



# **AGNIS Data Submission Procedures**

Version 2.0

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|             |                |                                      |                      |
|             |                |                                      |                      |

## AGNIS Data Submission Procedures

17 February 2009

### Glossary

| Term                   | Description   |
|------------------------|---|
| caDSR                  | The <u>c</u> ancer <u>D</u> ata <u>S</u> tandards <u>R</u> epository, which is part of the caBIG initiative ( <a href="http://cabig.nci.nih.gov">http://cabig.nci.nih.gov</a> ), is a tool set and database repository of metadata used by the National Cancer Institute (NCI) and its partners to create, edit and deploy similar or identical concepts (CDEs) used as metadata descriptors in clinical research trials. The caDSR follows the <a href="#">ISO/IEC 11179</a> standard for metadata registries. |
| cRF                    | Comprehensive Report Form. A set of forms collecting detailed transplant-related information for research purposes.   |
| Case Report Form (CRF) | A paper or electronic form specifically used in clinical trial research. AGNIS uses the caDSR CRF format, with a form consisting of modules which consist of CDEs.  |
| CDE                    | Common Data Element. A CDE is a representation which combines a Data Element Concept and a Value Domain. The Data Element Concept consists of an Object Class and a Property, the Value Domain indicates the set of possible values.  |
| Form Builder           | Form Builder is a caDSR application used to represent forms. Each of the NMDP recipient forms will have a corresponding form in the Form Builder application. The Form Builder form contains the information that you need to submit a form using the AGNIS application. See the FAQ for help accessing the application.  |
| instanceId             | The form-level attribute with the same value as the sequence number, CDE 2527889 (Clinical Data Form Sequence Number). This attribute will be included in the XML response to an initial submission of a form and must be included in all modifications to an existing form.  |
| Module                 | A group of related CDEs or a collection of repeating CDEs which occur more than once on a form.   |
| Mapping CDE            | For normalized curation, the CDE whose permissible values provide a one-to-one mapping with the associated form question numbers.   |
| Normalized Curation    | Normalized curation is a technique used to minimize the number of CDEs needed for list or tabular data, CDEs are used to represent the data columns rather than the rows.   |
| Repeat Sequence Number | A number used to indicate an instance of a repeating module. The repeat sequence number is used to group the CDEs in a module that can appear multiple times in one form. The repeat sequence number is not the same as the question number on the form.  |
| Sequence Number        | The sequence number is a FormsNet 2 value that is used to identify an instance of a form. It is represented by CDE 2527889 (Clinical Data Form Sequence Number). It is identical to the form-level attribute "instanceId". This CDE will be included in the XML response to an initial submission of a form and must be included in all modifications to an existing form.  |
| TED                    | Transplant Essential Data. The basic set of transplant-related information (patient, disease, procedure and outcomes) agreed on as "essential" by the international transplant community.   |

# AGNIS Data Submission Procedures

## 1. AGNIS Overview

AGNIS<sup>®</sup> is an open source web service which communicates hematopoietic stem cell transplant data using a secure, standards based system. While there are several ways to submit data using AGNIS, the most common usage is:

- 1) data from a research center system are translated into caDSR common data elements (CDEs) and transmitted to the National Marrow Donor Program<sup>®</sup> (NMDP) in an XML format
- 2) field- and form-level validation is performed by FormsNet<sup>™</sup> 2
- 3) the validation result is sent back to the submitter via AGNIS
- 4) error-free and complete forms are stored in the FormsNet 2 database

This document primarily describes the above usage; however, an additional data path involves data transfer to the CIMBTR Stem Cell Therapeutics Outcomes Database (SCTOD):

- 1) error-free and complete forms are transferred from the FormsNet 2 database to the AGNIS database in an XML format
- 2) completed forms are pulled by the CIMBTR AGNIS client to their staging database
- 3) form data are processed and stored in the SCTOD.

### 1.1 Manual vs. Electronic Submission

Manual data submission refers to FormsNet 2 access of the forms. Electronic submission refers to the use of AGNIS for data transmission. FormsNet 2 does not use CDEs internally while AGNIS uses CDEs as a communication standard. Because neither AGNIS nor FormsNet 2 have knowledge of which data values have been modified using the other technique, it is up to the user to determine which data values are maintained by what method. Note that a single form may have some data values maintained electronically by AGNIS and some maintained manually by FormsNet 2. For example, a center may perform an initial submission of Form 2004 from their local database using electronic submission via AGNIS. However, questions 10-17 are not stored in the center's database, so AGNIS will return a status of "ACCEPTED\_WITH\_ERROR" with error collections attached to the specific question collections indicating "missing required data". The center then uses FormsNet 2 to manually enter values for questions 10-17. Finally, the center sends Form 2004 with modified data for question 25 with new results. This results in a status of "ACCEPTED", as all fields have been filled out and verified correct.

AGNIS does have a mechanism to detect updates which would overwrite existing data. For manual (i.e. FormsNet 2) data submission, no additional mechanism is needed, as the current contents of the FormsNet database are always presented in the UI for modification. For AGNIS submissions, a

## AGNIS Data Submission Procedures

“lockString” is employed to ensure that the given update contains the current FormsNet contents as well as any desired data modifications. If the lockString specified with the update does not match the current value, an error message is returned (REJECTED\_LOCK\_MISMATCH) and the current FormsNet contents including the current lockString are returned. It is then left to the AGNIS user to merge the current contents with the desired update and re-submit the update with the current lockString.

See the caution below in the section on Non-Normalized Repeating Modules regarding mixing manual and electronic submission within a module.

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## 1.2 Electronic Submission Data Flow

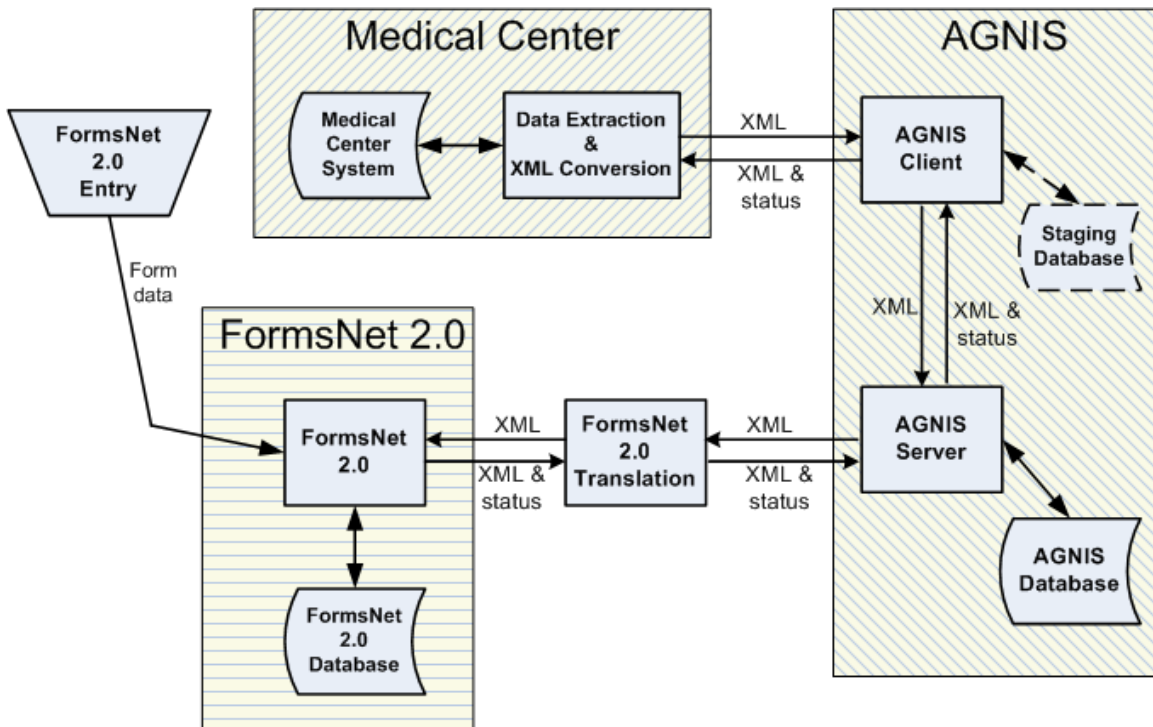


Figure 1.2a. Dataflow using electronic and manual data submission.

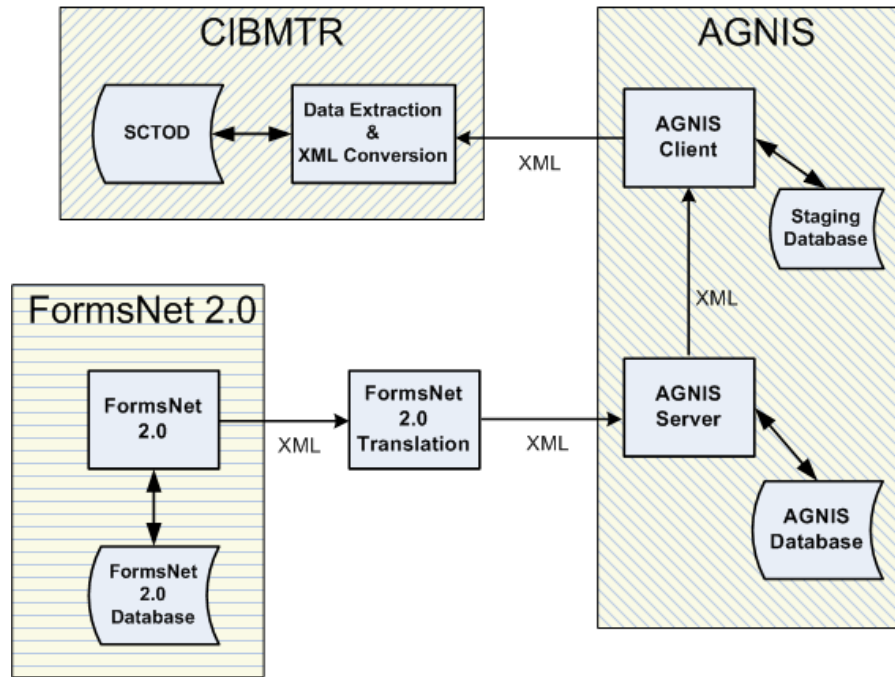


Figure 1.2b. Dataflow of completed forms to SCTOD.

## AGNIS Data Submission Procedures

### 1.3 AGNIS XML Summary

| Element                        | Attributes  | Child Elements  |
|--------------------------------|---|---|
| <b>FormRevision</b>            | <b>status</b> (string – either “REJECTED”, “REJECTED_LOCK_MISMATCH”, “ACCEPTED”, or “ACCEPTED_WITH_ERROR”)<br><b>lockString</b> (string – time of last FormsNet update)<br><b>lockOverride</b> (boolean – ignore lockString match result)   | <b>form</b><br><b>moduleCollection</b><br>errorCollection   |
| <b>form</b>                    | <b>instanceId</b> (string – individual form identifier, blank for initial submission)<br><b>publicId</b> (number – with version, the caDSR identifier for CRF Form metadata)<br><b>version</b> (decimal – with publicId, the caDSR identifier for CRF Form metadata)  | <b>originator</b><br>publisher  |
| errorCollection                | <b>message</b> (string – text error message)<br>type (code specifying error type)   | testQuestionCollection<br>(secondary question associated with a validation error)<br>rawData (extended error message) |
| <b>moduleCollection</b>        | <b>publicId</b> (number – with version, the caDSR identifier for the module)<br><b>version</b> (number – with publicId, the caDSR identifier for the module)<br><b>repeatSequenceNumber</b> (number – 1 for non-repeating CDEs, less than or equal to MaximumAllowed for repeating CDEs)<br><b>delete</b> (boolean – delete flag)   | <b>questionCollection</b>   |
| <b>questionCollection</b>      | <b>dataElementPublicId</b> (number – partial identifier for associated caDSR CDE)<br><b>dataElementVersion</b> (decimal – partial identifier for associated caDSR CDE)<br><b>delete</b> (boolean – delete flag)<br><b>valueMeaningPublicId</b> (number – with version, the caDSR identifier for a value from a choice-list)<br><b>valueMeaningVersion</b> (decimal – with publicId, the caDSR identifier for a value from a choice-list)<br>errorException (string – indicates whether any validation error was overridden for this question) | <b>value</b> (string – data value for this question based on caDSR CDE)<br>errorCollection                            |
| <b>originator</b><br>publisher | <b>uniqueName</b> (string – unique name assigned to an institution)   |   |
| testQuestionCollection         | dataElementPublicId (number – partial identifier for associated question)<br>dataElementVersion (decimal – partial identifier for associated question)<br>modulePublicId (number – partial identifier for module with associated question)<br>moduleVersion (decimal – partial identifier for associated question)  |   |
| Key:                           | <b>bold elements</b> and <b>attributes</b> are expected to be present, non-bold elements and attributes are permissible but not commonly present. For a detailed description of all elements and attributes refer to the <a href="#">AGNIS Data Dictionary</a> .<br><i>number</i> refers to an integer with no decimal point<br><i>decimal</i> refers to a number with a decimal point  |   |

**Table 1. Summary of AGNIS XML structure.**

# AGNIS Data Submission Procedures

## 2. Data Submission Overview

The Form Builder application in the caDSR uses modules to group related CDEs. It is possible to have more than one occurrence of a module on a form. For example, the “Contributing Causes of Death” module (form 2900, public ID 2481311) allows for a maximum of 10 instances of the module. This allows the user to enter multiple contributing causes of death. In general, there are three uses of modules in the Case Report Form:

- non-repeating (a group of related questions occurring only once on a form)
- non-normalized repeating (questions which occur more than once on a form)
- normalized repeating (a list or table of questions)

The data submission procedures are dependent on the type of module in which the CDE occurs. This document describes the data submission procedures for each type of module.

### 2.1 Data Submission Methods

There are two data submission approaches in AGNIS.

- method one – always transmit all CDEs
  - increased bandwidth
  - less bookkeeping
- method two – only transmit CDEs with changing data values
  - less bandwidth
  - more bookkeeping

**Note that method one must be used for non-normalized repeating modules.**

### 2.2 General Rules for XML Submission

The following are general guidelines for XML submission via AGNIS.

1. **Multiple Form Version Support.** AGNIS supports multiple versions of a given form. Different form versions may, however, contain different combinations of CDEs, it is the responsibility of the user to ensure the proper correspondence of form version and CDEs.
2. **Form Submission Sequencing.** AGNIS attempts to follow the “standard” sequence of form submission in FormsNet 2. This requires that forms are only accepted when they are “due” (with a few exceptions). The rough outline of this sequence is shown in Table 2.

## AGNIS Data Submission Procedures

| Action           | Effect   |                       |
|------------------|--|-----------------------|
| Create Unique ID | Form 2400 becomes due                              |                       |
| Complete 2400    | Recipient is randomly assigned to TED or cRF track |                       |
|                  | TED-track  | cRF-track             |
|                  | Forms 2450 (multiple copies) become due            | Form 2000 becomes due |

**Table 2. Summary of form submission sequencing.**

3. **Case and White-Space Insensitivity.** CDE values are case and white-space insensitive. That is, "male gender", "Male Gender" and "MaleGender" are considered equivalent.
4. **Key Field Involitivy.** Some key fields cannot be modified via AGNIS, this is to ensure that all forms for a given transplant can be identified. These fields include the CRID (the recipient unique id, CDE 2527897) and the HSCT\_Date (CDE 2527911). Additionally, the follow-up period for form 2450 (CDE 2787410) may not be modified – that is a form 2450 first submitted as a "100 Day" follow-up form may not be changed into a "6 Month" form.
5. **AGNIS vs. FormsNet 2 Return Status.** AGNIS has only four return status codes, "REJECTED", "REJECTED\_LOCK\_MISMATCH" "ACCEPTED", and "ACCEPTED\_WITH\_ERROR", while FormsNet 2 has over 20 possible form status code. An AGNIS status of "ACCEPTED" corresponds to a FormsNet 2 status of "CMP", meaning that the form is fully completed and contains no errors. AGNIS status codes of "REJECTED\_LOCK\_MISMATCH" or "REJECTED" do not correspond to any FormsNet 2 status code, because they indicate that the form was not submitted to FormsNet 2.
6. **value vs. valueMeaningPublicId.** The value for a CDE may be specified in two ways, using the "value" element or using the "valueMeaningPublicId" attribute. If both a "valueMeaningPublicId" attribute and a "value" element are specified for a "questionCollection" element, the "valueMeaningPublicId" attribute determines the value stored in FormsNet. See section 4 for XML examples showing the two value specifications.
7. **Date specification.** AGNIS dates are specified in ISO-8601 format, that is YYYY-MM-DD. (Note that this is a format change from previous AGNIS versions)
8. **AGNIS Validation Rules.** AGNIS imposes several validation rules in addition to the validation performed by FormsNet 2 (if these rules are violated, the form is REJECTED). These validation rules include:
  - a. The form ID and version ("publicId" and "version" attributes of the "form" tag) must be valid and supported.

## AGNIS Data Submission Procedures

- b. The center ID (CDE 2527895) must match the centerId which is part of the "uniqueName" attribute of the "originator" tag (within the "form" tag) and must match the centerId used to create the given CRID.
- c. For initial submissions, both the sequenceNumber (CDE 2527889) and the "instanceId" attribute of the "form" tag must be blank, for updates these numbers must agree and match an existing form.
- d. The CRID (CDE 2527897), HSCT\_Date (CDE 2527911), and Center ID (CDE 2527895) must match the existing values in FormsNet2.
- e. If a CDE has a non-blank value specified, the "delete" attribute must be "false".
- f. For a choice-list question, if a value is specified, it must be in the list of permissible values.
- g. For a normalized module, if a mapping CDE is submitted, there must be a corresponding value CDE.
- h. Various additional form-specific validation rules.

### 2.3 XML Examples

The following XML examples in this document illustrate method two; ellipses (...) show where the additional non-changing CDEs would be present. These examples are based on AGNIS v1.2 which specifically does not contain the module layer. These examples contain fictional values for the "dataElementPublicId" attribute and the "publicId" attribute of "moduleCollection" elements.

### 2.4 Possible Errors and Ramifications

The separation between data values which are manually entered and maintained (via FormsNet 2) and those electronically entered and maintained (via AGNIS) is totally at the control of the user and is on a form by form basis. Manually entered data values can be overwritten by electronic submission and vice versa. Proper use of the "lockString" attribute of the "FormRevision" element can detect this data collision.

Forms electronically submitted via AGNIS undergo several stages of verification. The return status of an electronic submission, which reflects the outcome of the verification process, will have one of four possible values, "REJECTED", "REJECTED\_LOCK\_MISMATCH", "ACCEPTED" or "ACCEPTED\_WITH\_ERROR". The first stage tests fundamental aspects such as a known PublicId and version, and whether the FormsNet 2 database is available. If this stage fails, AGNIS will return an "errorCollection" at the Form level as illustrated below:

## AGNIS Data Submission Procedures

### Example AGNIS return XML with REJECTED status

```
<FormRevision status="REJECTED" ... >
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
    <errorCollection message="FATAL ERROR EXPLANATION">
      <rawData>OTHER INFORMATION, STACK TRACE, ETC. </rawData>
    </errorCollection>
  </form>
</FormRevision>
```

If a form update is submitted with a "lockString" attribute which does not match the current lockString, the update is rejected with a return status of "REJECTED\_LOCK\_MISMATCH". In this case, the current lockString and FormsNet contents are also returned.

### Example AGNIS return XML with REJECTED\_LOCK\_MISMATCH status

```
<FormRevision lockString="2009-06-15T14:33:11.347"
  status="REJECTED_LOCK_MISMATCH" ... >
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234567"
      dataElementVersion="1.0" repeatSequenceNumber="1">
      <value>No</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

A form which passes the first verification stage goes on to element-level verification. Any errors detected in this stage are returned in an "errorCollection" at the question level and result in a return status of "ACCEPTED\_WITH\_ERROR". Forms with this status are provisionally accepted, but all errors must be corrected before the form is complete and available for further processing.

## AGNIS Data Submission Procedures

Example AGNIS return XML with ACCEPTED\_WITH\_ERROR status

```
<FormRevision status="ACCEPTED_WITH_ERROR" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cibmtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234567"
    dataElementVersion="1.0" repeatSequenceNumber="1">
    <value>No</value>
    <errorCollection message="missing value"/>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

A form which passes all verification stations without error will have a return status of "ACCEPTED" and will be available for subsequent processing.

Example AGNIS return XML with ACCEPTED status

```
<FormRevision status="ACCEPTED" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cibmtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234567"
    dataElementVersion="1.0" repeatSequenceNumber="1">
    <value>No</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### 2.5 Summary of Module value specification and "delete" attribute setting

Table 3 summarizes the result of the possible permutations of the "delete" attribute and the presence or absence of the value tag for any given CDE. In the table, "IS" refers to an initial submission and "U" refers to an update of a previously accepted (possibly with errors) form. The potential actions are:

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1. no value is sent to FormsNet 2 (no value will be stored for an initial submission and any existing value will be deleted for an update)
2. the existing value is preserved
3. the translated value is sent to FormsNet 2 (replacing any existing value)
4. an error is returned (for an ambiguous input, such as specifying both a value and the "delete" attribute)

|                  |                  | Delete Attribute  |   |
|------------------|------------------|---|---|
|                  |                  | False (or omitted)  | True  |
| <b>Value Tag</b> | <b>-none-</b>    | <b>IS:</b> No value sent to FN<br><b>U:</b> Keep existing value                 | <b>IS:</b> No value sent to FN<br><b>U:</b> Delete any existing value |
|                  | <b>Blank</b>     | <b>IS:</b> No value sent to FN<br><b>U:</b> Keep existing value                 | <b>IS:</b> No value sent to FN<br><b>U:</b> Delete any existing value |
|                  | <b>Non-blank</b> | <b>IS:</b> Translated value sent to FN<br><b>U:</b> Translated value sent to FN | <b>IS:</b> Error<br><b>U:</b> Error                                   |

**Table 3. Effect of delete attribute.**

### 3. Form-level Considerations

#### 3.1 Initial Submission

The initial submission of a form refers to the first submission of the form to FormsNet. If the form has already been submitted using the FormsNet UI, the first submission of the form via AGNIS will be an update, not be an initial submission.

In AGNIS, initial submissions are identified by not specifying the sequenceNumber. The sequenceNumber occurs twice in a FormRevision, as the "instanceId" attribute of the "form" element, and as the value of CDE 2527889. Furthermore, for an initial submission, the value of the "lockString" attribute of the "FormRevision" element will be blank.

Key points:

- o For the "FormRevision" element, submit the following
  - Blank value for the "lockString" attribute
- o For the "form" element, submit the following
  - Form publicId and version
  - Blank value for the "instanceId" attribute
- o For CDE 2527889, submit the following
  - Blank value

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### XML for initial submission

```
<FormRevision>
  <form instanceId="" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <!-- ... .. -->
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0" repeatSequenceNumber="1">
      <value />
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:33:11.347" status="ACCEPTED" ... >
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

### 3.2 Update Submission

Update submissions are modifications of a previously submitted form, either via AGNIS or the FormsNet UI. These updates can include all CDEs (“method one”) or only those CDEs with changing data values (“method two”).

#### Key points:

- o For the “FormRevision” element, submit the following
  - Current value for the “lockString” attribute
- o For the “form” element, submit the following
  - Form publicId and version
  - Form sequenceNumber as the value for the “instanceId” attribute
- o For CDE 2527889, submit the following
  - Form sequenceNumber as the value

## AGNIS Data Submission Procedures

### XML for update submission

```
<FormRevision lockString="2000-05-30T14:31:30.128">
  <form instanceId="123454321" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <!-- ... .. -->
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0" repeatSequenceNumber="1">
      <value>123454321</value>
    </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:33:11.347" status="ACCEPTED" ... >
  <form instanceId="123454321" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>123454321</value>
    </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

## 4. Specifying the Value of CDEs

### 4.1 Value element vs. valueMeaningPublicId attribute

The value for a CDE may be specified in two ways, using the “value” element or using the “valueMeaningPublicId” attribute. If both a “value” element and a “valueMeaningPublicId” attribute are specified for a “questionCollection” element, the “valueMeaningPublicId” attribute determines the value stored in FormsNet.

### 4.2 XML Example Using Value Element

From Form 2900, question #1 (“date estimated”)

```
<FormRevision>
  <form instanceId="" publicId="2481311" version="2.0">
    <originator uniqueName="cibmtr_center_number:000000"/>
  </form>
  <!-- ... .. -->
  <!-- Death Date -->
  <moduleCollection publicId="2832121" version="2.0" repeatSequenceNumber="1">
  <!-- Q#1 Date of death: -->
  <questionCollection dataElementPublicId="2762823" dataElementVersion="1.0"
    delete="false">
    <value>06/17/2009</value>
  </questionCollection>
  <!-- Date of death is estimated: -->
```

## AGNIS Data Submission Procedures

```

<questionCollection dataElementPublicId="2768794" dataElementVersion="1.0"
    delete="false">
  <value>Yes</value>
</questionCollection>
</moduleCollection>
<!-- ... .. -->
<FormRevision>

```

### 4.3 XML Example Using valueMeaningPublicId Attribute

From Form 2900, question #1 ("date estimated")

```

<FormRevision>
<form instanceId="" publicId="2481311" version="2.0">
  <originator uniqueName="cibmtr_center_number:000000"/>
</form>
<!-- ... .. -->
<!-- Death Date -->
<moduleCollection publicId="2832121" version="2.0" repeatSequenceNumber="1">
<!-- Q#1 Date of death: -->
<questionCollection dataElementPublicId="2762823" dataElementVersion="1.0"
    delete="false">
  <value>06/17/2009</value>
</questionCollection>
<!-- Date of death is estimated: -->
<questionCollection dataElementPublicId="2768794" dataElementVersion="1.0"
    valueMeaningPublicId="2567168" valueMeaningVersion="1.0"
    delete="false">
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
<FormRevision>

```

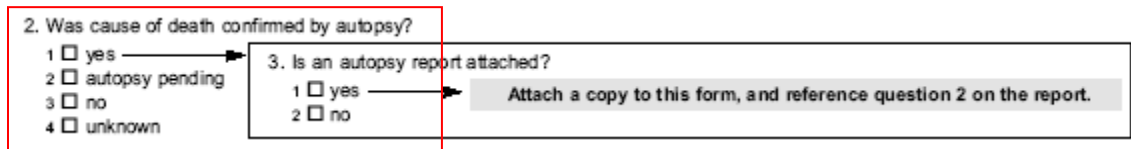
## 5. Non-Repeating Modules

### 5.1 Description

Non-repeating modules are the most frequently used modules. This type of module is used to group related CDEs. A given CDE can occur only once in any given module but may reoccur in other modules in the same form.

### 5.2 Example Question

Form 2900 Recipient Death Data, question 2



| dataElementPublicId | CDE Long Name                                |
|---------------------|--|
| 1234502             | Adverse Event Autopsy Confirmation Indicator |

## AGNIS Data Submission Procedures

### 5.3 Initial Submission

#### Key Points:

- o For each module, submit the following
  - Module publicId and version
  - CDEs contained within
  - "repeatSequenceNumber" attribute must be "1"
- o For each CDE, submit the following
  - CDE public ID and version
  - Desired value or "valueMeaningPublicId" attribute
- o Do not use alternateMetadata attributes

#### XML for initial submission

```
<FormRevision>
<form instanceId="" publicId="2481311" version="2.0"
      xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234502"
    dataElementVersion="1.0" repeatSequenceNumber="1">
    <value>No</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

#### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:33:11.347" status="ACCEPTED" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
      xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234502"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 2               | No               |

### 5.4 Modifying an Existing CDE

Key Points:

- For the module containing the CDE to modify, submit
  - Module publicId and version
  - repeatSequenceNumber must be "1"
- For the CDE to modify, submit
  - CDE publicId and version
  - Desired value
- Do not use alternateMetadata attributes

Modification example

Change the answer to question 2 from "no" to "yes".

XML for modification

```
<FormRevision lockString="2000-05-30T14:33:11.347">
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234502"
      dataElementVersion="1.0">
      <value>yes</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```
<FormRevision status="ACCEPTED" lockString="2000-05-30T14:35:22.237" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234502"
    dataElementVersion="1.0">
    <value>Yes</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### Resulting FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 2               | Yes              |

## 5.5 Deleting an Existing CDE

### Key Points

- o For the form, submit
  - Form public ID and version number
  - The value returned after the initial submission (in this example, "1111111") for both the value of CDE 2527889 and the XML Form attribute "instanceId".
- o For the CDEs, submit the following
  - CDE public ID and version number
  - The "delete" attribute is set to "true"
  - No <value> is sent
- o The repeat sequence must be "1"
- o Do not use the following attributes
  - alternateMetadataId
  - alternateMetadataType

### Deletion example

Delete the value for question 2.

## AGNIS Data Submission Procedures

### XML for deletion

```
<FormRevision lockString="2000-05-30T14:33:11.347">
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cimbtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234502"
      dataElementVersion="1.0" delete="true">
      <value />
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
</FormRevision>
```

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:35:23.125"
  status="ACCEPTED_WITH_ERROR" ... >
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cimbtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234502"
      dataElementVersion="1.0">
      <errorCollection message="missing value" />
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

(Note that an error is returned, because the FormsNet validation rules require an answer to this question.)

### Resulting FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 2               |                  |

# AGNIS Data Submission Procedures

## 6. Non-Normalized Repeating Modules

### 6.1 Description

Non-normalized repeating modules are used to group CDEs that can occur more than once on a form. This module corresponds to questions on the paper form that can have more than one answer. For this type of module, all instances of the module must be sent because the entire module is refreshed with each transmission.

Extreme caution should be exercised when a non-normalized repeating module has a mix of electronic and manual updates. **Since the entire module must be refreshed with each transmission, values entered manually will be lost unless they can be submitted along with the electronically submitted values.** If no instance of the module is submitted, then any existing contents are preserved, if any instance(s) is submitted, then only those instance(s) will be stored in FormsNet 2. Proper use of the "lockString" attribute of the "FormRevision" element will enable detection (and allow correction) of this data collision.

### 6.2 Example Question

Form 2900 Recipient Death Data, question 4 (contributing cause of death)

|               |                      |          |       |
|---------------|----------------------|----------|-------|
| Contributing: | <input type="text"/> | Specify: | _____ |
|               | <input type="text"/> | Specify: | _____ |
|               | <input type="text"/> | Specify: | _____ |
|               | <input type="text"/> | Specify: | _____ |
|               | <input type="text"/> | Specify: | _____ |

| dataElementPublicId | CDE Long Name                                     |
|---------------------|---|
| 1234503             | Adverse Event Contributing Cause of Death Type    |
| 1234504             | Adverse Event Contribution Death Etiology Specify |

### 6.3 Initial Submission

Key Points:

- For each module (e.g. each repeating instance), submit the following
  - Module publicId and version
  - CDEs contained within
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
- For the CDEs, submit the following
  - CDE publicId and version
  - Desired value or "valueMeaningPublicId" attribute
- Do not use alternateMetadata attributes

## AGNIS Data Submission Procedures

### XML for initial submission

```
<FormRevision>
<form instanceId="" publicId="2481311" version="2.0"
      xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Infection - Viral</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Organ failure—other organ failure, specify</value>
  </questionCollection>
  <questionCollection dataElementPublicId="1234504"
    dataElementVersion="1.0">
    <value>Renal</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:33:11.347" status="ACCEPTED" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
      xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Infection - Viral</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Organ failure—other organ failure, specify</value>
  </questionCollection>
  <questionCollection dataElementPublicId="1234504"
    dataElementVersion="1.0">
    <value>Renal</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | Contributing Cause of Death                  | Specify |
|-----------------|--|---------|
| 4b              | Infection – Viral                            |         |
| 4b              | Organ failure – other organ failure, specify | Renal   |

### 6.4 Modifying an Existing CDE

Key Points

- All instances of the module must be submitted
- For each repeating instance, submit the following
  - Module publicId and version
  - Unique “repeatSequenceNumber” attribute, less than or equal to the maximum number of repeats for the module
  - The “repeatSequenceNumber” need not be the same as the initial submission
  - CDEs contained within
- For the CDEs, submit the following
  - CDE publicId and version
  - Current or modified value as “value” element or “valueMeaningPublicId” attribute
- Do not use alternateMetadata attributes

Modification example

Change the specify for the second contributing cause of death from "Renal" to "Cardiac."

## AGNIS Data Submission Procedures

XML for modification (all CDEs must be sent regardless of whether they are being modified)

```
<FormRevision lockString="2000-05-30T14:33:11.347">
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Infection - Viral</value>
    </questionCollection>
  </moduleCollection>
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Organ failure—other organ failure, specify</value>
    </questionCollection>
    <questionCollection dataElementPublicId="1234504"
      dataElementVersion="1.0">
      <value>Cardiac</value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:35:31.426" status="ACCEPTED" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>1111111</value>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Infection - Viral</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Organ failure—other organ failure, specify</value>
  </questionCollection>
  <questionCollection dataElementPublicId="1234504"
    dataElementVersion="1.0">
    <value>Cardiac</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### Resulting FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | Contributing Cause of Death                  | Specify |
|-----------------|--|---------|
| 4b              | Infection – Viral                            |         |
| 4b              | Organ failure – other organ failure, specify | Cardiac |

### 6.5 Deleting an Existing CDE

Because all instances of a non-normalized repeating module must be submitted each time, deleting an existing CDE (or instance) translates to not submitting it.

## AGNIS Data Submission Procedures

### Key Points

- All instances of the module must be submitted
- For each repeating instance, submit the following
  - Module publicId and version
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
  - The "repeatSequenceNumber" need not be the same as the initial submission
  - CDEs contained within
- For the CDEs being retained, submit the following
  - CDE publicId and version
  - Current or modified value as "value" element or "valueMeaningPublicId" attribute
- Do not submit CDEs being deleted
- Do not use alternateMetadata attributes

### Deletion example

Delete other organ failure as a contributing cause of death.

### XML for deletion (only CDEs being kept are submitted)

```
<FormRevision lockString="2000-05-30T14:33:11.347">
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Infection - Viral</value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:36:11.624" status="ACCEPTED" ... >
<form instanceId="1111111" publicId="2481311" version="2.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>1111111</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1234503"
    dataElementVersion="1.0">
    <value>Infection - Viral</value>
  </questionCollection>
  <!-- ... .. -->
</FormRevision>
```

### Resulting FormsNet 2 database contents

For this example, the following answer would be recorded in FormsNet 2:

| Question Number | Contributing Cause of Death | Specify |
|-----------------|-----------------------------|---------|
| 4b              | Infection – Viral           |         |

### 6.6 Adding a New Value

Because all instances of a non-normalized repeating module must be submitted each time, adding a CDE (or instance) simply translates to submitting it.

#### Key Points

- All instances of the module must be submitted
- For each repeating instance, submit the following
  - Module publicId and version
  - Unique “repeatSequenceNumber” attribute, less than or equal to the maximum number of repeats for the module
  - The “repeatSequenceNumber” need not be the same as the initial submission
  - CDEs contained within
- For the CDEs, submit the following
  - CDE publicId and version
  - Current or modified value as “value” element or “valueMeaningPublicId” attribute
- Do not use alternateMetadata attributes

#### Addition example

Add a new contributing cause of death (all instances are submitted, even already existing ones).

## AGNIS Data Submission Procedures

### XML for addition (only new CDE is illustrated)

```
<FormRevision lockString="2000-05-30T14:33:11.347">
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cimbtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Infection - Viral</value>
    </questionCollection>
  </moduleCollection>
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Hemorrhage-pulmonary </value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:33:24.327" status="ACCEPTED" ... >
  <form instanceId="1111111" publicId="2481311" version="2.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cimbtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>1111111</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Infection - Viral</value>
    </questionCollection>
  </moduleCollection>
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
    <questionCollection dataElementPublicId="1234503"
      dataElementVersion="1.0">
      <value>Hemorrhage-pulmonary </value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

Resulting FormsNet 2 database contents

For this example, the following answer would be recorded in FormsNet 2:

| Question Number | Contributing Cause of Death | Specify |
|-----------------|-----------------------------|---------|
| 4b              | Infection – Viral           |         |
| 4b              | Hemorrhage – pulmonary      |         |

## 7. Normalized Repeating Modules

### 7.1 Description

Normalized repeating modules are used to group a list or table of questions. Normalization is a curation technique that is used to consolidate the list to minimize the resulting number of CDEs – rather than one CDE for each item, one CDE is used for each column, and the value of one CDE (the “mapping CDE”) is used to identify the row (or question number). Not all possible values of the mapping CDE must be submitted, but for each submitted value, there must be a corresponding “value CDE”.

### 7.2 Example Question

Form 2400-preTED questions 10-14

CIBMTR Center Number:

CIBMTR Recipient ID:

Cell source for this HSCT:

10. 1  yes 2  no BM

11. 1  yes 2  no PBSC

12. 1  yes 2  no UCB

13. 1  yes 2  no Other →

14. Specify cell source: \_\_\_\_\_

Allo HSCT donor gender:

15. 1  yes 2  no Male

16. 1  yes 2  no Female

17. Autologous HSCT?

1  yes

2  no

## AGNIS Data Submission Procedures

Resulting FormsNet 2 entry

For this example, the following answer would be recorded in FormsNet 2:

| mapping CDE | Placeholder<br>dataElementPublicId | CDE Long Name                                    |
|-------------|------------------------------------|--|
| ↙           | 1111111                            | Hematopoietic Stem Cell Graft Type Name          |
|             | 2222222                            | Hematopoietic Stem Cell Graft Type Therapy Ind-2 |
|             | 3333333                            | Hematopoietic Stem Cell Graft Other Type Specify |

In this example, the mapping CDE is dataElementPublicId "1111111" ("Hematopoietic Stem Cell Graft Type Name"). The one-to-one correspondence between the form question number and the corresponding mapping CDE value would be:

| Question # | Mapping CDE value<br>(1111111) | Value CDE value<br>(2222222) | Specify CDE value<br>(3333333) |
|------------|--------------------------------|------------------------------|--------------------------------|
| 10         | Marrow                         | YES or NO                    |                                |
| 11         | PBSC                           | YES or NO                    |                                |
| 12         | Cord blood                     | YES or NO                    |                                |
| 13         | Other                          | YES or NO                    | String Value                   |

### 7.3 Initial Submission

#### Key Points

- For each module (e.g. each mapping CDE value), submit the following
  - Module publicId and version
  - CDEs contained within
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
  - Each module is associated with a specific question number
- For the CDEs, submit the following
  - Mapping CDE publicId and version
  - Mapping CDE value or "valueMeaningPublicId" attribute
  - For each associated value CDE, submit the publicId and version, and the value
- Do not use alternateMetadata attributes

## AGNIS Data Submission Procedures

### XML for initial submission

```
<FormRevision>
<form instanceId="" publicId="2492857" version="5.0"
      xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cibmtr_center_number:99999" />
</form>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Marrow</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>PBSC</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>Yes</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="3">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Cord blood</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="4">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Other</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
  <questionCollection dataElementPublicId="3333333"
    dataElementVersion="1.0">
    <value/>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

Return XML from AGNIS (some repeating CDEs not illustrated)

```

<FormRevision lockString="2000-05-30T14:33:24.327" status="ACCEPTED" ... >
<form instanceId="7777777" publicId="2492857" version="5.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>7777777</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Marrow</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>PBSC</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>Yes</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>

```

FormsNet 2 database contents

For this example, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 10              | No               |
| 11              | Yes              |
| 12              | No               |
| 13              | No               |
| 14              |                  |

It is important to note that, when AGNIS submits the data to FormsNet 2, the values for each CDE are grouped by the repeatSequenceNumber. If you use different repeatSequenceNumbers for the CDEs associated with the same mapping CDE, the data may be entered into FormsNet 2 incorrectly.

## AGNIS Data Submission Procedures

### 7.4 Modifying an Existing Value

#### Key Points

- For each module (e.g. each mapping CDE value), submit the following
  - Module publicId and version
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
  - CDEs contained within
- For the CDEs, submit the following
  - Mapping CDE publicId and version
  - Mapping CDE value or "valueMeaningPublicId" attribute
  - For each associated value CDE, submit the publicId and version, and the current or updated value
  - The value of CDEs not submitted will be preserved
- Do not use alternateMetadata attributes

#### Modification example

Changing the product type from "PBSC" to "Marrow"

#### XML for modification (only CDEs being modified are illustrated)

```
<FormRevision lockString="2000-05-30T14:33:24.327">
  <form instanceId="7777777" publicId="2492857" version="5.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  </moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>7777777</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1111111"
      dataElementVersion="1.0">
      <value>Marrow</value>
    </questionCollection>
    <questionCollection dataElementPublicId="2222222"
      dataElementVersion="1.0">
      <value>Yes</value>
    </questionCollection>
  </moduleCollection>
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
    <questionCollection dataElementPublicId="1111111"
      dataElementVersion="1.0">
      <value>PBSC</value>
    </questionCollection>
    <questionCollection dataElementPublicId="2222222"
      dataElementVersion="1.0">
      <value>No</value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```

<FormRevision lockString="2000-05-30T14:35:34.347" status="ACCEPTED" ... >
<form instanceId="7777777" publicId="2492857" version="5.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>7777777</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Marrow</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>Yes</value>
  </questionCollection>
</moduleCollection>
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="2">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>PBSC</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>No</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>

```

### Resulting FormsNet 2 database contents

After this submission, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 10              | Yes              |
| 11              | No               |
| 12              | No               |
| 13              | No               |
| 14              |                  |

## AGNIS Data Submission Procedures

### 7.5 Deleting an Existing Value

#### Key Points

- For each module (e.g. each mapping CDE value), submit the following
  - Module publicId and version
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
  - CDEs contained within
- For the CDEs, submit the following
  - Mapping CDE publicId and version
  - Mapping CDE value or "valueMeaningPublicId" attribute
  - For each associated value CDE, submit the publicId and version, and the current or updated value
  - The value of CDEs not submitted will be preserved
  - For CDEs being deleted, the "delete" attribute is set to "true" and no value is sent
- Do not use alternateMetadata attributes

#### Deletion Example

Deleting the value for question 10

XML for deletion (only CDEs associated with the deletion are illustrated)

```
<FormRevision lockString="2000-05-30T14:33:24.327">
  <form instanceId="7777777" publicId="2492857" version="5.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>7777777</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1111111"
      dataElementVersion="1.0">
      <value>Marrow</value>
    </questionCollection>
    <questionCollection dataElementPublicId="2222222"
      dataElementVersion="1.0" delete="true">
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```
<FormRevision lockString="2000-05-30T14:34:52.532"
  status="ACCEPTED_WITH_ERROR" ... >
<form instanceId="7777777" publicId="2492857" version="5.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>7777777</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Marrow</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value></value>
    <errorCollection message="missing value, must specify either
      yes or no"/>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

(Note that an error occurs because this field requires answering either yes or no to each mapping CDE option.)

### Resulting FormsNet 2 database contents

After this submission, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 10              |                  |
| 11              | No               |
| 12              | No               |
| 13              | No               |
| 14              |                  |

## AGNIS Data Submission Procedures

### 7.6 Adding a New Value

#### Key Points

- For each module (e.g. each mapping CDE value), submit the following
  - Module publicId and version
  - Unique "repeatSequenceNumber" attribute, less than or equal to the maximum number of repeats for the module
  - CDEs contained within
- For the CDEs, submit the following
  - Mapping CDE publicId and version
  - Mapping CDE value or "valueMeaningPublicId" attribute
  - For each associated value CDE, submit the publicId and version, and the current or updated value
  - The value of CDEs not submitted will be preserved
- Do not use alternateMetadata attributes

#### Addition example

Adding a value for question 10

#### XML for addition (only CDEs being added are illustrated)

```
<FormRevision>
  <form instanceId="7777777" publicId="2492857" version="5.0"
    xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
    <originator uniqueName="cibmtr_center_number:99999" />
  </form>
  <moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="2527889"
      dataElementVersion="1.0">
      <value>7777777</value>
    </questionCollection>
    <!-- ... .. -->
  </moduleCollection>
  <!-- ... .. -->
  <moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
    <questionCollection dataElementPublicId="1111111"
      dataElementVersion="1.0">
      <value>Marrow</value>
    </questionCollection>
    <questionCollection dataElementPublicId="2222222"
      dataElementVersion="1.0">
      <value>Yes</value>
    </questionCollection>
  </moduleCollection>
  <!-- ... .. -->
</FormRevision>
```

## AGNIS Data Submission Procedures

### Return XML from AGNIS

```
<FormRevision status="ACCEPTED" ... >
<form instanceId="7777777" publicId="2492857" version="5.0"
  xmlns="gme://forms.AGNIS/2.0/net.agnis.forms">
  <originator uniqueName="cimbtr_center_number:99999" />
</form>
<moduleCollection publicId="123100" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="2527889"
    dataElementVersion="1.0">
    <value>7777777</value>
  </questionCollection>
  <!-- ... .. -->
</moduleCollection>
<!-- ... .. -->
<moduleCollection publicId="123123" version="1.0" repeatSequenceNumber="1">
  <questionCollection dataElementPublicId="1111111"
    dataElementVersion="1.0">
    <value>Marrow</value>
  </questionCollection>
  <questionCollection dataElementPublicId="2222222"
    dataElementVersion="1.0">
    <value>Yes</value>
  </questionCollection>
</moduleCollection>
<!-- ... .. -->
</FormRevision>
```

### Resulting FormsNet 2 database contents

After this submission, the following answers would be recorded in FormsNet 2:

| Question Number | FormsNet 2 Value |
|-----------------|------------------|
| 10              | Yes              |
| 11              | No               |
| 12              | No               |
| 13              | No               |
| 14              |                  |

### Known Issues

#### Karnofsky/Lansky

The mapping of the Karnofsky and Lansky scores (form 2400, questions 34 and 34, CDEs 2494701 and 2003853/2180158) can cause confusing error messages to be returned by FormsNet (because two CDEs map to a single FormsNet field). The error messages for this group of questions and CDEs should be considered collectively.

#### RepeatSequenceNumber behavior

The repeatSequenceNumber is used to group together related CDEs in a repeating or normalized module. Unexpected repeatSequenceNumbers are silently ignored (e.g. a repeatSequenceNumber not equal to 1 in a standard

## AGNIS Data Submission Procedures

module, or greater than the maximum number of repeats in a repeating modules).

### Extraneous XML content

Extraneous content in the input XML message is silently ignored. This content may include extra occurrences of a non-normalized repeating module and/or unexpected XML elements.

## FAQ

What happens when "instanceId" is left blank?

This signifies an initial submission. If the data already occurs in the FormsNet 2 database, a fatal error will be generated with a return status of "REJECTED".

What happens when "instanceId" differs from "sequenceNumber" (i.e. CDE 2527889)?

This will trigger a fatal error with a return status of "REJECTED".

How do I access Form Builder?

To access Form Builder, go to the following web site <http://formbuilder.nci.nih.gov> and login using the instructions for "guest users".

What is sent back when the data is accepted?

See XML examples

What does status attribute "REJECTED" (or "ACCEPTED\_WITH\_ERROR" or "ACCEPTED") mean?

|                        |  |
|------------------------|--|
| REJECTED               | The form could not be submitted to FormsNet.   |
| REJECTED_LOCK_MISMATCH | The submitted "lockString" did not match the stored value.   |
| ACCEPTED_WITH_ERROR    | The form has been provisionally accepted by FormsNet, some errors remain, and the entire form is not yet complete. |
| ACCEPTED               | The entire form is accepted without errors.  |

Does AGNIS support different versions of a form?

Yes, although the specific form versions supported by AGNIS may vary between instances of the AGNIS server. For example, the AGNIS v1.2 server may support versions 6 and 7 of form 2400, while the (future) AGNIS v2.0 server may support version 1 of form 2400.