OrganMatch Laboratory Portal (Part 1)

What is OrganMatch

A world class clinical transplant system managing our national and local waiting lists including highly sensitised patients programs for all organs. It delivers optimal immunological matching and best practise allocation processes when assessing compatibility for solid organ transplantation.

OrganMatch is an ecosystem of three portals, Laboratory, Transplantation and Donation. It connects clinicians, tissue typing laboratories and donation coordination agencies (OPO) with each other using real-time data.

OrganMatch is integrated with external software which currently includes the Electronic Donor Record (EDR) and Laboratory information systems (e.g. TISNet for Lifeblood labs). This allows transfer of data and results into OrganMatch.
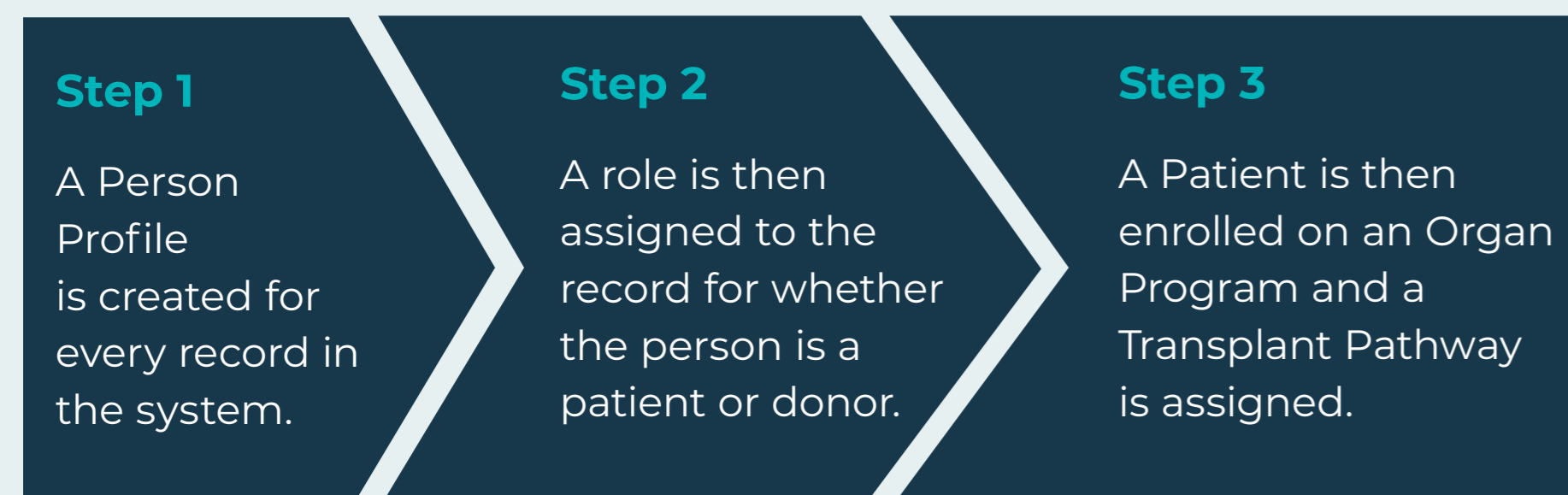
Roles and Access to OrganMatch

OrganMatch access is role based ensuring the user is only viewing information that is relevant to them.

Laboratory Portal roles range from Lab User, Advanced Lab User, Senior Lab User and Lab Manager, with functionality restricted to the specific role.

Transplantation Portal restricts the transplant and clinical units to viewing only data from patients linked to their unit, and deidentified deceased donor information.

Donation Portal restricts each state jurisdiction to view deceased donor information from their state or territory.

OrganMatch Laboratory Portal

The Laboratory Portal contains all the Histocompatibility data required for matching patients and donors for a Solid Organ Transplant.

Person Details

Step 1
A Person Profile is created for every record in the system.

Step 2
A role is then assigned to the record for whether the person is a patient or donor.

Step 3
A Patient is then enrolled on an Organ Program and a Transplant Pathway is assigned.

Transplant Pathways include:
- Transplant Waiting List (TWL)
- Living Directed Donation (LDD)
- Kidney Paired Donation (KPD) for the Australian and New Zealand Paired Kidney Exchange Program (ANZKX)
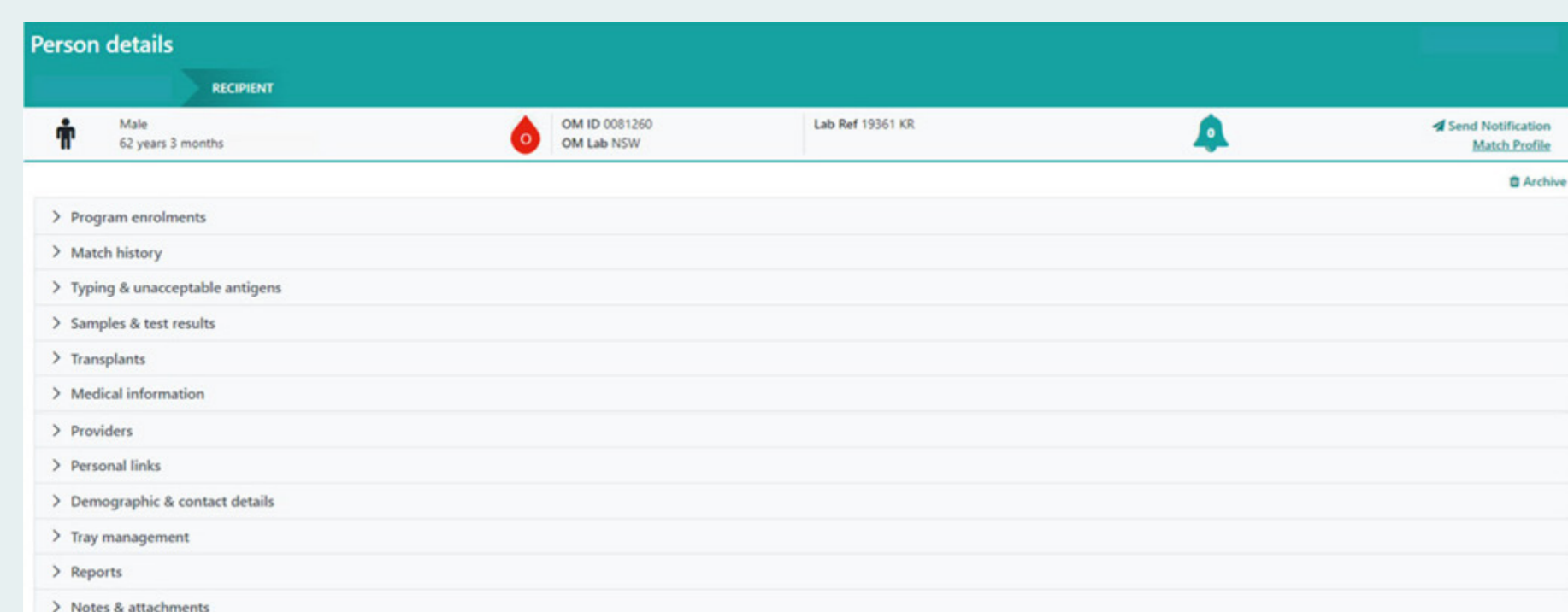

Program Enrolments

Program enrolments lists the Organ Programs the person is enrolled on. The laboratory can view the status of the person as to whether they are active or on hold. There is also functionality to update the status. For TWL patients this is usually managed by the Transplant hospital through the Transplantation Portal. The readiness for matching is also displayed.
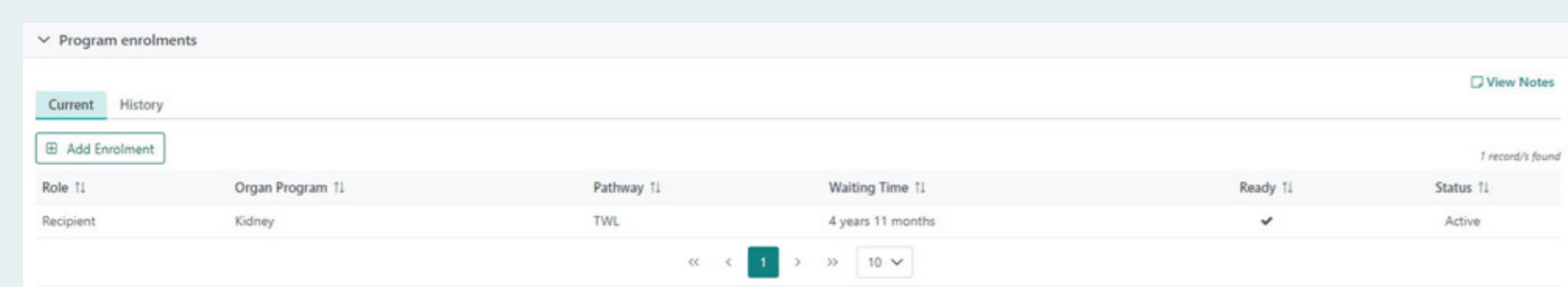
Match History

Match History allows the laboratory to view whether a patient has been matched against any donors. This is particularly relevant for Kidney TWL patients to review which donors they are being excluded from and where their position is on the waiting list.
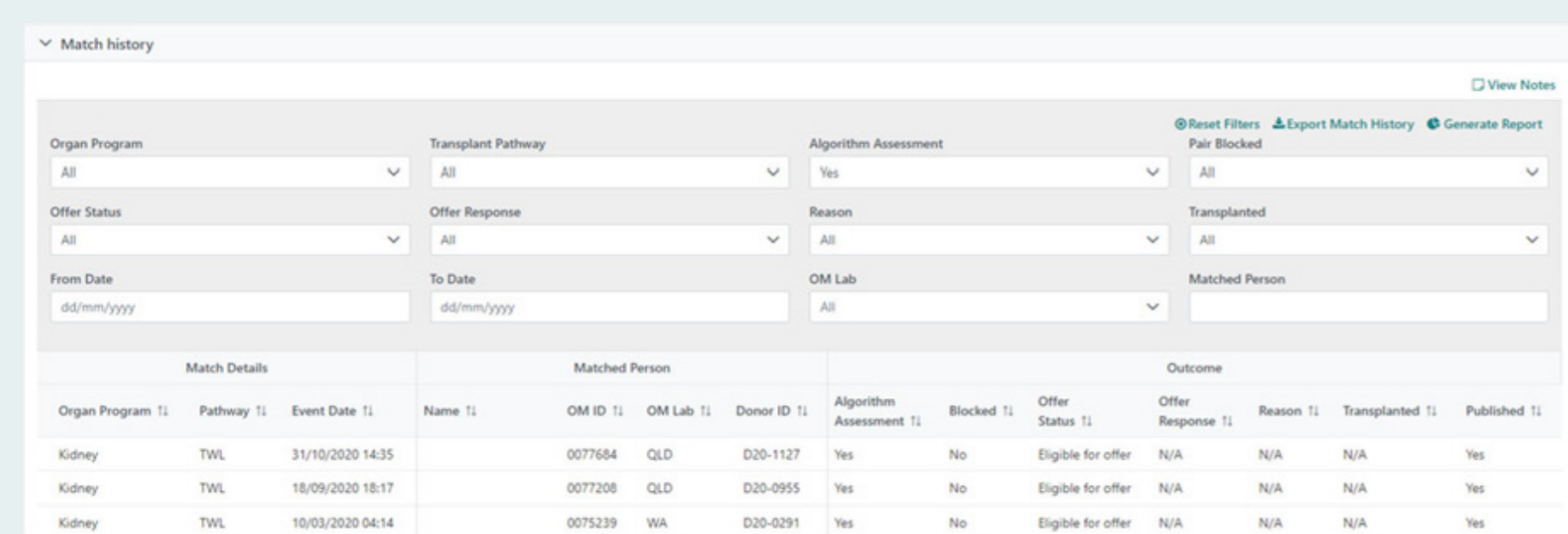
Notes and Attachments

Relevant documents can be uploaded into the system via a note in Notes and Attachments. The notes can be selected to appear on reports or as an internal note which can only be viewed in the Laboratory Portal. If a note is added via the Transplantation Portal a notification is generated to the Laboratory Portal and the laboratory can reply to the note in the system.
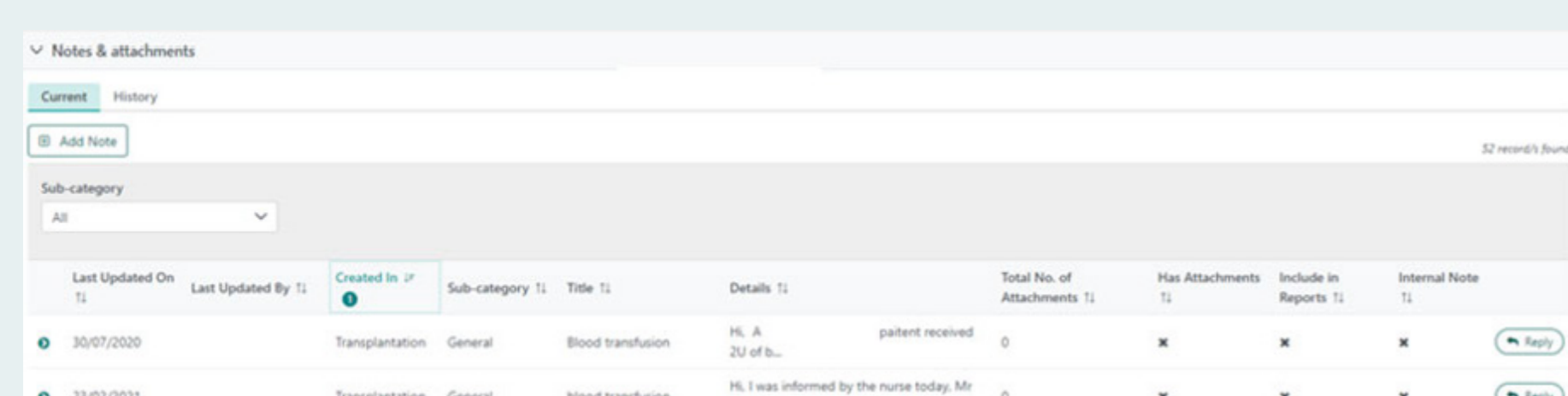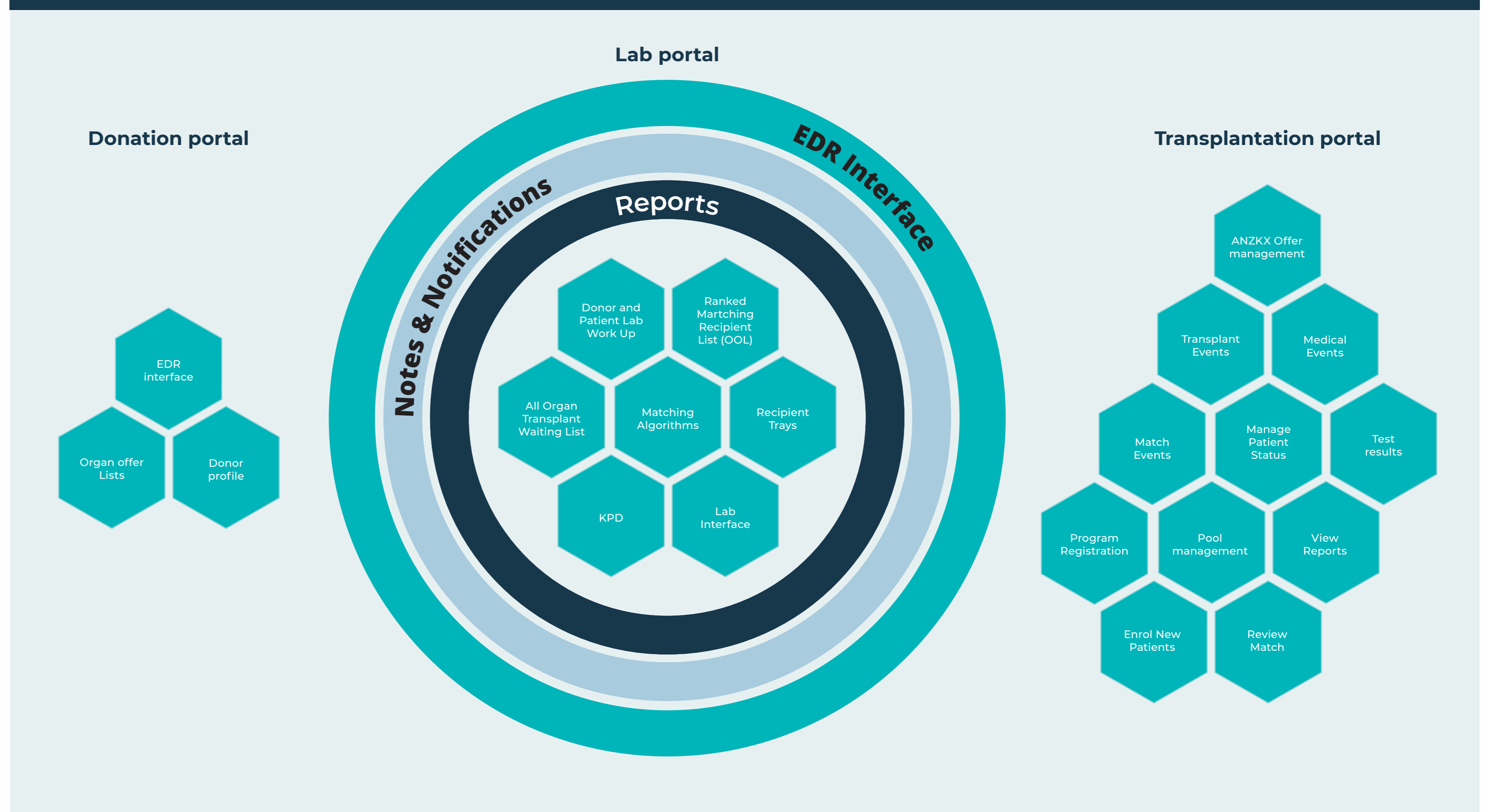

Figure 1: OrganMatch Portals

Typing and Unacceptable Antigens

HLA Typing Profile

HLA Typing Profile displays the authorised HLA typing. This is the HLA typing that is used in matching.

Unacceptable Antigens

The patients profile of HLA antigens that are deemed unacceptable to transplant across are managed in this section. The laboratory scientists create a consolidated panel from selected antibody results and any previous transplant mismatches to define the Unacceptable Antigen profile. This profile is used in the matching process to determine compatible donors.

The Unacceptable and Acceptable Antigens page has functionality to edit and authorise UA, sort by loci or MFI and displays the patient typing and typing of any previous donors.

mPRA is calculated in OrganMatch, using the HLA Antigens determined as unacceptable and the frequency in the Australian donor population.

The Change Log functionality allows users to track the change to UA over time.

Import Management

When a patient or donor is being worked up for transplantation the hospital can register and enrol them in an Organ Program through the Transplantation Portal. Once submitted, this record can be viewed in the Laboratory Portal allowing the labs to enter their testing results into the system.

A record can also be created through the integration with TISNet or via demographics import.

Samples and test results can be imported via File import or through integration. These results are then used by the laboratory to complete the Match Profile which includes the Unacceptable Antigens used for the patient in matching.
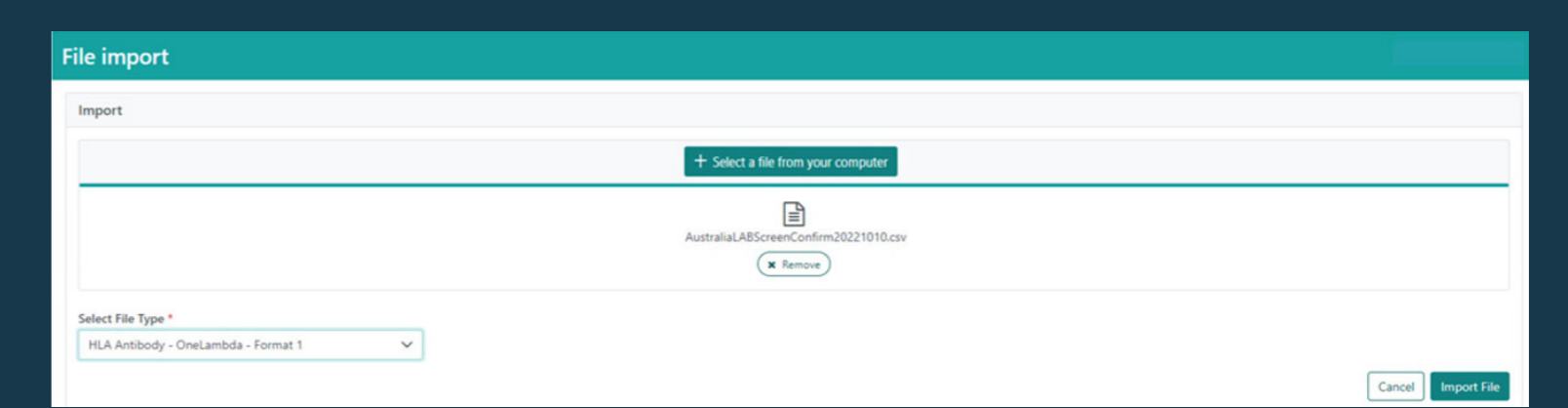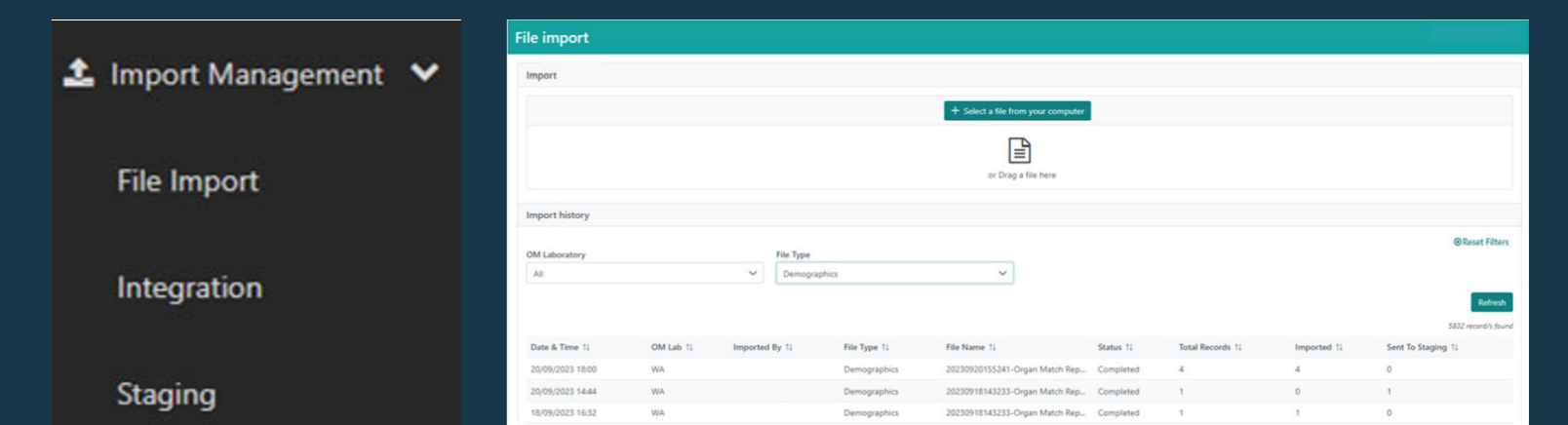
Samples and Tests

Samples and tests captures all the samples and test results imported in the system for the person. Antibody results can be viewed, collated or reported from this section. They can also be ticked to be included in the DSA assessment when matched against donors or displayed on the Organ Offer List (OOL) of a deceased donor.
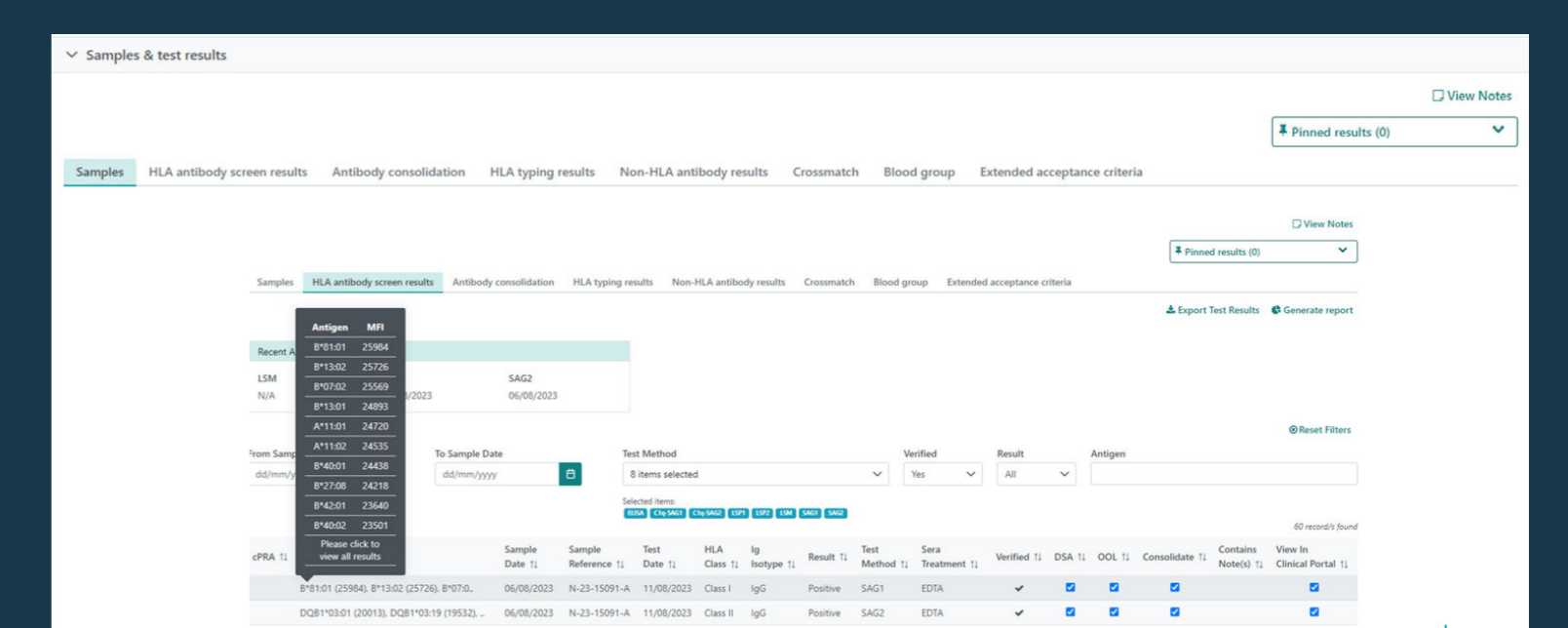
OrganMatch Laboratory Portal (Part 2)

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Reports

The Laboratory Portal has functionality to generate various types of reports. These include:

- Antibody Reports
- Laboratory Reports
- Match Event Report

Report generation is flexible to allow the user to select test results to appear on a report. Notes to appear on the reports can also be selected.

After the laboratory scientist generates the report, it must be authorised by the Lab manager or delegate. Once authorised a notification is generated to the Transplantation Portal where the report can be viewed in the patient record.

Tray Management

The Tray Management module in the Laboratory Portal has the functionality to create a data set of recipients that meet a specific criteria. This allows users to find a list of people or samples to include on a crossmatch or screening tray. This Recipient Set Query (RSQ) can be run repeatedly to create an up to date recipient set. The users can also create a tray template in a specific format which the RSQ is added to, to form trays. These trays can be registered and used in the matching algorithms.

Deceased Donor Matching

The EDR transfer creates the Deceased Donor profile in OrganMatch and populates the clinical information that is required for matching. The Laboratory enter the Histocompatibility results for the donor into the person profile and authorise the Match Profile. Once all the testing is complete the donor is ready for matching.

Once the user proceeds to matching, the Transplant Waiting List (TWL) Matching screen is created. The Organ Specific matching algorithm can be selected and run.

The recipients are then listed in order of score or ranked if the patient is for a renal transplant. Each patient has a row to navigate to the match event. A match event is the comparison of the donor and patient information on one screen.

The Histocompatibility assessment is completed including Donor Specific Antibody assessment for Virtual Crossmatch.

Donor Specific Antibody Assessment is automated in OrganMatch and is triggered by clicking on "Check for recipient DSA". OrganMatch is programmed to check the recipient antibody test results and the donor HLA, and assign as either specific or potential DSA based on HLA serotypes.

There are four Deceased Donor Matching Algorithms in the Laboratory Portal. These algorithms are the Kidney Matching Algorithm, the Kidney and Pancreas Matching Algorithm, the Lung Matching Algorithm and the Heart Matching Algorithm. All fours algorithms comprise of a High Level Compatibility Check (HLCC) where the system checks if patients meet the criteria to proceed to matching. These checks involve ABO compatibility and unacceptable antigens. If the patient passes through the HLCC they will then be given a score depending on different criteria based on the organ they require. The Kidney recipients are also ranked as the algorithm is used for allocation of the organ. The three other algorithms are used to provide a list of compatible recipients which the Transplant unit can choose from to the proceed to transplant.

Figure 2: Kidney Algorithm
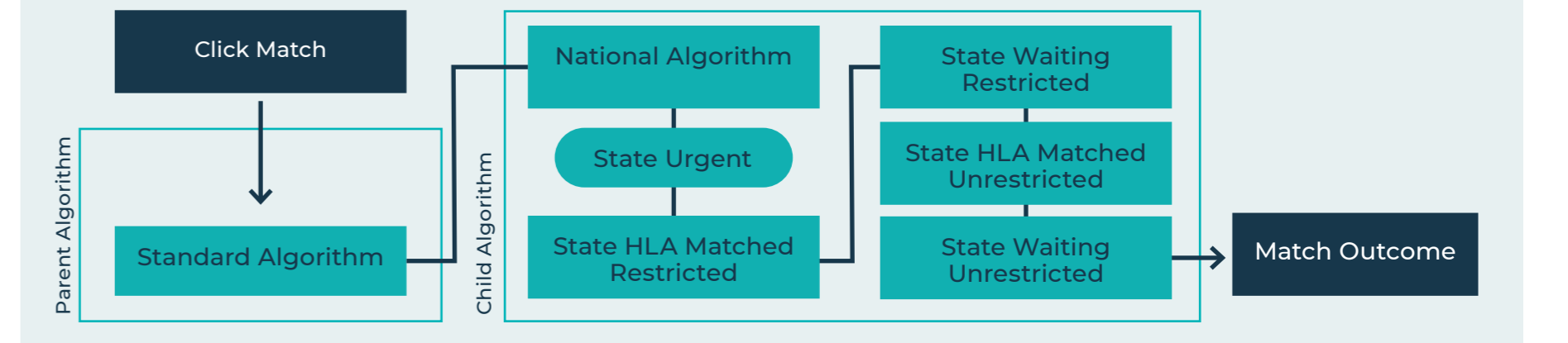
A Match Event is created for all recipients that are Active and Ready for matching and the ones that have proceeded to matching will be listed in the TWL Matching Screen.

The Match History tab of the donor displays all the Match Events with the recipients that proceeded to matching listed as Yes under Algorithm Assessment. By clicking on the Match Event the user can view the information as to why a patient may have been excluded from matching. This information can also be viewed in the Transplantation Portal in the patient record.

Living Directed and Non Directed Donor Matching

The Laboratory Portal has the functionality to match Living Directed Donors (LDD) to a specific recipient and Living Non Directed Donors (LNDD) to the TWL.

Once testing has been completed and the patient and donor are ready for matching, the user matches through the donor record to create a match event. The match event assessment can be completed in the same way as a deceased donor match event and the DSA can be reported. If the patient has unacceptable antigens to the donor, which are captured in the LDD UA, these are listed in the unacceptable antigen assessment. A Match Event Report can be generated to collate the Histocompatibility data and report to the Transplantation Portal.