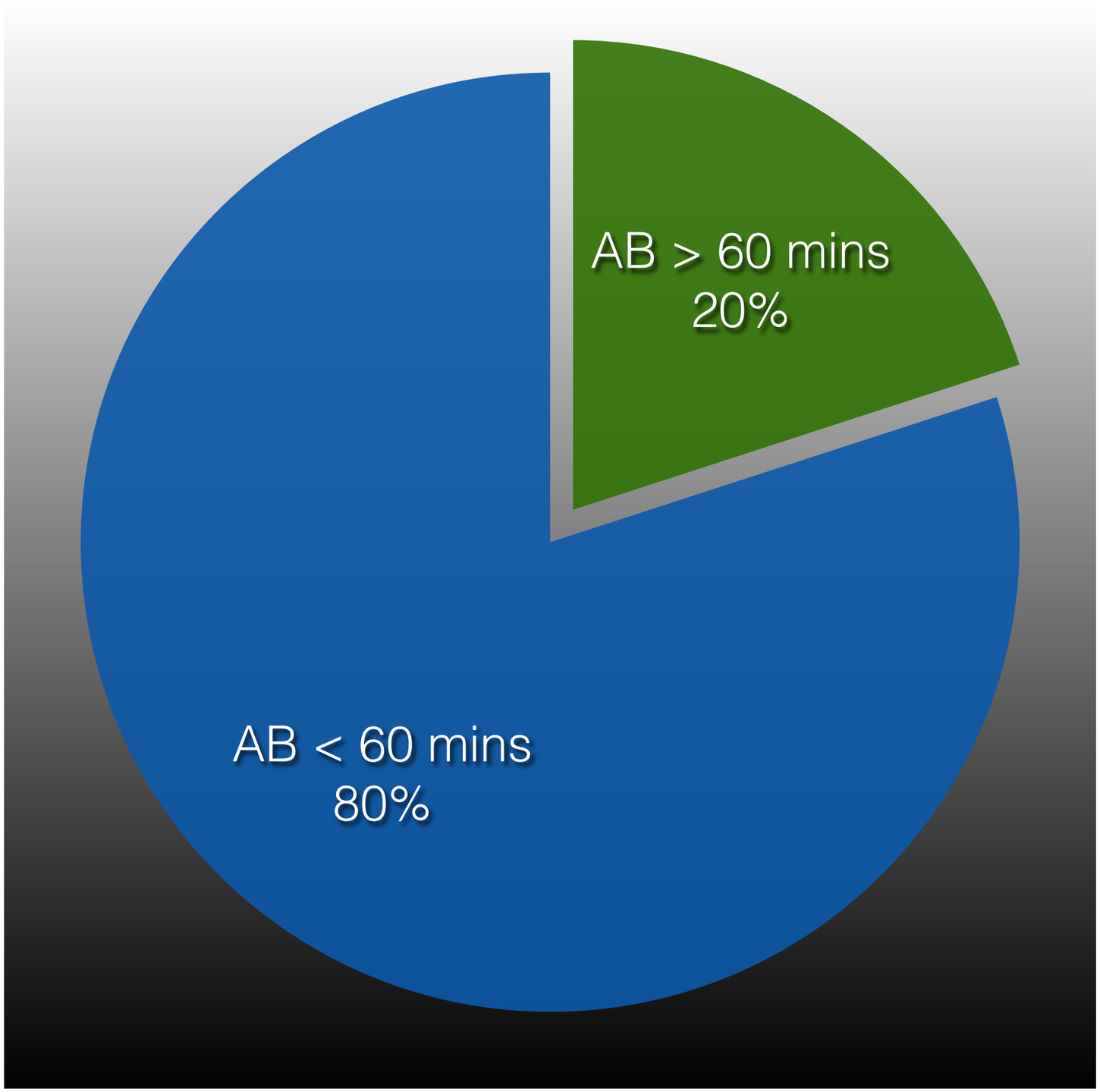
Temperature

Of the 19 patients identified as having clinical signs of infection or sepsis, 4 were afebrile and 1 was hypothermic.

Door-to-Needle time

Antibiotic Target < 60 minutes

post pathway



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References

- NICE (2014). *Neutropenic sepsis: prevention and management of neutropenic sepsis in cancer patients*. NICE clinical guideline 151.

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