

# **NCIS – Decision Support Guide**

This guide was developed to assist users in understanding the decision support functionality of NCIS. It describes the following:

- the different types of decision support available to different users
- the actions available to users when decision support is triggered

If you have any queries or suggestions for improvement, do not hesitate in contacting the NCIS office <u>ncis@cancercontrol.ie</u>

#### **Important Information About NCIS**

NCIS users should use their clinical judgement when prescribing, validating, dispensing or administering patient treatments.

**REMEMBER:** Your electronic signature is considered equivalent to your written signature.

- Regimens built in NCIS are based on approved NCCP Chemotherapy Regimens. NCIS allows the modification of regimens at patient level. Use of NCIS regimens is the responsibly of the prescribing clinician.
- If there is a dose range in the regimen (for example Carboplatin AUC 3-6) the dose prescribed should be adjusted to the required dose.
- NCIS regimens have some Decision Support rules inbuilt, however it does not alert for all
  potential modifications.
  - **Do not** assume that the absence of a decision support alert means that the dose is appropriate for that patient.
- The Drug File in NCIS is built based on information provided by manufacturers, regulatory bodies and research on drug stability. NCIS assigned drug stability can be adjusted locally.
- A number of laboratory results are displayed in NCIS and may also be used in dose and decision support calculations. Laboratory results should continue to be reviewed outside NCIS as per the local hospital policy.

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#### **Types of Decision Support in NCIS**

Decision support rules are built in NCIS Regimens based on the Dose Modifications in the corresponding NCCP National Regimen

A user may encounter THREE different types of decision support while attempting to change the status of a medication:

**Cycle Postponement**- If a medical result value is outside the specified range, the user will be prompted to postpone the regimen for a specified period of time.

**Medical Result Check**- If a medical result value is outside the specified range, user will be prompted to check medical result.

**Dose Modification Rule**- If a medical result value is outside the specified range, user will be prompted to modify dose.

NOTE: Laboratory results populated in NCIS.Med by interface will include the reference range from the Laboratory – Decision support rules operate using the reference values built in the regimen not the reference range from the laboratory interface.

This Training Guide details NCIS decision support functionality for Prescribers, Pharmacists and Nurses

#### The following scenarios are described for each user:

- 1. Cycle Postponement\* 1.1 Medical result not available 1.2 Medical result out of range 1.3 Rule accepted by user 1.4 Rule ignored by user
- 2. Medical Result Check
  - 2.1 Medical result not available
  - 2.2 Medical result out of range
  - 2.3 Rule accepted by user
  - 2.4 Rule ignored by user

#### 3. Dose Modification Rule \*\*

- 3.1 Medical result not available
- 3.2 Medical result out of range
- 3.3 Rule accepted by user
- 3.4 Rule ignored by user

Note: \*Cycle postponement rules do not appear to pharmacist or nurse users \*\* Dose modification rules do not appear for nurse users.



Prescriber Scenario 1.1

Scenario 1.1: Cycle postponement- medical results not available.

### **Rule:** Cycle Postponement-If PLT<100, postpone by 7 days

The pre point th prescrib	scriber receives the below warning when attempting to physician verify a drug. At t e prescriber can manually enter the medical result or ignore the rule and continue ing
* Note!	rent medical result!
NEUT: No c	irrent entry ent entry
Rule: If NE	T less than 1x10(9)/L, then postponement by 7 days. less than 100x10(9)/L, then postponement by 7 days.
Possible re	asons
Maintair	dose intensity
Other-p     Perform	ase outline below
Reason —	
	<b>v</b>
<u>p</u>	Enter missing medical result values

## Prescriber Scenario 1.2

Scenario 1.2 Cycle postponement- results out of range

Rule: Cycle Postponement-If PLT<100, postpone by 7 days

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#### **Prescriber Scenario 1.3**

#### Scenario 1.3 Cycle postponement- accept rule

Rule: Cycle Postponement-If PLT<100, postpone by 7 days

If the prescriber chooses to accept the cycle postponement rule the cycle will be pushed out by the time frame specified by the rule
 If the prescriber chooses to accept the cycle postponement rule the cycle will be pushed out by the time frame specified by the rule
 If Nov - 07 Nov
 Cycle 1 DOXOrubicin 75mg/m<sup>2</sup> 1 Day
 Cycle postponement rules: If NEUT less than 1x109/L, then postponement by 7 days • If PLT less than 100x10(9)/L, then postponement by 7 days
 If Nov - 14 Nov
 Cycle 1 DOXOrubicin 75mg/m<sup>2</sup> 1 Day
 Cycle 1 DOXOrubicin 75mg/m<sup>2</sup> 1 Day
 Cycle 1 DOXOrubicin 75mg/m<sup>2</sup> 1 Day
 Cycle postponement rules: If NEUT less than 1x10(9)/L, then postponement by 7 days • If PLT less than 100x10(9)/L, then postponement by 7 days

#### **Prescriber Scenario 1.4**

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Scenario 1.4 Cycle postponement- ignore rule

Rule: Cycle Postponement-If PLT<100, postpone by 7 days

If the prescriber chooses to ignore the cycle postponement rule the cycle will remain on original date and evidence of the rule being ignored will appear in the drug log



Status of cycle progresses to physician verified and evidence that cycle postponement rule has been ignored appears on drug log

Prescriber Scenarios 2.1

Scenario 2.1 Medical Result Check-results not available

Rule: Medical Result Check- If AST greater or equal to 69 refer to regimen

DOXOrubicin 149.74m	9	
AST: No current entry		
Rule: If AST between 69 If AST greater tha If AST greater tha	PU/L and 104U/L, then modify to 75%. n or equal to 104U/L, then modify to 50%. n or equal to 69U/L, then refer to regimen.	
Possible reasons		
Adverse result due t	o disease process	
Maintain dose inten	sity	
	- Delow	
Reason		
· · · · · · · · · · · · · · · · · · ·		

# Prescriber Scenarios 2.2

Scenario 2.2 Medical Result Check-results out of range

Rule: Medical Result Check- If AST greater or equal to 69 refer to regimen

<u>u</u>	In this scenario prescriber receives the below warning when attempting to physician verify a drug
	* Warning!
	A Medical result check!
	DOXOrubicin 149.74mg
	AST: 70U/L
	Rule: If AST greater than or equal to 69U/L, then refer to regimen.
	Confirm medical result values

Prescriber Scenarios 2.3

Scenario 2.3 Medical Result Check-accept rule

Rule: Medical Result Check- If AST greater or equal to 69 refer to regimen

A Medical result check!	
DOXOrubicin 149.74mg	
AST: <b>70U/L</b>	
Rule: If AST greater than or equal to 69U/L, then refer to regimen.	
	Confirm medical result values
prescriber chooses to accept medical result c lanned	heck, they can click 'cancel' and status retur

## Prescriber Scenarios 2.4

Scenario 2.4 Medical Result Check- ignore rule

Rule: Medical Result Check-If AST greater or equal to 69 refer to regimen

A Medical result check!			
DOXOrubicin 149.74mg			
AST: 70U/L			
Rule: If AST greater than or equal to 69	U/L, then refer to regimen.		
		Confirm medical result values	🗶 Cance
f prescriber chooses to ign status progresses to 'physic	ore medical result check	, they can click 'confirm me	edical result v

Prescrib	er Scenarios 3.1
Scenario	3.1 Dose Modification-results not available
<b>Rule:</b> Do	se Modification Rule- If AST between 69 and 104 dose modify to 75%
<u>u</u>	n this scenario, prescriber receives the below warning when attempting to physician verify a drug
	No current medical result!  DOXOrubicin 149.74mg
	AST: No current entry Rule: If AST between 69U/L and 104U/L, then modify to 75%. If AST greater than or equal to 104U/L, then modify to 50%. If AST greater than or equal to 69U/L, then refer to regimen.
	Possible reasons Adverse result due to disease process Adverse result due to disease process Aintain dose intensity Other: please outline below
	Reason
	Enter missing medical result value     Grancel

## Prescriber Scenarios 3.2

Scenario 3.2 Dose Modification-results out of range

Rule: Dose Modification Rule- If AST between 69 and 104 dose modify to 75%

Prescriber Scenarios 3.3

Scenario 3.3 Dose Modification-Accept dose modification

**Rule:** Dose Modification Rule-If AST between 69 and 104 modify to 75%

Modify dose to 7	15%?
Current dose: DOXOru	bicin 149.74mg
Rule: If AST between	69U/L and 104U/L, then modify to 75%.
Possible reasons	
<ul> <li>Adverse result due</li> <li>Maintain dose inter</li> </ul>	to disease process nsity
Other: please outlin	e below
Reason	
	🚱 Dose to 75% 🕥 Maintain dose (100%)
And the second sec	
	ration Wizard
osage Modific	cation Wizard
Josage Modific	Dosage Modification Wizard
Josage Modific	Dosage Modification Wizard
Should sub	Dosage Modification Wizard Dosequent medications with DOXOrubicin also be modified to 75% with an
Should sub	Dosage Modification Wizard Dosequent medications with DOXOrubicin also be modified to 75% with an administration route by intravenous injection?
	Dosage Modification Wizard Dosequent medications with DOXOrubicin also be modified to 75% with an administration route by intravenous injection?
Should sut	Dosage Modification Wizard Dosequent medications with DOXOrubicin also be modified to 75% with an administration route by intravenous injection?
Should sut	Dosage Modification Wizard Desequent medications with DOXOrubicin also be modified to 75% with an administration route by intravenous injection? I subsequent medications: 3 more
Should sut	Dosage Modification Wizard Dosequent medications with DOXOrubicin also be modified to 75% with an administration route by intravenous injection? I subsequent medications: 3 more

Prescriber Scenarios 3.4

Scenario 3.4 Dose Modification- Ignore dose modification

*Rule:* Dose Modification Rule- If AST between 69 and 104 dose modify to 75%

If prescriber chooses to ignore dose modification rule, they can click 'Maintain dos reason and status progresses to physician 'verified' with evidence of the dose mod	e 100%' with lification rule
ignored appearing on drug log (see below)	
👶 Notel	
Modify dose to 75%?	
Current dose: DOXOrubicin 149.74mg	
AST: 70U/L	
Rule: If AST between 69U/L and 104U/L, then modify to 75%.	
Possible reasons ✓ Adverse result due to disease process	
Maintáin dose intensity     Other: please outline below	
Reason	
Al Dece to 75%	
	Extra at fra
DUSE MODIFICATION RULE IGNORED by doctors doctor, doctors on 31 Oct at 15:11	
Adverse result due to disease process	ulug log li
Adverse result due to disease process	
DUVSICIAN VEDICIED by dester? dester? dester? on 21 Oct at 15:11	

## **Pharmacist Scenarios** Note: Cycle Postponement warnings will not trigger for pharmacists but evidence of cycle postponement rules that were previously triggered for the prescriber appear in the drug log PHYSICIAN-VERIFIED 30min DOXOrubicin 149.74mg (75mg/m<sup>2</sup> BSA Dubois) in Bolus • by intravenous injectio Edit flags 🔽 📍 Medication number 17444 • based on regimen medication 11033 Place of delivery SLH - SLH Ward • Cost Center SLH - Dr. Cliona Grant Dose modification rules and medical result check rules : If AST between 69U/L and 104U/L, then modify to 75%. • If AST greater than or equal to 104U/L, then modify to 50%. • If AST greater than or equal to 69U/L, then refer to regimen. If Creatinine Clearance (CrCI- Cockcroft Gault) less than 30mL/min, then refer to regimen. • If Total Bilirubin between 20umol/L and 50umol/L, then modify to 50%. • If Total Bilirubin between 50umol/L and 85umol/L, then modify to 25%. • If Total Bilirubin greater than or equal to 20umol/L, then refer to regimen. • If Total Bilirubin greater than or equal to 85umol/L, then modify to 0%. Cycle postponement rules are checked PLANNED by doctor3 doctor, doctor3 on 31 Oct at 11:50 DOXOrubicin 149.74mg(75mg/m<sup>2</sup> BSA Dubois) in Bolus • by intravenous injection • 30min CYCLE POSTPONEMENT RULE IGNORED by doctor3 doctor, doctor3 on 31 Oct at 15:31 Extract from drug log record

## Pharmacist Scenarios 2.1

Scenario 2.1 Medical Result Check-Results not available

Rule: Medical Result Check- If AST greater than or equal to 69 refer to regimen

🗼 No current medic	al result!	
DOXOrubicin Teva (DO	OXOrubicin) 149.74mg	
AST: No current entry		
Rule: If AST between 6 If AST greater tha If AST greater tha	9U/L and 104U/L, then modify to 75%. an or equal to 104U/L, then modify to 50%. an or equal to 69U/L, then refer to regimen.	
Possible reasons		
Adverse result due	to disease process	
Maintain dose inter     Other: please outlin	nsity e below	
Reason		
<u> </u>		

Plidillidu				
Scenario 2.2 Medical Result Check-Results out of range				
4	In this scenario, pharmacist receives the below warning when attempting to pharmacist verify a drug			
	😵 Warning!			
	A Medical result check!			
	DOXOrubicin Teva (DOXOrubicin) Concentrate for solution for infusion 149.74mg			
	AST: 70U/L			
	Rule: If AST greater than or equal to 690/L, then refer to regimen.			
	✓ Confirm medical result values     ズancel			

## Pharmacist Scenarios 2.3

Scenario 2.3 Medical Result Check-Ignore Medical Result Check

**Rule:** Medical Result Check-If AST greater than or equal to 69 refer to regimen

🔽 Warning!	
A Medical result check!	
DOXOrubicin Teva (DOXOrubicin) Concentrate for solution for infusion 149.74mg	
AST: 70U/L	
Rule: If AST greater than or equal to 69U/L, then refer to regimen.	
<b>▼</b> (	Confirm medical result values 🛛 💥 Cancel
abarmaaist abaasas ta ignara madigal rasult abaak t	hav can aligh (Canfirm madical rac
pharmacist chooses to ignore medical result check, t	hey can click 'Confirm medical res
pharmacist chooses to ignore medical result check, t nd status progresses to 'pharmacist verified'	hey can click 'Confirm medical res
pharmacist chooses to ignore medical result check, t nd status progresses to 'pharmacist verified'	hey can click 'Confirm medical res
pharmacist chooses to ignore medical result check, t nd status progresses to 'pharmacist verified'	hey can click 'Confirm medical res
<sup>2</sup> pharmacist chooses to ignore medical result check, t nd status progresses to 'pharmacist verified' <sup>30min</sup> DOXOrubicin Teva Concentrate for solution for infusio	hey can click 'Confirm medical res PHARMACIST-VERIFIED by pharm3 on 31 Oct

Pharmacist Scenarios 2.4

Scenario 2.4 Medical Result Check-Accept Medical Result Check

Rule: Medical Result Check-If AST greater than or equal to 69 refer to regimen

DOXORUBICI	n Teva (DOXOrubicin) Concentrate for solution for infusion 149.74mg	
AST: 70U/L		
Rule: If AST	greater than or equal to 69U/L, then refer to regimen.	
	Confirm medical	result values 🔀 Cano
a pharma	acist chooses to accept medical result check, they can clic	ck 'Cancel' and status re
hucicion	verified'	
nysician	vermed	

Pharmacist Scenarios 3.1

Scenario 3.1 Dose Modification-Results not available

Rule: Dose Modification- If AST between 69 and 104 dose modify to 75%

<u>u</u>	In this scenario, pharmacist receives the below warning when attempting to pharmacist verify a drug
	😵 Note!
	A No current medical result!
	DOXOrubicin Hospira (DOXOrubicin) 149.74mg         AST: No current entry         Rule: If AST between 69U/L and 104U/L, then modify to 75%. If AST greater than or equal to 104U/L, then modify to 50%. If AST greater than or equal to 69U/L, then refer to regimen.
	Possible reasons         Adverse result due to disease process         Maintain dose intensity         Other: please outline below
	Reason
Pharmac	sist Scenarios 3.2
Scenario	3.2 Dose Modification-Results out of range
Rule: Do	se Modification- If AST between 69 and 104 dose modify to 75%
<u>u</u>	In this scenario, pharmacist receives the below warning when attempting to pharmacist verify a drug
	Note     X      X      Q     Modify dese to 50%?      Current dose: DDXDrubicin Teva (DDXDrubicin) Concentrate for solution for infusion 149.74mg
	AST: 104U/L Rule: If AST greater than or equal to 104U/L, then modify to 50%.  Possible reasons  Adverse result due to disease process Adverse res
	Reson

🚱 Dose to 50% 😂 Maintain dose (100%) 🖉 Cancel

Pharmacist Scenarios 3.3

Scenario 3.3 Dose Modification-Accept Dose Modification

**Rule:** Dose Modification- If AST greater than or equal to 104 dose modify to 50%

If a pharmacist choo	oses to accept dose modification rule there are several screens involv
1: Firstly, click 'Dose	e to 50%' with a reason.
* Note!	
Modify dose to 50%?	
Current dose: DOXOrubicin Teva	a (DOXOrubicin) Concentrate for solution for infusion 149.74mg
AST: 104U/L Rule: If AST greater than or equ	ual to 104U/L, then modify to 50%.
Possible reasons	
Adverse result due to disease	e process
<ul> <li>Other: please outline below</li> </ul>	
Reason	
ļ	
	CP Dose to 50% Waintain dose (100%)

2. Next a pharmacist verification screen appears. To continue with the dose modification, press save.

	Thatmacist ver	incation of a meancation vernice by Higheitan				
p. approved 💽 🔽 Volumetric only 🗖 Medication dispe	ensed 🗖 To be completed at unit 🗖 Urgent				Me	dical r
ctive ingredient / Product	Usual dose	Calculation		Dose	Volume	÷
OXOrubicin / DOXOrubicin Hospira Powder for solution for inject	tion 75.00mg/m <sup>2</sup> BSA Dubois	50.00% = 37.5mg/m <sup>2</sup> x 2m <sup>2</sup> = 74.87mg		74.87mg	37.44mL	₿ ⊕
ctive ingredient	Product	Usual dose	Reference			
OXOrubicin	DOXOrubicin Hospira Powder for soluti	ion for injection 75.00 mg	/m² BSA Dubois			
Dose: 75mg/m <sup>2</sup>	x 50.00 % = 37.50 mg -	/m <sup>2</sup> x 2m <sup>2</sup> = 74.87 mg				
iluent: NaCl 0.9%						
mL/ mg						
orm: Bolus Max. vol. per individual syringe:	mL					
ehicle: <no vehicle=""></no>						
dministration: by intravenous injection	m: 0 Days 0 h 30 min			Deviating stability: 21 d	0 h	0 m
Date C Relative Date: 14/11/2019 Day in cycle:	1 Time: 08:00					
lace of delivery: SLH - SLH Ward	Cost center: SLH - Dr. Clic	ona Grant 🔿	Order no:			
		Create pre	paration notes Edit comments	Insert rules Insert services / addition	nal articles B	ed pl
				(	✓ Save	×

3. Finally, the system will ask if the dose medication is for all subsequent doses or just a single dose

	Dosage Modification Wizard	
Sho	uld subsequent medications with <b>DOXOrubicin</b> also be modified to <b>50%</b> with an administration route <b>by intravenous injection</b> ?	
• N	0	
C Ad	djust all subsequent medications: 3 more	
	✓ OK	
Status	s will progress to pharmacist verified with evidence of the dose reduction appearing i	n c
min	DOXOrubicin Teva Concentrate for solution for infusion 74.87mg • 50% (37.5mg/m <sup>2</sup> BSA Dubois)	

Scenario 3.4 Dose Modification-Janore Dose Modification						
Scenario						
Rule: Do	Rule: Dose Modification- If AST greater or equal to 104 dose modify to 50%					
	If pharmacist chooses to ignore dose modification rule, they can click 'Maintain dose 100%' with a					
	reason and status progresses to 'pharmacist verified' with evidence of the dose modification rule					
	being ignored appearing on drug log (see below)					
	Note:					
	Modify dose to 50%?					
	Current dose: DOXOrubicin Hospira (DOXOrubicin) Powder for solution for injection 149.74mg AST: 104U/L					
	Rule: If AST greater than or equal to 104U/L, then modify to 50%.					
	Possible reasons       V Adverse result due to disease process       Maintain does intensity					
	Cother: please outline below					
	<b>Z</b>					
	Nose to 50% Cancel					
	DOSE MODIFICATION RULE IGNORED by pharm3 pharmacist, pharm3 on 31 Oct at 16:13					
	Adverse result due to disease process					
	PHARMACIST-VERIFIED by pharm3 pharmacist, pharm3 on 31 Oct at 16:13					
	Extract from drug log					



### **Nurse Scenarios 2.1**

**U** 

Scenario 2.1 Medical Result Check-Results not available

Rule: Medical Result Check - If AST greater or equal to 69 refer to regimen

In this scenario, the nurse receives the below warning when attempting to set 'admin ok' status on a drug

<u> </u>	Note: DOXOrubicin Hospira (DOXOrubic	in) 149.74mg	
The following medical result check rule could not be verified: - If AST greater than or equal to 69U/L, then refer to regimen.			
Reason: No current value is available for medical result AST.			
Do you want to enter the missing medical result data now?			
Enter missing medical result value Ignore corresponding rules Cancel			

Nurse Scenarios 2.2				
Scenario 2.2 Medical Pocult Check Pocults out of range:				
Scenario 2.2 Medical Result Check-Results out of range.				
<b>Rule:</b> Medical Result Check-If AST greater or equal to 69 refer to regimen				
In this scenario, the nurse receives the below warning when attempting to set 'admin ok' status on a drug				
Attention! Medical result check!         Note:         DOXOrubicin Hospira (DOXOrubicin) 149.74mg         The following current medical result value was established:         AST = 70U/L         Attention! - Control AST!         Do you still want to continue?         Yes				
Nurse Scenarios 2.3				
Scenario 2.3 Medical Result Check-Accept warning Rule: Medical Result Check-If AST areater or eaual to 69 refer to reaimen				
<ul> <li>If 'no' is selected, status remains as 'Pharmacist Verified' only. A red 'x' remains in bottom left corner to signal admin ok has not been set.</li> <li>Attention! Medical result check!</li> <li>Note: DOXOrubicin Hospira (DOXOrubicin) 149.74mg</li> <li>The following current medical result value was established: AST = 70U/L</li> <li>Attention! - Control AST!</li> </ul>				

ok has not been set.	The following current medical reso AST = 70U/L	ult value was established:	
	Attention! - Control AST!		
	Do you still want to continue?		
	Yes N	lo	
<sup>34</sup> min DOXOrubicin Hospira 149 74mg (75mg/m <sup>2</sup> B	Powder for solution for injection	PHARMACIST-VERIFIED by pharm3 on 31 Oct	
in Bolus • by intravenous injection	on	APPROVED (P) APPROVED (S)	~

Scenario 2.4 Medical Result Check-Ignore warning				
Rule: Medical Result Check-If AST greater or equal to 69 refer to regimen				
If 'yes' is selected, status progresses to 'Administration ok'. A green tick appears in bottom left corner to signal admin ok set	Note:   DOXOrubicin Hospira (DOXOrubicin) 149.74mg   The following current medical result value was established:   AST = 70U/L   Attention! - Control AST!   Do you still want to continue?			
Imin         DOXOrubicin Hospira Powder for sol           149.74mg (75mg/m² BSA Dubois)         in Bolus • by intravenous injection	ution for injection     PHARMACIST-VERIFIED by pharm3 on 31 Oct       APPROVED (P)     APPROVED (5)			

Nurse Scenarios 2.4