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 for more information
    - If you can already successfully submit HML to the NMDP HML Gateway for submiting 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
    - Example using command line `curl`:

```
$ curl -X POST -d @"myHML.html" -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)

- o 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]
- o 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
    - o Has the form: `<property name="name" value="value"/>`
    - o 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.
    - o name="CRID"
        - ▪ needed for non-recipient typings
        - ▪ value="[CRID]"
    - o 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/2500/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/2500/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/2500/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/2500/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/2500/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/2500/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>
```