

# **Neurology: Traumatic Brain Injury (TBI) - Polytrauma Interdisciplinary Rehab Clinic Order Set**

## **Order Set: Conceptual Structure**

**Contract: VA118-16-D-1008, Task Order  
(TO): VA-118-16-F-1008-0007, CLIN0004AD**

**Department of Veterans Affairs (VA)**



**Knowledge Based Systems (KBS)  
Office of Informatics and Information Governance (OIIG)  
Clinical Decision Support (CDS)**

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# Neurology: Traumatic Brain Injury (TBI) - Polytrauma Interdisciplinary Rehab Clinic Order Set: Order Set: Conceptual Structure

by Knowledge Based Systems (KBS), Office of Informatics and Information Governance (OIIG), and Clinical Decision Support (CDS)

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## Table of Contents

Preface .....	v
Artifact Applicability .....	vi
Models .....	vii
1. External Data Definitions .....	1
2. Expression Definitions .....	2
3. Consults and Referrals .....	3
4. Patient and Caregiver Education .....	7
5. Tabular List .....	8
6. Behavior Symbols .....	12
A. References .....	14

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## List of Tables

1. Revision History .....	v
2. Clinical White Paper Contributors .....	v
3. Artifact Identifier .....	v
4. Applicability Foci, Description and Codes .....	vi
5. Model References .....	vii
5.1. Terminology Versions .....	8
5.2. Terminology References .....	8
6.1. Group Organizational Behavior .....	12
6.2. Group Selection Behavior .....	12
6.3. Required Behavior .....	12
6.4. Precheck Behavior .....	13
6.5. Cardinality Behavior .....	13
6.6. Item Flags .....	13
6.7. Read Only Behavior .....	13

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# Preface

**Table 1. Revision History**

Date	Life Cycle Event
June 20, 2018	Published
June 18, 2018	Published
May 16, 2018	Published
May 14, 2018	Reviewed
April 13, 2018	Reviewed
April 3, 2018	Created
April 3, 2018	Pre-published

**Table 2. Clinical White Paper Contributors**

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**Table 3. Artifact Identifier**

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	7efa8cba-ad31-5e77-ac09-0b3ecfd0a13b	B17B18B19

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# Artifact Applicability

**Table 4. Applicability Foci, Description and Codes**

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Primary Care	SNOMED CT	453231000124104  Primary care provider (occupation)	N/A	N/A
ClinicalFocus	Adult patients with suspected Traumatic Brain Injury			N/A	N/A
ClinicalVenue	Outpatient	SNOMED CT	33022008  Hospital-based outpatient department (environment)	N/A	N/A
PatientAgeGroup	Adult patients	SNOMED CT	133936004  Adult (person)	N/A	N/A
PatientGender	All			N/A	N/A
WorkflowTask	Request Neurology Consultation	SNOMED CT	664c7c9e-52dc-4788-805c-2c5506b846ee  Neurology consultation and report (procedure)	N/A	N/A

---

# Models

**Table 5. Model References**

Referenced Model	Description
urn:solor.io:anf-model:1.0	VA Analysis Normal Form Model

---

# Chapter 1. External Data Definitions

No externalData expression definitions and no trigger definitions are present.



---

# Chapter 2. Expression Definitions

No expression definitions are present.

---

# Chapter 3. Consults and Referrals

# Referral to Neurology: Evaluate for mild traumatic brain injury with current symptomatology (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 183521007 |Referral to neurology service (procedure)|
    unstructured[0]: with current symptomatology
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)] -
->(363702006 |Has focus (attribute))->[110030002 |Concussion injury of brain (disorder)]
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Polytrauma/Physical Medicine and Rehabilitation: Evaluate and manage rehabilitation needs for mild traumatic brain injury with current symptomatology (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 2477c532-f495-4b2b-bb71-1f337dfd3238 |Referral to
polytrauma physical medicine and rehabilitation service (procedure)|
    unstructured[0]: with current symptomatology
    purpose[0]: Postcoordinated Expression [14736009 |History and physical examination with
evaluation and management of patient (procedure)]- ->(363702006 |Has focus (attribute))-
->[52052004 |Rehabilitation therapy (regime/therapy)]- ->(42752001 |Due to (attribute))-
->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Physical Therapy: Evaluate and manage mobility issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 444831000124102 |Referral for physical therapy
(procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-
->(363702006 |Has focus (attribute))->[302046008 |Difficulty mobilizing (finding)]- -
->(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Occupational Therapy: Evaluate and manage activities of daily living issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 453581000124100 |Referral for occupational therapy
(procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-
->(363702006 |Has focus (attribute))->[129818000 |Activity of daily living alteration
(finding)]- ->(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain
(disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Speech–Language Pathology: Evaluate and manage speech, language, and cognitive issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 306173009 |Referral to speech and language therapy
    service (procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-
    -(363702006 |Has focus (attribute))->[267095009 |Speech problem (finding)]- -
    >(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Speech–Language Pathology: Evaluate and manage speech, language, and cognitive issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 306173009 |Referral to speech and language therapy
    service (procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-
    -(363702006 |Has focus (attribute))->[62305002 |Disorder of language (finding)]- -
    >(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Speech–Language Pathology: Evaluate and manage speech, language, and cognitive issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 306173009 |Referral to speech and language therapy
    service (procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]- -
    >(363702006 |Has focus (attribute))->[373930000 |Cognitive function finding (finding)]- -
    >(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Referral Mental Health: Evaluate and manage mental health issues related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
    topic: Precoordinated Expression 390866009 |Referral to mental health team (procedure)|
    purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-
    -(363702006 |Has focus (attribute))->[413307004 |Mental health problem (finding)]- -
    >(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];
    priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
```

# Consult Social Work/Case Management: Evaluate need for social services related to mild traumatic brain injury (routine)

```
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
```

topic: Precoordinated Expression 935b3-168e-4e9a-96d2-4135409ce715 |Social services consultation and report (procedure)|

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[410606002 |Social service procedure (procedure)]- ->(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Consult Integrative Health: Evaluate wellness needs related to mild traumatic brain injury (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression d14c1f9a-ce16-49f5-8c25-455a1c298af5 |Integrative health consultation and report (procedure)|

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[365275006 |General well-being finding (finding)]- ->(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Referral Rehabilitation Medicine Spasticity Clinic: Evaluate for mild traumatic brain injury with current symptomatology that includes spasticity (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 84ecb31f-345c-44f0-8be4-020a657ab6ea |Referral to rehabilitation medicine spasticity clinic (procedure)|

unstructured[0]: with current symptomatology

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[221360009 |Spasticity (finding)]- ->(42752001 |Due to (attribute))->[110030002 |Concussion injury of brain (disorder)];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Referral Polytrauma Interdisciplinary Rehabilitation Clinic: Evaluate for mild traumatic brain injury with current symptomatology (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression eecdd596-fe95-4ea3-a8c2-6686cfdac3cb |Referral to polytrauma interdisciplinary rehabilitation clinic (procedure)|

unstructured[0]: with current symptomatology

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[110030002 |Concussion injury of brain (disorder)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Consult Psychiatry (Psychiatry referral is suggested for patient being referred to the Polytrauma Interdisciplinary Rehabilitation Clinic): Evaluate for psychiatric comorbidity for patients with mild traumatic brain injury with current symptomatology (routine). (NOTE: Psychiatry referral is suggested for patient being referred to the Polytrauma Interdisciplinary Rehabilitation Clinic)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 108311000 |Psychiatric procedure, interview AND/OR consultation (procedure)|

unstructured[0]: with current symptomatology

unstructured[1]: (NOTE: Psychiatry referral is suggested for patient being referred to the Polytrauma Interdisciplinary Rehabilitation Clinic)

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)]-  
->(363702006 |Has focus (attribute))->[12066f68-b9e1-4061-9616-b0e89dcff60e |  
Psychiatric comorbid conditions (finding)]- ->(42752001 |Due to (attribute))->[110030002 |  
Concussion injury of brain (disorder);

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

---

# Chapter 4. Patient and Caregiver Education

# Provide a link to relevant educational materials that may be specific to the implementing institution.

---

# Chapter 5. Tabular List

## *Terminology Service Request (TSR) Mappings*

**Table 5.1. Terminology Versions**

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

**Table 5.2. Terminology References**

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	108311000  Psychiatric procedure, interview AND/OR consultation (procedure)	Precoordinated Expression	1
SNOMED CT	133936004  Adult (person)	Adult patients	1
SNOMED CT	183521007  Referral to neurology service (procedure)	Precoordinated Expression	1
SNOMED CT	2477c532-f495-4b2b-bb71-1f337dfd3238   Referral to polytrauma physical medicine and rehabilitation service (procedure)	Precoordinated Expression	1
SNOMED CT	306173009  Referral to speech and language therapy service (procedure)	Precoordinated Expression	3
SNOMED CT	33022008  Hospital-based outpatient department (environment)	Outpatient	1
SNOMED CT	385644000  Requested (qualifier value)	Precoordinated Expression	13
SNOMED CT	390866009  Referral to mental health team (procedure)	Precoordinated Expression	1
SNOMED CT	444831000124102   Referral for physical therapy (procedure)	Precoordinated Expression	1
SNOMED CT	453231000124104   Primary care provider (occupation)	Primary Care	1
SNOMED CT	453581000124100   Referral for occupational therapy (procedure)	Precoordinated Expression	1

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	50811001  Routine (qualifier value)	Precoordinated Expression	13
SNOMED CT	664c7c9e-52dc-4788-805c-2b55066816c9  Neurology consultation and report (procedure)	Request for Neurology Consultation	1
SNOMED CT	84ecb31f-345c-44f0-8be4-070a657ad16a  Referral to rehabilitation medicine spasticity clinic (procedure)	Precoordinated Expression	1
SNOMED CT	935b3-168e-4e9a-96d2-4133409c7115  Social services consultation and report (procedure)	Precoordinated Expression	1
SNOMED CT	[14736009  History and physical examination with evaluation and management of patient (procedure)]- ->(363702006  Has focus (attribute))->[52052004  Rehabilitation therapy (regime/therapy)]- ->(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder);	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)] - ->(363702006  Has focus (attribute))->[110030002  Concussion injury of brain (disorder)]	Postcoordinated Expression	2
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[12066f68-b9e1-4061-9616-b0e89dcff60e  Psychiatric comorbid conditions (finding)]- ->(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder);	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[129818000  Activity of daily living alteration (finding)]-	Postcoordinated Expression	1



System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
	->(42752001  Due to (attribute))->[110030002   Concussion injury of brain (disorder];		
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[221360009  Spasticity (finding)]- ->(42752001  Due to (attribute))->[110030002   Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[267095009   Speech problem (finding)]- ->(42752001  Due to (attribute))->[110030002   Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[302046008  Difficulty mobilizing (finding)]- ->(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[365275006   General well-being finding (finding)]- ->(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[373930000   Cognitive function finding (finding)]- ->(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[410606002  Social service procedure (procedure)]- -(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[413307004  Mental health problem (finding)]- -(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	[386053000  Evaluation procedure (procedure)]- ->(363702006  Has focus (attribute))->[62305002  Disorder of language (finding)]- -(42752001  Due to (attribute))->[110030002  Concussion injury of brain (disorder];	Postcoordinated Expression	1
SNOMED CT	d14c1f9a-ce16-49f5-8c25-455a1c298af5  Integrative health consultation and report (procedure)	Precoordinated Expression	1
SNOMED CT	eebdd596-fe95-4ea3-a8c2-6686cfdae3cb  Referral to polytrauma interdisciplinary rehabilitation clinic (procedure)	Precoordinated Expression	1

<sup>a</sup>If a code is used multiple times in the KNART, only the display text of the first instance is shown.

<sup>b</sup>Count of the number of times the given code system and code pair is used in the KNART.

---

# Chapter 6. Behavior Symbols

**Table 6.1. Group Organizational Behavior**

Symbol	Name	Definition
#	Sentence Group	A group of related alternative actions is a sentence group if the item referenced by the action is the same in all the actions, and each action simply constitutes a different variation on how to specify the details for that item. For example, two actions that could be in a SentenceGroup are "aspirin, 500 mg, 2 times per day" and "aspirin, 300 mg, 3 times per day". In both cases, aspirin is the item referenced by the action, and the two actions represent two different options for how aspirin might be ordered for the patient. Note that a SentenceGroup would almost always have an associated selection behavior of "AtMostOne", unless it's a required action, in which case, it would be "ExactlyOne".
#	Logical Group	A group with this behavior logically groups its sub-elements, and may be shown as a visual group to the end user, but it is not required to do so.
➤	Visual Group	Any group marked with this behavior should be displayed as a visual group to the end user.

**Table 6.2. Group Selection Behavior**

Symbol	Name	Definition
#	Any	Any number of the items in the group may be chosen, from zero to all.
#	All	All the items in the group must be selected as a single unit.
#	AllOrNone	All the items in the group are meant to be chosen as a single unit: either all must be selected by the end user, or none may be selected.
#	ExactlyOne	The end user must choose one and only one of the selectable items in the group. The user may not choose none of the items in the group.
⬠	AtMostOne	The end user may choose zero or at most one of the items in the group.
✱	OneOrMore	The end user must choose a minimum of one, and as many additional as desired.

**Table 6.3. Required Behavior**

Symbol	Name	Definition
◆	Must	An action with this behavior must be included in the actions processed by the end user; the end user may not choose not to include this action.
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.

Symbol	Name	Definition
➤	MustUnlessDocumented	An action with this behavior must be included in the set of actions processed by the end user, unless the end user provides documentation as to why the action was not included.

**Table 6.4. Precheck Behavior**

Symbol	Name	Definition
▲	Yes	An action with this behavior is one of the most frequent actions that is, or should be, included by an end user, for the particular context in which the action occurs. The system displaying the action to the end user should consider "pre-checking" such an action as a convenience for the user.
#	No	An action with this behavior is one of the less frequent actions included by the end user, for the particular context in which the action occurs. The system displaying the actions to the end user would typically not "pre-check" such an action.

**Table 6.5. Cardinality Behavior**

Symbol	Name	Definition
◆	Single	An action with this behavior may only be completed once.
❖	Multiple	An action with this behavior may be repeated multiple times.

**Table 6.6. Item Flags**

Symbol	Name	Definition
☞	fillIn	This item, in a list entry, allows the user to enter a fill in value that is not present in the set of presented choices.

**Table 6.7. Read Only Behavior**

Symbol	Name	Definition
#	true	For a particular action or action group, specifies whether the elements are read only.

---

# Appendix A. References

This appendix contains the list of related resources and supporting documents used in creating this KNART.

## List of References

### Related Resources

[CCWP] *Neurology: Traumatic Brain Injury Screening Clinical Content White Paper*

[CSD] *Neurology: Traumatic Brain Injury (TBI) - Polytrauma Interdisciplinary Rehab Clinic Order Set Conceptual Structure Document*

[KVRpt] *Neurology: Traumatic Brain Injury (TBI) - Polytrauma Interdisciplinary Rehab Clinic Order Set KNART Validation Report*

### Supporting Evidence

[AMEDDC&S 2017] *Mild Traumatic Brain Injury Rehabilitation Toolkit. Army Medical Department Center and School (AMEDDC&S), U.S. Army Health Readiness Center of Excellence ( HRCoE ) website. Accessed August 28, 2017 (link [<https://doi.org/10.1111/j.1745-7599.2011.00658.x>])*

[VA/DoD] *Management of Concussion-mild Traumatic Brain Injury (mTBI), Version 2.0 – 2016. VA/DoD Clinical Practice Guidelines website. Management of Concussion/mTBI Working Group. Published February 2016 (link [<https://www.healthquality.va.gov/guidelines/Rehab/mtbi/mTBICPGFullCPG50821816.pdf>])*