Trust Policy		Worcestershire Acute Hospitals NHS Trust

Guideline for the management of suspected Neutropenic Sepsis in Oncology / Haematology patients

Department / Service:	Haematology & Oncology
Originator:	Mark Squire
Accountable Director:	Juliet Mills, Clinical Director
Approved by:	Haematology Governance meeting, Clinical Governance Group, Medicines Safety Committee
Date of approval:	6th July 2021
Review Date: **This is the most current document and should be used until a revised version is in place**	6th July 2024
Target Organisation(s)	Worcestershire Acute Hospitals NHS Trust
Target Departments	Haematology & Oncology
Target staff categories	Nursing, Medical and Pharmacy

Policy Overview:
This guideline refers to the management of suspected neutropenic sepsis in adult (age >16years) oncology / haematology patients, including those who have received systemic anti-cancer treatment (SACT) in the preceding 6 weeks who present to Worcestershire Acute NHS Trust.

Latest Amendments to this policy:	
11.2017	Just In case pack discontinued and new Emergency Sepsis Prescription (ESP)
02.2018	Updated to reflect the NICE 2016 Sepsis: recognition, assessment and early management (NICE guideline 51) and to incorporate the trust sepsis pathways.
02.2018	Section 5.2 identify need to identify patient on chemotherapy as a history risk of neutropenia on sepsis screening tool.
08.2018	Microbiology updated antibiotic protocols for patients that were an inpatient on laurel 3 after 1/5/18 or colonise with CPE
25.5.2020	Document extended for 6 months during COVID-19 period
February 2021	Document extended as per Trust agreement 11.02.2021.
April 2021	Antimicrobial recommendation change
July 2021	Document approved for 3 years at the following groups/ committees: Haematology Governance meeting 20th May 2021 Medicines Safety Committee 9th June 2021 Clinical Governance Group 6th July 2021

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

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1. Introduction

This guideline refers to the management of suspected neutropenic sepsis in Oncology / Haematology patients. It encompasses the pathway of care to follow when a patient over the age of 16 in adult services presents to Worcestershire Acute Hospitals NHS Trust. It includes all patients who have received SACT in adult services within the last 6 weeks presenting to Worcestershire Acute Hospitals NHS Trust.

2. Scope of this document

This document is for all staff (medical, pharmacy and nursing) involved in the management of patients presenting with suspected neutropenic sepsis.

3. Definitions

Neutropenic sepsis is defined as a patient who is having Systemic Anti-Cancer Treatment (SACT) and:-
Fever: - A single oral temperature of 38.0˚C
Neutropenia:- A neutrophil count of <0.5x10^9/l or less or a neutrophil count <1.0x10^9/l and predicted to fall.

And/or
Other signs or symptoms consistent with clinically significant sepsis (NICE 2012)

However any patient with a neutrophil count <1.0x 10^9/l or who had chemotherapy within the last 6 weeks which on a regular basis is causing severe neutropenia irrespective of the current neutrophil count with a temperature sustained fever of ≥37.5 may also require treatment according to this febrile neutropenia pathway e.g. if high NEWS2 score (≥5) or signs or symptoms of active infection (Marshall E & Innes H 2008).

It is important to note that fever may not be present or reach the defining levels for febrile neutropenia in a patient with sepsis or in septic shock (Dellinger et al 2008) It is vital to establish a robust clinical history as the possibility of neutropenic sepsis should be considered in any patient who presents clinically unwell and has received SACT in the past 6 weeks or has a haematology malignancy.

4. Responsibility and Duties

It is the responsibility of the practitioner caring for the patient with suspected neutropenic sepsis to ensure they adhere to this guidance.

5. Policy Detail

5.1 Management of Suspected Neutropenic Sepsis

SACT induced neutropenia is a major dose limiting toxicity of treatment and is associated with substantial morbidity, mortality and costs (Jeddi et al 2010); Mortality rates in adults range between 2 and 21% (NICE 2012).The incidence of infection rises as the neutrophil count decreases and is compounded by the rate of decline and the duration of neutropenia (Schimpff 2001).

The management of a patient who presents neutropenic and unwell is considered a high risk sepsis patient and should immediately be assessed in a hospital setting. As with all cases of sepsis, rapid recognition,

prompt initiation of the ‘Sepsis pathway’ and administration of effective antimicrobial therapy is essential to prevent avoidable deaths (Rivers et al 2001; Mackenzie & Lever 2007, NICE, 2016)

Febrile neutropenia is a time dependant medical emergency. Patients can deteriorate over a matter of hours with life threatening complications; it is recommended that intravenous antibiotics be commenced within the first hour of recognition of sepsis (Kumar A et al 2006, Dellinger et al 2008).The publication of “Chemotherapy: Ensuring Quality and safety” (NCAG 2009) reflects this recommendation and a national standard of door to needle time of 1 hour for intravenous antibiotics for patients with suspected neutropenic sepsis has been established.

Referrals into the hospital should initially be after discussion with the Acute Oncology nurse practitioner (GPs or patients) or the relevant haematology / oncology consultant. In hours, all referred patients will be assessed in the appropriate environment dependent upon hospital site this maybe AEC, Medical Assessment unit or A&E. Out of hours the patient will be assessed in A&E or MAU.

Patients who are receiving SACT at WAHNHST will have been provided with a SACT alert card and an “Emergency Sepsis prescription” for Haematology and Oncology patients presenting with suspected neutropenic sepsis to facilitate the prescribing and administration of IV antibiotics within an hour, see Appendix 1

In the case of patients who are critically ill then these patients are best assessed initially in the resuscitation room of the emergency department (irrespective of time of day).

All acutely unwell neutropenic patients should be managed in an area where a doctor is present and there is an ability to escalate care once that patient has had an initial assessment and treatment has been commenced.

Escalation of care to the critical care team for a patient with a high NEWS2 score or presenting critically unwell should be undertaken as soon as possible.

The importance of the patient receiving IV antibiotics and initiation of the ‘sepsis 6 pathway’ within an hour irrespective of where the patient presents and is being managed should not be delayed by looking for a side room as this can be reviewed at a later stage, see Appendix 2.

There is an expectation that the Acute Oncology Team will be involved early on the care of patients who are potentially neutropenic. During the week 09:00-17:00 the Acute Oncology Team will endeavour to respond to calls to see potentially neutropenic patients within 15-30mins of them being informed of their arrival in the AOS Bay, MAU or A&E.

For oncology patients a healthcare professional e.g. medical staff or acute oncology nurse practitioner with competence in managing complications of anticancer treatment should assess the patient's risk of septic complications within 24 hours of presentation to the acute setting. This should be based on presentation features and using a validated risk scoring system for example the Multinational Association for Supportive Care in Cancer (MASCC) risk index: a multinational scoring system for identifying low-risk febrile neutropenic cancer patients. Patients assessed as low risk of developing septic complications, consideration should be given to outpatient antibiotic therapy taking into account the patient's social and clinical circumstances and discussing with them the need to return to hospital promptly if a problem develops (NICE 2012; ESMO 2016)

Haematology patients are exempt from MASCC scoring.

MASCC Scoring system

Characteristics	Score
Burden of illness: no or mild symptoms	5
Burden of illness: moderate symptoms	3
Burden of illness: severe symptoms	0
No hypotension (systolic BP > 90 mmHg)	5
No chronic obstructive pulmonary disease	4
Solid tumour/lymphoma with no previous fungal infection	4
No dehydration	3
Outpatient status (at onset of fever)	3
Age <60 years	2

Patients with scores ≥21 are at low risk of complications. Points attributed to the variable 'burden of illness' are not cumulative. The maximum theoretical score is therefore 26 [2]. Reprinted with permission. © 2000 American Society of Clinical Oncology. All rights reserved.
BP, blood pressure.

Acute Myeloid Leukaemia Patients

Patients with Acute Myeloid Leukaemia (AML) who are being managed with curative intent will be admitted from when they become neutropenic following SACT (neutrophils <0.5x10^{6}/l) until they are fit enough to be discharged and their neutrophils are recovering. Patients who do not wish to be admitted must be counselled on the risk of going home and have regular (>3xweek) review arranged.

5.2 Initial patient assessment pathway

The following pathway demonstrates the proactive approach to the assessment and management required within the first 60 minutes of presentation ensuring compliance with the national standard for a patient with potential neutropenic sepsis.

The link below accesses the trust guidelines for the management of sepsis and septic shock patients. This includes screening tools for inpatient and Emergency department's assessment. It is essential when utilising this form that management of neutropenic sepsis box is ticked if a patient presents with signs of sepsis 6 weeks post SACT, prior to confirmation of neutropenia on the blood results.

http://www.treatmentpathways.worcsacute.nhs.uk/sepsis-key-documents/

PRESENTATION

Consider Neutropenic Sepsis IF:

- SACT in the last 6 weeks or known haematological malignancy
- Temperature >38.0°C or <36°C
- Clinically Unwell
- Rigors
- Cough

ASSESSMENT

Observations:

- Temperature
- Pulse
- Blood Pressure
- Respiratory Rate
- Oxygen Saturations

INVESTIGATION

Initiate Sepsis screening Pathway

- Identify possible source of infection e.g. line
- URGENT bloods FBC, U/Es, LFTs, CRP, Lactate
- Blood Cultures - always peripheral; central lines if possible
- Septic screen e.g. urine for culture, wound/ throat swabs, stool sample etc.
- Consider CXR
- Review ICE for previous microbiology culture results

MANAGEMENT

DO NOT WAIT FOR NEUTROPENIA TO BE CONFIRMED

- Antibiotics within **60** minutes, IV piperacillin-tazobactam (Tazocin®) 4.5 g IV 8 hourly
- For patients with a suspected penicillin allergy refer to (Appendix 1)
- Contact AOS team or 24 hour on call haematology or oncology consultant
- Escalation of care dependent on NEWS2 score
- Patients presenting with a NEWS2 score ≥ 5 should have gentamicin prescribed in addition to piperacillin-tazobactam (dose as per Trust guidelines)
- Patients known to be previously colonised or infected with piperacillin-tazobactam resistant pathogens should be discussed with microbiology

5.2 Ongoing Management

Day of Admission ⇓	Day 2 and beyond ⇓
Monitoring	
• NEWS2 chart • Where possible the patient should be admitted to a side room if expected duration of neutropenia >5 days • Observations every 30 minutes until stable, then 2 hourly for 4 hours, then 4 hourly if stable. • Even if observations stable the patient should be checked hourly as condition can deteriorate suddenly • Acknowledge that classic signs and symptoms may be absent, if patient is afebrile may still be septic • Ensure the acute oncology ANP has been informed of attendance/admission who has responsibility for ensuring the clinician with responsibility for the patients SACT or on call consultant is aware of admission the same day	• NEWS2 chart • Observations four hourly if stable • FBC, U&Es & CRP to be repeated daily until neutrophils>1 • Review by medical team and discuss with treating clinician or on call consultant regarding on-going management • NEWS2 score >5 escalate to critical care outreach
Medication	
• Discontinue any SACT, such as chemotherapy on admission ensuring safe storage/disposal following discussion with pharmacy • GCSF may be considered in profound neutropenia following discussion with treating clinician or on call Oncology / Haematology consultant	• Do not recommence any SACT until discussed with treating clinician
Antimicrobials	
• If the patient is not neutropenic, consider stopping or narrowing antimicrobial therapy; refer to Trust antibiotic guidelines to manage likely focus of infection • Review any previous microbiology culture and sensitivities and seek microbiologist's advice if needed regarding changes to antibiotic treatment.	• Refer to Trust antibiotic guidelines • Central line in situ consider addition of vancomycin if rigors etc. when line is used / fever not settling after 48 hours. • If fever continues after 48 hours discuss with microbiologist • Review antibiotics after 48 hours, consider de-escalation depending on culture result / focus of infection or discontinuation as soon as infection appears to have resolved and blood cultures are negative
Fluid balance	
• Refer to trust sepsis guidelines • Monitor urine output hourly aiming for urine output of 0.5ml/kg/hour • Intravenous fluids administered to maintain circulating volume	• Maintain 4 hourly fluid balance if condition stable.

5.3 Contact Numbers for Advice:

Oncology	
Acute Oncology Service (24 hours a day)	01905 760158 / 30048
Acute Oncology Nurses (Mon-Fri 0900-1700)	WRH Bleep 398 or 491 Alex Bleep: 0192
Oncology Consultant On-call (24 hours)	Via Switchboard
Haematology	
Haematology patient 24 hour contact number	01905 760568
Haematology Consultant On-call (24 hours)	Via Switchboard
Haematology CNS (Mon-Fri 0900-1700)	Ext 39115 / Bleep 357

6 Implementation

6.1 Plan for implementation

This document will be reviewed at the Chemotherapy Advisory Group (CAG) and the Medicines Safety Committee (MSC), once ratified the document will be distributed to all clinical areas that administer SACT and upload to the Haematology/ Oncology Intranet page (Policies).

6.2 Training and awareness

This guideline is to support the appropriate management of patients being admitted with neutropenic sepsis. All staff should have an understanding of recognising and assessing patients for signs and symptoms of sepsis.

7 Monitoring and compliance

7.1 Reports

A monthly and quarterly report is produced and presented to cancer board to identify compliance of patients receiving IV antibiotics within 1 hour of presenting to the trust (door to needle time).

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	All patients with suspected febrile neutropenia receive first dose antibiotics within 1 hour	On-going door to needle time audit	On-going	Acute Oncology Service	Haematology/ Oncology directorate	Monthly

8 References

- Dellinger RP, Levy MM, Carlet JM et al (2008)
  Surviving Sepsis Campaign: International Guidelines for the management of severe sepsis and septic shock: 2008 [published correction appears in Critical Care Medicine 2008, 36:1394-1396] Critical Care Medicine 2008 36:296-327

- Klastersky J. et al (2016) Management of febrile neutropaenia: ESMO Clinical Practice Guidelines. Annals of Oncology 27 (Supplement 5): 2016; v111–v118

- Hughes WT, Armstrong D, Bodey GP et al. (2002)
  Guidelines for the Use of Antimicrobial Agents in Neutropenic Patients with Cancer.
  Clinical Infectious Diseases 2002; 34 730-751

- Jeddi R, Achour M, Amor RB et al (2010)
  Factors associated with severe sepsis: prospective study of 94 neutropenic febrile episodes
  Hematology 2010 15(1) 28-32

- Kumar A, Roberts D, Wood K et al (2006)
  Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock, Critical Care Medicine 34 (6) 1589-1596

- Mackenzie I & Lever A (2007)
  Management of sepsis, British Medical Journal 335 929-932

- Marshall E & Innes H 2008
  Chemotherapy induced febrile neutropenia: management and prevention
  Clinical Medicine Vol 8 (4) 448-451

- National Chemotherapy Advisory Group 2009
  Chemotherapy: Ensuring Quality and Safety
  Department of Health

- NICE (2012) Neutropenic sepsis: prevention and management of Neutropenic sepsis in cancer patients
  NICE clinical guideline 151

- NICE (2016) Sepsis: recognition, assessment and early management
  NICE guideline 51

- Rivers E, Nguyen B Havstad S et al (2001)
  Early goal directed therapy in the treatment of severe sepsis and septic shock
  New England Journal of Medicine 345 1368-1377

- Schimpff S (Chap1)
  Textbook of Febrile Neutropenia
  Kenneth Rolston and Edward B Rubenstein (Eds) Martin Dunitz 2001

Trust References: Code:

Sepsis Treatment Pathway v2.1 http://www.treatmentpathways.worcsacute.nhs.uk/sepsis-key-documents/	WAHT-TP-104

10. Background

10.1. Equality requirements

The content of this policy has no adverse effect on equality and diversity.

10.2 Financial risk assessment

The content of this policy has no adverse effect on finance.

10.3 Consultation

This document has been developed in consultation with the Chemotherapy/Radiotherapy Project Nurse, Acute Oncology Nurse Practitioners, microbiology, haematology and oncology consultants, Emergency medicine consultants and Lead Chemotherapy Nurse.

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Acute Oncology Lead Clinician
Haemo-Oncology Lead Clinician
Acute Oncology Nurse Practitioners
Microbiologist
Sepsis Lead Nurse/ Consultant
Clinical Director
Emergency Medicine Consultant
Lead Chemotherapy Nurse
Lead Oncology Pharmacist

This key document has been circulated to the chair(s) of the following committees / groups for comments;

Committee
Chemotherapy Advisory Group (CAG)
Medicines Safety Committee (MSC)
Sepsis Improvement Meeting
AOS Ops Meeting

10.4 Approval Process

The policy will be reviewed and revised every three years or sooner if required.

10.5 Version Control

This section should contain a list of key amendments made to this document each time it is reviewed.

Date	Amendment	By:
8.7.2003	Guideline approved by Clinical Effectiveness Committee	
11.12.2007	Revised by Clinical Leads and approved by Medicines Safety Committee	Mrs S Sharp
01.2009	Doses revised by Lead Pharmacist	Mrs S Sharp
12.2010	Revised by Chemotherapy Project Nurse	Mrs S Sharp
01.2011	Revised and minor amendments to charts pages 4 &5	Mrs S Sharp
03.2012	Revised with amendments on pages 4,5 & 8	Mrs S Sharp
04.2013	Revised to reflect NICE Guideline (CG151) where clinically appropriate and agreed by accountable director	Mrs S Sharp Dr S Shafeek
09.2015	Reviewed by Clinical leads. Changes made and resubmitted to appropriate committees	Mrs S Sharp
04.2021	Review of antimicrobial choice to reflect stewardship priorities	Dr H Morton

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page;

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	x	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Oliver Chapman / Samantha Toland**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Samantha Toland	**Lead Chemotherapy Nurse**	**S.toland@nhs.net**
Date assessment completed	**7/9/21**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title: Policy – Guideline for the management of suspected Neutropenic Sepsis in Oncology / Haematology patients**			
What is the aim, purpose and/or intended outcomes of this Activity?	Provide updated guidance for the management of neutropenic sepsis in oncology / haematology patients			
Who will be affected by the development & implementation of this activity?	❑ ☒ ❑ ❑	Service User Patient Carers Visitors	☒ ❑ ❑ ❑	Staff Communities Other ______________________

Is this:	☒ Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	N/A
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Not required- it is an update of an existing policy- the only thing changed is the antibiotic to be given
Summary of relevant findings	N/A

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		X		There should be no impact as the policy is inclusive of all equality groups
Disability		X		There should be no impact as the policy is inclusive of all equality groups
Gender Reassignment		X		There should be no impact as the policy is inclusive of all equality groups
Marriage & Civil Partnerships		X		There should be no impact as the policy is inclusive of all equality groups
Pregnancy & Maternity		X		There should be no impact as the policy is inclusive of all equality groups
Race including Traveling Communities		X		There should be no impact as the policy is inclusive of all equality groups
Religion & Belief		X		There should be no impact as the policy is inclusive of all equality groups
Sex		X		There should be no impact as the policy is inclusive of all equality groups

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Sexual Orientation		X		There should be no impact as the policy is inclusive of all equality groups
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		X		There should be no impact as the policy is inclusive of all equality groups
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		X		There should be no impact as the policy is inclusive of all equality groups

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
		.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)	**At policy review**			

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

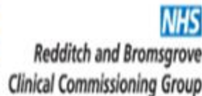
1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected

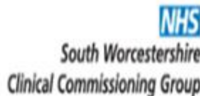
characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

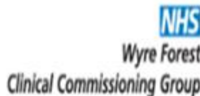
1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	[signature]
Date signed	7/9/21
Comments:	
Signature of person the Leader Person for this activity	[signature]
Date signed	20/9/21
Comments:	







Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	**Yes/No**
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval

Worcestershire Acute Hospitals NHS Trust

Appendix 1: Emergency Sepsis Prescription (Printed on Blue paper)

Emergency Sepsis Antibiotic Prescription for Haematology and Oncology Patients
ONLY for use if 'neutropenic sepsis' is suspected*

Affix Patient Label here or record
NAME:…………………………………………………
NHS NO: ______________________
HOSP NO: ______________________
DOB: __/__/____ MALE □ FEMALE □

WEIGHT: KGS

ALLERGIES/ADVERSE DRUG REACTIONS		
None Known ☐	Source	Signature
Date:	Drug	Reaction details

Emergency Helpline Number:
If you feel unwell and need emergency advice please call
01905 760158
**** SINGLE USE PRESCRIPTION ONLY****

IF NEWS2 SCORE ≥5 ADD GENTAMICIN 5mg/Kg

***If you have a temperature of 38°C or above *and/or* shivers or shakes (feel hot or cold); feel dreadful for no obvious reason; have a sore mouth making drinking or swallowing difficult; severe sickness / vomiting or watery diarrhoea; pain when passing urine; your line or injection site is red, swollen, painful or oozing**
Please bring this to hospital with you – the chemotherapy team or the Acute Oncology team can arrange a replacement when used.

Date Prescribed	Drug	Dose	Route	Prescriber	Date of Admin	Time of Admin	Admin By:	Specific Instructions:
	PIPERACILLIN-TAZOBACTAM (in 100mls sodium chloride 0.9% over 30 mins)	4.5g	IV	Signature: Name: GMC/PIN:				
Date Prescribed	**Drug**	**Dose**	**Route**	**Prescribers Details**	**Date of Admin**	**Time of Admin**	**Admin By:**	**Specific Instructions**
			IV	Signature: Name: GMC/PIN:				
Date Prescribed	**Drug**	**Dose**	**Route**	**Prescribers Details**	**Date of Admin**	**Time of Admin**	**Admin By:**	**Specific Instructions**
				Signature: Name: GMC/PIN:				

NHS Worcestershire Acute Hospitals NHS Trust

Emergency Sepsis Antibiotic Prescription for Haematology and Oncology Patients ONLY for use if 'neutropenic sepsis' is suspected*

Affix Patient Label here or record
NAME:...
NHS NO: ______________________
HOSP NO: ______________________
DOB: __/__/____ MALE □ FEMALE □

WEIGHT: KGS

ALLERGIES/ADVERSE DRUG REACTIONS		
None Known ☐	Source	Signature
Date:	Drug	Reaction details

Emergency Helpline Number:
If you feel unwell and need emergency advice please call
01905 760158
**** SINGLE USE PRESCRIPTION ONLY****

***If you have a temperature of 38°C or above *and/or* shivers or shakes (feel hot or cold); feel dreadful for no obvious reason; have a sore mouth making drinking or swallowing difficult; severe sickness / vomiting or watery diarrhoea; pain when passing urine; your line or injection site is red, swollen, painful or oozing**
Please bring this to hospital with you – the chemotherapy team or the Acute Oncology team can arrange a replacement when used.

Date Prescribed	Drug	Dose	Route	Prescriber	Date of Admin	Time of Admin	Admin By:	Specific Instructions:
	MEROPENEM (Bolus in 20mls sodium chloride 0.9%) (Use with mild Penicillin allergy – see overpage)	1g	IV	Signature: Name: GMC/PIN:				
Date Prescribed	Drug	Dose	Route	Prescribers Details	Date of Admin	Time of Admin	Admin By:	Specific Instructions
				Signature: Name: GMC/PIN:				
Date Prescribed	Drug	Dose	Route	Prescribers Details	Date of Admin	Time of Admin	Admin By:	Specific Instructions
				Signature: Name: GMC/PIN:				

NHS Worcestershire Acute Hospitals NHS Trust

Emergency Sepsis Antibiotic Prescription for Haematology and Oncology Patients

ONLY for use if 'neutropenic sepsis' is suspected*

Affix Patient Label here or record
NAME:...
NHS NO: ______________________
HOSP NO: ______________________
DOB: __/__/____ MALE □ FEMALE □

WEIGHT: KGS

ALLERGIES/ADVERSE DRUG REACTIONS		
None Known □	Source	Signature
Date:	Drug	Reaction details

Emergency Helpline Number:
If you feel unwell and need emergency advice please call
01905 760158
**** SINGLE USE PRESCRIPTION ONLY****
ONLY FOR USE IN PATIENTS WITH SEVERE PENICILLIN ALLERGY

***If you have a temperature of 38°C or above *and/or* shivers or shakes (feel hot or cold); feel dreadful for no obvious reason; have a sore mouth making drinking or swallowing difficult; severe sickness / vomiting or watery diarrhoea; pain when passing urine; your line or injection site is red, swollen, painful or oozing**
Please bring this to hospital with you – the chemotherapy team or the Acute Oncology team can arrange a replacement when used.

Date Prescribed	Drug	Dose	Route	Prescriber	Date of Admin	Time of Admin	Admin By:	Specific Instructions:
	GENTAMICIN (5mg/kg) in 100ml sodium chloride 0.9% over 1 hour		IV	Signature: Name: GMC/PIN:				

Date Prescribed	Drug	Dose	Route	Prescribers Details	Date of Admin	Time of Admin	Admin By:	Specific Instructions
	VANCOMYCIN (in 250mls sodium chloride 0.9% over 90 mins)	1G	IV	Signature: Name: GMC/PIN:				

Date Prescribed	Drug	Dose	Route	Prescribers Details	Date of Admin	Time of Admin	Admin By:	Specific Instructions
	CIPROFLOXACIN (Ready-made over 1 hour)	400mg	IV	Signature: Name: GMC/PIN:				

Patient Information

Remember to bring this pack and chemotherapy alert card with you.

If you need to attend the Accident and Emergency Department, please show this pack to a member of staff and remind them that you must **receive treatment promptly.**

If neutropenic sepsis is suspected you should expect your antibiotics to be given within **one hour of arrival to hospital**.

Please **tell the staff,** if you have taken Paracetamol within the previous 6 hours or are on steroids, as this can lower your temperature reading.

If you experience severe chest pain, difficulty in breathing, or sudden onset of face weakness, arm or leg weakness or speech problems you **must dial 999** immediately for an emergency ambulance**.**

Health Care Professionals

Flow chart opposite: For further information refer to the Trust Sepsis Guidelines, Guideline for Management of suspected Neutropenic Sepsis Induced by SACT (WAHT-HAE-003), Trust Antimicrobial Guidelines (on intranet)

Always discuss with either the consultant haematologist or oncologist on call 24/7.

Other considerations include:
Clostridium Difficile treatment – see trust guideline and send a stool sample
Probable Central Venous Access Infection: Consider VANCOMYCIN 1g IV infusion 12 hourly

Health Care Professionals

FLOW CHART FOR PRESCRIBING OF FIRST LINE ANTIBIOTICS IN SUSPECTED NEUTROPENIC SEPSIS

Does the patient have a penicillin allergy?

No

TAZOBACTAM (TAZOCIN®) 4.5 g intravenous infusion in 50 ml sodium chloride 0.9% over 30 minutes 8 hourly
If NEWS2 ≥ 5:
Give **GENTAMICIN** 5mg/kg (estimated ideal body weight) ONCE DAILY IV infusion over 30 min (Maximum dose 560 mg daily)

Yes

Patients **WHO HAVE NOT HAD** an anaphylactic or accelerated reaction including non-urticarial rash: **Give MEROPENEM 1g IV injection over 5 mins 8 hourly**

Patients **WHO HAVE HAD** an anaphylactic or accelerated reaction: **Administered in the order below:**
GENTAMICIN 5mg/kg (estimated ideal body weight) ONCE DAILY IV infusion over 30 min (Maximum dose 560 mg daily). One dose only should be prescribed AND

VANCOMYCIN 1g IV infusion over 90 mins 12 hourly **AND**

CIPROFLOXACIN 400 mg IV infusion over 60 mins TWICE DAILY **AND**

(If signs of peri-anal infection or abdominal pain consider adding **METRONIDAZOLE** 500 mg IV over 20 min 8 hourly)

Appendix 2: Operational Arrangements for admission of Neutropenic patients to Worcestershire Acute Hospitals NHS Trust

The importance of the patient receiving IV antibiotics and other acute interventions within an hour irrespective of where the patient presents and is being managed should not be delayed by looking for a side room as this can be reviewed at a later stage. The important issue is the acute management and treatment of the patient with potential Neutropenic Sepsis, ensuring all acute interventions are carried out as quickly as possible. Once these have been undertaken a discussion can be undertaken as to whether the patient should be nursed in a side room.

Patients who are neutropenic (neut <1.0) and are admitted to a Worcestershire Hospital as an emergency should ideally be nursed in a side-room (non-negative pressure) but may be nursed temporarily in a bay with other patients (and must be isolated at earliest opportunity) while **waiting** for a side-room if:

- There are no side-rooms available
- Available side-rooms are not felt to be suitable by the admitting team for example:
  - Patient has complex or specialist nursing/care needs that can only be delivered in a certain ward/area e.g. CCU, ITU
  - Patient is very unwell and available side-room is in a ward where the staff do not have the skills to nurse the patient, or the room is remote and does not allow for easy patient observation
- The bay does not contain patients with active transmittable infection

If there are several neutropenic patients waiting for side-rooms the following should be the priority:
1. Profound neutropenia following chemotherapy (a neutrophil count of less than 0.5)
2. Neutropenia following chemotherapy (a neutrophil count of between 0.5 and 1.0)
3. Chronic non-chemotherapy related neutropenia

If there are patients without a haematological diagnosis in Laurel 3 then they should ideally be moved to allow haematology patients with neutropenia to be admitted to Laurel 3. Neutropenic patients can be cohorted in a bay on laurel 3 and Laurel 2 Oncology. This should be completed after a risk assessment ensuring there are no patients with infectious diseases in the bay. This risk assessment should be carried out on patients transferring in from other areas, such as A and E, AEC and MAU.

Appendix 3: ED Suspected Sepsis screening tool

Affix Patient Label here or record

Name:

NHS No:

Hosp No:

D.O.B: D D / M M / Y Y Y Y Male ☐ Female ☐

Ward: Cons:

SUSPECTED SEPSIS SCREENING TOOL
FOR ALL PATIENTS OVER 18 YEARS OLD AND NEWS 5 AND ABOVE

NHS Worcestershire Acute Hospitals NHS Trust

News......... Date............. Time......... Sig.................

Could this be due to an infection?

Cough / sputum / chest pain		Headache with neck stiffness	
Abdo pain / distension / diarrhoea		Dysuria / loin pain	
Fever		Cellulitis / wound infection / device-related infection	
Endocarditis		Septic arthritis	
Immunosuppression		Yes / other site / source unclear	

No → **Low risk of sepsis**

Use standard protocols, review if deteriorates

Form Complete ☐

Yes ↓

Could this be sepsis?
1 or more clinical signs of organ dysfunction (Red Flags/High risk criteria)?

Systolic BP under **90mmHg** or drop >40 from normal	
New need for oxygen to keep SpO2 over **92%**	
AKI: Urine output under **0.5ml/kg/hr** for 2 hours or no urine output for **18 hours**	
Raised respiratory rate greater than **25 breaths / min**	
Chemotherapy within 6 weeks **Use Emergency Sepsis Pack**	
Objective evidence of **new altered mental state**: ACVPU score C or less	
Heart rate greater than **130 bpm**	
Lactate over **2mmol/l**	
Non-blanching **rash** or **mottled / ashen / cyanotic** skin, lips or tongue	

No →

1 or more Amber Flags / Moderate Risk criteria present?

Does the patient look **unwell**?	
Recent **trauma/surgery/pregnancy?**	
Relatives concerned about **mental status**?	
Acute **deterioration** in functional ability?	
Respiratory rate **21-24** or breathing hard	
Heart rate **91-130** or new arrhythmia	
Systolic BP **91-100mmHg**	
Not passed urine in last **12-18** hours	
Clinical sign of wound, device or skin **infection**	
Temperature less than **36°C**	

No ↑ (to Low risk of sepsis)

Yes ↓

Moderate risk of sepsis
Treat suspected Infection

- Blood cultures
- FBC / U&E / CRP / **Lactate** / Clotting
- **Antibiotics** directed at source of infection (preferably after cultures **but Do Not delay** administration)
- Reassess for **Sepsis** with hourly observations
- Consider **IV fluid** therapy
- Review by **ST3+ Dr Within 3H**

Form Complete ☐

Yes ↓

SEPSIS This is **Life Threatening** start the clock	Time Zero (24hr clock):	Initials:
ALL Sepsis 6 actions MUST be completed within 1h	**Time Complete**	**Reason not done**
Blood Cultures- Urine/sputum/wound samples for MC&S plus: FBC, U&E, LFT, CRP, Clotting and glucose		
IV Antibiotics as per Trust guidelines within an hour. **Make Sure That They Are Given. Review antibiotic prescription within 72hours and/or if patient deteriorates**		
Oxygen High flow 15l/min via non-rebreathe mask. Target saturation 94% or more (COPD 88-92%)		
IV Fluids 500ml 0.9% STAT if SBP less than 90mmHg. Pt will require 30ml/kg fluid resuscitation (crystalloid) e.g. 2L Hartmann's for 70kg Pt. (consider 0.9% saline if potassium over 5.5mmol/l)		
Serial serum Lactate measurement		
Catheterise and **Hourly** fluid balance monitoring		

Escalate

Alert SENIOR ED doctor/Consultant and explain that the patient has SEPSIS.

Make a treatment escalation plan

Pt. sticker in Red Sepsis folder for audit ☐

Consultant informed?	Y ☐	N ☐
Escalation to ICU appropriate?	Y ☐	N ☐
Treatment limitations?	Y ☐	N ☐
Form Complete ☐		

Review Response to 'Sepsis 6'. **Consultant review** if condition fails to respond **within 1h** of initial treatment
If **SBP <90 + lac >2** following recommended fluid resuscitation = **Septic Shock (>40% mortality)**
Call ICU Team Bleep 0933 Alex/ 702 WRH **+/- consider CPR status**

PC WR5068 Sepsis Screening Tool Emergency Department Version 3 Page 1 of 2

Affix Patient Label here or record:

Name: ....

NHS No: | | | | | | | | | |

Hosp No: | | | | | | | | | |

D.O.B: D D / M M / Y Y Y Y Male ☐ Female ☐

Ward:.................................Cons:.................................

Sepsis Patient Pathway

Emergency Department

News.......... Date.............. Time.......... Sig..................

Patient arrives in ED

Patient triaged
Nurse records observations, Calculates NEWS score

Complete NEWS on CAS card

NEWS ≥5

NEWS <5

Use your clinical judgement! If patient is NEWS <5 but you suspect sepsis, start the sepsis pathway regardless.

Nurse prints 'Suspected sepsis' proforma

Suspected infection

NO suspected infection

Nurse ticks NO to suspected sepsis

(screening complete)

1 or more clinical signs of organ dysfunction

No

1 or more Amber flags present:

Nurse/Dr treats suspected infection and ticks form complete in 'Moderate risk' box

(Screening complete)

Yes

Nurse completes proforma as far as possible and contacts ED Dr/parent team Dr for urgent review

Dr/ANP reviews patient and completes proforma. 'Sepsis 6' and escalation undertaken.

Patient sticker in Red Sepsis folder for audit.

(Screening complete)

!

If **SEPSIS**

'Sepsis 6' within 1h:

- *Recording full set of observations + NEWS*
- *Start high flow oxygen*
- *IV access and send blood samples including blood cultures and lactate*
- *Start IV crystalloid*
- *Give IV antibiotics within 1 hour (www.worcsacute.nhs.uk/antibiotic-treatment-guidelines-adults/)*
- *Insert urinary catheter and monitor hourly urine output/fluid balance*
- *Discuss with senior ED doctor and consider referral to ICU*

PC WR5068 Sepsis Screening Tool Emergency Department Version 3 Page 2 of 2

Affix Patient Label here or record:

Name: ....

NHS No:

Hosp No:

D.O.B: D D / M M / Y Y Y Y Male ☐ Female ☐

Ward:.............................. Cons:..............................

SUSPECTED SEPSIS SCREENING TOOL

FOR ALL PATIENTS OVER 18 YEARS OLD AND NEWS 5 AND ABOVE

NHS
Worcestershire Acute Hospitals
NHS Trust

News.......... Date.............. Time.......... Sig..................

Could this be due to an infection?

Cough / sputum / chest pain		Headache with neck stiffness	
Abdo pain / distension / diarrhoea		Dysuria / loin pain	
Fever		Cellulitis / wound infection / device-related infection	
Endocarditis		Septic arthritis	
Immunosuppression		Yes / other site / source unclear	

No →

Low risk of sepsis

Use standard protocols, review if deteriorates

Form Complete ☐

Yes ↓

Could this be sepsis?
1 or more clinical signs of organ dysfunction (Red Flags/High risk criteria)?

Systolic BP under **90mmHg** or drop >40 from normal	
New need for oxygen to keep SpO2 over **92%**	
AKI: Urine output under **0.5ml/kg/hr** for 2 hours or no urine output for **18 hours**	
Raised respiratory rate greater than **25 breaths / min**	
Chemotherapy within 6 weeks **Use Emergency Sepsis Pack**	
Objective evidence of **new altered mental state**: ACVPU score C or less	
Heart rate greater than **130 bpm**	
Lactate over **2mmol/l**	
Non-blanching **rash** or **mottled / ashen / cyanotic** skin, lips or tongue	

No →

No ↑

1 or more Amber Flags / Moderate Risk criteria present?

Does the patient look **unwell**?	
Recent **trauma/surgery/pregnancy?**	
Relatives concerned about **mental status**?	
Acute **deterioration** in functional ability?	
Respiratory rate **21-24** or breathing hard	
Heart rate **91-130** or new arrhythmia	
Systolic BP **91-100mmHg**	
Not passed urine in last **12-18** hours	
Clinical sign of wound, device or skin **infection**	
Temperature less than **36°C**	

Yes ↓

Moderate risk of sepsis
Treat suspected Infection

- Blood cultures
- FBC / U&E / CRP / **Lactate** / Clotting
- **Antibiotics** directed at source of infection (preferably after cultures **but Do Not delay** administration)
- Reassess for **Sepsis** with hourly observations
- Consider **IV fluid** therapy
- Review by **ST3+ Dr Within 3H**

Form Complete ☐

Yes ↓

SEPSIS This is **Life Threatening** start the clock	Time Zero (24hr clock):	Initials:

ALL Sepsis 6 actions MUST be completed within 1h	Time Complete	Reason not done	24hr review
Blood Cultures- Urine/sputum/wound samples for MC&S plus: FBC, U&E, LFT, CRP, Clotting and glucose			
IV Antibiotics as per Trust guidelines within an hour. Make Sure That They Are Given. **Review antibiotic prescription within 72hours and/or if patient deteriorates**			
Oxygen High flow 15l/min via non-rebreathe mask. Target saturation 94% or more (COPD 88-92%)			
IV Fluids 500ml 0.9% STAT if SBP less than 90mmHg. Pt will require 30ml/kg fluid resuscitation (crystalloid) e.g. 2L Hartmann's for 70kg Pt. (consider 0.9% saline if potassium over 5.5mmol/l)			
Serial serum Lactate measurement			
Catheterise and **Hourly** fluid balance monitoring			

Escalate ↓

Call (use **SBAR**): **ST3+ Dr** and **Critical Care Outreach Team** 0216/0217Alex / 421/422 WRH

Make a treatment escalation plan

Pt. sticker in Red Sepsis folder for audit ☐

Consultant informed?	Y ☐	N ☐
Escalation to ICU appropriate?	Y ☐	N ☐
Treatment limitations?	Y ☐	N ☐

Form Complete ☐

Review Response to 'Sepsis 6'. **Consultant review** if condition fails to respond **within 1h** of initial treatment
If **SBP <90 + lac >2** following recommended fluid resuscitation = **Septic Shock (>40% mortality)**
Call ICU Team Bleep 0933 Alex/ 702 WRH +/- **consider CPR status**

PC WR5067 Sepsis Screening Tool Inpatients Version 3 Page 1 of 2

Affix Patient Label here or record

Name:	
NHS No:	
Hosp No:	
D.O.B: DD/MM/YYYY	Male ☐ Female ☐
Ward:	Cons:

Sepsis Patient Pathway
Inpatient Wards

News.......... Date............. Time.......... Sig..................

Nurse records observations and Calculates NEWS score

NEWS ≥5 | NEWS <5

Use your clinical judgement! If patient is NEWS <5 but you suspect sepsis, start the sepsis pathway regardless.

Complete NEWS escalation sticker AND stick in notes

Nurse contacts parent team Dr/Dr on-call or ANP for URGENT review

Nurse obtains 'Suspected sepsis' screening tool and completes as far as possible

Suspected infection | NO suspected infection

Nurse ticks NO to suspected sepsis

(screening complete)

1 or more clinical signs of organ dysfunction

No → 1 or more Amber flags present:

Nurse/Dr treats suspected infection and ticks form complete in 'Moderate risk' box

(Screening complete)

Yes → Dr/ANP reviews patient and completes proforma. 'Sepsis 6' and escalation undertaken.

Patient sticker in Red Sepsis folder for audit.

(Screening complete)

! If SEPSIS

'Sepsis 6' within 1h:

- *Record full set observations + NEWS*
- *Start high flow oxygen*
- *IV access and send blood samples including blood cultures and lactate*
- *Start IV crystalloid*
- *Give IV antibiotics within 1 hour (www.worcsacute.nhs.uk/antibiotic-treatment-guidelines-adults/)*
- *Insert urinary catheter and monitor hourly urine output/fluid balance*
- *Discuss with senior doctor and consider referral to ICU*

Consultant review of antibiotics to be documented

! Within 72 hours

PC WR5067 Sepsis Screening Tool Inpatients Version 3 Page 2 of 2