



NCIS GUIDE Managing Changes to Dosing Parameters

1 Background

In NCIS.Med (BD CATO) doses are calculated at Physician Verification and Pharmacist Verification. If there is **any** change in the variable used for dosing, i.e. body surface area (BSA), weight, creatinine clearance, between Physician and Pharmacist verification the user applying Pharmacist Verification will receive a warning. It is then possible for the user to accept the newly calculated dose or retain the physician verified dose.

This guide explains how this functionality works, and suggests potential workflows.

2 Functionality

Figure 1 shows a physician verified dose, the dose was verified on 19/06/2023 using a BSA of 1.81m².





It is possible to see the variables used in the calculation either by looking at the medication log (figure 1) or by opening the Medical Results tab (figure 2).

Mrs. MANIS TESSA • d.o.b. 14 Nov 1966 56.8 Years • Pat. no.: 517963 • TRN - Training						
Therapy plans	Compact	List	Cor	nplete		
Period: <custom></custom>	v (from	n 28/03/202	3 🔽 to	18/09/2	023 🔽)	Med
			Current		19/06/2023	3
ALP				New		
ALT				New		
AST				New		
Creatinine				New		
Height			170cm	New	170cm	
NEUT				New		
PLT				New		
Total Bilirubin				New		
WBC				New		
Weight			70kg	New	70kg	
BSA Dubois			1.81m ²		1.81m ²	
Creatinine Clearan	ce (eCrCl-Cockcro	ft & Gault)				

Figure 2: Medical Results tab showing the height, weight and BSA

Figure 3 shows that a new weight of 72kg is entered on 18/09/2023 with a corresponding change to BSA Dubois to 1.83^2 .

	Current		18/09/2023	19/06/2023	2
ALP		New			
ALT		New			
AST		New			
Creatinine		New			
Height	170cm	New		170cm	1
NEUT		New			
PLT		New			
Total Bilirubin		New			
WBC		New			
Weight	72kg	New	72kg	70kg	
BSA Dubois	1.83m ²		1.83m ²	1.81m ²	1.
Creatinine Clearance (eCrCl-Cockcroft & Gault)					

Figure 3: Medical results tab showing changed weight

When completing Pharmacist Verification NCIS.Med (BD CATO) will warn the user that there has been a change in the dosing variable, see figure 4. To note this warning will trigger for any change and there is not functionality available to set a variance on this warning.

_		
olati	Shall the dosage be adapted?	X
L Glu		
_	A Shall the dosage be adapted?	
yr 21		
'RN -	Oxaliplatin 5 mg/mL Accord Concentrate for solution for infusion	
'RN E	The medical result data "BSA Dubois" has changed by +1.2% from 1.81m ² to 1.83m ² .	
	Shall the dosage of Oxaliplatin 5 mg/mL Accord Concentrate for solution for infusionbe adapted corresponding to from 153.84mg to 155.69mg?	
TRAII		
t in t		🗸 Yes 🛛 😳 No
5mg/		
ose 1		

D by TRN DOCTOR1, TRNHOSD1 - mcrn83839 on 19 Jun 2023 at 16:21

Figure 4: Warning triggered due to change in dosing variable between physician and pharmacist verification

At this point it is possible to either accept the proposed dose change by clicking "Yes" or rejecting by clicking "No". If the dose change is rejected the medication dose will still be calculated by the new variable (1.83m² in this case) but the dose will be adjusted to maintain the previous dose (98.81% in this case). Figure 5 shows the pharmacist verification screen after "No" is clicked and the previous dose is maintained.

м.	0		Pharmacist Verification of a Medication Verified By Physician			x	1
	Pharmacist Verification of a Medication Verified By Physician						L d
n 21	Prep. approved V TRAIN V Volumetric only Medication d	ispensed 🔲 To be completed at	unit 🗌 Urgent		1	Medical results	
.Fe	Active ingredient / Product	Usual dose	Calculation	Dose	Volume	÷	Ľ
s 1.	Oxaliplatin 5 mg/mL Accord Concentrate for solution for infusion (Oxalipla	tin) 85mg/m ² BSA Dubois	98.81% = 83.99mg/m ² x 1.83m ² = 153.84mg	153.84mg	30.77mL	(1) ⊕ へ	P
	Active ingredient	Product	Usual dose	Reference			1
	Oxaliplatin	A > Oxaliplatin 5 mg/mL According	ord Concentrate for solution for infusion 🚯 85.00 mg 🗸	/m² BSA Dubois		\$	
4	Dose: 85mg/m² x 98.	81 % = 83.99 mg	✓ /m ² x 1.83m ² = 153.84 mg				
20 : Cj	Diluent						1
	Form: Pre-filled container					Ð	-



It remains possible to round or band the dose as normal, remembering the percentage adjustment will be based on the new dosing variable.

0	PI	harmacist Verification of a Medication Verified By Physician					× 1
Pharmacist Verification of a Medication Verified By Physician						l. d	
Dispense approved v TRAIN v Volumetric only Medication dispensed To be completed at unit Urgent Medical results							
Active ingredient / Product	Usual dose	Calculation		Dose	Volume	+	
Oxaliplatin IV Infusion (DB) in 500mL Glucose 5% (Oxaliplatin)	85mg/m ² BSA Dubois	102.77% = 87.35mg/m ² x 1.83m ² = 160mg		160mg		自 ① へ	
Active ingredient	Product	Usual dose	Reference				1
Oxaliplatin	A > Oxaliplatin IV Infusion (DB) in 500r	mL Glucose 5% 🚯 85.00 mg	✓ /m ² BSA Dubois			Ŷ	
Dose: 85mg/m ² x	102.77 % = 87.35 mg	✓ /m ² x 1.83m ² = 160.00 mg			Strengths: 1	x 160mg	
Diluent:							1
Form: Empty container V Empty container:						Ŷ	<u> </u>
	Cospense approved V TRAIN V Volumetric only Medic Active ingredient / Product Oxaliplatin IV Infusion (DB) in 500mL Glucose 5% (Oxaliplatin) Active ingredient (Oxaliplatin Dose: 85mg/m ² x Diluent: V Ferm: Empty container V Empty container:		Harmacit Verification of a Medication Verified By Physician Pharmacits Verification of a Medication Verified By Physician Insertion of a Medication of a Medication Insertion of a Medication of a Medication Insertion of a Medication Insertion of a Medication of a Medication Insertion of a Medication of a Medication Insertion of a Medication of a	Compared by training and physician Compared by training and physician Construction of a Medication Verified By Physician Active ingredient / Product Calculation Ocaliplatin IV Infusion (DB) in S00mL Glucose 5% (Oxaliplatin) 85mg/m ² 85M Oubois 102.77% 87.35mg/m ² x 1.83m ² = 160.00 mg v Active ingredient Product Usual dose Reference Ocaliplatin By oxaliplatin IV Infusion (DB) in S00mL Glucose 5% 8.800 mg v m ² Disce: 85mg/m ² x 102.77 % = 87.35 mg v/m ² x 1.83m ² = 160.00 mg v method mg v Diluent: v Form: [Empty container:]	O Pharmacity Verification of a Medication Verified By Physician Oispense approved v TRANN v Nedication dispensed To be completed at unit Urgent Active ingredient / Product Usual dose Calculation Dose Oxaliplatin /V Infusion (DB) in 500mL Glucose 5% (Oxaliplatin) 85mg/m² BSA Dubois 102.77% e 87.35mg/m² x 1.83m² e 160mg 160mg Active ingredient Product Usual dose Reference Oxaliplatin 0 > Oxaliplatin (DB) in 500mL Glucose 5% 0 85.00 [mg /m² x 1.83m² Dise: 85mg/m² x 102.77% e 87.33 [mg< v) /m² x 1.83m² = 160.00 [mg v V Dise: 85mg/m² x 102.77% e 87.33 [mg< v) /m² x 1.83m² = 160.00 [mg v Ferm: Empty container: v Empty container:	Control of a Medication Verified By Physician Pharmacist Verification of a Medication Verified By Physician Operation of a Medication Verified By Physician Active ingredient / Product Usual dose Calculation Dose Volume Active ingredient / Product Usual dose Calculation Dose Volume Active ingredient / Product Usual dose Reference Storegregient Storegregient<	Determination of a Medication Verified By Physician Pharmacist Verification of a Medication Verified By Physician Stepense approved v TRAN v Ovumetric only nedication dispensed or to be completed at unit or urgent Medical results Active ingredient / Product Usual dose Calculation Oxaliplatin /V Infusion (DB) in 500mL Glucose 5% (Oxaliplatin) 85mg/m² BSA Dubois 102.77% e 87.35mg/m² x 1.83m² = 160mg 160mg Active ingredient Product Usual dose Reference (Oxaliplatin or G) is Conaliplatin IV Infusion (DB) in 500mL Glucose 5% 3 85.00 [mg v / m² SSA Dubois 3 Dose: 85mg/m² x 1.02.77% = 87.33 [mg v / m² x 1.83m² = 160.00 [mg v / m² s

Figure 6: Pharmacist verification window following selection of a dose-banded strength

The therapy plan will display the dose as expected as well as indicating that there is a new dosing variable.

120min x ศู?	Oxaliplatin IV Infusion (DB) in 500mL Glucose 5% by intravenous infusion	160mg • 102.77% (87.35mg/m ² BSA Dubois) • Division: 1 x 160mg	PHARMACIST-VERIFIED (APPROVED (D) (TRAIN)
Medica	ion number 213667 • based on regimen medication 24875		
Place of	delivery TRN - Training Oncology/Haematology Day Ward • Cost center TRN - T	aining Consultant	
PLANNE La: Os in PHYSICI.	D by NCIS_TRAIN_meade caroline, NCISTRCM on 19 Jun 2023 at 16:18 t valid dose in this status: al iplatin 85mg/m² BSA Dubois 900mL Glucces 5% + by intravenous infusion • 120min N. VERIFIED by TRN DOCTOR1, TRNHOSD1 - mcm83839 on 19 Jun 2023 at 16:21		
La: Ox in	t valid dose in this status: a liplatin 153.84mg • (85mg/m² BSA Dubois, 1.81m²) 30mL Glucos 5% • by intravenous infusion • 120min		
PHARM/ La:	CIST-VERIFIED by TRN PHARM1, HOSPPH1 - PSI6545748 on 18 Sep 2023 at 13:32 t valid dose in this status:		
Os O by	aliplatin IV Infusion (DB) in 500mL Glucose 5% 160mg • 102.77% (87.35mg/m ² 85 aliplatin 160mg intravenous infusion • 120min	A Dubo <mark>ir, 183m¹) -</mark> Division: 1 x 160mg	
[

Figure 7: Therapy plan window view

3 Potential Workflows

There are several potential workflows for managing this functionality. The workflow chosen will depend on the agreed processes locally and as stated in the Medical Oncology Safety Review Report (2014) these processes should be clearly documented.

3.1 Always use the most up to date dosing variable

In this workflow when pharmacist verifying the dose is always adjusted to the most recent dosing variable. This approach is advantageous as it is always using the most up to date parameters for dosing and may work well in units that are primarily preparing. However for outsourced products this may lead to complications due to ordering lead times and frequent dose changes.

3.2 Only adjust the dose if the dosing variable changes by an agreed variance between physician and pharmacist verification

In this workflow an agreed variance in dosing variable is utilised. Provided the dosing variable has not changed by greater than the agreed variance the dose is maintained. An example is described in the box below:

The hospital pharmacy has agreed with the medical oncologists that if a BSA is within 5% of the BSA used when physician verifying then the dose will be retained. This is documented in the hospitals oncology workflow SOP.

Example

- Mr A is commenced on 12 cycles of FOLFOX. His initial weight = 60kg, height = 170cm and BSA Dubois = 1.7m²
- Dr B physician verifies the first 6 cycles using the BSA of 1.7m².
- As Mr A's weight has reduced to 56kg when the pharmacist is verifying cycle 2 they are warned that Mr A's BSA has reduced to 1.65m² and asked if they wish to change the doses of his medication. As the BSA has changed by only 2.9% the pharmacist chooses to retain the previous doses.
- Mr A's weight continues to drop throughout his treatment, by cycle 6 his weight is now 53kg with a BSA of 1.61m². Again the pharmacist is warned there is a change in dosing variable, however as the BSA change is now 5.3% the pharmacist chooses to accept the warning and adjust the doses.
- Dr B now physician verifies the remaining 6 cycles, but this time using the new BSA of 1.61m². This becomes the new baseline for pharmacist verification.
- 3.3 Only adjust the dose if the weight or creatinine changes by an agreed variance from baseline

This workflow has been commonly utilised when using paper prescriptions. This workflow is more complex in BD CATO as users would need to check the original weight/creatinine using the medical results tab, manually calculate the differential and adjust the dose accordingly.