



**Canadian
Blood
Services**

BLOOD
PLASMA
STEM CELLS
ORGANS
& TISSUES

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IPOS High Status Heart: Information & Rules for
Calculating Days at Current Medical Status (DCMS)

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Guidelines for Calculating a Recipient's Eligible Days at Current Medical Status

in Inter-Provincial Heart Sharing Program for High-Status Heart Recipients

Abbreviations & Definitions

- **HSH** = High Status Heart - *includes both urgent medical status (4) and highly sensitized recipients.*
- **IPOS** = Inter-Provincial Organ Sharing
- **DCMS** = Days at Current Medical Status
- **CTR** = Canadian Transplant Registry
- **CCTN** = Canadian Cardiac Transplant Network
- **HTAC** = Heart Transplant Advisory Committee

Background

The concept of “Days at Current Medical Status” is newly developed by HTAC specifically for the HSH inter-provincial organ sharing program. This concept does not currently exist in the CCTN’s allocation guidelines (2012) used in current practice.

Scope

In Scope

These guidelines are for the sole purpose of tiebreaking and ranking HSH eligible patients in the IPOS HS Heart program.

Out of Scope

These guidelines are not intended to usurp any local provincial allocation process or other wait time guidelines when allocating a heart outside of the IPOS HS Heart program.

Objective

These guidelines were developed in consultation with the Canadian Heart Transplant Advisory Committee (HTAC) to determine which days spent at which medical status should be counted for an HSH eligible patient when an HSH donor allocation is run in the CTR. The ‘Days at Current Medical Status’ (DCMS) is a tier in the HSH allocation tie-breaking rules¹ that the CTR is to use to produce a ranked list of HSH patients who have matched the heart donor. Organ Offers are made first to the patient(s) who have ranked first on the list, then subsequently to lower ranked patients. These guidelines are aimed at providing direction in the calculation of the eligible days at current medical status, which then ensures an equitable application for all patients in the inter-provincial High-Status Heart (HSH) program.



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[Patient Eligibility Pool](#)

H.S. Heart Program

Recipient Eligibility Pool Diagram

Inactive Heart Organ Requests. Recipients are not HSH Eligible, nor are they listed on the NOW

Active Heart Recipients on the National Organ Waitlist (NOW)
Ineligible for H.S. Heart Program Participation

Pool of Recipients Eligible to be Matched in HSH Allocation



Medical Status 4,
Any cPRA %



HSH Recused Recipient,
non-urgnet medical Status (1-3.5)
≥ 80% cPRA



O.R. = On-Hold'
Medical Status 0,
Any cPRA%



Medical Status 3.5,
< 80% cPRA



Medical Status 3.5,
≥ 80% cPRA



Medical Status 3,
≥ 80% cPRA



Medical Status 3,
< 80% cPRA



O.R. State = Offlist
Any Medical Status (0-4)



Medical Status 2,
< 80% cPRA



Medical Status 2,
≥ 80% cPRA



Medical Status 1,
≥ 80% cPRA



Medical Status 1,
< 80% cPRA



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Background &
Objective



Use of DCMS as a Tiebreakers

Use of Days at Current Medical Status (DCMS) in Recipient Ranking & Tiebreaking

Urgent Status Recipients

For urgent status recipients, the number of days the recipient spends at their current medical status is predicted to be used frequently as the main tiebreaker that will give the urgent recipients their final ranking spot; given the infrequency of recipients having the same exact number of days.

While DCMS is technically the 4th tier tiebreaker, Tiers 2 and 3 involve pediatric recipients (< 19). So, if there are no eligible pediatric (< 19) urgent status recipients on the waitlist, DCMS will be the first relevant tiebreaker for any adult urgent status recipients.

On the other hand, when there are multiple pediatric urgent status recipients on the waitlist, DCMS is still the next relevant tiebreaker serving to break the ties within both the pediatric and adult sub-groups. Pediatric urgent status recipients will always rank above urgent status adults.

Highly Sensitized Recipients

Now in the 5th tier, the number of days a patient spends at their current medical status for the highly sensitized recipients (> 80% cPRA) is predicted to be used *less* frequently as a tiebreaking criterion. In addition to highly sensitized recipients, first most, needing a negative virtual crossmatch with the donor, Tier 2 (*cPRA % from 80 to 100%*) and Tier 4 (*medical status from 1 to 3.5*) will do much of the tiebreaking.

For more information:

[CTR 10.002 - Allocation: Matching & Ranking Policy](#)

[H.S. Heart Recipient Ranking & Tiebreaking Diagram](#)



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[Patient Eligibility Pool](#)



[Use of MS Change Date
in Calculating DCMS](#)

Use of the Medical Status Change Date in Calculating the Days at Current Medical Status

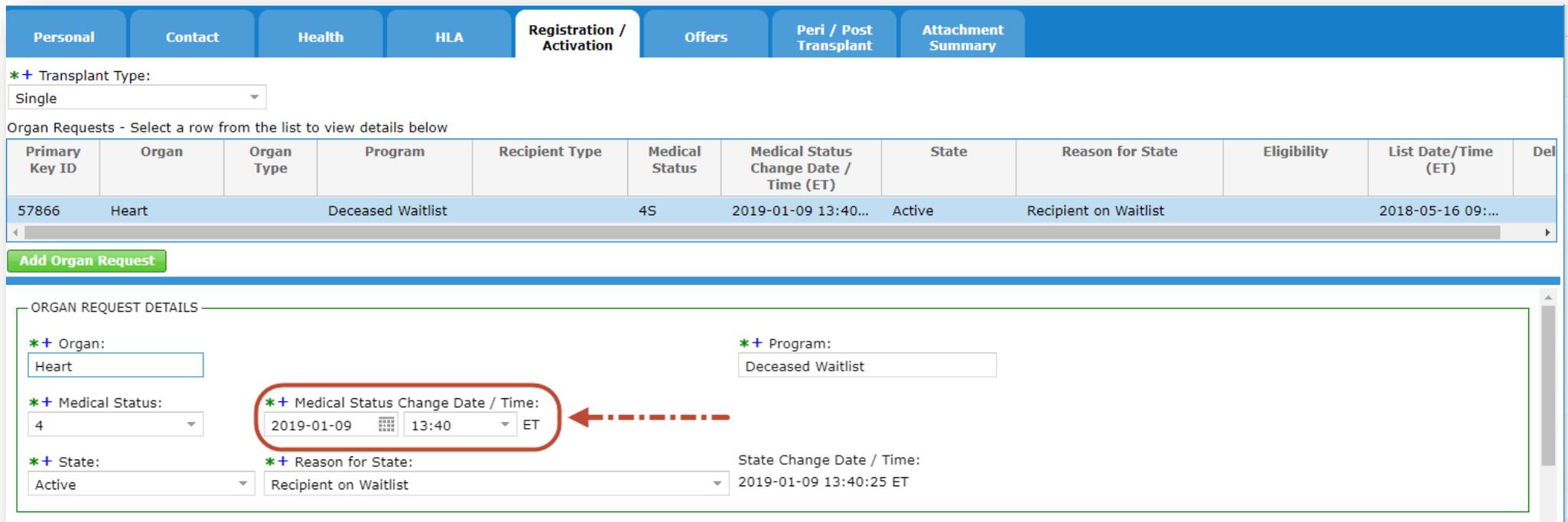
The formula used by CTR's High Status Heart matching algorithm to calculate a recipient's eligible Days at Current Medical Status (DCMS) is:

$$\text{Today (Current Date)} - \text{Medical Status Change Date/Time} = \text{DCMS}$$

(e.g) 2021-04-01 - 2021-01-01 = 90 days

The 'Medical Status Change Date / Time' field (below) is intended to capture the date on which the patient was changed to a that medical status. In the H.S. Heart Program, to ensure the CTR credits the recipient with the right number of days to which they are entitled it will depend on the date that the user, or provincial webservice, provides.

Depending on the scenario and based on the guidelines to follow, you may need to update the field to the current date, maintain the date that's already there, or "manufacture" a date depending if you're upgrading, downgrading, or re-activating from On-Hold.



The screenshot shows a web application interface with several tabs: Personal, Contact, Health, HLA, Registration / Activation, Offers, Peri / Post Transplant, and Attachment Summary. The 'Registration / Activation' tab is selected.

Below the tabs, there is a dropdown menu for 'Transplant Type' set to 'Single'. Below that is a table of organ requests. The table has columns: Primary Key ID, Organ, Organ Type, Program, Recipient Type, Medical Status, Medical Status Change Date / Time (ET), State, Reason for State, Eligibility, List Date/Time (ET), and Del.

Primary Key ID	Organ	Organ Type	Program	Recipient Type	Medical Status	Medical Status Change Date / Time (ET)	State	Reason for State	Eligibility	List Date/Time (ET)	Del
57866	Heart		Deceased Waitlist		4S	2019-01-09 13:40...	Active	Recipient on Waitlist		2018-05-16 09:...	

Below the table is a green button labeled 'Add Organ Request'. Below that is a section titled 'ORGAN REQUEST DETAILS' with several fields:

- * + Organ: Heart
- * + Program: Deceased Waitlist
- * + Medical Status: 4
- * + Medical Status Change Date / Time: 2019-01-09 13:40 ET (highlighted with a red dashed box and arrow)
- * + State: Active
- * + Reason for State: Recipient on Waitlist
- State Change Date / Time: 2019-01-09 13:40:25 ET



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[Use of DCMS as a Tiebreaker](#)



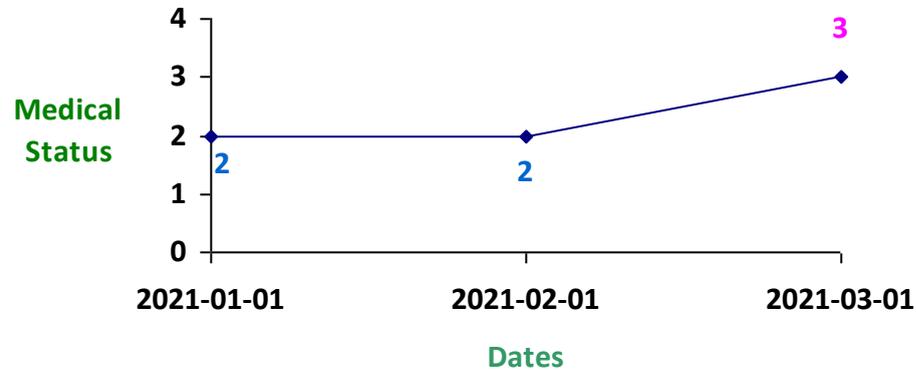
[Upgrading Rule](#)

When Upgrading a Medical Status

Rule:

When raising a patient's medical status the day count will always start again at 1.

- Any days spent at the preceding lower medical status do not carry forward to the higher medical status.
- The upgrading rule draws a “*line in the sand*” by which future changes need to be considered.



Calendar Date	Medical Status	True MS Change Date	Accumulated Days At previous	Previous Days Eligible?	“Medical Status Change Date” to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor
2021-01-01	2	2021-01-01	None – Date of First Activation	N/A	2020-01-01	1
2021-02-01	2	No change	31	Yes	No update Required	32
2021-03-01	3	2021-03-01	59	No	2021-03-01	1



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DCMS Formula for Calculation

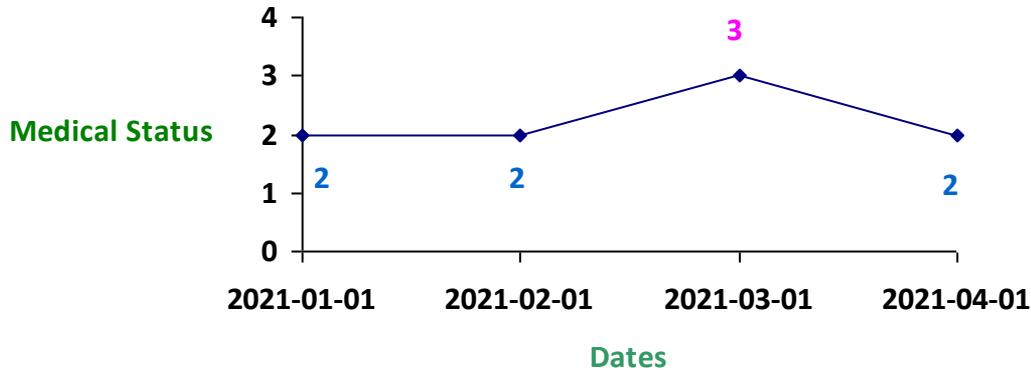


Downgrading Rule

Rule:

When lowering a recipient’s medical status, only the days spent at the immediately preceding higher medical status will count towards the days at the lower medical status.

- Days accrued at the same medical status two changes ago are not re-added to the total due to the upgrade rule.



Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	“Medical Status Change Date” to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (<i>accumulated days +1</i>)
2021-01-01	2	2021-01-01	None – Date of First Activation	N/A	2021-01-01	1
2021-02-01	2	No change	31	Yes	No Update Required	32
2021-03-01	3	2021-03-01	62	No	2021-03-01	1
2021-04-01	2	2021-04-01	30 days @ 3	Yes	No update Required	31
			62 days @ 2	No		



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[Upgrading Rule](#)



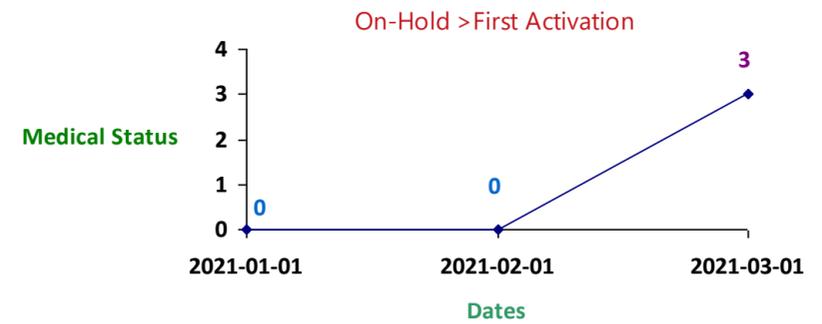
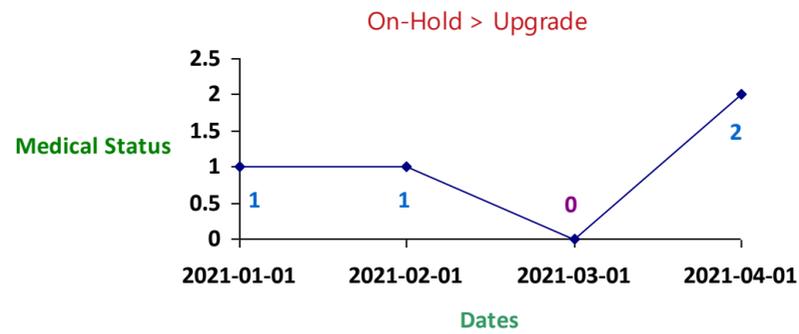
[On Hold Continuity](#)

Rule:

While On Hold (MS= 0) the accrual of days is paused. When the medical status is changed from 0 to ≥ 1 , the days while at 0 do not count.

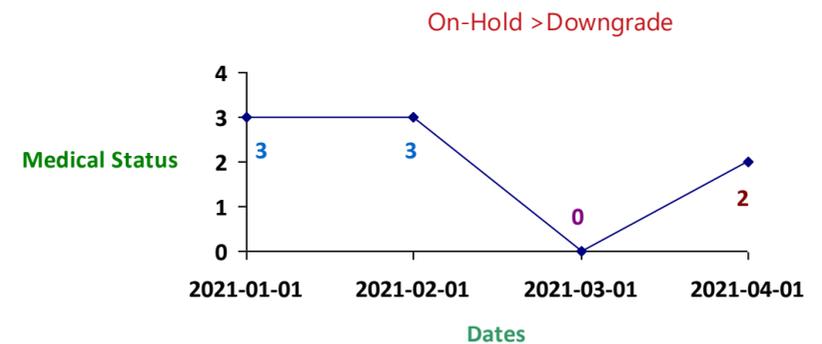
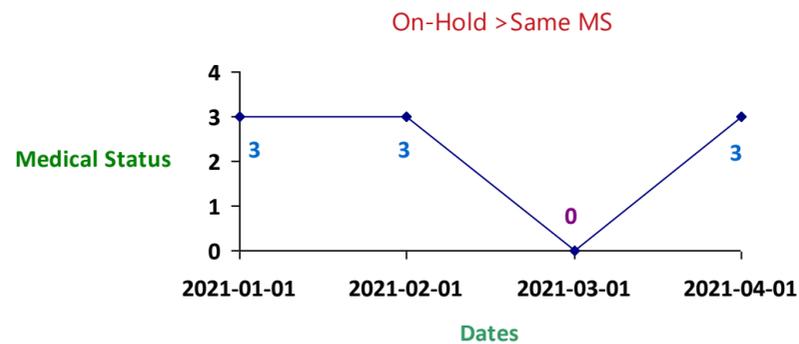
The upgrade and downgrade rules will apply when you're setting the current medical status.

- The **upgrade** rule is applied when the recipient is reactivated to a medical status **greater than** it was preceding their On-hold time and their day count must start again.
- The **downgrade** rule applies when the recipient had a medical status of ≥ 1 prior to being placed On-hold and where a current medical status is **less than or equal to** the status prior to being placed On-Hold. In this case you will need to "manufacture" a Medical Status Change Date/Time, see below.



Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	"Medical Status Change Date" to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (accumulated days +1)
2021-01-01	1	2021-01-01	None – Date of First Activation	N/A	2021-01-01	1
2021-02-01	1	No change	31	Yes	No Update Required	32
2021-03-01	0	2021-03-01	59	Pending	2021-03-01	Not Eligible
2021-04-01	2	2021-04-01	31 days @ 0	No	2021-04-01	1
			59 days @ 1	No		

Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	"Medical Status Change Date" to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (accumulated days +1)
2021-01-01	0	2021-01-01	None – Date of CTR Registration	N/A	2021-01-01	0
2021-02-01	0	No change	0	N/A	No Update Required	0
2021-03-01	3	2021-03-01	0	N/A	2021-03-01	1



Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	"Medical Status Change Date" to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (accumulated days +1)
2021-01-01	3	2021-01-01	None – Date of First Activation	N/A	2021-01-01	1
2021-02-01	3	No change	31	Yes	No Update Required	32
2021-03-01	0	2021-03-01	59	Pending	2021-03-01	Not Eligible
2021-04-01	3	2021-04-01	31 days @ 0	No	2021-04-01	60
			59 days @ 3	Yes	-59 days = 2021-02-01	

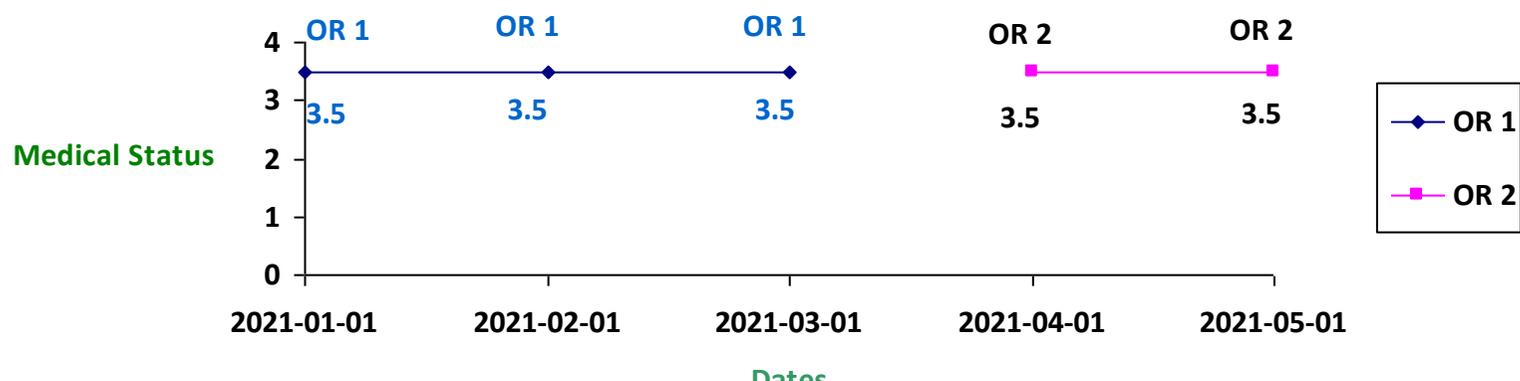
Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	"Medical Status Change Date" to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (accumulated days +1)
2021-01-01	3	2021-01-01	None – Date of First Activation	N/A	2021-01-01	1
2021-02-01	3	No change	31	Yes	No Update Required	32
2021-03-01	0	2021-03-01	59	Pending	2021-03-01	Not Eligible
2021-04-01	2	2021-04-01	31 days @ 0	No	2021-04-01	60
			59 days @ 3	Yes		



Rule:

In all cases, the day count will begin again when a patient is re-listed after being placed ‘Offlist’.

- This includes scenarios when a brand-new Organ Request is added to CTR for a 2nd transplant, or when an existing Organ Request in CTR is reactivated (Cancel Offlist).
- Any previous medical status days associated to any previous Organ Requests will not transfer to the new organ request and the day count shall always start again.



Calendar Date	Medical Status	True MS Change Date	Accumulated Days at previous MS	Are Previous Days Eligible?	“Medical Status Change Date” to send to CTR	Days at Current Medical Status sent to Algorithm if Matched w/ Donor (<i>accumulated days +1</i>)
2021-01-01	3.5	2021-01-01	None – Date of First Activation O.R. #1	N/A	2021-01-01	1
2021-02-01	3.5	No change	31	Yes	No Update Required	32
2021-03-01	3.5	No change	59	Yes	No Update Required	60 Patient is Matched & Transplanted (Yay!) O.R #1 = Offlist
Patient needs a 2nd Transplant due to graft rejection. ☹️						
2021-04-01	3.5	2021-04-01	None – Date of First Activation O.R. #2	N/A	2021-04-01	1
			Previous 59 days @ 3.5	No		
2021-05-01	3.5	No change	30	Yes	No Update Required	31





Contacts

If you have any questions or concerns about the document email:

listing.allocations@blood.ca or CTR.IPOS@blood.ca