Canadian Transplant Registry

Integration Guide

2025-01-16 Version 2.1

Confidential (C)

Canadian Blood Services
BLOOD
PLASMA
STEM CELLS
ORGANS
& TISSUES

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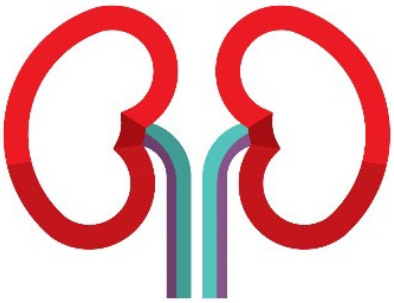
Canadian Transplant Registry

Overview



Canadian Blood Services works with the Organ and Tissue Donation and Transplantation (OTDT) community across the country to facilitate inter-provincial organ sharing and to improve national system performance through the development of leading practices, professional education, public awareness, and data analysis and reporting.

The Canadian Transplant Registry (CTR) is an innovative technology that generates value in terms of quality, safety and efficiency through its capabilities for supporting all donors, candidate listing, offer management, allocation and pre- and post-transplant data. CTR is a national web-based computer program that supports Canada's national programs (Kidney Paired Donation, Highly Sensitized Patients, and National Organ Waitlist), and is used for linking the national potential recipient waitlist with actual organ donors. CTR provides timely access to high quality organ donation and transplantation information for patient care, system management, and accountability.

CTR features:

- Advanced capabilities for allocating living and deceased donor organs and for generating the important data needed to improve transplant system performance
- Improved access to transplants for highly sensitized patients
- Increased effectiveness and efficiency of national organ sharing programs for living donors and for patients who are critically ill
- State of the art, high quality human leukocyte antigen typing and antibody analysis, that is the most comprehensive of any matching system in the world – leading to more successful transplantation and less rejection
- Real-time information sharing and file uploads to facilitate the decision-making process and create efficiency by eliminating faxes and phone calls
- Can be used on any device – computer, tablet, even mobile phone
- With more than 400 users from coast to coast, CTR currently supports Canada's national programs – Kidney Paired Donation, Highly Sensitized Patients and National Organ Waitlist

Integration Guide and Application Programming Interface (API) Documentation

The information in this guide describes the technical configuration that allows some amount of automated exchange of data between CTR and connecting provincial systems. Where applicable, links to CTR API Documentation will be accessible in soft copies of this document. Together, the use of this guide and the API documentation will provide framework for integration with CTR.

Use of this Document

The Integration Guide assumes that the user has valid access to CTR to perform the required functions of their role. In order to receive the proper level of access, a request may be made through Customer Support.

Please note that each “method” listed in the appendices contains a valid link to access the relevant API Documentation.

Customer Support

For assistance with integration efforts, please contact our CTR Customer Solutions Team via email or at 1-855-274-2889. If you are calling outside of normal office hours, dial ‘1’ to speak to on-call CTR Customer Support personnel.

CTR APIs

Simple Object Access Protocol (SOAP) API

SOAP is a web communication protocol used to expose web services and transmit data over HTTP/HTTPS. It supports the XML data format only and strongly follows pre-set standards such as messaging structure, a set of encoding rules, and a convention for providing procedure requests and responses. The built-in functionality to create web-based services allows SOAP to handle communications which are language and platform independent. SOAP based APIs are designed to create, recover, update and delete records. The web service responses may include identifiers that will be necessary for further communication and updates to data.

SOAP is currently the API standard for web services use of the Canadian Transplant Registry.

CTR Environments

CTR currently has 14 User Acceptance Testing (UAT) environments available in addition to the main CTR Production environment.

The breakdown of the UAT environments and their usage is as follows:

- Train Prod – Used by all partners for the latest beta version of the next release candidate
- UAT Prod – Used by all partners, matches the current version in Production
- UAT ON, UAT ON2 – Used exclusively by Ontario partners
- UAT BC, UAT BC2 – Used exclusively by British Columbia partners
- UAT QC, UAT QC2 – Used exclusively by Quebec partners
- UAT Dev, UAT QA – Used by all partners
- UAT Gen, UAT Gen2, UAT Gen3, UAT Gen4 – Used by all partners

For the current status of these environments, check: https://ctrstatus.otdtcalculators.ca/.

The CTR Status Page also gives real-time information on any outages which may be affecting one or more environments, and outlines the current version, dataset, applicable URLs (including endpoints), and relevant notes of upcoming work which may affect accessibility.

Connecting to the CTR SOAP API

CTR 1 ENDPOINTS – WHERE TO ACCESS

Please note, to access the WSDL, add ?wsdl at the end of each URL.

Environment	URLs
UAT Prod	https://ctr2uatprd.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://ctr2uatprd.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://ctr2uatprd.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://ctr2uatprd.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT Dev	https://ctr2uatdev.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://ctr2uatdev.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://ctr2uatdev.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://ctr2uatdev.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT QA	https://ctr2uatqa.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://ctr2uatqa.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://ctr2uatqa.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://ctr2uatqa.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT BC	https://uat-bc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-bc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-bc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-bc.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT BC2	https://uat-bc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-bc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient

	https://uat-bc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-bc2.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT ON	https://uat-on.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-on.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-on.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-on.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT ON2	https://uat-on2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-on2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-on2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-on2.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT QC	https://uat-qc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-qc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-qc.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-qc.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT QC2	https://uat-qc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-qc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-qc2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-qc2.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT Gen	https://uat-gen.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-gen.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-gen.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-gen.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT Gen2	https://uat-gen2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-gen2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-gen2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-gen2.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT Gen3	https://uat-gen3.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-gen3.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-gen3.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-gen3.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
UAT Gen4	https://uat-gen4.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://uat-gen4.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://uat-gen4.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://uat-gen4.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
Train Prod	https://ctr2trainprod.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://ctr2trainprod.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://ctr2trainprod.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://ctr2trainprod.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService
CTR Production	https://ctr2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalDonor https://ctr2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalRecipient https://ctr2.transplantregistry.ca/otd-soap/otd/ctr1ws/ExternalOffer https://ctr2.transplantregistry.ca/otd-soap/otd/ctr1ws/PRACalculatorService

CTR 2 ENDPOINT – WHERE TO ACCESS

Please note: to access the WSDL, add ?wsdl at the end of each URL.

Environment	URLs
UAT Prod	https://ctr2uatprd.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT Dev	https://ctr2uatdev.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT QA	https://ctr2uatqa.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT BC	https://uat-bc.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT BC2	https://uat-bc2.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT ON	https://uat-on.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT ON2	https://uat-on2.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT QC	https://uat-qc.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT QC2	https://uat-qc2.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT Gen	https://uat-gen.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT Gen2	https://uat-gen2.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT Gen3	https://uat-gen3.transplantregistry.ca/otd-soap/otd/ctr2ws
UAT Gen4	https://uat-gen4.transplantregistry.ca/otd-soap/otd/ctr2ws
Train Prod	https://ctr2trainprod.transplantregistry.ca/otd-soap/otd/ctr2ws
CTR Production	https://ctr2.transplantregistry.ca/otd-soap/otd/ctr2ws

CTR 3 ENDPOINT – WHERE TO ACCESS

Please note, to access the WSDL, add ?wsdl at the end of each URL.

Environment	URLs
UAT Prod	https://ctr2uatprd.transplantregistry.ca/otd-ws/ctr3
UAT Dev	https://ctr2uatdev.transplantregistry.ca/otd-ws/ctr3
UAT QA	https://ctr2uatqa.transplantregistry.ca/otd-ws/ctr3
UAT BC	https://uat-bc.transplantregistry.ca/otd-ws/ctr3
UAT BC2	https://uat-bc2.transplantregistry.ca/otd-ws/ctr3
UAT ON	https://uat-on.transplantregistry.ca/otd-ws/ctr3
UAT ON2	https://uat-on2.transplantregistry.ca/otd-ws/ctr3
UAT QC	https://uat-qc.transplantregistry.ca/otd-ws/ctr3
UAT QC2	https://uat-qc2.transplantregistry.ca/otd-ws/ctr3
UAT Gen	https://uat-gen.transplantregistry.ca/otd-ws/ctr3
UAT Gen2	https://uat-gen2.transplantregistry.ca/otd-ws/ctr3
UAT Gen3	https://uat-gen3.transplantregistry.ca/otd-ws/ctr3
UAT Gen4	https://uat-gen4.transplantregistry.ca/otd-ws/ctr3
Train Prod	https://ctr2trainprod.transplantregistry.ca/otd-ws/ctr3
CTR Production	https://ctr2.transplantregistry.ca/otd-ws/ctr3

Endpoint Documentation

API VERSIONS

There is no formal versioning applied to the web service methods. The version of CTR is the only version that is available.

RESPONSE CODES?

CTR web services don’t use custom-defined response codes. Every method has a response structure, which may be a structured error or a structured response to the request.

HOW DO WE HANDLE ERRORS?

The following is an example of an error response. All errors generated from the application will return a structured error response. Each error response will contain the following fields:

- **Method**: The name of the web service request that failed.
- **SoapLogID**: This is a unique numeric identifier to the request that failed. This is useful to the support team when investigating the error is necessary.
- **ErrorID**: This is a unique key that is specific to the error. This is useful to the support team when investigating the error is necessary.
- **Msg**: This is a human-friendly error message, in plain text.
- **MsgHtml**: This is the human-friendly error message, with HTML formatting.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body>
<soap:Fault>
<faultcode>soap:Server</faultcode>
<faultstring>
Method: countWaitlistRecipients;
SoapLogID: 914017;
Search criteria AgeTo[-100] is less than AgeFrom[0].
ErrorID: recipient.error.ageFrom_ageTo;
Msg: Search criteria AgeTo[-100] is less than AgeFrom[0].;
MsgHtml: Search criteria AgeTo[-100] is less than AgeFrom[0].;
</faultstring>
</soap:Fault>
</soap:Body>
</soap:Envelope>
```

COMMON DESIGN AND DATA PATTERNS

Every request must contain the security header, which is within the Header. Where possible, response structures are shared.

```
<o:Security xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd" s:mustUnderstand="1">
<o:UsernameToken u:Id="uuid-2aa069e6-b0ad-40cb-8582-9f574c118459-1360">
<o:Username>USERNAME</o:Username>
<o:Password>PASSWORD</o:Password>
</o:UsernameToken>
</o:Security>
```

WHAT DOES UPDATE REQUEST LOOK LIKE VS READ ONLY? (Document CRUD - create, read, update, and delete)

Web service methods use names that are meaningful.

- Methods that can add or update data are prefixed with **add**, **update**, **make**, or **run**.
- Methods that provide data, which are read-only, are prefixed with **get**, **find**, **preview**, or **list**.

Credentials to Access API (Hello World)

Every web service request requires a user to have the necessary permission in order to successfully receive a valid response. For a user with access to the National Organ Waitlist, the following is a simple **Hello World** example of a web service request.

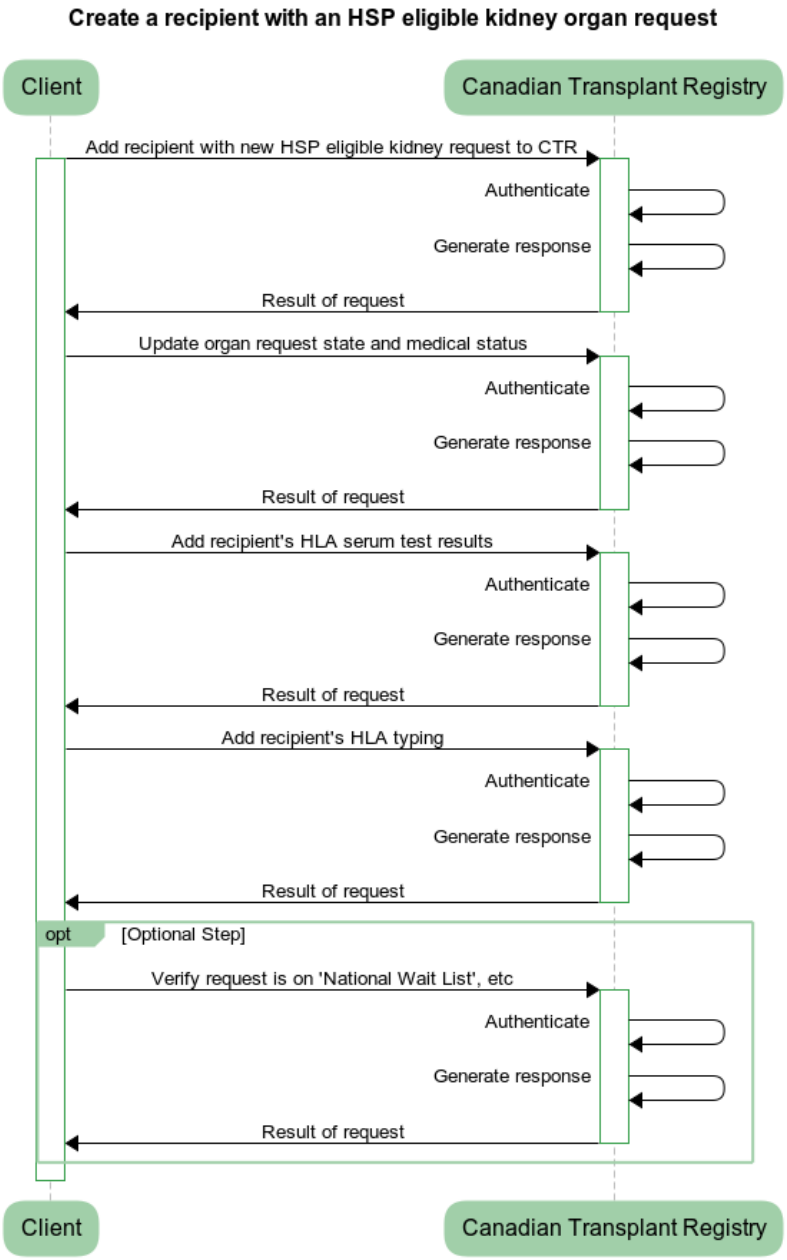
The following request to **countWaitlistRecipients** will return with a numeric value representing the number of patients on the National Organ Waitlist that match the filter criteria provided – in the following example, we are filtering patients who have an age between 0 and 100.

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/" xmlns:s="s" xmlns:u="u">

        <soapenv:Header>
                <ActivityId
xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics"
CorrelationId="90b8544f-8787-4935-92b7-83c8582e1e21">8a6001cd-ef20-4ddf-a327-
9c92935b7ec1</ActivityId>
                <o:Security xmlns:o="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
s:mustUnderstand="1">
                        <o:UsernameToken u:Id="uuid-2aa069e6-b0ad-40cb-8582-
9f574c118459-1360">
                                <o:Username>USERNAME</o:Username>
                                <o:Password>PASSWORD</o:Password>
                        </o:UsernameToken>
                </o:Security>
        </soapenv:Header>

        <soapenv:Body>
                <ctr:countWaitlistRecipients>
                        <arg0>
                                <ageFrom>0</ageFrom>
                                <ageTo>100</ageTo>
                        </arg0>
                </ctr:countWaitlistRecipients>
        </soapenv:Body>
</soapenv:Envelope>
```

List of SOAP Web Service Use Cases

Appendix A

Create a recipient with an HSP eligible kidney organ request



1.1 Add a new recipient to CTR with an organ request for kidney

Method: **addRecipientByNationalRecipientId()**

Comment: The recipient added to CTR with a kidney organ request has state 'NEW' [id: 1 , bizRef: REFERRAL] and medical status 'KIDNEY_1'.

Sample SOAP Request: **cs1step1**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:addRecipientByNationalRecipientId>
                <arg0>
                    <firstName>myFirstName</firstName>
                    <lastName>myLast-name</lastName>
                    <city>Montreal</city>
                    <province>
                        <id>11</id>
                        <bizRef>QC</bizRef>
                    </province>
                    <dateOfBirth>1991-02-01</dateOfBirth>
                    <gender>
                        <id>2</id>
                    </gender>
                    <height>155</height>
                    <weight>88</weight>
                    <phin>QT-776655</phin>
                    <phinProvince>
                        <id>9</id>
                    </phinProvince>
                    <transplantType>
                        <id>1</id>
                    </transplantType>
                    <onDialysis>true</onDialysis>
                    <mostRecentDialysisStartDate>2018-01-
01</mostRecentDialysisStartDate>
                    <bloodGroup>
```

```
                        <id>4</id>
                    </bloodGroup>
                    <rh>
                        <id>2</id>
                    </rh>
                    <inUtero>false</inUtero>
                    <organRequests>
                        <id>0</id>
                        <hspEligible>false</hspEligible>
                        <listDateTime>2019-11-20T00:00:00-
05:00</listDateTime>
                        <localOrganRequestID>51186</localOrganRequestID>
                        <medicalStatusChangeDate>2019-11-20T00:00:00-
05:00</medicalStatusChangeDate>
                        <organMedicalStatus>
                            <id>27</id>

<additionalInfoRequired>false</additionalInfoRequired>
                        </organMedicalStatus>
                        <organRequired>
                            <id>5</id>
                            <version>0</version>

<additionalInfoRequired>false</additionalInfoRequired>
                        </organRequired>
                        <status>
                            <id>2</id>
                        </status>
                    </organRequests>
                    <opo>
                        <id>23</id>
                    </opo>
                    <transplantCentre>
                        <id>92</id>
                    </transplantCentre>
                    <hlaLab>
                        <id>93</id>
                    </hlaLab>
                </arg0>
            </ctr:addRecipientByNationalRecipientId>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:addRecipientByNationalRecipientIdResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>38</id>
                    <age>
                        <days>4</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
```

```
                    <years>29</years>
                </age>
                <bloodGroup>
                    <id>4</id>
                    <bizRef>AB</bizRef>
                </bloodGroup>
                <bmi>36.6</bmi>
                <deathInHospital>false</deathInHospital>
                <suddenDeath>false</suddenDeath>
                <city>Montreal</city>
                <confirmBloodType>TRUE</confirmBloodType>
                <confirmRh>TRUE</confirmRh>
                <consentReceivedByCbs>false</consentReceivedByCbs>
                <dateOfBirth>1991-02-01T00:00:00-05:00</dateOfBirth>
                <firstName>myFirstName</firstName>
                <gender>
                    <id>2</id>
                    <bizRef>FEMALE</bizRef>
                </gender>
                <height>155</height>
                <hlaLab>
                    <id>93</id>
                    <facilityName>Transplant-Quebec</facilityName>
                    <facilityType>
                        <id>2</id>
                        <bizRef>HLA_LAB</bizRef>
                    </facilityType>
                    <facilityCode>QC-TQ-HLA</facilityCode>
                    <corrCode>40000</corrCode>
                </hlaLab>
                <InUtero>false</InUtero>
                <isOffListDuplicate>false</isOffListDuplicate>

<isOffListWithdrewConsent>false</isOffListWithdrewConsent>
                <KPDWithdrewConsent>false</KPDWithdrewConsent>
                <lastName>myLast-name</lastName>
                <mostRecentDialysisStartDate>2018-01-01T00:00:00-
05:00</mostRecentDialysisStartDate>
                <nationalRecipientId>CTR000038</nationalRecipientId>
                <onDialysis>true</onDialysis>
                <opo>
                    <id>23</id>
                    <facilityName>Transplant-Quebec</facilityName>
                    <facilityType>
                        <id>3</id>
                        <bizRef>OPO</bizRef>
                    </facilityType>
                    <facilityCode>QC-TQ</facilityCode>
                    <corrCode>40000</corrCode>
                </opo>
                <organRequests>
                    <id>104</id>
                    <organRequired>
                        <id>5</id>
                        <bizRef>KIDNEY</bizRef>
```

```
                        </organRequired>
                        <organMedicalStatus>
                            <id>27</id>
                            <bizRef>KIDNEY_1</bizRef>
                        </organMedicalStatus>
                        <listDateTime>2019-11-20T00:00:00-
05:00</listDateTime>
                        <status>
                            <id>2</id>
                            <bizRef>ACTIVE</bizRef>
                        </status>
                        <program>
                            <id>2</id>
                            <bizRef>DECEASED_WAITLIST</bizRef>
                        </program>
                        <reason>
                            <id>31</id>
                            <bizRef>ACTIVE_RECIPIENT_ON_WAITLIST</bizRef>
                        </reason>
                        <medicalStatusChangeDate>2019-11-20T00:00:00-
05:00</medicalStatusChangeDate>
                        <organStatusChangeDate>2020-10-28T13:38:56-
04:00</organStatusChangeDate>
                        <dwlEligible>false</dwlEligible>
                        <localOrganRequestID>51186</localOrganRequestID>
                    </organRequests>
                    <phin>QT-776655</phin>
                    <phinProvince>
                        <id>9</id>
                        <bizRef>ON</bizRef>
                    </phinProvince>
                    <province>
                        <id>11</id>
                        <bizRef>QC</bizRef>
                    </province>
                    <registeredOnLDPE>false</registeredOnLDPE>
                    <registryEnterDate>2020-10-28T13:38:49-
04:00</registryEnterDate>
                    <rh>
                        <id>2</id>
                        <bizRef>MINUS</bizRef>
                    </rh>
                    <timeOnDialysisInDays>1031</timeOnDialysisInDays>
                    <transplantCentre>
                        <id>92</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>1</id>
                            <bizRef>TX_CENTRE</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ-TXC</facilityCode>
                        <corrCode>40000</corrCode>
                    </transplantCentre>
                    <transplantType>
                        <id>1</id>
```

```
                    <bizRef>SINGLE</bizRef>
                </transplantType>
                <weight>88</weight>
            </return>
        </ns2:addRecipientByNationalRecipientIdResponse>
    </soap:Body>
</soap:Envelope>
```

1.2 Update the kidney organ request state and medical status

Method: **updateRecipientByNationalRecipientId()**

Comment: The kidney organ request has state 'ACTIVE' and medical status 'KIDNEY_2MU'. NOTE: steps 1 & 2 may be combined into a single call. For clarity, a 2-step use case is outlined.

Sample SOAP Request: **cs1step2**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateRecipientByNationalRecipientId>
                <arg0>CTR000038</arg0>
                <arg1>
                    <organRequests>
                        <id>104</id>
                        <organRequired>
                            <id>5</id>
                            <bizRef>KIDNEY</bizRef>
                        </organRequired>
                        <organMedicalStatus>
                            <bizRef>KIDNEY_2MU</bizRef>
                        </organMedicalStatus>
                        <medicalStatusChangeDate>2020-10-26T06:41:00-
04:00</medicalStatusChangeDate>
                        <status>
                            <id>2</id>
                            <bizRef>ACTIVE</bizRef>
                        </status>
                    </organRequests>
                </arg1>
            </ctr:updateRecipientByNationalRecipientId>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:updateRecipientByNationalRecipientIdResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>38</id>
                    <age>
                        <days>4</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>
                        <id>4</id>
                        <bizRef>AB</bizRef>
                    </bloodGroup>
                    <bmi>36.6</bmi>
                    <deathInHospital>false</deathInHospital>
                    <suddenDeath>false</suddenDeath>
                    <city>Montreal</city>
                    <confirmBloodType>TRUE</confirmBloodType>
                    <confirmRh>TRUE</confirmRh>
                    <consentReceivedByCbs>false</consentReceivedByCbs>
                    <dateOfBirth>1991-02-01T00:00:00-05:00</dateOfBirth>
                    <firstName>myFirstName</firstName>
                    <gender>
                        <id>2</id>
                        <bizRef>FEMALE</bizRef>
                    </gender>
                    <height>155</height>
                    <hlaLab>
                        <id>93</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>2</id>
                            <bizRef>HLA_LAB</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ-HLA</facilityCode>
                        <corrCode>40000</corrCode>
                    </hlaLab>
                    <InUtero>false</InUtero>
                    <isOffListDuplicate>false</isOffListDuplicate>

<isOffListWithdrewConsent>false</isOffListWithdrewConsent>
                    <KPDWithdrewConsent>false</KPDWithdrewConsent>
                    <lastName>myLast-name</lastName>
                    <mostRecentDialysisStartDate>2018-01-01T00:00:00-
05:00</mostRecentDialysisStartDate>
                    <nationalRecipientId>CTR000038</nationalRecipientId>
                    <onDialysis>true</onDialysis>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
```

```
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                        <corrCode>40000</corrCode>
                    </opo>
                    <organRequests>
                        <id>104</id>
                        <organRequired>
                            <id>5</id>
                            <bizRef>KIDNEY</bizRef>
                        </organRequired>
                        <organMedicalStatus>
                            <id>28</id>
                            <bizRef>KIDNEY_2MU</bizRef>
                        </organMedicalStatus>
                        <listDateTime>2019-11-20T00:00:00-
05:00</listDateTime>
                        <status>
                            <id>2</id>
                            <bizRef>ACTIVE</bizRef>
                        </status>
                        <program>
                            <id>2</id>
                            <bizRef>DECEASED_WAITLIST</bizRef>
                        </program>
                        <reason>
                            <id>31</id>
                            <bizRef>ACTIVE_RECIPIENT_ON_WAITLIST</bizRef>
                        </reason>
                        <medicalStatusChangeDate>2020-10-26T06:41:00-
04:00</medicalStatusChangeDate>
                        <organStatusChangeDate>2020-10-28T13:38:56-
04:00</organStatusChangeDate>
                        <dwlEligible>false</dwlEligible>
                    </organRequests>
                    <phin>QT-776655</phin>
                    <phinProvince>
                        <id>9</id>
                        <bizRef>ON</bizRef>
                    </phinProvince>
                    <province>
                        <id>11</id>
                        <bizRef>QC</bizRef>
                    </province>
                    <registeredOnLDPE>false</registeredOnLDPE>
                    <registryEnterDate>2020-10-28T13:38:49-
04:00</registryEnterDate>
                    <rh>
                        <id>2</id>
                        <bizRef>MINUS</bizRef>
                    </rh>
                    <timeOnDialysisInDays>1031</timeOnDialysisInDays>
                    <transplantCentre>
```

```
                    <id>92</id>
                    <facilityName>Transplant-Quebec</facilityName>
                    <facilityType>
                        <id>1</id>
                        <bizRef>TX_CENTRE</bizRef>
                    </facilityType>
                    <facilityCode>QC-TQ-TXC</facilityCode>
                    <corrCode>40000</corrCode>
                </transplantCentre>
                <transplantType>
                    <id>1</id>
                    <bizRef>SINGLE</bizRef>
                </transplantType>
                <weight>88</weight>
            </return>
        </ns2:updateRecipientByNationalRecipientIdResponse>
    </soap:Body>
</soap:Envelope>
```

1.3 Add recipient's HLA serum test results

Method: **updateRecipientHlaSerumTestResult()**

Comment: Set the input field 'confirmAntibodies' = true

Sample SOAP Request: **cs1step3**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateRecipientHlaSerumTestResult>
                <arg0>
                    <id>0</id>
                    <nationalRecipientId>CTR000038</nationalRecipientId>
                    <confirmAntibodies>true</confirmAntibodies>
                    <collectionDate>2020-10-28</collectionDate>
                    <testDate>2020-10-28</testDate>
                    <antigens>
                        <type>B</type>
                        <subType>35</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>9</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>24</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>13</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
```

```
        <type>DR</type>
        <subType>0103</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>5</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>41</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>47</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>55</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>11</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>24</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>69</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>17</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>36</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>Cw</type>
        <subType>4</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>14</subType>
        <aui>Acceptable</aui>
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    <antigens>
        <type>B</type>
        <subType>38</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
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        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>30</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Bw46</type>
        <subType>4</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>16</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>22</subType>
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    </antigens>
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        <subType>0202</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>85</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
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        <subType>4</subType>
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    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>10</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>50</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Bw46</type>
        <subType>6</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>39</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>10</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>52</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>6</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>57</subType>
        <aui>Acceptable</aui>
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```

```
        <type>A</type>
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    <antigens>
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        <subType>12</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>6</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
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        <subType>33</subType>
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    <antigens>
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    <antigens>
        <type>B</type>
        <subType>71</subType>
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        <subType>78</subType>
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        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>4</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <subType>0401</subType>
        <aui>Acceptable</aui>
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    <antigens>
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```

```
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        <subType>81</subType>
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    <antigens>
        <type>DR345</type>
        <subType>51</subType>
        <aui>Acceptable</aui>
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        <type>B</type>
        <subType>73</subType>
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    <antigens>
        <type>DQA</type>
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```

```
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        <type>DPB</type>
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        <type>DPB</type>
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        <subType>42</subType>
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        <subType>7</subType>
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    </antigens>
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    </antigens>
    <antigens>
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        <subType>1</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>25</subType>
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        <type>DPB</type>
        <subType>5</subType>
        <aui>Acceptable</aui>
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    <antigens>
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        <subType>8</subType>
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```

```
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        <subType>17</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <subType>18</subType>
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        <subType>72</subType>
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    <antigens>
        <type>DPB</type>
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```

```
        <type>DR</type>
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    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
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        <type>B</type>
        <subType>82</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>1</subType>
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        <subType>63</subType>
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        <type>DPB</type>
        <subType>0201</subType>
        <aui>Acceptable</aui>
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        <subType>67</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <type>Cw</type>
        <subType>12</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>11</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
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    </antigens>
    <antigens>
        <type>A</type>
        <subType>29</subType>
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    </antigens>
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        <type>B</type>
        <subType>53</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <type>B</type>
        <subType>65</subType>
        <aui>Acceptable</aui>
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        <type>DR</type>
        <subType>16</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>62</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>13</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>60</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
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    <antigens>
        <type>DQB</type>
        <subType>9</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>9</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
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Response: the CTR recipient HLA serum records

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    <type>Cw</type>
    <subType>4</subType>
    <aui>Acceptable</aui>
```

```
</antigens>
<antigens>
    <type>DPB</type>
    <subType>28</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>DR</type>
    <subType>1</subType>
    <aui>Unacceptable</aui>
</antigens>
<antigens>
    <type>B</type>
    <subType>39</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>A</type>
    <subType>69</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>Cw</type>
    <subType>10</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>DPB</type>
    <subType>40</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>B</type>
    <subType>55</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>DQB</type>
    <subType>2</subType>
    <aui>Unacceptable</aui>
</antigens>
<antigens>
    <type>DPB</type>
    <subType>3</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>B</type>
    <subType>76</subType>
    <aui>Acceptable</aui>
</antigens>
<antigens>
    <type>DPB</type>
    <subType>16</subType>
    <aui>Acceptable</aui>
```

```
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>18</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>25</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>0201</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>B</type>
                        <subType>62</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>A</type>
                        <subType>26</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>A</type>
                        <subType>29</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                </serumTests>
            </return>
        </ns2:updateRecipientHlaSerumTestResultResponse>
    </soap:Body>
</soap:Envelope>
```

1.4 Add recipient's HLA typing

Method: **updateHlaTyping()**

Comment: Set the input field 'confirmHLATyping' = true

Sample SOAP Request: **cs1step4**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateHlaTyping>
                <arg0>
                    <nationalId>CTR000038</nationalId>
                    <confirmHLATyping>true</confirmHLATyping>
                    <drb345TestedNotPresent>true</drb345TestedNotPresent>
                    <bw4>POSITIVE</bw4>
                    <bw6>POSITIVE</bw6>
                    <listMoleculars>
                        <molecularType>A_1</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>A_2</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_1</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_2</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>C_1</molecularType>
                        <molecular>01:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
```

```
                    <moleculerType>C_2</moleculerType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DPA1_1</moleculerType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DPA1_2</moleculerType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DPB1_1</moleculerType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DPB1_2</moleculerType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DQA1_1</moleculerType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DQA1_2</moleculerType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DQB1_1</moleculerType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DQB1_2</moleculerType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DRB1_1</moleculerType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <moleculerType>DRB1_2</moleculerType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <dr51>false</dr51>
                <dr52>false</dr52>
                <dr53>false</dr53>
            </arg0>
        </ctr:updateHlaTyping>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the CTR recipient filtered National Wait List records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
```

```
<ns2:updateHlaTypingResponse xmlns:ns2="http://ctr3ws.cbs.com/">
    <return>
        <nationalId>CTR000038</nationalId>
        <confirmHLATyping>true</confirmHLATyping>
        <drb345TestedNotPresent>true</drb345TestedNotPresent>
        <bw4>POSITIVE</bw4>
        <bw6>POSITIVE</bw6>
        <listMoleculars>
            <molecularType>A_1</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>A_2</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_1</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_2</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_1</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_2</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_1</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_2</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
```

```
<listMoleculars>
    <molecularType>DQB1_1</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DQB1_2</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_1</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_2</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<dr51>false</dr51>
<dr52>false</dr52>
<dr53>false</dr53>
<bw4SystemCalculated>NEGATIVE</bw4SystemCalculated>
<bw6SystemCalculated>POSITIVE</bw6SystemCalculated>
<listSerologies>
    <serologicaType>A_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>A_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_1</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_2</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPB_1</serologicaType>
```

```
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DPB_2</serologicaType>
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_1</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_2</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <hlaCompleteByOrgan>
                    <complete>true</complete>
                    <program>
                        <id>2</id>
                        <bizRef>DECEASED_WAITLIST</bizRef>
                    </program>
                    <evaluatedOn>2020-10-28T00:00:00-04:00</evaluatedOn>
                    <organ>
                        <id>5</id>
                        <bizRef>KIDNEY</bizRef>
                    </organ>
                </hlaCompleteByOrgan>
            </return>
        </ns2:updateHlaTypingResponse>
    </soap:Body>
</soap:Envelope>
```

1.5 Verify kidney organ request is on 'National Wait List' as well as DWL eligibility status

Method: **listWaitlistRecipients()**

Comment: This step is optional

Sample SOAP Request: **cs1step5**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:listWaitlistRecipients>
                <arg0>
                    <dwlEligible>true</dwlEligible>
                    <organRequestStatuses>
                        <id>2</id>
                        <bizRef>ACTIVE</bizRef>
                    </organRequestStatuses>
                    <organs>
                        <id>5</id>
                        <bizRef>KIDNEY</bizRef>
                    </organs>
                    <opos>
                        <id>23</id>
                    </opos>
                </arg0>
            </ctr:listWaitlistRecipients>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient filtered National Wait List records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:listWaitlistRecipientsResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
```

```
                    <id>103</id>
                    <acceptanceCriteria>
                        <id>116</id>
                        <acceptDCD>true</acceptDCD>
                        <acceptHepBCoreAB>false</acceptHepBCoreAB>
                        <acceptHepC>false</acceptHepC>

<acceptIncompatibleBloodGroups>false</acceptIncompatibleBloodGroups>
                        <crossMatchRequired>false</crossMatchRequired>
                        <localDonorOnly>false</localDonorOnly>
                        <organRequestId>103</organRequestId>
                        <recipientID>37</recipientID>
                    </acceptanceCriteria>
                    <age>
                        <days>4</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>AB</bloodGroup>
                    <bloodGroupLabelEn>AB</bloodGroupLabelEn>
                    <height>155</height>
                    <dwlEligible>true</dwlEligible>
                    <inUtero>false</inUtero>
                    <lastUpdated>2020-10-28T16:34:13.938-04:00</lastUpdated>
                    <listDate>2019-11-20T00:00:00-05:00</listDate>
                    <medicalStatusChangeDate>2019-11-20T00:00:00-
05:00</medicalStatusChangeDate>
                    <nationalRecipientId>CTR000037</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                    </opo>
                    <organ>KIDNEY</organ>
                    <organCPRA>100</organCPRA>
                    <organId>5</organId>
                    <organLabelEn>Kidney</organLabelEn>
                    <organMedicalStatus>KIDNEY_1</organMedicalStatus>
                    <organMedicalStatusId>27</organMedicalStatusId>
                    <organRequestStatus>ACTIVE</organRequestStatus>
                    <organRequestStatusId>2</organRequestStatusId>
                    <province>QC</province>
                    <provinceId>11</provinceId>
                    <provinceLabelEn>Quebec</provinceLabelEn>
                    <recipientId>37</recipientId>
                    <transplantType>SINGLE</transplantType>
                    <transplantTypeId>1</transplantTypeId>
                    <transplantTypeLabelEn>Single</transplantTypeLabelEn>
                    <weight>88</weight>
                </return>
```

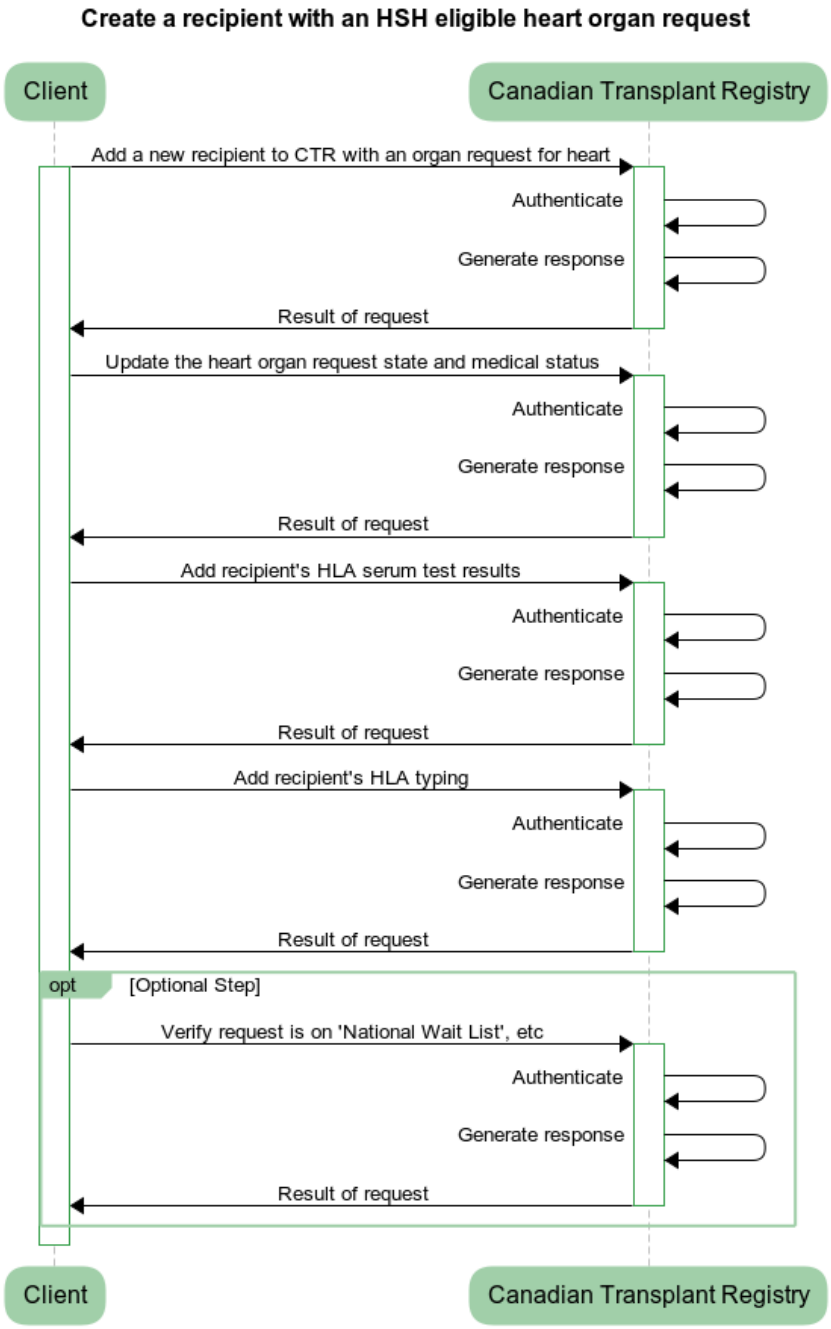
```
                <return>
                    <id>104</id>
                    <acceptanceCriteria>
                        <id>117</id>
                        <acceptDCD>true</acceptDCD>
                        <acceptHepBCoreAB>false</acceptHepBCoreAB>
                        <acceptHepC>false</acceptHepC>

<acceptIncompatibleBloodGroups>false</acceptIncompatibleBloodGroups>
                        <crossMatchRequired>false</crossMatchRequired>
                        <localDonorOnly>false</localDonorOnly>
                        <organRequestId>104</organRequestId>
                        <recipientID>38</recipientID>
                    </acceptanceCriteria>
                    <age>
                        <days>4</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>AB</bloodGroup>
                    <bloodGroupLabelEn>AB</bloodGroupLabelEn>
                    <height>155</height>
                    <dwlEligible>true</dwlEligible>
                    <inUtero>false</inUtero>
                    <lastUpdated>2020-10-28T16:45:58.069-04:00</lastUpdated>
                    <listDate>2019-11-20T00:00:00-05:00</listDate>
                    <medicalStatusChangeDate>2020-10-28T16:41:00-
04:00</medicalStatusChangeDate>
                    <nationalRecipientId>CTR000038</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                    </opo>
                    <organ>KIDNEY</organ>
                    <organCPRA>100</organCPRA>
                    <organId>5</organId>
                    <organLabelEn>Kidney</organLabelEn>
                    <organMedicalStatus>KIDNEY_1</organMedicalStatus>
                    <organMedicalStatusId>27</organMedicalStatusId>
                    <organRequestStatus>ACTIVE</organRequestStatus>
                    <organRequestStatusId>2</organRequestStatusId>
                    <province>QC</province>
                    <provinceId>11</provinceId>
                    <provinceLabelEn>Quebec</provinceLabelEn>
                    <recipientId>38</recipientId>
                    <transplantType>SINGLE</transplantType>
                    <transplantTypeId>1</transplantTypeId>
                    <transplantTypeLabelEn>Single</transplantTypeLabelEn>
                    <weight>88</weight>
```

```
            </return>
        </ns2:listWaitlistRecipientsResponse>
    </soap:Body>
</soap:Envelope>
```

Appendix B

Create a recipient with an HSH eligible heart organ request



1.1 Add a new recipient to CTR with an organ request for heart

Method: **addRecipientByNationalRecipientId()**

Comment: The recipient added to CTR with a kidney organ request has organ request state: 'NEW' [id: 1 , bizRef: REFERRAL] and organ medical status: [id: 27 , bizRef: KIDNEY_1].

The input field [**medicalStatusChangeDate**] is used by the IPOS Heart allocation algorithm as a tie breaker, **please enter an accurate date**.

Steps 1 & 2 may be combined into a single call. For clarity, a 2-step use case is outlined.

Sample SOAP Request: **cs2step1**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:addRecipientByNationalRecipientId>
                <arg0>
                    <firstName>myFirstName2</firstName>
                    <lastName>myLast-name2</lastName>
                    <city>Montreal</city>
                    <province>
                        <id>11</id>
                    </province>
                    <dateOfBirth>1991-02-01</dateOfBirth>
                    <gender>
                        <id>2</id>
                    </gender>
                    <height>165</height>
                    <weight>65</weight>
                    <localRecipientId>QT-191919</localRecipientId>
                    <phin>QT-191919</phin>
                    <phinProvince>
                        <id>11</id>
                    </phinProvince>
                    <transplantType>
```

```
                        <id>1</id>
                    </transplantType>
                    <bloodGroup>
                        <id>4</id>
                    </bloodGroup>
                    <rh>
                        <id>2</id>
                    </rh>
                    <organRequests>
                        <id>0</id>
                        <listDateTime>2019-12-20T00:00:00-
05:00</listDateTime>
                        <medicalStatusChangeDate>2019-12-20T00:00:00-
05:00</medicalStatusChangeDate>
                        <organMedicalStatus>
                            <id>7</id>
                            <!--<bizRef>HEART_1</bizRef>-->
                        </organMedicalStatus>
                        <organRequired>
                            <id>1</id>
                            <!--<bizRef>HEART</bizRef>-->
                        </organRequired>
                        <status>
                            <id>1</id>
                            <!--<bizRef>REFERRAL</bizRef>-->
                        </status>
                    </organRequests>
                    <opo>
                        <id>23</id>
                    </opo>
                    <transplantCentre>
                        <id>92</id>
                    </transplantCentre>
                    <hlaLab>
                        <id>93</id>
                    </hlaLab>
                </arg0>
            </ctr:addRecipientByNationalRecipientId>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:addRecipientByNationalRecipientIdResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>39</id>
                    <age>
                        <days>5</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
```

```
                    </age>
                    <bloodGroup>
                        <id>4</id>
                        <bizRef>AB</bizRef>
                    </bloodGroup>
                    <bmi>23.9</bmi>
                    <deathInHospital>false</deathInHospital>
                    <suddenDeath>false</suddenDeath>
                    <city>Montreal</city>
                    <confirmBloodType>TRUE</confirmBloodType>
                    <confirmRh>TRUE</confirmRh>
                    <consentReceivedByCbs>false</consentReceivedByCbs>
                    <dateOfBirth>1991-02-01T00:00:00-05:00</dateOfBirth>
                    <firstName>myFirstName2</firstName>
                    <gender>
                        <id>2</id>
                        <bizRef>FEMALE</bizRef>
                    </gender>
                    <height>165.0</height>
                    <hlaLab>
                        <id>93</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>2</id>
                            <bizRef>HLA_LAB</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ-HLA</facilityCode>
                        <corrCode>40000</corrCode>
                    </hlaLab>
                    <InUtero>false</InUtero>
                    <isOffListDuplicate>false</isOffListDuplicate>

<isOffListWithdrewConsent>false</isOffListWithdrewConsent>
                    <KPDWithdrewConsent>false</KPDWithdrewConsent>
                    <lastName>myLast-name2</lastName>
                    <localRecipientId>QT-191919</localRecipientId>
                    <localRecipientSource>ODO</localRecipientSource>
                    <nationalRecipientId>CTR000039</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                        <corrCode>40000</corrCode>
                    </opo>
                    <organRequests>
                        <id>105</id>
                        <organRequired>
                            <id>1</id>
                            <bizRef>HEART</bizRef>
                        </organRequired>
                        <organMedicalStatus>
```

```
                            <id>7</id>
                            <bizRef>HEART_1</bizRef>
                        </organMedicalStatus>
                        <listDateTime>2019-12-20T00:00:00-
05:00</listDateTime>
                        <status>
                            <id>1</id>
                            <bizRef>REFERRAL</bizRef>
                        </status>
                        <program>
                            <id>2</id>
                            <bizRef>DECEASED_WAITLIST</bizRef>
                        </program>
                        <reason>
                            <id>33</id>
                            <bizRef>NEW_ORGAN_REQUEST</bizRef>
                        </reason>
                        <medicalStatusChangeDate>2019-12-20T00:00:00-
05:00</medicalStatusChangeDate>
                        <organStatusChangeDate>2020-10-29T12:02:18-
04:00</organStatusChangeDate>
                        <dwlEligible>false</dwlEligible>
                    </organRequests>
                    <phin>QT-191919</phin>
                    <phinProvince>
                        <id>11</id>
                        <bizRef>QC</bizRef>
                    </phinProvince>
                    <province>
                        <id>11</id>
                        <bizRef>QC</bizRef>
                    </province>
                    <registeredOnLDPE>false</registeredOnLDPE>
                    <registryEnterDate>2020-10-29T12:02:17-
04:00</registryEnterDate>
                    <rh>
                        <id>2</id>
                        <bizRef>MINUS</bizRef>
                    </rh>
                    <timeOnDialysisInDays>0</timeOnDialysisInDays>
                    <transplantCentre>
                        <id>92</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>1</id>
                            <bizRef>TX_CENTRE</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ-TXC</facilityCode>
                        <corrCode>40000</corrCode>
                    </transplantCentre>
                    <transplantType>
                        <id>1</id>
                        <bizRef>SINGLE</bizRef>
                    </transplantType>
                    <weight>65.0</weight>
```

```
            </return>
        </ns2:addRecipientByNationalRecipientIdResponse>
    </soap:Body>
</soap:Envelope>
```

1.2 Update the heart organ request state and medical status

Method: **updateRecipientByNationalRecipientId()**

Comment: The kidney organ request has organ request state: 'ACTIVE' and organ medical status: [id: 2 , bizRef: HEART_4]

Sample SOAP Request: **cs2step2**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateRecipientByNationalRecipientId>
                <arg0>CTR000039</arg0>
                <arg1>
                    <organRequests>
                        <id>105</id>
                        <organRequired>
                            <id>1</id>
                            <!--<bizRef>HEART</bizRef>-->
                        </organRequired>
                        <organMedicalStatus>
                            <bizRef>HEART_4</bizRef>
                        </organMedicalStatus>
                        <medicalStatusChangeDate>2020-10-29T06:42:00-
04:00</medicalStatusChangeDate>
                        <status>
                            <id>2</id>
                            <bizRef>ACTIVE</bizRef>
                        </status>
                    </organRequests>
                </arg1>
            </ctr:updateRecipientByNationalRecipientId>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:updateRecipientByNationalRecipientIdResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>39</id>
                    <age>
                        <days>5</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>
                        <id>4</id>
                        <bizRef>AB</bizRef>
                    </bloodGroup>
                    <bmi>23.9</bmi>
                    <deathInHospital>false</deathInHospital>
                    <suddenDeath>false</suddenDeath>
                    <city>Montreal</city>
                    <confirmBloodType>TRUE</confirmBloodType>
                    <confirmRh>TRUE</confirmRh>
                    <consentReceivedByCbs>false</consentReceivedByCbs>
                    <dateOfBirth>1991-02-01T00:00:00-05:00</dateOfBirth>
                    <firstName>myFirstName2</firstName>
                    <gender>
                        <id>2</id>
                        <bizRef>FEMALE</bizRef>
                    </gender>
                    <height>165</height>
                    <hlaLab>
                        <id>93</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>2</id>
                            <bizRef>HLA_LAB</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ-HLA</facilityCode>
                        <corrCode>40000</corrCode>
                    </hlaLab>
                    <InUtero>false</InUtero>
                    <isOffListDuplicate>false</isOffListDuplicate>

<isOffListWithdrewConsent>false</isOffListWithdrewConsent>
                    <KPDWithdrewConsent>false</KPDWithdrewConsent>
                    <lastName>myLast-name2</lastName>
                    <localRecipientId>QT-191919</localRecipientId>
                    <localRecipientSource>ODO</localRecipientSource>
                    <nationalRecipientId>CTR000039</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
```

```
                        <id>3</id>
                        <bizRef>OPO</bizRef>
                    </facilityType>
                    <facilityCode>QC-TQ</facilityCode>
                    <corrCode>40000</corrCode>
                </opo>
                <organRequests>
                    <id>105</id>
                    <organRequired>
                        <id>1</id>
                        <bizRef>HEART</bizRef>
                    </organRequired>
                    <organMedicalStatus>
                        <id>2</id>
                        <bizRef>HEART_4</bizRef>
                    </organMedicalStatus>
                    <listDateTime>2019-12-20T00:00:00-
05:00</listDateTime>
                    <status>
                        <id>2</id>
                        <bizRef>ACTIVE</bizRef>
                    </status>
                    <program>
                        <id>2</id>
                        <bizRef>DECEASED_WAITLIST</bizRef>
                    </program>
                    <reason>
                        <id>31</id>
                        <bizRef>ACTIVE_RECIPIENT_ON_WAITLIST</bizRef>
                    </reason>
                    <medicalStatusChangeDate>2020-10-29T06:42:00-
04:00</medicalStatusChangeDate>
                    <organStatusChangeDate>2020-10-29T12:11:12-
04:00</organStatusChangeDate>
                    <dwlEligible>false</dwlEligible>
                </organRequests>
                <phin>QT-191919</phin>
                <phinProvince>
                    <id>11</id>
                    <bizRef>QC</bizRef>
                </phinProvince>
                <province>
                    <id>11</id>
                    <bizRef>QC</bizRef>
                </province>
                <registeredOnLDPE>false</registeredOnLDPE>
                <registryEnterDate>2020-10-29T12:02:17-
04:00</registryEnterDate>
                <rh>
                    <id>2</id>
                    <bizRef>MINUS</bizRef>
                </rh>
                <timeOnDialysisInDays>0</timeOnDialysisInDays>
                <transplantCentre>
                    <id>92</id>
```

```
                    <facilityName>Transplant-Quebec</facilityName>
                    <facilityType>
                        <id>1</id>
                        <bizRef>TX_CENTRE</bizRef>
                    </facilityType>
                    <facilityCode>QC-TQ-TXC</facilityCode>
                    <corrCode>40000</corrCode>
                </transplantCentre>
                <transplantType>
                    <id>1</id>
                    <bizRef>SINGLE</bizRef>
                </transplantType>
                <weight>65</weight>
            </return>
        </ns2:updateRecipientByNationalRecipientIdResponse>
    </soap:Body>
</soap:Envelope>
```

1.3 Add recipient's HLA serum test results

Method: **updateRecipientHlaSerumTestResult()**

Comment: Set the input field 'confirmAntibodies' = true

Sample SOAP Request: **cs2step3**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateRecipientHlaSerumTestResult>
                <arg0>
                    <id>0</id>
                    <nationalRecipientId>CTR000039</nationalRecipientId>
                    <confirmAntibodies>true</confirmAntibodies>
                    <collectionDate>2020-10-29</collectionDate>
                    <testDate>2020-10-29</testDate>
                    <antigens>
                        <type>B</type>
                        <subType>35</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>9</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>24</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
                        <type>DPB</type>
                        <subType>13</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                    <antigens>
```

```
        <type>DR</type>
        <subType>0103</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>5</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>41</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>47</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>55</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>11</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>24</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>69</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>17</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>36</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>Cw</type>
        <subType>4</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>14</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>38</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>54</subType>
        <aui>Acceptable</aui>
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    <antigens>
        <type>A</type>
        <subType>30</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Bw46</type>
        <subType>4</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>16</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>22</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <subType>0202</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>85</subType>
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    </antigens>
    <antigens>
```

```
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    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
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        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>50</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Bw46</type>
        <subType>6</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>39</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>10</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>52</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>6</subType>
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    </antigens>
    <antigens>
        <type>B</type>
        <subType>57</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
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        <subType>12</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>6</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>33</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
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        <aui>Acceptable</aui>
    </antigens>
    <antigens>
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        <subType>71</subType>
        <aui>Acceptable</aui>
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        <type>B</type>
        <subType>78</subType>
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    <antigens>
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        <subType>5</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>4</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>0401</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>2</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
```

```
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        <subType>64</subType>
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    </antigens>
    <antigens>
        <type>B</type>
        <subType>81</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR345</type>
        <subType>51</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>73</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>28</subType>
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        <subType>9</subType>
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    </antigens>
    <antigens>
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        <subType>11</subType>
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        <type>DQA</type>
        <subType>4</subType>
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        <subType>75</subType>
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    <antigens>
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        <subType>14</subType>
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    </antigens>
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```

```
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    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>25</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>5</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
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        <subType>13</subType>
        <aui>Acceptable</aui>
    </antigens>
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        <type>A</type>
        <subType>26</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>17</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>4</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>83</subType>
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    <antigens>
        <type>DR</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
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        <type>DR345</type>
        <subType>52</subType>
        <aui>Acceptable</aui>
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        <aui>Acceptable</aui>
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        <subType>27</subType>
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        <subType>72</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>40</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>DR</type>
        <subType>7</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>82</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
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        <type>B</type>
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        <subType>63</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>0201</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>67</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>12</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>11</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>A</type>
        <subType>43</subType>
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    </antigens>
    <antigens>
        <type>A</type>
        <subType>29</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>53</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>65</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>16</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>62</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>13</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>60</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>B</type>
        <subType>61</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQB</type>
        <subType>9</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>9</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>8</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>32</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>23</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>1</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>2</subType>
        <aui>Unacceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>49</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>46</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>DPB</type>
        <subType>0402</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>7</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>14</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>80</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>7</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>19</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>10</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR345</type>
        <subType>53</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>23</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>18</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>59</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>A</type>
        <subType>68</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>27</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>77</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>37</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>74</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>A</type>
        <subType>3</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>45</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>15</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>1</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>56</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>2</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
        <type>Cw</type>
        <subType>5</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>48</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DQA</type>
        <subType>6</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>Cw</type>
        <subType>6</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPA</type>
        <subType>2</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DR</type>
        <subType>17</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>51</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>B</type>
        <subType>44</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>26</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>30</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
        <type>DPB</type>
        <subType>20</subType>
        <aui>Acceptable</aui>
    </antigens>
    <antigens>
```

```
                        <type>A</type>
                        <subType>31</subType>
                        <aui>Acceptable</aui>
                    </antigens>
                </arg0>
            </ctr:updateRecipientHlaSerumTestResult>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the CTR recipient HLA serum records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:listWaitlistRecipientsResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>105</id>
                    <acceptanceCriteria>
                        <id>118</id>
                        <acceptDCD>true</acceptDCD>
                        <acceptHepBCoreAB>false</acceptHepBCoreAB>
                        <acceptHepC>false</acceptHepC>

<acceptIncompatibleBloodGroups>false</acceptIncompatibleBloodGroups>
                        <crossMatchRequired>false</crossMatchRequired>
                        <localDonorOnly>false</localDonorOnly>
                        <organRequestId>105</organRequestId>
                        <recipientID>39</recipientID>
                    </acceptanceCriteria>
                    <age>
                        <days>5</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>AB</bloodGroup>
                    <bloodGroupLabelEn>AB</bloodGroupLabelEn>
                    <height>165</height>
                    <dwlEligible>true</dwlEligible>
                    <inUtero>false</inUtero>
                    <lastUpdated>2020-10-29T12:46:59.032-04:00</lastUpdated>
                    <listDate>2019-12-20T00:00:00-05:00</listDate>
                    <medicalStatusChangeDate>2020-10-29T06:42:00-
04:00</medicalStatusChangeDate>
                    <nationalRecipientId>CTR000039</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                    </opo>
                    <organ>HEART</organ>
```

```
                    <organCPRA>100</organCPRA>
                    <organId>1</organId>
                    <organLabelEn>Heart</organLabelEn>
                    <organMedicalStatus>HEART_4</organMedicalStatus>
                    <organMedicalStatusId>2</organMedicalStatusId>
                    <organRequestStatus>ACTIVE</organRequestStatus>
                    <organRequestStatusId>2</organRequestStatusId>
                    <province>QC</province>
                    <provinceId>11</provinceId>
                    <provinceLabelEn>Quebec</provinceLabelEn>
                    <recipientId>39</recipientId>
                    <localRecipientId>QT-191919</localRecipientId>
                    <transplantType>SINGLE</transplantType>
                    <transplantTypeId>1</transplantTypeId>
                    <transplantTypeLabelEn>Single</transplantTypeLabelEn>
                    <weight>65</weight>
                </return>
            </ns2:listWaitlistRecipientsResponse>
        </soap:Body>
    </soap:Envelope>
```

1.4 Add recipient's HLA typing

Method: **updateHlaTyping()**

Comment: Set the input field 'confirmHLATyping' = true

Sample SOAP Request: **cs2step4**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateHlaTyping>
                <arg0>
                    <nationalId>CTR000039</nationalId>
                    <confirmHLATyping>true</confirmHLATyping>
                    <drb345TestedNotPresent>true</drb345TestedNotPresent>
                    <bw4>POSITIVE</bw4>
                    <bw6>POSITIVE</bw6>
                    <listMoleculars>
                        <molecularType>A_1</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>A_2</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_1</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_2</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>C_1</molecularType>
                        <molecular>01:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
```

```
                    <molecularType>C_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_1</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_2</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_1</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_2</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_1</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_1</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_2</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_1</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_2</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <dr51>false</dr51>
                <dr52>false</dr52>
                <dr53>false</dr53>
            </arg0>
        </ctr:updateHlaTyping>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the CTR recipient filtered National Wait List records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
```

```
<ns2:updateHlaTypingResponse xmlns:ns2="http://ctr3ws.cbs.com/">
    <return>
        <nationalId>CTR000039</nationalId>
        <confirmHLATyping>true</confirmHLATyping>
        <drb345TestedNotPresent>true</drb345TestedNotPresent>
        <bw4>POSITIVE</bw4>
        <bw6>POSITIVE</bw6>
        <listMoleculars>
            <molecularType>A_1</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>A_2</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_1</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_2</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_1</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_2</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_1</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_2</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
```

```
<listMoleculars>
    <molecularType>DQB1_1</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DQB1_2</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_1</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_2</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<dr51>false</dr51>
<dr52>false</dr52>
<dr53>false</dr53>
<bw4SystemCalculated>NEGATIVE</bw4SystemCalculated>
<bw6SystemCalculated>POSITIVE</bw6SystemCalculated>
<listSerologies>
    <serologicaType>A_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>A_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_1</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_2</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPB_1</serologicaType>
```

```
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DPB_2</serologicaType>
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_1</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_2</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <hlaCompleteByOrgan>
                    <complete>true</complete>
                    <program>
                        <id>2</id>
                        <bizRef>DECEASED_WAITLIST</bizRef>
                    </program>
                    <evaluatedOn>2020-10-29T00:00:00-04:00</evaluatedOn>
                    <organ>
                        <id>1</id>
                        <bizRef>HEART</bizRef>
                    </organ>
                </hlaCompleteByOrgan>
            </return>
        </ns2:updateHlaTypingResponse>
    </soap:Body>
</soap:Envelope>
```

1.5 Verify heart organ request is on 'National Wait List' as well as DWL eligibility status

Method: **listWaitlistRecipients()**

Comment: This step is optional.

Sample SOAP Request: **cs2step5**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>USERNAME</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:listWaitlistRecipients>
                <arg0>
                    <localRecipientId>QT-191919</localRecipientId>
                </arg0>
            </ctr:listWaitlistRecipients>
        </soapenv:Body>
    </soapenv:Envelope>
```

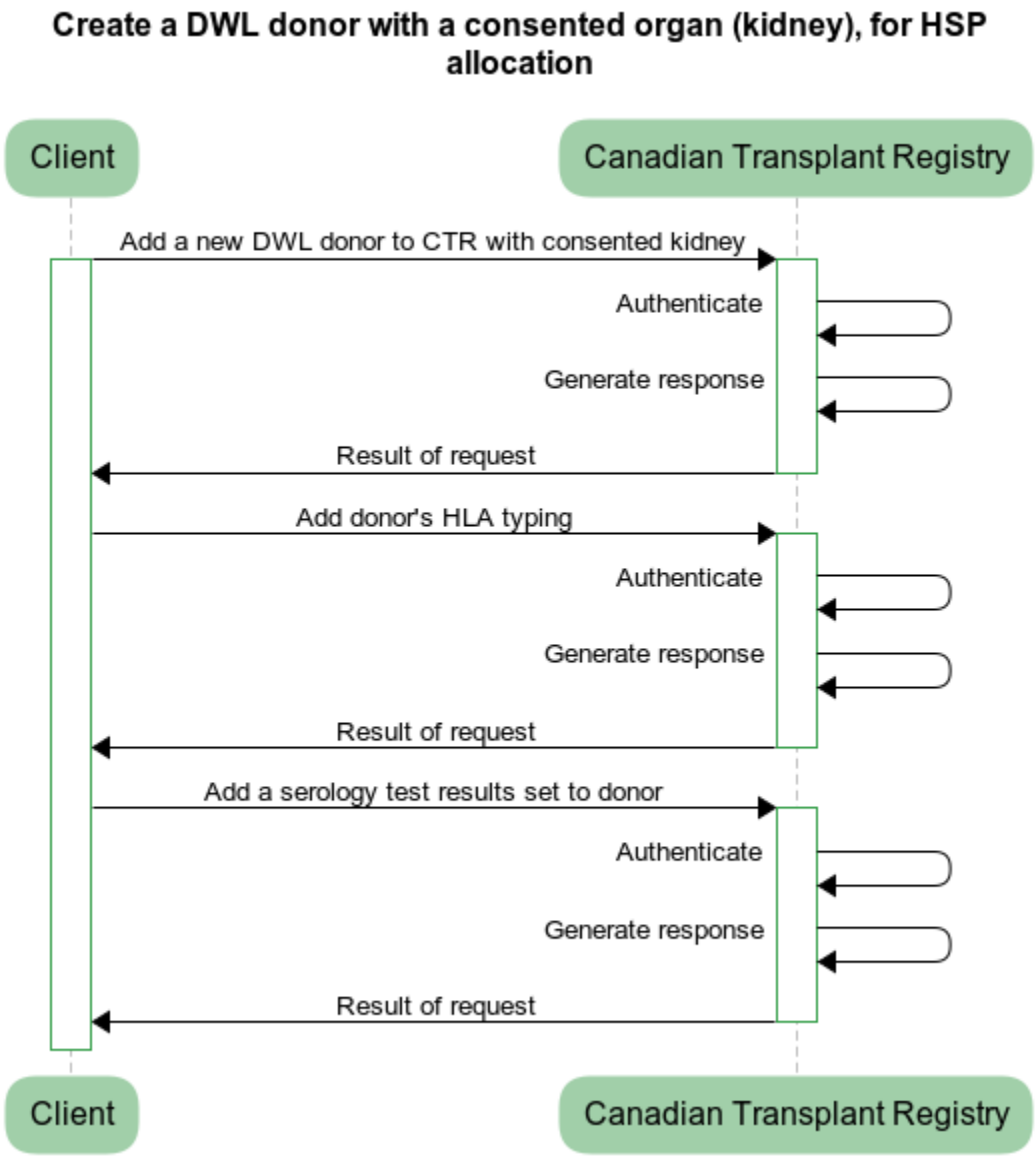
Response: the CTR recipient filtered National Wait List records

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:listWaitlistRecipientsResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>105</id>
                    <acceptanceCriteria>
                        <id>118</id>
                        <acceptDCD>true</acceptDCD>
                        <acceptHepBCoreAB>false</acceptHepBCoreAB>
                        <acceptHepC>false</acceptHepC>

<acceptIncompatibleBloodGroups>false</acceptIncompatibleBloodGroups>
                        <crossMatchRequired>false</crossMatchRequired>
                        <localDonorOnly>false</localDonorOnly>
                        <organRequestId>105</organRequestId>
```

```
                        <recipientID>39</recipientID>
                    </acceptanceCriteria>
                    <age>
                        <days>5</days>
                        <negative>false</negative>
                        <weeks>38</weeks>
                        <years>29</years>
                    </age>
                    <bloodGroup>AB</bloodGroup>
                    <bloodGroupLabelEn>AB</bloodGroupLabelEn>
                    <height>165</height>
                    <dwlEligible>true</dwlEligible>
                    <inUtero>false</inUtero>
                    <lastUpdated>2020-10-29T12:46:59.032-04:00</lastUpdated>
                    <listDate>2019-12-20T00:00:00-05:00</listDate>
                    <medicalStatusChangeDate>2020-10-29T06:42:00-
04:00</medicalStatusChangeDate>
                    <nationalRecipientId>CTR000039</nationalRecipientId>
                    <opo>
                        <id>23</id>
                        <facilityName>Transplant-Quebec</facilityName>
                        <facilityType>
                            <id>3</id>
                            <bizRef>OPO</bizRef>
                        </facilityType>
                        <facilityCode>QC-TQ</facilityCode>
                    </opo>
                    <organ>HEART</organ>
                    <organCPRA>100</organCPRA>
                    <organId>1</organId>
                    <organLabelEn>Heart</organLabelEn>
                    <organMedicalStatus>HEART_4</organMedicalStatus>
                    <organMedicalStatusId>2</organMedicalStatusId>
                    <organRequestStatus>ACTIVE</organRequestStatus>
                    <organRequestStatusId>2</organRequestStatusId>
                    <province>QC</province>
                    <provinceId>11</provinceId>
                    <provinceLabelEn>Quebec</provinceLabelEn>
                    <recipientId>39</recipientId>
                    <localRecipientId>QT-191919</localRecipientId>
                    <transplantType>SINGLE</transplantType>
                    <transplantTypeId>1</transplantTypeId>
                    <transplantTypeLabelEn>Single</transplantTypeLabelEn>
                    <weight>65</weight>
                </return>
            </ns2:listWaitlistRecipientsResponse>
        </soap:Body>
    </soap:Envelope>
```

Appendix C

Create a DWL donor with a consented organ (kidney), for HSP allocation



1.1 Add a new DWL donor to CTR with a consented kidney

Method: **addDonor()**

Comment: The DWL donor added to CTR.

Sample SOAP Request: **cs3step1**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:addDonor>
                <arg0>
                    <localDonorId>bc-hsp123</localDonorId>
                    <dateOfBirth>2000-01-19</dateOfBirth>
                    <height>180</height>
                    <weight>80</weight>
                    <gender>
                        <id>1</id>
                    </gender>
                    <bloodType>
                        <id>3</id>
                        <bizRef>O</bizRef>
                    </bloodType>
                    <donorType>
                        <bizRef>DECEASED_DONOR</bizRef>
                    </donorType>
                    <donorDeathType>
                        <id>1</id>
                    </donorDeathType>
                    <facilities>
                        <id>17</id>
                    </facilities>
                    <facilities>
                        <id>3</id>
                    </facilities>
                    <consentedOrgans>
                        <consentedOrgan>KIDNEYS</consentedOrgan>
                        <consentedState>
```

```
                        <bizRef>CONSENTED</bizRef>
                    </consentedState>
                    <!--<stateChangeDate>?</stateChangeDate>-->
                </consentedOrgans>
            </arg0>
        </ctr:addDonor>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the CTR DWL Donor record

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
        <ns2:addDonorResponse xmlns:ns2="http://ctr3ws.cbs.com/">
            <return>
                <nationalDonorId>CTD000041</nationalDonorId>
                <localDonorId>bc-hsp123</localDonorId>
                <dateOfBirth>2000-01-19</dateOfBirth>
                <height>180.0</height>
                <weight>80.0</weight>
                <gender>
                    <id>1</id>
                    <bizRef>MALE</bizRef>
                </gender>
                <bloodType>
                    <id>3</id>
                    <bizRef>O</bizRef>
                </bloodType>
                <registryEnterDate>2020-11-03T15:12:35-
05:00</registryEnterDate>
                <caseStatus>
                    <id>1</id>
                    <bizRef>OPEN</bizRef>
                </caseStatus>
                <caseChangeDate>2020-11-03T15:12:37.554-
05:00</caseChangeDate>
                <donorType>
                    <id>1</id>
                    <bizRef>DECEASED</bizRef>
                </donorType>
                <breastFed>
                    <id>2</id>
                    <bizRef>NO</bizRef>
                </breastFed>
                <facilities>
                    <id>17</id>
                    <facilityName>British Columbia
Transplant</facilityName>
                    <facilityType>
                        <id>3</id>
                        <bizRef>OPO</bizRef>
                    </facilityType>
                    <facilityCode>BC-BCT</facilityCode>
                    <corrCode>90000</corrCode>
                </facilities>
```

```
                    <facilities>
                        <id>3</id>
                        <facilityName>Vancouver General Hospital - Immunology
Lab</facilityName>
                        <facilityType>
                            <id>2</id>
                            <bizRef>HLA_LAB</bizRef>
                        </facilityType>
                        <facilityCode>BC-VAN-HLA</facilityCode>
                        <corrCode>90101</corrCode>
                    </facilities>
                    <consentedOrgans>
                        <consentedOrganId>257</consentedOrganId>
                        <nationalDonorId>CTD000041</nationalDonorId>
                        <organ>
                            <id>5</id>
                            <bizRef>KIDNEY</bizRef>
                        </organ>
                        <organType>
                            <id>14</id>
                            <bizRef>DOUBLE_KIDNEY</bizRef>
                        </organType>
                        <consentedState>
                            <id>1</id>
                            <bizRef>CONSENTED</bizRef>
                        </consentedState>
                    </consentedOrgans>
                    <consentedOrgans>
                        <consentedOrganId>260</consentedOrganId>
                        <nationalDonorId>CTD000041</nationalDonorId>
                        <organ>
                            <id>1</id>
                            <bizRef>HEART</bizRef>
                        </organ>
                        <organType>
                            <id>101</id>
                            <bizRef>HEART</bizRef>
                        </organType>
                        <consentedState>
                            <id>7</id>
                            <bizRef>NOT_PARTICIPATING</bizRef>
                        </consentedState>
                        <recoveredState>
                            <id>4</id>
                            <bizRef>NOT_RECOVERED</bizRef>
                        </recoveredState>
                        <shippedState>
                            <id>9</id>
                            <bizRef>NOT_SHIPPED</bizRef>
                        </shippedState>
                        <notShippedStateReason>
                            <id>2</id>
                            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
                        </notShippedStateReason>
                        <notRecoveredStateReason>
```

```
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>261</consentedOrganId>
        <nationalDonorId>CTD000041</nationalDonorId>
        <organ>
            <id>2</id>
            <bizRef>LUNG</bizRef>
        </organ>
        <organType>
            <id>3</id>
            <bizRef>DOUBLE_LUNG</bizRef>
        </organType>
        <consentedState>
            <id>7</id>
            <bizRef>NOT_PARTICIPATING</bizRef>
        </consentedState>
        <recoveredState>
            <id>4</id>
            <bizRef>NOT_RECOVERED</bizRef>
        </recoveredState>
        <shippedState>
            <id>9</id>
            <bizRef>NOT_SHIPPED</bizRef>
        </shippedState>
        <notShippedStateReason>
            <id>2</id>
            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
        </notShippedStateReason>
        <notRecoveredStateReason>
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>264</consentedOrganId>
        <nationalDonorId>CTD000041</nationalDonorId>
```

```
            <organ>
                <id>3</id>
                <bizRef>LIVER</bizRef>
            </organ>
            <organType>
                <id>6</id>
                <bizRef>WHOLE_LIVER</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
                <bizRef>NOT_TRANSPLANTED</bizRef>
            </transplantedState>
            <notTransplantedStateReason>
                <id>3</id>
                <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
            </notTransplantedStateReason>
        </consentedOrgans>
        <consentedOrgans>
            <consentedOrganId>267</consentedOrganId>
            <nationalDonorId>CTD000041</nationalDonorId>
            <organ>
                <id>6</id>
                <bizRef>SMALL_BOWEL</bizRef>
            </organ>
            <organType>
                <id>106</id>
                <bizRef>SMALL_BOWEL</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
```

```
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
                <bizRef>NOT_TRANSPLANTED</bizRef>
            </transplantedState>
            <notTransplantedStateReason>
                <id>3</id>
                <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
            </notTransplantedStateReason>
        </consentedOrgans>
        <consentedOrgans>
            <consentedOrganId>268</consentedOrganId>
            <nationalDonorId>CTD000041</nationalDonorId>
            <organ>
                <id>7</id>
                <bizRef>STOMACH</bizRef>
            </organ>
            <organType>
                <id>107</id>
                <bizRef>STOMACH</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
```

```
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>269</consentedOrganId>
        <nationalDonorId>CTD000041</nationalDonorId>
        <organ>
            <id>4</id>
            <bizRef>PANCREAS</bizRef>
        </organ>
        <organType>
            <id>9</id>
            <bizRef>WHOLE_PANCREAS</bizRef>
        </organType>
        <consentedState>
            <id>7</id>
            <bizRef>NOT_PARTICIPATING</bizRef>
        </consentedState>
        <recoveredState>
            <id>4</id>
            <bizRef>NOT_RECOVERED</bizRef>
        </recoveredState>
        <shippedState>
            <id>9</id>
            <bizRef>NOT_SHIPPED</bizRef>
        </shippedState>
        <notShippedStateReason>
            <id>2</id>
            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
        </notShippedStateReason>
        <notRecoveredStateReason>
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <duplicate>false</duplicate>
    <donorDeath>
        <deathType>
            <id>1</id>
            <bizRef>NDD</bizRef>
        </deathType>
        <countryOfDeath>
            <id>1</id>
```

```
                        <bizRef>CAN</bizRef>
                    </countryOfDeath>
                    <province_StateOfDeath>
                        <id>2</id>
                        <bizRef>BC</bizRef>
                    </province_StateOfDeath>
                    <id>11</id>
                </donorDeath>
            </return>
        </ns2:addDonorResponse>
    </soap:Body>
</soap:Envelope>
```

1.2 Add donor's HLA typing

Method: **updateHlaTyping()**

Comment: Note - set the input field 'confirmHLATyping' = true

Sample SOAP Request: **cs3step2**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateHlaTyping>
                <arg0>
                    <nationalId>CTD000041</nationalId>
                    <confirmHLATyping>true</confirmHLATyping>
                    <drb345TestedNotPresent>true</drb345TestedNotPresent>
                    <bw4>POSITIVE</bw4>
                    <bw6>POSITIVE</bw6>
                    <listMoleculars>
                        <molecularType>A_1</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>A_2</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_1</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_2</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>C_1</molecularType>
                        <molecular>01:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
```

```
                    <molecularType>C_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_1</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_2</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_1</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_2</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_1</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_1</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_2</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_1</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_2</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <dr51>false</dr51>
                <dr52>false</dr52>
                <dr53>false</dr53>
            </arg0>
        </ctr:updateHlaTyping>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the donor's HLA typing record.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
```

```
<ns2:updateHlaTypingResponse xmlns:ns2="http://ctr3ws.cbs.com/">
    <return>
        <nationalId>CTD000041</nationalId>
        <confirmHLATyping>true</confirmHLATyping>
        <drb345TestedNotPresent>true</drb345TestedNotPresent>
        <bw4>POSITIVE</bw4>
        <bw6>POSITIVE</bw6>
        <listMoleculars>
            <molecularType>A_1</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>A_2</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_1</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_2</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_1</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_2</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_1</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_2</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
```

```
<listMoleculars>
    <molecularType>DQB1_1</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DQB1_2</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_1</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_2</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<dr51>false</dr51>
<dr52>false</dr52>
<dr53>false</dr53>
<bw4SystemCalculated>NEGATIVE</bw4SystemCalculated>
<bw6SystemCalculated>POSITIVE</bw6SystemCalculated>
<listSerologies>
    <serologicaType>A_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>A_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_1</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_2</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPB_1</serologicaType>
```

```
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DPB_2</serologicaType>
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_1</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_2</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <hlaCompleteByOrgan>
                    <complete>true</complete>
                    <program>
                        <id>2</id>
                        <bizRef>DECEASED_WAITLIST</bizRef>
                    </program>
                    <evaluatedOn>2020-11-03T00:00:00-05:00</evaluatedOn>
                    <organ>
                        <id>5</id>
                        <bizRef>KIDNEY</bizRef>
                    </organ>
                </hlaCompleteByOrgan>
            </return>
        </ns2:updateHlaTypingResponse>
    </soap:Body>
</soap:Envelope>
```

1.3 Add a serology test results set to donor

Method: **updateDonorSerology()**

Comment: N/A

Sample SOAP Request: **cs3step3**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateDonorSerology>
                <arg0>
                    <id>0</id>
                    <nationalId>CTD000041</nationalId>
                    <testDefinitionName>donorSerology</testDefinitionName>
                    <testDefinitionId>1</testDefinitionId>
                    <collectionDate>2020-07-12T00:15:00-
04:00</collectionDate>
                    <serologyType>DILUTED</serologyType>
                    <serologySource>DONOR</serologySource>
                    <comment>#1:  a serology comment. </comment>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbcoreab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbsurfaceab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbsurfaceag</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
```

```
                    </testElementResults>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hebcab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                </arg0>
            </ctr:updateDonorSerology>
        </soapenv:Body>
    </soapenv:Envelope>
```

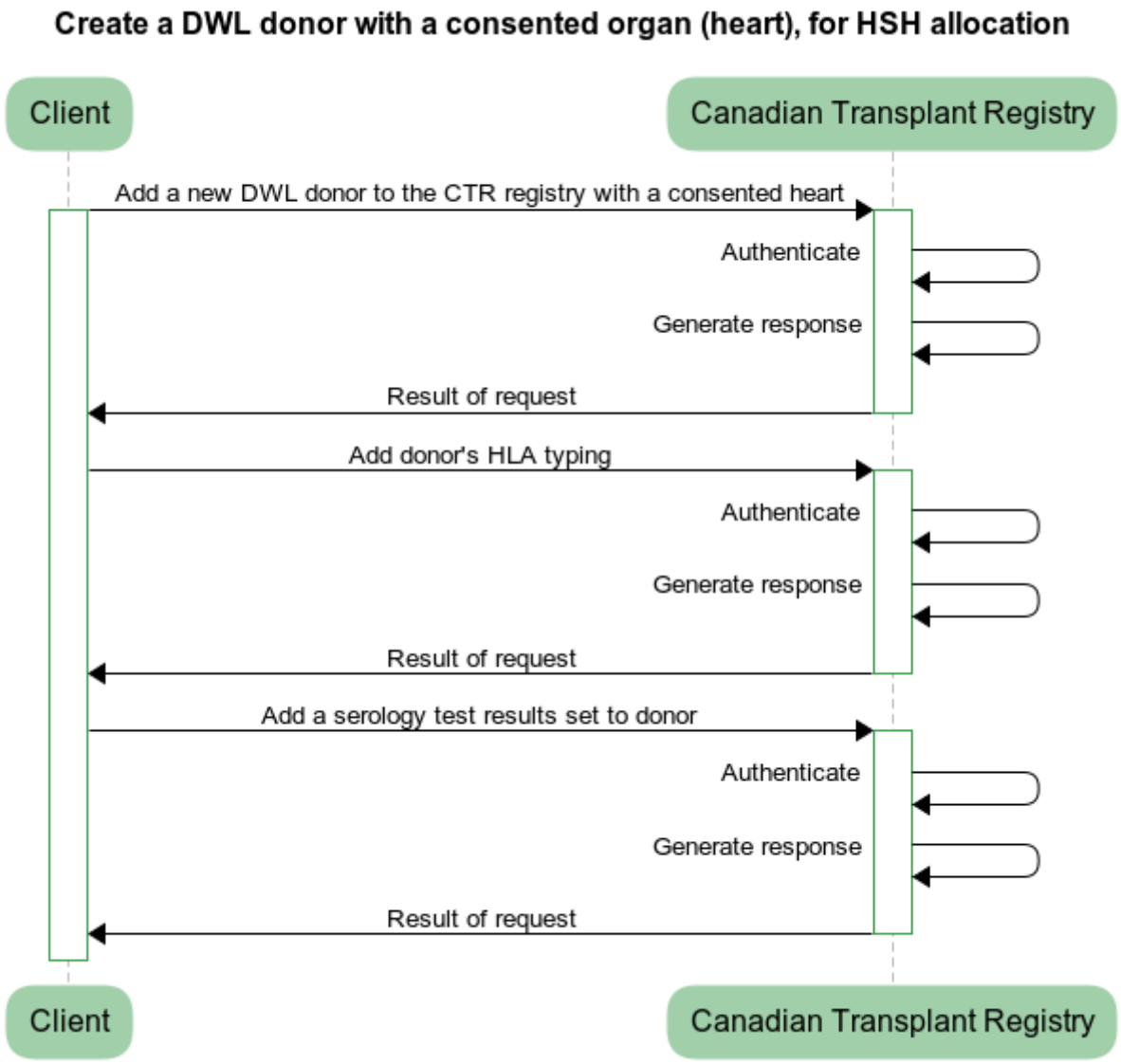
Response: the donor's new a serology test results set.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:updateDonorSerologyResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>62</id>
                    <nationalId>CTD000041</nationalId>
                    <testDefinitionName>donorSerology</testDefinitionName>
                    <testDefinitionId>1</testDefinitionId>
                    <collectionDate>2020-07-12T00:15:00-
04:00</collectionDate>
                    <serologyType>DILUTED</serologyType>
                    <serologySource>DONOR</serologySource>
                    <comment>#1:  a serology comment. </comment>
                    <testElementResults>
                        <id>65</id>

<testElementDefinitionName>hepbcoreab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>66</id>

<testElementDefinitionName>hepbsurfaceab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>67</id>

<testElementDefinitionName>hepbsurfaceag</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>68</id>

<testElementDefinitionName>hebcab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                </return>
            </ns2:updateDonorSerologyResponse>
```

```
        </soap:Body>
    </soap:Envelope>
```

Appendix D

Create a DWL donor with a consented organ (heart), for HSH allocation.



1.1 Add a new DWL donor to CTR with a consented heart

Method: **addDonor()**

Comment: The DWL donor added to CTR.

Sample SOAP Request: **cs4step1**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:addDonor>
                <arg0>
                    <localDonorId>bc-hsh456</localDonorId>
                    <dateOfBirth>2000-01-19</dateOfBirth>
                    <height>180</height>
                    <weight>80</weight>
                    <gender>
                        <id>1</id>
                    </gender>
                    <bloodType>
                        <id>3</id>
                        <bizRef>O</bizRef>
                    </bloodType>
                    <donorType>
                        <bizRef>DECEASED_DONOR</bizRef>
                    </donorType>
                    <donorDeathType>
                        <id>1</id>
                    </donorDeathType>
                    <facilities>
                        <id>17</id>
                    </facilities>
                    <facilities>
                        <id>3</id>
                    </facilities>
                    <consentedOrgans>
                        <consentedOrgan>HEART</consentedOrgan>
                        <consentedState>
```

```
                        <bizRef>CONSENTED</bizRef>
                    </consentedState>
                    <!--<stateChangeDate>?</stateChangeDate>-->
                </consentedOrgans>
            </arg0>
        </ctr:addDonor>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the CTR DWL Donor record

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
        <ns2:addDonorResponse xmlns:ns2="http://ctr3ws.cbs.com/">
            <return>
                <nationalDonorId>CTD000042</nationalDonorId>
                <localDonorId>bc-hsh456</localDonorId>
                <dateOfBirth>2000-01-19</dateOfBirth>
                <height>180.0</height>
                <weight>80.0</weight>
                <gender>
                    <id>1</id>
                    <bizRef>MALE</bizRef>
                </gender>
                <bloodType>
                    <id>3</id>
                    <bizRef>O</bizRef>
                </bloodType>
                <registryEnterDate>2020-11-03T17:08:47-
05:00</registryEnterDate>
                <caseStatus>
                    <id>1</id>
                    <bizRef>OPEN</bizRef>
                </caseStatus>
                <caseChangeDate>2020-11-03T17:08:48.309-
05:00</caseChangeDate>
                <donorType>
                    <id>1</id>
                    <bizRef>DECEASED</bizRef>
                </donorType>
                <breastFed>
                    <id>2</id>
                    <bizRef>NO</bizRef>
                </breastFed>
                <facilities>
                    <id>17</id>
                    <facilityName>British Columbia
Transplant</facilityName>
                    <facilityType>
                        <id>3</id>
                        <bizRef>OPO</bizRef>
                    </facilityType>
                    <facilityCode>BC-BCT</facilityCode>
                    <corrCode>90000</corrCode>
                </facilities>
```

```
                    <facilities>
                        <id>3</id>
                        <facilityName>Vancouver General Hospital - Immunology
Lab</facilityName>
                        <facilityType>
                            <id>2</id>
                            <bizRef>HLA_LAB</bizRef>
                        </facilityType>
                        <facilityCode>BC-VAN-HLA</facilityCode>
                        <corrCode>90101</corrCode>
                    </facilities>
                    <consentedOrgans>
                        <consentedOrganId>273</consentedOrganId>
                        <nationalDonorId>CTD000042</nationalDonorId>
                        <organ>
                            <id>1</id>
                            <bizRef>HEART</bizRef>
                        </organ>
                        <organType>
                            <id>101</id>
                            <bizRef>HEART</bizRef>
                        </organType>
                        <consentedState>
                            <id>1</id>
                            <bizRef>CONSENTED</bizRef>
                        </consentedState>
                    </consentedOrgans>
                    <consentedOrgans>
                        <consentedOrganId>274</consentedOrganId>
                        <nationalDonorId>CTD000042</nationalDonorId>
                        <organ>
                            <id>2</id>
                            <bizRef>LUNG</bizRef>
                        </organ>
                        <organType>
                            <id>3</id>
                            <bizRef>DOUBLE_LUNG</bizRef>
                        </organType>
                        <consentedState>
                            <id>7</id>
                            <bizRef>NOT_PARTICIPATING</bizRef>
                        </consentedState>
                        <recoveredState>
                            <id>4</id>
                            <bizRef>NOT_RECOVERED</bizRef>
                        </recoveredState>
                        <shippedState>
                            <id>9</id>
                            <bizRef>NOT_SHIPPED</bizRef>
                        </shippedState>
                        <notShippedStateReason>
                            <id>2</id>
                            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
                        </notShippedStateReason>
                        <notRecoveredStateReason>
```

```
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>277</consentedOrganId>
        <nationalDonorId>CTD000042</nationalDonorId>
        <organ>
            <id>3</id>
            <bizRef>LIVER</bizRef>
        </organ>
        <organType>
            <id>6</id>
            <bizRef>WHOLE_LIVER</bizRef>
        </organType>
        <consentedState>
            <id>7</id>
            <bizRef>NOT_PARTICIPATING</bizRef>
        </consentedState>
        <recoveredState>
            <id>4</id>
            <bizRef>NOT_RECOVERED</bizRef>
        </recoveredState>
        <shippedState>
            <id>9</id>
            <bizRef>NOT_SHIPPED</bizRef>
        </shippedState>
        <notShippedStateReason>
            <id>2</id>
            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
        </notShippedStateReason>
        <notRecoveredStateReason>
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>280</consentedOrganId>
        <nationalDonorId>CTD000042</nationalDonorId>
```

```
            <organ>
                <id>5</id>
                <bizRef>KIDNEY</bizRef>
            </organ>
            <organType>
                <id>14</id>
                <bizRef>DOUBLE_KIDNEY</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
                <bizRef>NOT_TRANSPLANTED</bizRef>
            </transplantedState>
            <notTransplantedStateReason>
                <id>3</id>
                <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
            </notTransplantedStateReason>
        </consentedOrgans>
        <consentedOrgans>
            <consentedOrganId>283</consentedOrganId>
            <nationalDonorId>CTD000042</nationalDonorId>
            <organ>
                <id>6</id>
                <bizRef>SMALL_BOWEL</bizRef>
            </organ>
            <organType>
                <id>106</id>
                <bizRef>SMALL_BOWEL</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
```

```
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
                <bizRef>NOT_TRANSPLANTED</bizRef>
            </transplantedState>
            <notTransplantedStateReason>
                <id>3</id>
                <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
            </notTransplantedStateReason>
        </consentedOrgans>
        <consentedOrgans>
            <consentedOrganId>284</consentedOrganId>
            <nationalDonorId>CTD000042</nationalDonorId>
            <organ>
                <id>7</id>
                <bizRef>STOMACH</bizRef>
            </organ>
            <organType>
                <id>107</id>
                <bizRef>STOMACH</bizRef>
            </organType>
            <consentedState>
                <id>7</id>
                <bizRef>NOT_PARTICIPATING</bizRef>
            </consentedState>
            <recoveredState>
                <id>4</id>
                <bizRef>NOT_RECOVERED</bizRef>
            </recoveredState>
            <shippedState>
                <id>9</id>
                <bizRef>NOT_SHIPPED</bizRef>
            </shippedState>
            <notShippedStateReason>
                <id>2</id>
                <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
            </notShippedStateReason>
            <notRecoveredStateReason>
                <id>4</id>
                <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
            </notRecoveredStateReason>
            <transplantedState>
                <id>6</id>
```

```
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <consentedOrgans>
        <consentedOrganId>285</consentedOrganId>
        <nationalDonorId>CTD000042</nationalDonorId>
        <organ>
            <id>4</id>
            <bizRef>PANCREAS</bizRef>
        </organ>
        <organType>
            <id>9</id>
            <bizRef>WHOLE_PANCREAS</bizRef>
        </organType>
        <consentedState>
            <id>7</id>
            <bizRef>NOT_PARTICIPATING</bizRef>
        </consentedState>
        <recoveredState>
            <id>4</id>
            <bizRef>NOT_RECOVERED</bizRef>
        </recoveredState>
        <shippedState>
            <id>9</id>
            <bizRef>NOT_SHIPPED</bizRef>
        </shippedState>
        <notShippedStateReason>
            <id>2</id>
            <bizRef>NOT_PARTICIPATING_FOR_TRANSPLANT</bizRef>
        </notShippedStateReason>
        <notRecoveredStateReason>
            <id>4</id>
            <bizRef>NOT_PARTICIPATING_RECOVERY</bizRef>
        </notRecoveredStateReason>
        <transplantedState>
            <id>6</id>
            <bizRef>NOT_TRANSPLANTED</bizRef>
        </transplantedState>
        <notTransplantedStateReason>
            <id>3</id>
            <bizRef>NOT_PARTICIPATING_TRANSPLANT</bizRef>
        </notTransplantedStateReason>
    </consentedOrgans>
    <duplicate>false</duplicate>
    <donorDeath>
        <deathType>
            <id>1</id>
            <bizRef>NDD</bizRef>
        </deathType>
        <countryOfDeath>
            <id>1</id>
```

```
                        <bizRef>CAN</bizRef>
                    </countryOfDeath>
                    <province_StateOfDeath>
                        <id>2</id>
                        <bizRef>BC</bizRef>
                    </province_StateOfDeath>
                    <id>12</id>
                </donorDeath>
            </return>
        </ns2:addDonorResponse>
    </soap:Body>
</soap:Envelope>
```

1.2 Add donor's HLA typing

Method: **updateHlaTyping()**

Comment: Note - set the input field 'confirmHLATyping' = true

Sample SOAP Request: **cs4step2**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateHlaTyping>
                <arg0>
                    <nationalId>CTD000042</nationalId>
                    <confirmHLATyping>true</confirmHLATyping>
                    <drb345TestedNotPresent>true</drb345TestedNotPresent>
                    <bw4>POSITIVE</bw4>
                    <bw6>POSITIVE</bw6>
                    <listMoleculars>
                        <molecularType>A_1</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>A_2</molecularType>
                        <molecular>01:01</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_1</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>B_2</molecularType>
                        <molecular>07:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
                        <molecularType>C_1</molecularType>
                        <molecular>01:02</molecular>
                    </listMoleculars>
                    <listMoleculars>
```

```
                    <molecularType>C_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_1</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPA1_2</molecularType>
                    <molecular>01:04</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_1</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DPB1_2</molecularType>
                    <molecular>109:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_1</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQA1_2</molecularType>
                    <molecular>01:02</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_1</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DQB1_2</molecularType>
                    <molecular>02:03</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_1</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <listMoleculars>
                    <molecularType>DRB1_2</molecularType>
                    <molecular>01:01</molecular>
                </listMoleculars>
                <dr51>false</dr51>
                <dr52>false</dr52>
                <dr53>false</dr53>
            </arg0>
        </ctr:updateHlaTyping>
    </soapenv:Body>
</soapenv:Envelope>
```

Response: the donor's HLA typing record.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
    <soap:Body>
```

```
<ns2:updateHlaTypingResponse xmlns:ns2="http://ctr3ws.cbs.com/">
    <return>
        <nationalId>CTD000042</nationalId>
        <confirmHLATyping>true</confirmHLATyping>
        <drb345TestedNotPresent>true</drb345TestedNotPresent>
        <bw4>POSITIVE</bw4>
        <bw6>POSITIVE</bw6>
        <listMoleculars>
            <molecularType>A_1</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>A_2</molecularType>
            <molecular>01:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_1</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>B_2</molecularType>
            <molecular>07:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>C_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_1</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPA1_2</molecularType>
            <molecular>01:04</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_1</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DPB1_2</molecularType>
            <molecular>109:01</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_1</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
        <listMoleculars>
            <molecularType>DQA1_2</molecularType>
            <molecular>01:02</molecular>
        </listMoleculars>
```

```
<listMoleculars>
    <molecularType>DQB1_1</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DQB1_2</molecularType>
    <molecular>02:03</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_1</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<listMoleculars>
    <molecularType>DRB1_2</molecularType>
    <molecular>01:01</molecular>
</listMoleculars>
<dr51>false</dr51>
<dr52>false</dr52>
<dr53>false</dr53>
<bw4SystemCalculated>NEGATIVE</bw4SystemCalculated>
<bw6SystemCalculated>POSITIVE</bw6SystemCalculated>
<listSerologies>
    <serologicaType>A_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>A_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_1</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>B_2</serologicaType>
    <serology>7</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>Cw_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_1</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPA_2</serologicaType>
    <serology>1</serology>
</listSerologies>
<listSerologies>
    <serologicaType>DPB_1</serologicaType>
```

```
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DPB_2</serologicaType>
                    <serology>109-tbc</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQA_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_1</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DQB_2</serologicaType>
                    <serology>2</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_1</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <listSerologies>
                    <serologicaType>DR_2</serologicaType>
                    <serology>1</serology>
                </listSerologies>
                <hlaCompleteByOrgan>
                    <complete>true</complete>
                    <program>
                        <id>2</id>
                        <bizRef>DECEASED_WAITLIST</bizRef>
                    </program>
                    <evaluatedOn>2020-11-03T00:00:00-05:00</evaluatedOn>
                    <organ>
                        <id>1</id>
                        <bizRef>HEART</bizRef>
                    </organ>
                </hlaCompleteByOrgan>
            </return>
        </ns2:updateHlaTypingResponse>
    </soap:Body>
</soap:Envelope>
```

1.3 Add a serology test results set to donor

Method: **updateDonorSerology()**

Comment: N/A

Sample SOAP Request: **cs4step3**

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ctr="http://ctr3ws.cbs.com/">
        <soapenv:Header>
            <wsse:Security soapenv:mustUnderstand="0"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd">
                <wsse:UsernameToken wsu:Id="UsernameToken-3"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-utility-1.0.xsd">
                    <wsse:Username>someCTRuser</wsse:Username>
                    <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">PASSWORD</wsse:Password>
                </wsse:UsernameToken>
            </wsse:Security>
        </soapenv:Header>
        <soapenv:Body>
            <ctr:updateDonorSerology>
                <arg0>
                    <id>0</id>
                    <nationalId>CTD000042</nationalId>
                    <testDefinitionName>donorSerology</testDefinitionName>
                    <testDefinitionId>1</testDefinitionId>
                    <collectionDate>2020-07-12T00:15:00-
04:00</collectionDate>
                    <serologyType>DILUTED</serologyType>
                    <serologySource>DONOR</serologySource>
                    <comment>#1: a serology comment. </comment>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbcoreab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbsurfaceab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>0</id>

<testElementDefinitionName>hepbsurfaceag</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
```

```
                        <id>0</id>

<testElementDefinitionName>hebcab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                </arg0>
            </ctr:updateDonorSerology>
        </soapenv:Body>
    </soapenv:Envelope>
```

Response: the donor's new a serology test results set.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
        <soap:Body>
            <ns2:updateDonorSerologyResponse
xmlns:ns2="http://ctr3ws.cbs.com/">
                <return>
                    <id>63</id>
                    <nationalId>CTD000042</nationalId>
                    <testDefinitionName>donorSerology</testDefinitionName>
                    <testDefinitionId>1</testDefinitionId>
                    <collectionDate>2020-07-12T00:15:00-
04:00</collectionDate>
                    <serologyType>DILUTED</serologyType>
                    <serologySource>DONOR</serologySource>
                    <comment>#1: a serology comment. </comment>
                    <testElementResults>
                        <id>69</id>

<testElementDefinitionName>hepbcoreab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>70</id>

<testElementDefinitionName>hepbsurfaceab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>71</id>

<testElementDefinitionName>hepbsurfaceag</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                    <testElementResults>
                        <id>72</id>

<testElementDefinitionName>hebcab</testElementDefinitionName>
                        <testValue>NEGATIVE</testValue>
                    </testElementResults>
                </return>
            </ns2:updateDonorSerologyResponse>
        </soap:Body>
    </soap:Envelope>
```

Appendix E

Web Service Method Index

Method	Description	Package
acceptOffer()	Accept a DWL donor offer.	IExternalOffers
addDonor()	Add a DWL donor to the CTR registry.	IExternalDonor
addRecipientByNationalRecipientId()	Add a recipient to the CTR registry.	IExternalRecipient
countWaitlistRecipients()	Get the count of the DWL waitlist organ requests that match the search criteria.	IExternalRecipient
deleteAttachment()	Delete a DWL attachement.	IExternalAttachment
downloadAttachment()	Download an attachment file from the CTR registry.	IExternalAttachment
downloadOfferAttachment()	Download an offer attachment file from the CTR registry.	IExternalAttachment
findAllRecipientHlaSerumTestResults()	Find a patient's HLA serum test results.	IExternalHla
findAttachments()	Find a patient's attachment information, optionally the search results can be filtered.	IExternalAttachment
findDonorByNationalDonorId()	Find a DWL donor's information.	IExternalDonor
findDonorDeath()	Find a DWL donor's death information.	IExternalDonor
findDonorOffers()	Find a donor's offers, the output can be filtered based on offer state.	IExternalOffers
findDonorOrganState()	Find a DWL donor's organs disposition information.	IExternalDonor
findDonorSerology()	Find a donor's serology test results.	IExternalDonor
findHlaTyping()	Find a patient's HLA typing information.	IExternalHla
findOfferAttachments()	Find a donor's offer attachment information, optionally the search results can be filtered.	IExternalAttachment

Method	Description	Package
findPatient()	Get a CTR patient's basic information.	IExternalCtr3WS
findRecipientAcceptanceCriteriaByNationalRecipientId()	Find the acceptance criteria information for each recipient organ request.	IExternalRecipient
findRecipientByNationalRecipientID()	Find a recipient information.	IExternalRecipient
findRecipientOffers()	Find a recipient's offers, the output can be filtered based on offer state.	IExternalOffers
findRecipientTransplants()	Find a recipient's transplant records.	IExternalOffers
getCardioThoracicProfiles()	Get a recipient's cardio thoracic profiles.	IExternalHealth
getDonorHealth()	Gets a donor's health records.	IExternalHealth
getDonorMedications()	Gets the DWL donor medications.	IExternalHealth
getDonorUrinalysis()	Get a donor's urinalyses.	IExternalHealth
getHsHeartMatchResults()	Gets a donor's current “IPOS Heart” match results.	IExternalAllocation
getHSPMatchforDonor()	Gets a donor's current “IPOS Kidney” match results.	IExternalAllocation
getMedicalHistory()	Gets the recipient medical history.	IExternalHealth
getOfferDonorInfo()	Gets an offer's donor information.	IExternalOffers
getOfferStateHistory()	Get a list offer state histories or alternatively offer state history of a specific offer.	IExternalOffers
getPatientAbdominalProfiles()	Gets a donor's abdominal profiles.	IExternalHealth
getPatientBloodGases()	Get a donor's blood gases records.	IExternalHealth
getPatientChemistry()	Get a patient's(donor/recipient) chemistry records.	IExternalHealth
getPatientElectrolytes()	Get a patient's(donor/recipient) electrolytes records.	IExternalHealth
getPatientHeartProfiles()	Get a donor's heart profiles.	IExternalHealth
getPatientHematologies()	Get a patient's(donor/recipient) hematology records.	IExternalHealth

Method	Description	Package
getPatientInfections()	Gets a recipient's infections.	IExternalHealth
getPatientLungProfile()	Get donor's lung profiles.	IExternalHealth
getPatientMalignancies()	Gets a recipient's malignancies.	IExternalHealth
getPatientMedicalSocialHistory()	Gets the DWL donor's medical social history record.	IExternalHealth
getPatientVitalSigns()	Get a patient's(donor/recipient) vital signs records.	IExternalHealth
getRecipientHealth()	Gets a recipient's health records.	IExternalHealth
getRecipientMedications()	Gets a recipient's medications.	IExternalHealth
getRenalProfiles()	Get a recipient's renal profiles.	IExternalHealth
getSocialDetails()	Get the recipient's social details record.	IExternalRecipient
listDonor()	Get a filtered list of DWL donors.	IExternalDonor
listWaitlistRecipients()	List the DWL national waitlist organ requests.	IExternalCtr3WS
makeHshOffer()	Make an “IPOS Heart” offer to a recipient.	IExternalOffers
makeOfferAgainstHSPMatch()	Make an “IPOS Kidney” offer to a recipient.	IExternalOffers
previewHsHeartMatch()	Preview the “IPOS Heart” match results for a donor.	IExternalAllocation
previewHSPMatchForDonor()	Preview the “IPOS Kidney” match results for a donor.	IExternalAllocation
runHsHeartMatch()	Run an “IPOS Heart” allocation for a donor.	IExternalAllocation
runHSPMatchOnDonor()	Run an “IPOS Kidney” allocation for a DWL donor.	IExternalAllocation
updateAttachment()	Update an attachment's information.	IExternalAttachment
updateCardioThoracicProfile()	Add or update a recipient's cardio thoracic profile.	IExternalHealth
updateDonor()	Update an existing DWL donor information.	IExternalDonor
updateDonorDeath()	Update an existing DWL donor's death information.	IExternalDonor

Method	Description	Package
updateDonorMedications()	Add or update a donor medication record.	IExternalHealth
updateDonorOrganState()	Update a donor's organ disposition state.	IExternalDonor
updateDonorSerology()	Add or update a donor's serology sample test results.	IExternalDonor
updateDonorUrinalysis()	Add or update a donor's urinalysis record.	IExternalHealth
updateHlaTyping()	Update a patient's HLA typing record.	IExternalHla
updateHSPTransplant()	Add or update an organ transplantation record.	IExternalOffers
updateMedicalHistory()	Update the recipient medical history.	IExternalHealth
updateNotTransplanted()	Add or update an organ Non-transplantation record.	IExternalOffers
updateOfferState()	Update the state of an offer.	IExternalOffers
updateOfferStateHistory()	Update the offer state history of a specific offer.	IExternalOffers
updateOrganRequestParticipation()	Update a recipient's participation to the IPOS Heart program.	IExternalRecipient
updatePatientAbdominalProfile()	Add or update a donor's abdominal profile.	IExternalHealth
updatePatientBloodGases()	Add or update a donor's blood gases record.	IExternalHealth
updatePatientChemistry()	Add or update a patient's(donor/recipient) chemistry record.	IExternalHealth
updatePatientElectrolytes()	Add or update a patient's(donor/recipient) electrolytes record.	IExternalHealth
updatePatientHeartProfile()	Add or update a donor's heart profile.	IExternalHealth
updatePatientHematology()	Add or update a patient's(donor/recipient) hematology record.	IExternalHealth
updatePatientInfections()	Add or update a recipient infections record.	IExternalHealth
updatePatientLungProfile()	Add or update a donor's lung profile.	IExternalHealth
updatePatientMalignancies()	Add or update a recipient malignancy record.	IExternalHealth

Method	Description	Package
updatePatientMedicalSocialHistory()	Add or update a DWL donor's medical social history record.	IExternalHealth
updatePatientVitalSigns()	Add or update a patient's(donor/recipient) vital signs record.	IExternalHealth
updateRecipientAcceptanceCriteriaByNationalRecipientId()	Update a recipient's organ request acceptance criteria record.	IExternalRecipient
updateRecipientByNationalRecipientId()	Update an existing recipient information.	IExternalRecipient
updateRecipientHlaSerumTestResult()	Update a recipient HLA serum test results.	IExternalHla
updateRecipientMedications()	Add or update a recipient medication record.	IExternalHealth
updateRenalProfile()	Add or update a recipient's renal profile.	IExternalHealth
updateSocialDetails()	Update a recipient's social details record.	IExternalRecipient
uploadAttachment()	Upload an attachment document.	IExternalAttachment

Revision History

Version 1.0	2020-12-16	Initial Release
Version 1.1	2021-03-01	• Updated **CONNECTING TO THE CTR SOAP API** section to include new API endpoints. • Added new environment status website in **CTR ENVIRONMENTS** section
Version 1.2	2021-04-06	• Updated all CTR2 references in listed URLs to CTR3
Version 1.3	2021-05-01	• Added CTR1 references for Train Prod environment
Version 2.0	2024-02-14	• Updated endpoints for additional UAT environments • Minor formatting edits • URL updates for listed methods
Version 2.1	2025-01-16	• Updated endpoints for additional UAT environments • Minor formatting edits

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