

# HML for CIBMTR - Form 2005 replacement

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## Use case

- Electronic reporting of HLA to CIBMTR for **non-NMDP facilitated transplants** through the NMDP HML Gateway
- If patient/donor HLA typing has been submitted to NMDP via electronic form 22 or 117, the Transplant Center does NOT need to re-submit CIBMTR Form 2005 (CIBMTR collects this data from NMDP)
- This specification is only for reporting patients/donors/etc that are normally reported through CIBMTR FormsNet Form 2005 (non-NMDP facilitated transplants).

## Required

- Use NMDP HML Gateway rules
  - Contact [donorlabservices@nmdp.org](mailto:donorlabservices@nmdp.org) for more information
  - If you can already successfully submit HML to the NMDP HML Gateway for submitting electronic Form 22/117, you are compliant with the rules.
- You can check your HML for compliance to HML Gateway rules using the validation end point
  - [https://qa-api.nmdp.org/hml\\_gw/v1/validate](https://qa-api.nmdp.org/hml_gw/v1/validate)
  - Example using command line `curl`:

```
$ curl -X POST -d @"myHML.hml" -H "Content-Type: text/xml" https://qa-api.nmdp.org/hml_gw/v1/validate

returns....

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:validateHMLResponse xmlns:ns2="http://schemas.nmdp.org/spec/hml/1.0.1">
<hmlid>000000000_999</hmlid>
<status>VALID</status>
<timestamp>2019-06-19T17:19:16.200Z</timestamp>
<sample-count>1</sample-count>
<message>HML message is syntactically correct and passed validation.</message>
<ns2:errors/>
</ns2:validateHMLResponse>
```

- CIBMTR specific HML data elements. In addition to HML Gateway rules, CIBMTR requires these specific data elements in HML
  - hml project-name
    - **RES\_CIBMTR\_FHIR\_RECIPIENT**
      - Patient receiving the transplant
    - **RES\_CIBMTR\_FHIR\_CBU**
      - Cord blood unit
    - **RES\_CIBMTR\_FHIR\_CBUMOTHER**
      - Mother of the cord blood unit
    - **RES\_CIBMTR\_FHIR\_DONOR**
      - Hematopoietic cell donor
    - **RES\_CIBMTR\_FHIR\_NONDONOR**
      - Non-donor, but of interest (e.g., mother of patient)

- sample id
  - for recipient = [CRID]
    - CIBMTR Research Identifier
  - for donor = [GRID]
    - Global Registration Identifier for Donors
    - <https://www.wmda.info/professionals/optimising-search-match-connect/why-global-identifier>
  - for cord blood unit = [cbu id]
  - for non-donor = [specimen id]
- sample center-code
  - CIBMTR center code

## Optional

### HML property element

- HML allows for property elements containing name/value pairs. The content of this element must be coordinated between sender and receiver. This is not validated by the validator described above
  - Has the form: `<property name="name" value="value"/>`
  - See <http://schemas.nmdp.org/>
- If the property elements described below are included for each sample, Form 2005 will be considered complete.
- For non-recipient HLA, two property elements are used to capture the CRID of the transplant recipient, and the relationship of what is being typed to the recipient.
  - name="CRID"
    - needed for non-recipient typings
    - value="[CRID]"
  - name="recipient-relationship"
    - relationship between the specimen being typed and the transplant recipient
    - value="[recipient-relationship]"
    - possible values for recipient-relationship are
      - fraternal-twin
      - identical-twin
      - full-sibling
      - half-sibling
      - child
      - cousin
      - father
      - mother
      - uncle
      - aunt
      - nephew
      - niece
      - grandparent
      - grandchild
      - other-relative
      - unrelated

## Examples:

- Recipient HLA ([property](#) not needed)

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_RECIPIENT"
version="1.0.1">
...
  <sample id="[CRID]" center-code="[transplant center id]">
    ...
  </sample>
...
</hml>
```

- Unrelated Donor HLA

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_DONOR"
version="1.0.1">
...
  <sample id="[GRID]" center-code="[transplant center id]">
    ...
    <property name="CRID" value="[CRID]" />
    <property name="recipient-relationship" value="unrelated" />
    ...
  </sample>
...
</hml>
```

- Related Donor HLA (mother)

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_DONOR"
version="1.0.1">
...
  <sample id="[GRID]" center-code="[transplant center id]">
    ...
    <property name="CRID" value="[CRID]" />
    <property name="recipient-relationship" value="mother" />
    ...
  </sample>
...
</hml>
```

- Cord Blood Unit HLA (property recipient-relationship not needed)

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_CBU"
version="1.0.1">
...
  <sample id="[CBU id]" center-code="[transplant center id]">
    ...
      <property name="CRID" value="[CRID]" />
    ...
  </sample>
...
</hml>
```

- Non-donor, related HLA (father)

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_NONDONOR"
version="1.0.1">
...
  <sample id="[non-donor id]" center-code="[transplant center id]">
    ...
      <property name="CRID" value="[CRID]" />
      <property name="recipient-relationship" value="father" />
    ...
  </sample>
...
</hml>
```

- Mother of cord blood unit

```
<hml xmlns="http://schemas.nmdp.org/spec/hml/1.0.1"
xmlns:proc="http://hl7.org/fhir"
xmlns:xsi="http://www.w3.org/2000/XMLSchema-instance"
xsi:schemaLocation="http://schemas.nmdp.org/spec/hml/1.0.1"
project-name="RES_CIBMTR_FHIR_CBUMOTHER"
version="1.0.1">
...
  <sample id="[specimen id]" center-code="[transplant center id]">
    ...
      <property name="CRID" value="[CRID]" />
    ...
  </sample>
...
</hml>
```