



Hybrid Way to Develop Patient Narratives

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Team

- Team Size: 2 dedicated members
- 6 utilities maintained
- 2 utilities in active development
- Full-Service Workflow:
 1. Identify user needs
 2. Deliver MVP (Minimum Viable Product)
 3. Provide clear documentation
 4. Launch utilities on the server
 5. Offer ongoing user support
 6. Implement regular updates
- Utility purpose:
 1. Automating the creation of clinical documents and datasets
 2. Enhancing efficiency and accuracy in regulatory reporting
- Innovation Focus: Investing in Machine Learning algorithms to reduce manual workload and streamline complex processes



Loskutov Volodymyr, Python
team lead



Oleh Buno, Stat Programmer II

What is Patient Narratives?

A concise summary of a patient's experience during a clinical trial, focusing on serious or medically significant events.

Includes:

- Demographics & medical history
- Treatment details
- Description of adverse events
- Actions taken & outcomes
- Investigator's causality assessment

Part of the CSR (clinical study report) and Regulatory review

- Narratives are included in the Safety Section of the CSR
- Provide context for serious adverse events
- Help regulators understand individual patient cases
- Support safety evaluations and regulatory decisions

Patient ID Number	0001				
Narrative Type(s)	☐ Death ☒ SAE ☐ Discontinuation due to AE				
Demography	43 ^a / Female / White / Not Hispanic <u>Or</u> Latino /				
Treatment Assignment During RCP	☐ Treatment 1 ☒ Placebo				
Infusion Study Day	First Dose During RCP			Day 1	
	Last Dose			Day 1	
Preferred Term (Verbatim Term)	Study Day of Onset/ Period/ Number of Treatment 1 Doses	Seriousness Criteria	Status of Event/ Study Day of Resolution/ Period	Relationship Determined by Investigator	Action Taken with Study Treatment
Infusion related reaction (Infusion Reaction)	Day 1/ 1/	Deemed as Other medically important serious event	Recovered/Resolved/ Day 1/ RCP	Related	Drug Withdrawn
Renal failure (Renal Failure)	Day 20/ 1/	Deemed as Other medically important serious event	Not Recovered/Not Resolved	Not Related	Not Applicable

The patient weighed 90 kg and was 175 cm tall at baseline. The patient was assigned to Placebo .

Medical history (year of onset/year of resolution) included: diabetic nephropathy, diabetic neuropathy, diabetic retinopathy, eczema (unknown/ongoing); vitreous haemorrhage, vitreous haemorrhage (2020/before); autoimmune thyroiditis, hypertension, aplastic anaemia (2018/ongoing), thymectomy (2018/2018); depression (2014/ongoing); type 1 diabetes mellitus (1981/ongoing).

Vaccination history: bexsero (meningococcal vaccine b rhbp/nada/nhba omv) (2019, 2020), nimenrix (meningococcal vaccine a/c/y/w coni (tet tox)) (2020).

INFUSION RELATED REACTION (Infusion Reaction)

On the patient experienced a. The most recent dose of IV prior to event onset was administered on. Concomitant medications at the time of event onset included candesartan, dimetindene maleate, erythropoietin, furosemide, insulin aspart, lercanidipine, levothyroxine, metoprolol succinate, moxonidine, pantoprazole, urapidil and venlafaxine hydrochloride. dimetindene maleate (infusion reaction)

Patient Data → Narrative Creation → CSR Integration → Regulatory Review

Creating Narratives

COLLABORATION

The business process to develop patient narratives is a cross-functional process incorporating

- Medical Writers
- Statistical Programmers
- Biostatistics
- Narrative creators

The user activities to create patient narratives are as follows:

- Develop the patient narrative template for the study of interest (MW)
- Develop and validate SAS programs to generate datasets used for tag derivation (SP)
- Create patient narratives (Narrative creators)
- Review Created patient narratives (MW, SP, BioStats and Narrative creators)

Manually inserting tags

Updates are time consuming

Patient Narrative sections lack consistency

Data validation is fully manual

Additional team required for creation



User requirements

- Flexible template design
- Dataset variable validation
- Predefined library tags
- Custom tags for statistical programmers
- Support for repeated data in templates
- User-friendly interface
- Generate a narrative in under 30 seconds

The screenshot shows a web browser window with the address bar displaying '127.0.0.1:8000'. The page title is 'Patient-Narrative'. The interface includes four input sections, each with a 'Browse...' button and a text field showing 'No file selected':

- Select Tags List:
- Select ADaM datasets:
- Select Template:
- Select Output Path: (with a 'Select Folder' button inside the text field)

Below these sections is a 'RUN' button. In the bottom right corner, there is a small notification box with a close button (X) that reads: 'Welcome to Patient Narrative Please, upload your Tags List, ADaM datasets and Template'.

Graphical User Interface

- Tag list contains information about tag types
- All datasets must be provided in sas7bdat format
- Template is a docx document with 'tags' to replace

Patient-Narrative

Select Tags List:

Browse...

No file selected

Select ADaM datasets:

Browse...

No file selected

Select Template:

Browse...

No file selected

Select Output Path:

Select Folder

RUN

×

Welcome to Patient Narrative Please, upload your Tags List, ADaM datasets and Template

Template and tags

Biostats, Medical Writers, Statistical Programmers, and Narrative Creators must approve:

- Template structure
- Narrative text
- Library tags
- Tags provided by statistical programmers

Tag Conventions

- Library tags and Statistical Programmer tags are enclosed in:
`<< tag_name >>`
- Template system tags (e.g., <repeat>) are enclosed in:
`< tag_name >`

Patient ID Number	<<PATID>>				
Narrative Type(s)	<<AE_TYPE_DEATH>> Death <<AE_TYPE_SAE>> SAE <<AE_TYPE_DISCON>> Discontinuation due to AE				
Demography	<<DEM_AGE>> / <<DEM_GENDER>> / <<DEM_RACE>> <<DEM_ETHNIC>> / <<DEM_CNTRY>>				
Treatment Assignment	<<TRT_1>> Treatment 1 <<TRT_2>> Placebo				
Infusion Study Day	First Dose During RCP			<<DAY_P01>>	
	Last Dose			<<Last_StudyDay>><<Last_StudyDayR>>	
Preferred Term (Verbatim Term)	Study Day of Onset/ Period/ Number of Treatment1 Doses	Seriousness Criteria	Status of Event/ Study Day of Resolution/ Period	Relationship Determined by Investigator	Action Taken with Study Treatment
<<AEPT>><<AE TERM>>	<<AEP1DY>> <<AEP2DY>>/ <<AEPRD>>/ <<AENDOSE>>	<<AESERCIT>>	<<AESTAT>>	<<AEREL>>	<<AEACT>>

The patient weighed <<DEM_WGT_BL>> kg and was <<DEM_HGT_BL>> cm tall at baseline. The patient had <<DEM_MGEXCR>> prior to screening. The patient was assigned to <<TRT01_ASSIGN>> <<TRT01_LOADDOSE>>. <<TRT01_MAINDOSE>> <<TRT02_LOADDOSE>> <<TRT02_MAINDOSE>>

Medical history (year of onset/year of resolution) included: <<MH>>.

Vaccination history: <<VAC>>.

<repeat>

<<AEPT1>> <<AETERM1>>

On <<TERM_DAY>> the patient experienced a <<SER2>> <<VP_TERM2_HOSP>>. The most recent dose of <<TERM_TRT>> IV prior to event onset was administered on <<TERM_TRT_DY>>. Concomitant medications at the time of event onset included <<TERM_CM>>.

</repeat>

Standard Patient Narrative template

Patient ID Number		####-####			
Narrative Type(s)		☐ Death ☐ SAE ☐ Discontinuation due to AE ☐ Pregnancy			
Demography (Age/ Sex/ Weight/ Race/ Ethnicity/Country)		<<Age in years>> ^ / <<Female or Male>> <<kg>> / <<American Indian or Alaskan Native or Asian or Black or African American or Native Hawaiian or Other Pacific Islander or White or Not Reported or Unknown or Other>> / <<Hispanic or Not Hispanic or Latino>> // <<Country>>			
Treatment Assignment During RCT Period		☐ Treatment 1 ☐ Placebo			
Study Intervention Administration Dates		First Dose During RCT Period		Day 1	
		Last Dose		Day #	
Preferred Term (Verbatim Term)	Study Day of Onset/Period	Seriousness Criteria	Status of Event/ Study Day of Resolution	Relationship Determined by Investigator	Action Taken with Study Treatment
Preferred term (Verbatim term)	Day # <<If the participant was randomized to placebo and the event occurred in the OLE, include the following: (Day #)>> /<<RCT OR OLE>>	<<congenital anomaly/birth defect/ resulted in persistent or significant disability/incapacity/ resulted in death/ required inpatient hospitalization or prolongation of existing hospitalization/ life-threatening/ medically important event/ Not applicable>>	<<Not resolved or Resolved with sequelae or Resolved or Unknown>> / Day # <<If the participant was randomized to placebo and the event occurred in the OLE, include the following: (Day #)>>	Related or Not related	<<Dose Not Changed OR Drug Interrupted OR Drug Withdrawn OR Not Applicable>>

The patient weighed ## kg and was # cm tall on <<Day 1 or at Screening>>. <<For patients randomized to placebo>> The patient was randomized to placebo and received <<xx mL (# of PFS-SDs administered) for placebo>>

Medical history (year of onset/year of resolution) included: preferred term (YYYY/YYYY), preferred term (YYYY/ongoing), and preferred term (YYYY/YYYY)

Vaccination history: << list vaccine(s) and strain followed by YYYY, eg. Menactra meningococcal vaccine A/C/Y/W (2017)>> <<Include COVID vaccination history, if applicable>>

PREFERRED TERM (Verbatim term)

On Day # <<If the participant was randomized to placebo and the event occurs in the OLE, include the following: (Day #)>> the patient experienced preferred term (verbatim term). At the time of the event of preferred term, the patient was receiving <<placebo or treatment 1 xx mL (#

Patient ID Number	<<PATID>>				
Narrative Type(s)	<<AE_TYPE_DEATH>> Death <<AE_TYPE_SAE>> SAE <<AE_TYPE_DISCON>> Discontinuation due to AE				
Demography	<<DEM_AGE>> ^ / <<DEM_GENDER>> / <<DEM_RACE>> <<DEM_ETHNIC>> / <<DEM_CNTRY>>				
Treatment Assignment	<<TRT_1>> Treatment 1 <<TRT_2>> Placebo				
Infusion Study Day	First Dose During RCP			<<DAY_P01>>	
	Last Dose			<<Last_Study_Day>><<Last_Study_DayR>>	
Preferred Term (Verbatim Term)	Study Day of Onset/Period/ Number of Treatment1 Doses	Seriousness Criteria	Status of Event/ Study Day of Resolution/ Period	Relationship Determined by Investigator	Action Taken with Study Treatment
<<AEPT>><<AE TERM>>	<<AEP1DY>> <<AEP2DY>>/ <<AEP3DY>>/ <<AENDOSE>>	<<AESERCRIT>>	<<AESTAT>>	<<AEREL>>	<<AEACT>>

The patient weighed <<DEM_WGT_BL>> kg and was <<DEM_HGT_BL>> cm tall at baseline. The patient had <<DEM_MGEXCR>> prior to screening. The patient was assigned to <<TRT01_ASSIGN>> <<TRT01_LOADDOSE>>. <<TRT01_MAINDOSE>> <<TRT02_LOADDOSE>> <<TRT02_MAINTDOSE>>

Medical history (year of onset/year of resolution) included: <<MH>>.

Vaccination history: <<VAC>>.

<repeat>

<<AEPT1>> <<AETERM1>>

On <<TERM_DAY>> the patient experienced a <<SER2>> <<VP_TERM2_HOSP>>. The most recent dose of <<TERM_TRT>> IV prior to event onset was administered on <<TERM_TRT_DY>>. Concomitant medications at the time of event onset included <<TERM_CM>>.

</repeat>

Tag library

Different tag types

Tags are designed for different purposes:
Patient-level tags
Event-level tags
Embedded tags
Statistical Programming (SP) team tags

Dataset specifying

Different datasets can be specified for creating different tags.



Validation

All predefined tag logic is validated according to client security standards.

Various Examples

The Tag Library contains more than 100 different tags for various purposes.

Dataset Validation

Built-in algorithm to review required variables in the dataset for each tag.

Datasets Validation



Number of Datasets

- Verify that all required datasets are present



Variable Validation

- Review variable type, minimum/maximum values, length, missing values, and allowed values



Variables Present

- Ensure all required variables are included



Pre-run Validation

- Validate datasets before final versions are delivered

Repeated data in the Tables

- Some tags must be replaced with values (Patient-level tags)
- Event-level tags require adding new elements to the template
- New paragraphs or rows can be added to the template to fit the data.
- An additional check ensures that provided tags can be inserted into the template.

Treatment Assignment	<<TRT_1>> Treatment 1 <<TRT_2>> Placebo				
	First Dose During RCP			<<DAY_P01>>	
Infusion Study Day	Last Dose			<<Last_StudyDay>><<Last_StudyDayR>>	
Preferred Term (Verbatim Term)	Study Day of Onset/ Period/ Number of Treatment1 Doses	Seriousness Criteria	Status of Event/ Study Day of Resolution/ Period	Relationship Determined by Investigator	Action Taken with Study Treatment
<<AEPT>><<AE TERM>>	<<AEP1DY>> <<AEP2DY>>/ <<AEPRD>>/ <<AENDOSE>>	<<AESERCRIT>>	<<AESTAT>>	<<AEREL>>	<<AEACT>>

The patient weighed <<DEM_WGT_BL>> kg and was <<DEM_HGT_BL>> cm tall at baseline. The patient had <<DEM_MGEXCR>> prior to screening. The patient was assigned to <<TRT01_ASSIGN>> <<TRT01_LOADDOSE>> <<TRT01_MAINDOSE>>

Demography	45 * / Female / White / Not Hispanic <u>Ur</u> Latino /				
Treatment Assignment During RCP	☐ Treatment 1 ☒ Placebo				
Infusion Study Day	First Dose During RCP			Day 1	
	Last Dose			Day 1	
Preferred Term (Verbatim Term)	Study Day of Onset/ Period/ Number of Treatment 1 Doses	Seriousness Criteria	Status of Event/ Study Day of Resolution/ Period	Relationship Determined by Investigator	Action Taken with Study Treatment
Infusion related reaction (Infusion Reaction)	Day 1/ 1/	Deemed as Other medically important serious event	Recovered/Resolved/ Day 1/ RCP	Related	Drug Withdrawn
Renal failure (Renal Failure)	Day 20/ 1/	Deemed as Other medically important serious event	Not Recovered/Not Resolved	Not Related	Not Applicable

The patient weighed 90 kg and was 175 cm tall at baseline. The patient was assigned to Placebo .

Medical history (year of onset/year of resolution) included: diabetic nephropathy, diabetic neuropathy, diabetic retinopathy, eczema (unknown/ongoing); vitreous hemorrhage, vitreous

Repeated data in the Paragraphs

Repeated paragraphs are enclosed between `<repeat>` and `</repeat>` tags.

Multiple repeat blocks can be included in the template.

Repeat blocks may be removed if there is no data to insert.

Medical history (year of onset/year of resolution) included: <<MH>>.

Vaccination history: <<VAC>>.

`<repeat>`

`<<AEPT1>> <<AETERM1>>`

On `<<TERM_DAY>>` the patient experienced a `<<SER2>>` `<<VP_TERM2_HOSP>>`. The most recent dose of `<<TERM_TRT>>` IV prior to event onset was administered on `<<TERM_TRT_DY>>`. Concomitant medications at the time of event onset included `<<TERM_CM>>`.

`</repeat>`

(1981/ongoing).

Vaccination history: bexsero (meningococcal vaccine b rfbhp/nada/nhba omv) (2019, 2020), nimenrix (meningococcal vaccine a/c/y/w conj (tet tox)) (2020).

INFUSION RELATED REACTION (Infusion Reaction)

On the patient experienced a . The most recent dose of IV prior to event onset was administered on . Concomitant medications at the time of event onset included candesartan, dimetindene maleate, erythropoietin, furosemide, insulin aspart, lercanidipine, levothyroxine, metoprolol succinate, moxonidine, pantoprazole, urapidil and venlafaxine hydrochloride.

dimetindene maleate (infusion reaction)

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RENAL FAILURE (Renal Failure)

On the patient experienced a . The most recent dose of IV prior to event onset was administered on . Concomitant medications at the time of event onset included candesartan, erythropoietin, folic acid, furosemide, insulin aspart, lercanidipine, levothyroxine, metoprolol succinate, moxonidine, pantoprazole, sodium bicarbonate, urapidil and venlafaxine hydrochloride.

erythropoietin (aplastic anemia), sodium bicarbonate (renal failure)

Patient Narrative Tool now

PNT has been used to create narratives for 6 studies.

All future studies will use PNT to create narratives.

PNT requires 3 to 15 minutes to create narratives.

The largest study required creating more than 200 narratives; some were longer than 10 pages.

66% of dry runs were completed in less than 3 days.



Summary

- Easy-to-update template
- Utility may be run by any member of the team
- Dataset validation
- Tags may be derived by Python or SP team
- 'Repeat elements' inserting



Frame Workshop (Ukraine)

◆ Bank account (USD):

IBAN: UA383052990000026000011221644

Bank SWIFT Code: PBANUA2X

◆ Bank account (EUR):

IBAN: UA263052990000026002001214108

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