



**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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# 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), but are *ineligible* for participation in H.S. Heart Program.**

**Pool of Recipients who are Eligible to be Matched in HSH Allocation**



Medical Status 4,  
Any cPRA %



HSH Recused Recipient,  
non-urgent 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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# 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 rules<sup>1</sup> 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**

# 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 4<sup>th</sup> 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 5<sup>th</sup> 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

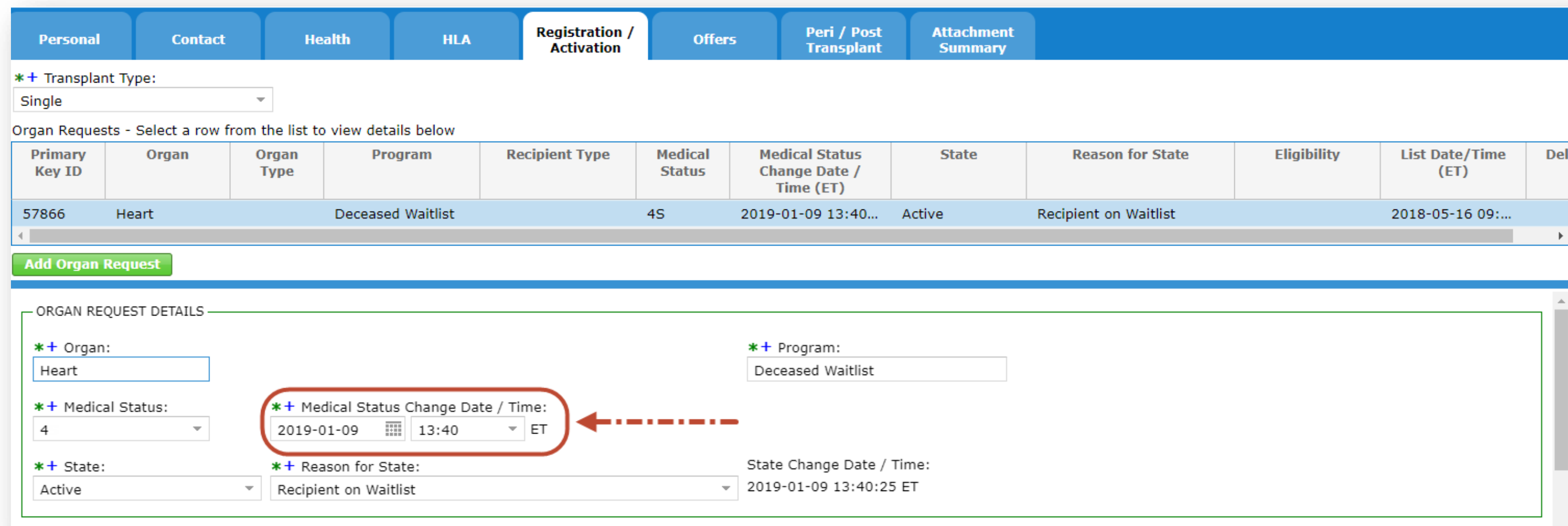
The formula used by the CTR to calculate a recipient's eligible days at their current medical status (DCMS) in the High Status Heart program is:

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

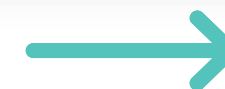
(e.g) 2021-04-01 - 2021-01-01 = 90 days

The 'Medical Status Change Date / Time' field (in red below) is there to capture the date & time the recipient was changed to that medical status. To ensure that the CTR credits the recipient with the correct number of days to which they are entitled is dependent on the date that CTR user, or provincial webservice, will provide to the CTR.

The date to provide depends on the recipient's situation and is based on the rules defined in the upcoming slides.



The screenshot shows the 'Registration / Activation' tab of the system. A table lists organ requests, with one row highlighted for Primary Key ID 57866, Organ Heart, Program Deceased Waitlist, Medical Status 4S, and Medical Status Change Date / Time (ET) 2019-01-09 13:40:25 ET. Below the table, the 'ORGAN REQUEST DETAILS' form is visible. The 'Medical Status Change Date / Time' field is highlighted in red and circled, with a red dashed arrow pointing to it from the text above. The field contains the date 2019-01-09, time 13:40, and time zone ET. Other fields include Organ (Heart), Program (Deceased Waitlist), Medical Status (4), State (Active), and Reason for State (Recipient on Waitlist).



## Go-Live Day Activities:

### What 'Medical Status Change Date' (MSCD) to put for Calculating the Recipient's Days at Current Medical Status (DCMS)?

- When the High-Status Heart (HSH) Inter-Provincial Organ Sharing program is officially launched the '4S' medical status will be retired. Going forward, recipients will be considered 'highly sensitized' in CTR based solely on their cPRA percentage.
- On "Go-Live" day **all recipients with a '4S' medical status will need to have their medical status updated with their true hemodynamic medical status (3.5, 3, 2, or 1)**. Tied to this step is the updating of the '*Medical Status Change Date & Time*' (MSCD) field which, as previously mentioned, is used by the CTR to credit the recipient with the correct number of days at their medical status in HS Heart allocations.
- Per the DCMS upgrade rule (*see next slide*), on HSH "Go Live" day you're permitted to back-date the '*Medical Status Change Date & Time*' fields **with the date the HSH recipient was most recently upgraded to their true current hemodynamic medical status**.
  - **Additionally, per HSH policy 10.003** "*Potential recipients do not accumulate days on previous medical status, when 'On Hold' (medical status = 0)*". **Thus, the days a recipient spent while 'On Hold' need to be subtracted**. If the recipient has spent any days on-hold since the most recent upgrade, and adjusted representative date needs to be entered that subtracts the 'On Hold' time, allowing the CTR to credit the recipient for only their 'Active' days. See the '**On Hold Continuity**' rule on the next slides for directions on correctly subtracting those days, and what adjusted date you will need to put.

#### Important Notes:

1. By design, in CTR, when a medical status is altered (*from '4S' to '2', for example*) the '*Medical Status Change Date & Time*' field automatically updates itself with the current date & time immediately as you change it; even prior to hitting 'Save'.
2. For the purposes of recipient ranking at the time of a Donor's HSH allocation, any recipient still listed in CTR as a '4S' will still be compared and ranked, first, based on pediatric status and cPRA percentages but thereafter, when still tied, they will rank below all others who have had their true medical status updated.



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Use of DCMS as a Tiebreaker



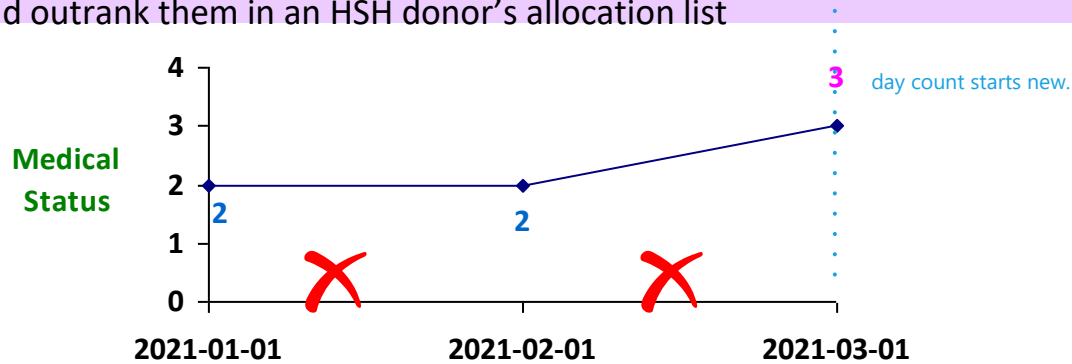
Upgrading Rule

## Upgrading a Medical Status

### Rule:

**When raising a patient’s medical status the day count always begins again.**

- The upgrading rule draws a “line in the sand” by which any future changes need to be considered. Days spent at a precedingly lower medical status do not carry forward to the higher medical status. All days accrued prior an upgrading are lost, and begin again at the new higher medical status.
- This is applied under the principal of ensuring that someone who has been sicker for longer and already waiting at that higher medical status is not disadvantaged by someone newly listed to that medical status, and who is carrying forward substantial time at a lower status and could outrank them in an HSH donor’s allocation list



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



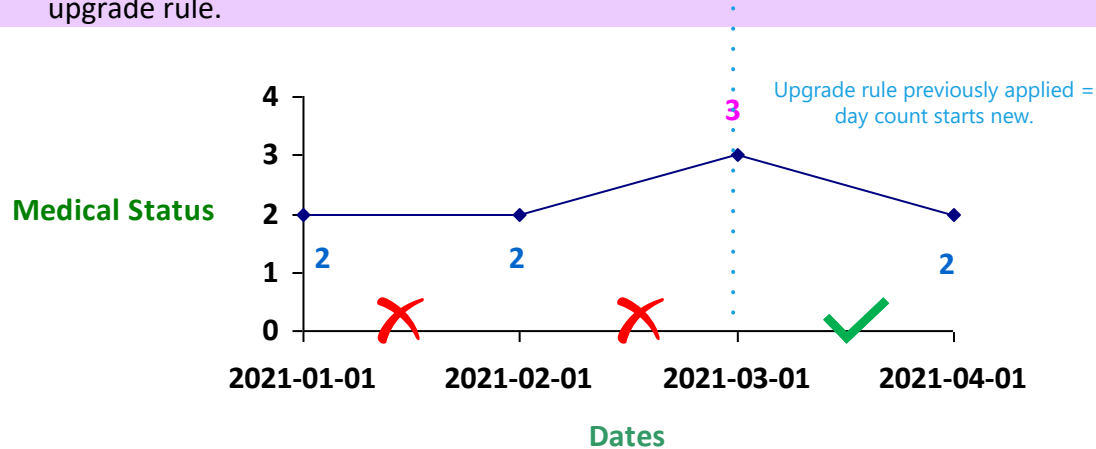
Downgrading Rule

## Downgrading a Medical Status

### Rule:

When lowering a recipient's medical status, only the days spent at the immediately preceding higher medical status 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	62 days @ 2	No	2021-03-01 (No update Required)	31
			30 days @ 3	Yes		



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[Upgrading Rule](#)



[On Hold Continuity](#)



## On-Hold Time + Up/Down Continuity

### Rule:

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

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

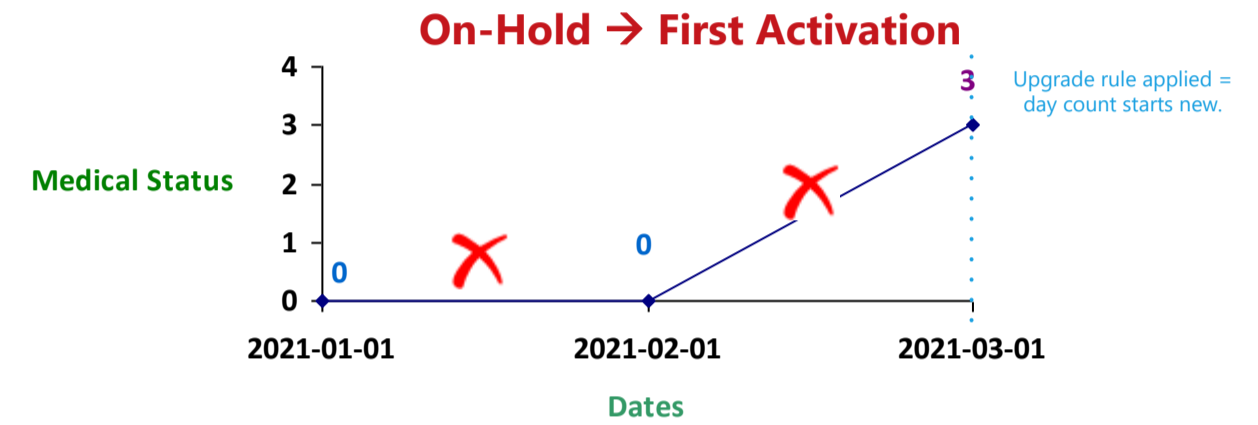
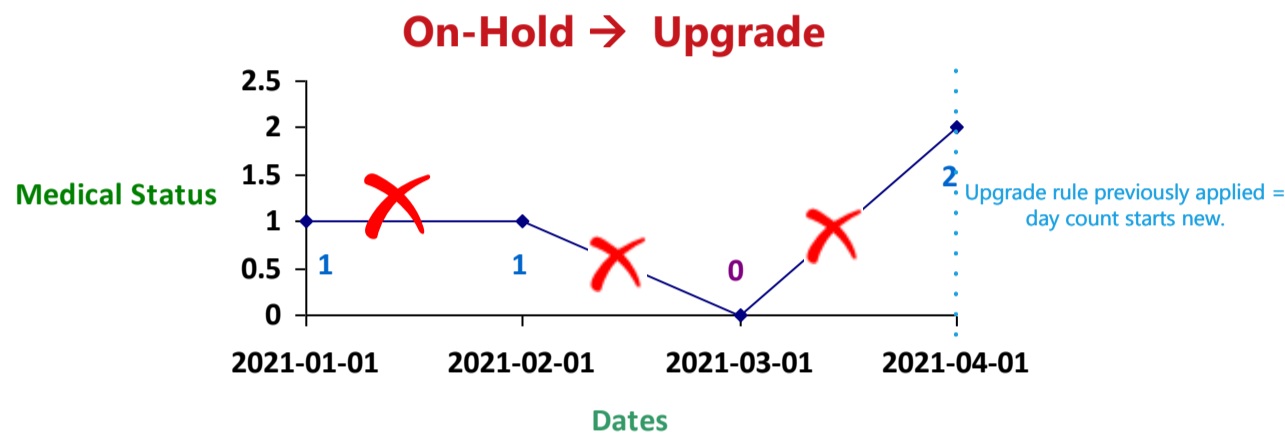
- The **upgrade** rule is applied when the recipient is reactivated to a medical status **greater than** it was preceding their On-hold time and **their day count must start again**.
- The **downgrade** rule applies when the recipient had a medical status of  $\geq 1$  prior to being placed On-hold and 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.

The calculation Programs need to make is:

**True MS Change Date** – **Accredited previous days** = **Date to send to CTR** (Medical Status Change Date/Time Field)

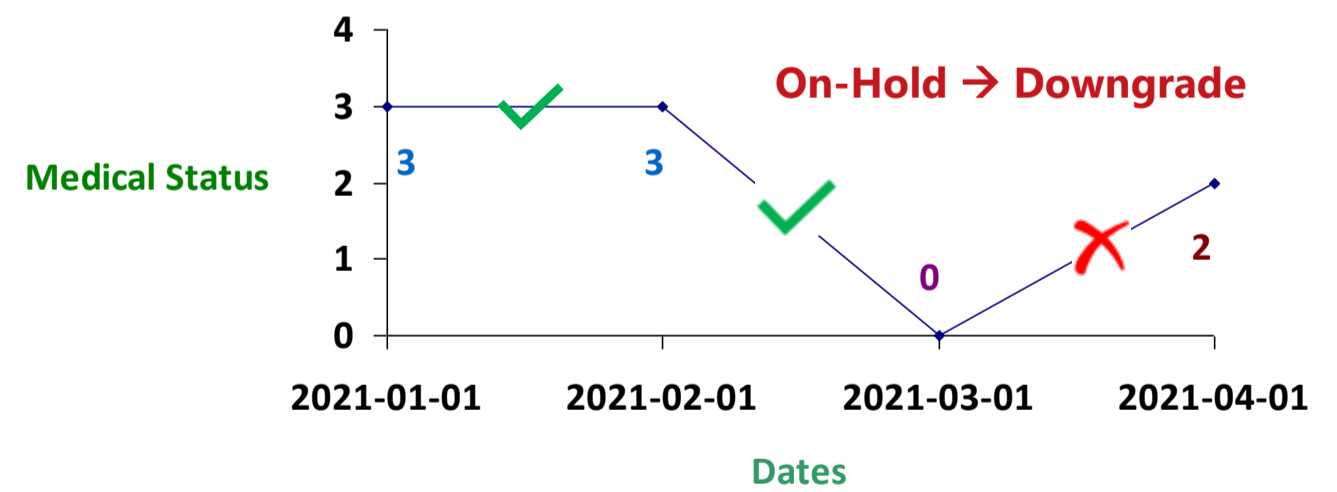
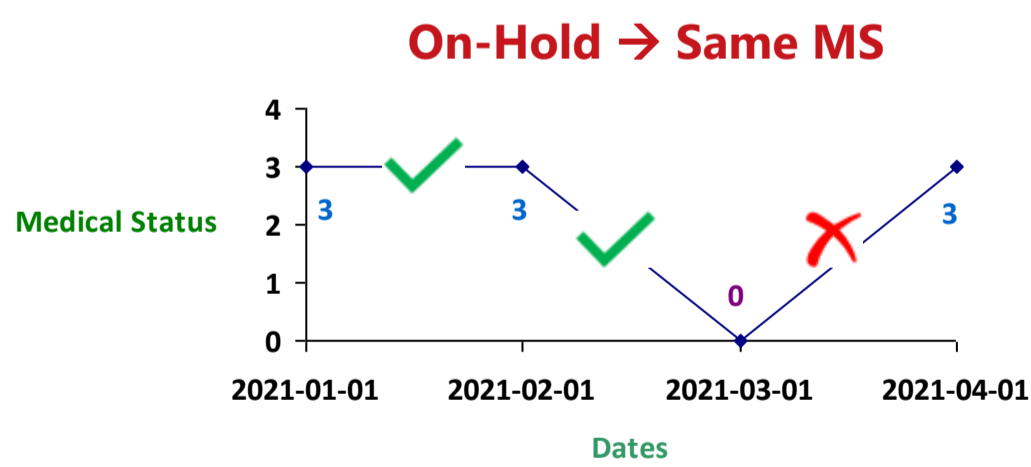
To assist people in calculating the number of days between dates you may:

- Google search : Number of days between <MM/DD/YYYY> and <MM/DD/YYY>
- Go to a date calculator site such as: <https://www.timeanddate.com/date/duration.html>



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 59 days @ 1	No No	2021-04-01	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	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 59 days @ 3	No Yes	2021-04-01 -59 days = 2021-02-01	60

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 59 days @ 3	No Yes	2021-04-01 -59 days = 2021-02-01	60

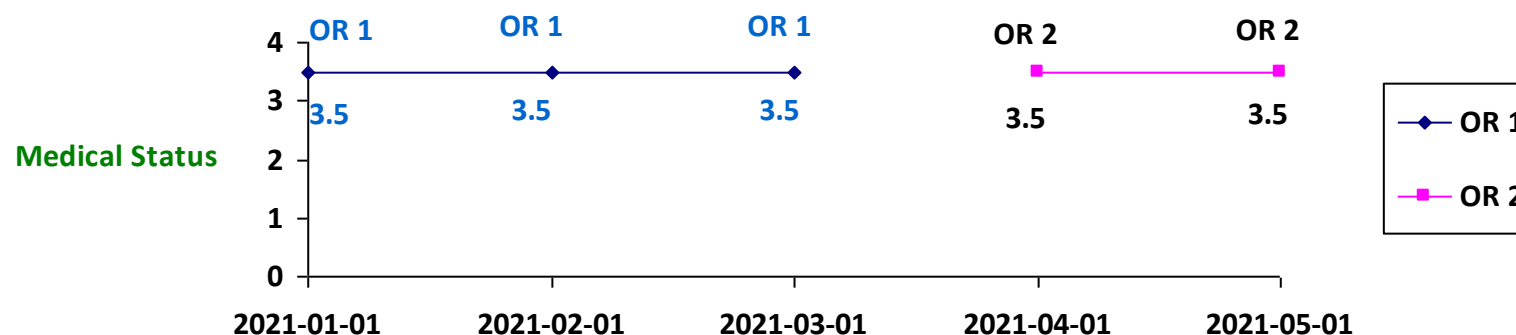


## Off List & New Organ Requests

### 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 2<sup>nd</sup> 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.
- An offlisted Organ request must not be reactivated. A new CTR Heart organ request must be created.



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 + current date & time)
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
<b>Patient needs a 2<sup>nd</sup> Transplant due to graft rejection. 😞</b>						
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



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On-Hold Continuity

# CBS Contacts

For questions about the document, email:  
[listing.allocation@blood.ca](mailto:listing.allocation@blood.ca) or [CTR.IPOS@blood.ca](mailto:CTR.IPOS@blood.ca)

## Customer Support

Real time 24/7 support is provided for calculating the adjusted date can be obtained by calling CTR Support at

1-855-274-2889