NEMSIS V3 Suggested List – eMedications.03 - Medication Given

Date

September 8, 2011 (Initial release)
January 29, 2012 (Updated Medication List Names – FINAL)
March 29, 2013 (Updated one medication: Hydrocortisone, and EMS Use options)
April 17, 2013 (Updated one medication: Hydralazine)
June 6, 2013 (Updated table with explanation)
January 10, 2014 (Added Dextrose 5% Infusion Solution back in the White Paper)

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eMedications.03 - Medication Given

The code list associated with eMedications.03 (Medication Given) 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 ten (10) of this document.

Suggested List for eMedications.03 Medication Given

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. There are 116 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 UML S update.

The suggested list below 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), another RxNorm name (AKA), or an EMS Use naming option.

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

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 website. A licensed user will be able to login to the 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 UML S 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 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 Suggested List for eMedications.03 Medication, Medications for EMS in the pre-hospital environment

The Medication Given by EMS should use the RxNorm Description where possible. This is based on the recommendation provided above with regard to use of the Ingredient Name (IN) as the primary and preferred medication description. Brand Name (BN) use is recommended only when the Ingredient (IN), Precise Ingredient (PIN), Semantic Clinical Drug Form (SCDF), or Semantic Clinical Drug Component (SCDC) medication name descriptions do not meet the needs of the EMS community in the pre-hospital environment.

The June 6, 2013 update provides the columns to the right in a light red background to identify examples EMS friendly vocabulary and options for training purposes. The "Example EMS Descriptor" column includes terminology that may be used by the EMS community in place of the official health care data standard description. Please note neither the official code nor description has been changed. The backend code and description remain that of the health care data standard for the element. This is true at the NEMSIS TAC and for EMS software development companies and their products. The EMS terminology is derived from the health care data standard and has not changed the meaning of the description. Where possible a data standard synonym is used. This information may be used for EMS training purposes or implemented in the EMS software used by EMS.

RxNorm Suggested List for eMedications.03 Medication, Medications for EMS in the pre-hospital environment

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) Explanation of Inclusion or Clarification Clar: A clarification for code inclusion and/or intended use.	NEMSIS Version 3 - Medication Given (by EMS) Example EMS Descriptor
1	Abciximab	IN		
2	Acetaminophen	IN		
3	Activated Charcoal	IN		
4	Adenosine	IN		
5	Albumin Human, USP	IN	Clar: 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		
12	Bumetanide	IN		
13	Butorphanol	IN		
14	Calcium Chloride	IN		
15	Calcium Gluconate	IN		
16	Captopril	IN		
17	Chitosan	IN	Clar: Topical Hemostatic Agent - Chitosan based.	
18	Clonidine	IN		
19	Clopidogrel	IN		
20	Dexamethasone	IN		
21	dextrose 10 % Injectable Solution	SY	Clar: D10	D10
22	dextrose 250 MG/ML Injectable Solution	SY	Clar: D25	D25
23	dextrose 50 % Injectable Solution	SY	Clar: D50	D50
24	Diazepam	IN		
25	Diltiazem	IN		

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) Explanation of Inclusion or Clarification Clar: A clarification for code inclusion and/or intended use.	NEMSIS Version 3 - Medication Given (by EMS) Example EMS Descriptor
26	Diphenhydramine	IN		
27	Dobutamine	IN		
28	Dopamine	IN		
29	Droperidol	IN		
30	Enalapril	IN		
31	Epinephrine 0.1mg/ml	SCDC	Clar: Epi 1:10,000	Epi 1:10,000
32	Epinephrine 1 mg/ml	SCDC	Clar: Epi 1:1,000	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	Clar: Sugar based solution given in any oral form or by mouth.	
46	Haloperidol	IN		
47	Heparin	IN		
48	Hetastarch	IN		
49	Hydralazine	IN		
50	Hydrocortisone	IN		
51	Hydromorphone	IN		

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) Explanation of Inclusion or Clarification Clar: A clarification for code inclusion and/or intended use.	NEMSIS Version 3 - Medication Given (by EMS) Example EMS Descriptor
52	Hydroxocobalamin	IN		
53	Hydroxyzine	IN		
54	Ibuprofen	IN		
55	Insulin	IN		
56	Ipecac	IN		
57	Ipratropium	IN		
58	Isoproterenol	IN		
59	Ketamine	IN		
60	Ketorolac	IN		
61	Labetalol	IN		
62	Levalbuterol	IN		
63	Lidocaine	IN	Clar: To be used for parenteral administration.	
64	Lidocaine *Topical*	SCDF	Clar: To specify topical use vs parenteral.	
65	Lorazepam	IN		
66	Magnesium Sulfate	IN		
67	Mannitol	IN		
68	Meperidine	IN		
69	Metaclopramide	IN		
70	Methylprednisolone	IN		
71	Metoprolol	IN		
72	Midazolam	IN		
73	Morphine	IN		
74	Nalbuphine	IN		
75	Naloxone	IN		
76	Nicardipine	IN		
77	Nitroglycerin	IN		
78	Nitroprusside	IN		

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) **Explanation of Inclusion or Clarification** Clar: A clarification for code inclusion and/or intended use.	NEMSIS Version 3 - Medication Given (by EMS) **Example EMS Descriptor**
79	Nitrous Oxide	IN		
80	Norepinephrine	IN		
81	Normal Saline	IN	Clar: To be used for irrigation: burns, eyes, etc.	
82	Ondansetron	IN		
83	Oxygen	IN		
84	Oxymetazoline	IN		
85	Oxytocin	IN		
86	Pancuronium	IN		
87	Phenobarbital	IN		
88	Phenylephrine	IN		
89	Phenytoin	IN		
90	Plasma Protein Fraction	IN		
91	Potassium Chloride	IN		
92	Potassium Iodide	IN		
93	Pralidoxime	IN		
94	Prednisone	IN		
95	Procainamide	IN		
96	Prochlorperazine	IN		
97	Promethazine	IN		
98	Proparacaine hydrochloride	IN		
99	Propofol	IN		
100	Propranolol	IN		
101	Quinidine	IN		
102	Ranitidine	IN		
103	Reteplase	IN		
104	Rocuronium	IN		
105	Sodium Bicarbonate	IN		

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) Explanation of Inclusion or Clarification Clar: A clarification for code inclusion and/or intended use.	NEMSIS Version 3 - Medication Given (by EMS) Example EMS Descriptor
106	Sterile Water	PIN	Clar: Included for irrigation.	
107	Succinylcholine	IN		
108	Tenecteplase	IN		
109	Terbutaline	IN		
110	Tetracaine	IN		
111	Thiamine	IN		
112	Tirofiban	IN		
113	Vasopressin	IN		
114	Vecuronium	IN		
115	Verapamil	IN		
116	Ziprasidone	IN		

RxNorm Parenteral Solutions for EMS in the pre-hospital environment

	RxNorm Description	TTY Code	NEMSIS Version 3 - Medication Given (by EMS) Explanation of Inclusion or Clarification Clar: A clarification for code inclusion and/or intended use. SYN: The RxNorm synonym for the description.	NEMSIS Version 3 - Medication Given (by EMS) Example EMS Descriptor
1	Lactated Ringer's Solution	IN	Clar: For use for burns, dehydration, fluid replacement	
2	NaCl 0.0769 MEQ/ML Injectable Solution	SY	Clar: NS 0.45%; AKA: Sodium Chloride 0.45% Injectable Solution	NS 0.45% Infusion Solution (1); 1/2 Normal Saline Infusion Solution (2)
3	NaCl 0.154 MEQ/ML Injectable Solution	SY	Clar: NS 0.9%; AKA: Sodium Chloride 0.9% Injectable Solution	NS 0.9% Infusion Solution
4	NaCl 0.513 MEQ/ML Injectable Solution	SY	Clar: NS 0.3% (1); Included for changing resuscitation guidelines and research (2). AKA: Sodium Chloride 3% Injectable Solution	NaCl 3% Injectable Solution
5	dextrose 5 % Injectable Solution	SY	Clar: D5W	Dextrose 5% Infusion Solution

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 Appendix 2 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]
BPCK	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