

# NEMSIS V3 Suggested List – dConfiguration.04 - Medications Permitted by the State

---

## **Date**

November 10, 2011 (FINAL)

December 5, 2011 (Updated FINAL)

January 29, 2012 (Updated Medication List Names – FINAL)

## **Authors**

Karen E. Jacobson – NEMSIS Director

Keith R. Davis – NEMSIS Data Architect

N. Clay Mann – NEMSIS P.I.

## **dConfiguration.04 - Medications Permitted by the State**

The code list associated with dConfiguration.04 (Medications Permitted by the State) is represented by a selected group of values found in RxNorm. RxNorm is a standardized nomenclature for clinical drugs and drug delivery devices. The process for gaining access to the RxNorm code values is provided at the end of this document.

## **RxNorm Code Usage Recommendations**

RxNorm provides various codes for medications based on the Term Type (TTY). These include but are not limited to: Ingredient (IN), Precise Ingredient (PIN), Brand Name (BN), Semantic Clinical Drug Form (SCDF), Semantic Clinical Drug Component (SCDC), codes indicating the medication strength or concentration or mixtures (Synonym of Another TTY = SY), and many term type dosing options.

The NEMSIS TAC recommends that medications administered by EMS professionals in the pre-hospital setting be recorded and submitted using the Ingredient (IN) code for the large majority of medication names. This is frequently the generic name of the medication. The NEMSIS Version 3 dataset has elements that allow for the separate documentation of the medication route, dosage, and dosage unit using the following three elements:

1. eMedications.04 - Medication Administered Route
2. eMedications.05 - Medication Dosage
3. eMedications.06 - Medication Dosage Units

To review the RxNorm overview, including an introduction, purpose and examples of RxNorm, and its usage please visit <http://www.nlm.nih.gov/research/umls/rxnorm/overview.html>. To see the explanation of the term types see page six of this document.

## Suggested List for dConfiguration.04 - Medications Permitted by the State

The suggested medication description and RxNorm (RxCUI) Code list is designed for the pre-hospital setting. The medication list was developed based upon collaboration between the NEMSIS TAC and EMS Medical Directors at the agency and state level.

Please note the medications listed in this document are based on the Term Type (TTY) and its corresponding RxNorm description (unless otherwise indicated *via italics*). There are 114 medications and five (5) parenteral solutions included in the lists below.

The U.S. National Library of Medicine updates the medications contained in RxNorm and corresponding medication descriptions available to the NEMSIS TAC through UMLS twice a year. Updates were made the beginning of January 2012. This update had an impact on a number of medications descriptions (e.g. Sodium Chloride 0.45% Injectable Solution is now NaCl 0.0769 MEQ/ML Injectable Solution). How EMS software companies choose to display these codes to their clientele is up to them. The NEMSIS TAC will not update the list of suggested pre-hospital medications with every UMLS update.

The suggested list below now has a column called “Explanation of Inclusion” indicating why a medication was included, clarification of the medication (e.g. dextrose 250 MG/ML Injectable Solution = Clarification: D25), or another RxNorm name (AKA).

The NEMSIS TAC collaborators recommend the use of “Dextrose” for parenteral administration and “Glucose” for oral administration of sugar based medications/solutions.

## RxNorm Medications for EMS in the pre-hospital environment

	Medication	TTY Code	Explanation of Inclusion (Reason for inclusion, Clarification, or Other RxNorm Name [AKA])
1	Abciximab	IN	
2	Acetaminophen	IN	
3	Activated Charcoal	IN	
4	Adenosine	IN	
5	Albumin Human, USP	IN	To cover one aspect of blood products.
6	Albuterol	IN	
7	Alteplase	IN	
8	Amiodarone	IN	
9	Aspirin	IN	
10	Atropine	IN	
11	Benzocaine	IN	

	Medication	TTY Code	Explanation of Inclusion
12	Bumetanide	IN	
13	Butorphanol	IN	
14	Calcium Chloride	IN	
15	Calcium Gluconate	IN	
16	Captopril	IN	
17	Chitosan	IN	Topical Hemostatic Agent - Chitosan based.
18	Clonidine	IN	
19	Clopidogrel	IN	
20	Dexamethasone	IN	
21	dextrose 10 % Injectable Solution	SY	Clarification: D10
22	dextrose 250 MG/ML Injectable Solution	SY	Clarification: D25
23	dextrose 50 % Injectable Solution	SY	Clarification: D50
24	Diazepam	IN	
25	Diltiazem	IN	
26	Diphenhydramine	IN	
27	Dobutamine	IN	
28	Dopamine	IN	
29	Droperidol	IN	
30	Enalapril	IN	
31	Epinephrine 0.1mg/ml	SCDC	Clarification: Epi 1:10,000
32	Epinephrine 1 mg/ml	SCDC	Clarification: Epi 1:1,000
33	Epinephrine, Racemic Hydrochloride	PIN	
34	Eptifibatide	IN	
35	Esmolol	IN	
36	Etomidate	IN	
37	Factor IX	IN	
38	Factor VIIa	IN	
39	Famotidine	IN	
40	Fentanyl	IN	
41	Flumazenil	IN	
42	Fosphenytoin	IN	
43	Furosemide	IN	
44	Glucagon	IN	
45	Glucose	IN	Sugar based solution given in any oral form or by mouth.
46	Haloperidol	IN	
47	Heparin	IN	
48	Hetastarch	IN	
49	Hydromorphone	IN	

	Medication	TTY Code	Explanation of Inclusion
50	Hydroxocobalamin	IN	
51	Hydroxyzine	IN	
52	Ibuprofen	IN	
53	Insulin	IN	
54	Ipecac	IN	
55	Ipratropium	IN	
56	Isoproterenol	IN	
57	Ketamine	IN	
58	Ketorolac	IN	
59	Labetalol	IN	
60	Levalbuterol	IN	
61	Lidocaine	IN	To be used for parenteral administration.
62	Lidocaine <i>Topical</i>	SCDF	To specify topical use vs parenteral.
63	Lorazepam	IN	
64	Magnesium Sulfate	IN	
65	Mannitol	IN	
66	Meperidine	IN	
67	Metaclopramide	IN	
68	Methylprednisolone	IN	
69	Metoprolol	IN	
70	Midazolam	IN	
71	Morphine	IN	
72	Nalbuphine	IN	
73	Naloxone	IN	
74	Nicardipine	IN	
75	Nitroglycerin	IN	
76	Nitroprusside	IN	
77	Nitrous Oxide	IN	
78	Norepinephrine	IN	
79	Normal Saline	IN	To be used for irrigation: burns, eyes, etc.
80	Ondansetron	IN	
81	Oxygen	IN	
82	Oxymetazoline	IN	
83	Oxytocin	IN	
84	Pancuronium	IN	
85	Phenobarbital	IN	
86	Phenylephrine	IN	
87	Phenytoin	IN	
88	Plasma Protein Fraction	IN	
89	Potassium Chloride	IN	

	Medication	TTY Code	Explanation of Inclusion
90	Potassium Iodide	IN	
91	Pralidoxime	IN	
92	Prednisone	IN	
93	Procainamide	IN	
94	Prochlorperazine	IN	
95	Promethazine	IN	
96	Proparacaine hydrochloride	IN	
97	Propofol	IN	
98	Propranolol	IN	
99	Quinidine	IN	
100	Ranitidine	IN	
101	Reteplase	IN	
102	Rocuronium	IN	
103	Sodium Bicarbonate	IN	
104	Sterile Water	PIN	Included for irrigation.
105	Succinylcholine	IN	
106	Tenecteplase	IN	
107	Terbutaline	IN	
108	Tetracaine	IN	
109	Thiamine	IN	
110	Tirofiban	IN	
111	Vasopressin	IN	
112	Vecuronium	IN	
113	Verapamil	IN	
114	Ziprasidone	IN	

## RxNorm Parenteral Solutions for EMS in the pre-hospital environment

	Parenteral Solutions Name	TTY Code	Explanation of Inclusion (Reason for inclusion, Clarification, or Other RxNorm Name [AKA])
1	Lactated Ringer's Solution	IN	For use for burns, dehydration, fluid replacement
2	NaCl 0.0769 MEQ/ML Injectable Solution	SY	Clarification: NS 0.45%; AKA: Sodium Chloride 0.45% Injectable Solution
3	NaCl 0.154 MEQ/ML Injectable Solution	SY	Clarification: NS 0.9%; AKA: Sodium Chloride 0.9% Injectable Solution
4	NaCl 0.513 MEQ/ML Injectable Solution	SY	Clarification: 1) NS 0.3%; 2) Included for changing resuscitation guidelines and research. AKA: Sodium Chloride 3% Injectable Solution
5	dextrose 50 % Injectable Solution	SY	Clarification: D5W

## Licensed “Suggested Lists”

The U.S. National Library of Medicine provides access to the RxNorm code values through the Unified Medical Language System (UMLS). An applicant must accept the terms of the UMLS Metathesaurus License and create a UMLS Terminology Services (UTS) account for access to UMLS datasets and terminology browsers.

More information can be found at: <http://www.nlm.nih.gov/databases/umls.html>. RxNorm codes may also be accessed through <http://rxnav.nlm.nih.gov/>

The NEMSIS TAC may only distribute suggested lists with specific value codes from the UMLS system to entities licensed through the UMLS system. Thus, each software developer must seek licensing and provide proof of licensing before gaining access to all of the pre-defined suggested lists available through the NEMSIS TAC.

## Access to “Suggested List” Archive Files

Access to suggested code lists will be provided on a special section of the NEMSIS TAC’s SharePoint site. A licensed user will be able to login to the SharePoint site and download the appropriate archive file (RxNorm, ICD-10, etc).

The UMLS license verification service helps determine if the remote user has a license to use and/or distribute certain code sets. If the user does not have a current license, access to the “suggested lists” archive will be denied.

The “suggested list” files will be zipped archives that are automatically created each time one of the licensed code databases is updated in the NEMSIS master data repository.

## Viewing and Using the “Suggested List” Archive Files

The downloaded suggested list appears in a pipe-delimited text format. The proper code to utilize for medications is the “RxNormCode”. Please note that the RxCUI, RxAUI and TTY fields are included for reference purposes. These codes allow one to locate the exact code and description in the UMLS Metathesaurus that was selected for inclusion in the suggested list.

The process for classifying the appropriate medication description was determined with the assistance of a U.S. National Library of Medicine (NLM) UMLS RxNorm Physician Medical Officer. Per their direction the NEMSIS TAC used three categories (or attribute names) to identify the medication description provided in the suggested list: 1) Medication Concept Unique Identifier (RxCUI), 2) Medication Term Type (TTY), and 3) String (STR) for which the shortest name for the medication is selected.

According to the NLM the RxCUI code should always be used as the primary identifier as it is the concept unique identifier for the medication. Each RxCUI code may have multiple descriptions of the medication judged to have the same meaning.

As previously indicated, the NEMSIS TAC collaborators identified that the medication term type (TTY) should be limited to Ingredient (IN) where possible. The selected TTY decreases the number of descriptions for the RxCUI medication.

The “shortest name” is being used for the medication description as typically it is the preferred name and the “friendliest name” most readily associated with the medication. The one exception to this in the medication suggested list is Kalium Jodatum, which is the same as Potassium Iodide.

The list provides additional fields indicating when a record became active in the NEMSIS TAC’s master data repository as well as the version of the source used for a particular code and description in a suggested list.

## Conclusions

By maintaining a single source of these data and making it available internally as well as to our customers, we improve our data quality and consistency. This will reduce reporting errors in data submissions provided it is used as part of our own and our customer’s data management best practices.

## RxNorm Medication Term Types (TTY)

From the National Library of Medicine website: <http://www.nlm.nih.gov/research/umls/rxnorm/overview.html>.

TTY	Name	Definition	Example(s)
IN	Ingredient	A compound or moiety that gives the drug its distinctive clinical properties. The preferred name is usually the USAN name.	Fluoxetine, Insulin, Isophane, Human Gentamicin Sulfate (USP)
PIN	Precise Ingredient	A specified form of the ingredient that may or may not be clinically active. Most precise ingredients are salt or isomer forms.	Fluoxetine Hydrochloride
MIN	Multiple Ingredients	Two or more ingredients created from SCDF. In rare cases when IN/PIN or PIN/PIN combinations of the same base ingredient exist, created from SCD.	Fluoxetine / Olanzapine
DF	Dose Form	A complete list of Dose Forms can be found in <a href="#">Appendix 2</a> of the RxNorm Documentation.	Topical Solution, Oral Tablet
SCDC	Semantic Clinical Drug Component	Ingredient plus strength—see section on Rules and Conventions, below, for units of measurement and for rules pertaining to the calculation of strengths.	Fluoxetine 4 MG/ML
SCDF	Semantic Clinical Drug Form	Ingredient plus dose form.	Fluoxetine Oral Solution
SCD	Semantic Clinical Drug	Ingredient plus strength and dose form.	Fluoxetine 4 MG/ML Oral Solution
BN	Brand Name	A proprietary name for a family of products containing a specific active ingredient.	Prozac
SBDC	Semantic Branded Drug Component	Branded ingredient plus strength.	Fluoxetine 4 MG/ML [Prozac]
SBDF	Semantic Branded Drug Form	Branded ingredient plus dose form.	Fluoxetine Oral Solution [Prozac]
SBD	Semantic Branded Drug	Ingredient, strength, and dose form plus brand name.	Fluoxetine 4 MG/ML Oral Solution [Prozac]
SY	Synonym of another TTY	Given for clarity.	Prozac 4 MG/ML Oral Solution
TMSY	Tall Man Lettering synonym of another TTY	Given to distinguish between commonly confused drugs.	FLUoxetine 10 MG Oral Capsule [PROzac]
BPCCK	Brand Name Pack	Branded Drug Delivery Device.	{12 (Ethinyl Estradiol 0.035 MG / Norethindrone 0.5 MG Oral Tablet) / 9 (Ethinyl Estradiol 0.035 MG / Norethindrone 1 MG Oral Tablet) / 7 (Inert Ingredients 1 MG Oral Tablet) } Pack [Leena 28 Day]
GPCK	Generic Pack	Generic Drug Delivery Device.	{11 (varenicline 0.5 MG Oral Tablet) / 42 (varenicline 1 MG Oral Tablet) } Pack