

MIMIC-II v3.0 Guidelines

By:

Dr Roger Mark

The Laboratory for Computational Physiology

Massachusetts Institute of Technology, US

Table of Contents

| | | |
|----------|--|----------|
| 1 | Introduction | 5 |
| 1.1 | What’s new in MIMIC-II v3.0? | 6 |
| 1.2 | How to contribute | 7 |
| 1.2.1 | Raising an issue | 7 |
| 1.2.2 | Updating the guidelines | 7 |
| 1.2.3 | Editing the documentation | 8 |
| 2 | Accessing the clinical database | 9 |
| 2.1 | Installing the MIMIC-II Database | 10 |

| | | |
|----------|------------------------------------|-----------|
| 3 | Overview of the database | 12 |
| 3.1 | ADDITIVES table | 12 |
| 3.2 | ADMISSIONS table | 14 |
| 3.3 | CENSUSEVENTS table | 16 |
| 3.4 | CHARTEVENTS table | 17 |
| 3.5 | CPTEVENTS table | 19 |
| 3.6 | D_CAREGIVERS table | 19 |
| 3.7 | D_CAREUNITS table | 20 |
| 3.8 | D_ITEMS table | 21 |
| 3.9 | D_PATIENTS table | 24 |
| 3.10 | D_UNITS table | 26 |
| 3.11 | DEMOGRAPHIC_DETAIL table | 26 |
| 3.12 | DRGEVENTS table | 28 |
| 3.13 | ICD9 table | 28 |
| 3.14 | ICUSTAYEVENTS table | 29 |

| | |
|---|----|
| 3.15 IOEVENTS table | 30 |
| 3.16 LABEVENTS table | 32 |
| 3.17 <i>Table: Description of the columns in the LABEVENTS table</i> | 34 |
| 3.18 LCP_COMORBIDITY_SCORES table | 34 |
| 3.19 LCP_DAILY_SAPSI table | 36 |
| 3.20 LCP_DAILY_SOFA table | 37 |
| 3.21 LCP_ELIXHAUSER_SCORES table | 38 |
| 3.22 LCP_VENTILATION table | 39 |
| 3.23 MEDEVENTS table | 39 |
| 3.24 MICROBIOLOGYEVENTS table | 41 |
| 3.25 NOTEEVENTS table | 42 |
| 3.26 ORDERENTRY table | 45 |
| 3.27 <i>Table: Description of the columns in the ORDERENTRY table</i> | 46 |
| 3.28 POE_MED_ORDER table | 46 |
| 3.29 PROCEDUREEVENTS table | 48 |

3.30 TOTALBALEVENTS table 49

Chapter 1

Introduction

For the first time MIMIC-II contains data from two different source databases (CareVue and MetaVision). This new version of MIMIC-II maps and combines data from MIMIC2V26 (45 tables) and MetaVision (506 tables), as well as additional data sets from Beth Israel Deaconess Medical Center (23 tables) and Social Security datasets (2 tables).

Mapping and combining data from the two systems was challenging due to large differences between the two systems and limited availability of documentation. As a result of the mapping process it was necessary to make numerous changes to the database structure, so V3.0 is significantly different from earlier (V2.x) versions.

We are aware that further work is needed to clean, optimise, and develop the database and we welcome your assistance in doing this. Please share observations, bugs, and suggestions for improvement via the issue tracker <https://github.com/mimic2/v3.0/issues>. Alternatively, please email us

at mimic-support@physionet.org.

1.1 What's new in MIMIC-II v3.0?

Version 3.0 of MIMIC II contains around 48,000 patients, including over 15,000 newly added adult patients (neonates patients will be added at a later release).

The total count of hospital admissions is now nearly 58,000 with over 60,000 ICU stays. Version 2.6 contains ICU clinical data from 2001 to 2008; version 3.0 extended the data set to October of 2012.

The comparison of patients, admissions, and icustays between v2.6 and v3.0 is listed below:

| Table Name (Primary Key column) | Count (MIMIC2V26) | Count (MIMIC2V30) | Difference | New ID data in MIMIC2V30 starting point |
|---------------------------------|-------------------|-------------------|------------|---|
| D_Patients (subject_id) | 32,536 | 48,018 | 15,482 | 33,000 |
| Admissions (hadm_id) | 36,095 | 57,955 | 21,860 | 37,000 |
| ICUStayEvents (icustay_id) | 40,426 | 63,508 | 23,082 | 48,000 |

Table: Comparison of patient volume between MIMIC2V26 and MIMIC2V30

1.2 How to contribute

Providing support for the MIMIC-II database is an ongoing process. Our resources are limited, so please help us to update and improve documentation. These guidelines are hosted on GitHub, making it straightforward for you to raise issues and suggest changes.

1.2.1 RAISING AN ISSUE

If you notice something that could be improved, such as:

- a factual error in the guidelines;
- a common question that should be documented;

...then please raise an issue on Github. To raise an issue, [open the issue tracker](#), select “New issue”, and then add a description (along with a suggested solution, if possible).

1.2.2 UPDATING THE GUIDELINES

We encourage you to directly contribute to the guidelines. To do this, please:

- fork [the repository](#)
- edit the documentation as appropriate (more detail below)

- submit a pull request

1.2.3 EDITING THE DOCUMENTATION

Content hosted on a `gh-pages` branch on GitHub is automatically rendered as a website with [Jekyll](#).

Each page of the website is generated from content in the `_posts` directory. Editing the content in `_posts` will be reflected in the corresponding webpage automatically.

For example, any edits made to [Additives.md](#) will result in changes to the [Additives webpage](#).

Chapter 2

Accessing the clinical database

Access to the MIMIC-II Clinical Database requires a PhysioNetWorks account, so begin by [creating a PhysioNetWorks account](#) if you have not already done so.

The MIMIC-II Clinical Database, although de-identified, still contains detailed information regarding the clinical care of patients, and must be treated with appropriate care and respect.

Researchers seeking to use the database must formally request access by following these steps:

- Follow [the instructions](#) to create and log in to a PhysioNetWorks account. If you already have a PhysioNetWorks account, [log in to it](#).
- On your PhysioNetWorks home page, click on the link titled “MIMIC II Clinical Database”, and follow the instructions to apply for access.

All applications are reviewed, and if yours is approved you will receive separate emails containing instructions for downloading the database from PhysioNetWorks. Note that approval usually requires at least a week, and will be delayed if your request is missing any required information.

2.1 Installing the MIMIC-II Database

Before working with MIMIC-II data, you will first need to complete the [application process](#). Once this process is complete, you will be granted access to a [set of data files on PhysioNet](#) which can be used to reconstruct the database.

The process for downloading the data files and reconstructing the text-delimited tables is as follows:

- download all of the compressed files linked from the [PhysioNet webpage](#)
- check the integrity of the compressed files against the checksums. On a unix-based system, this can be done with:

```
md5sum -c md5_checksum_compressed.hash
```

- decompress the files as follows:

```
cat mimic2v30b.tgz_* | tar xvz
```

- check the integrity of the reconstructed data tables with:

```
md5sum -c md5_checksum_uncompressed.hash
```

Once the tables have been downloaded, they can be imported into a relational database system such as [Postgres](#), [Oracle](#), or [Maria-DB](#) to reconstruct MIMIC-II. Guidelines for the import process will be provided soon.

Chapter 3

Overview of the database

MIMIC-II consists of 24 core tables, along with a growing number of tables and views containing derived information such as severity scores (identifiable by a preceding 'lcp' in the table names).

3.1 ADDITIVES table

In version 2.6, patient input/output (IO) data is recorded in the IOEVENTS, D_IOITEMS, DELIVERIES, TOTALBALEVENTS and ADDITIVES tables.

As with the MEDEVENTS table, the IOEVENTS and ADDITIVES tables in v3.0 have some new columns like 'ORDERID', a foreign key referring to the ORDERENTRY table. Users can get more detailed medical order-related information from the ORDERENTRY table.

As in the MEDEVENTS table, the new IO data includes STARTTIME and ENDTIME, making calculations of total INPUT/OUTPUT volumes much easier.

Another change to these tables is that the 'LABEL' of ITEMID is included in the table; users can do word-based searches right on the events table, no need to join with the D_ITEMS table first.

Please note that the ITEMIDs for IO and ADDITIVES ITEMS have been shifted up by 40001 to avoid overlapping with ITEMIDs for the CHART ITEMS (refer to table 3).

| Column name | Data Type | New Column | Remarks |
|-------------|---------------|------------|--|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |
| ORDERID | NUMBER(10) | Y | Foreign key, referring to ORDERENTRY |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| LABEL | VARCHAR2(100) | Y | Included for easy word-based searches |
| IOITEMID | NUMBER(7) | N | Foreign key, referring to IOEVENTS |
| IOITEMLABEL | VARCHAR2(100) | Y | Label for the IO item, included for easy word-based searches |
| CHARTTIME | TIMESTAMP(6) | N | Used for old data, null for new data |
| STARTTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| ENDTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| ELEMID | NUMBER(7) | N | The ELEMID of a combined additive |
| CGID | NUMBER | N | Foreign key, referring to D_CAREGIVERS |
| CUID | NUMBER | N | Foreign Key – referring to D_CAREUNITS table |

| Column name | Data Type | New Column | Remarks |
|-----------------|----------------|------------|-------------------------------------|
| VALUE | NUMBER | N | Called 'AMOUNT' in v2.6 |
| UOM | NVARCHAR2(70) | Y | Called 'DOSEUNITS' in v2.6 |
| IOITEMVALUE | NUMBER | N | Called 'SOLVOLUME' in v2.6 |
| IOITEMUOM | NVARCHAR2(101) | N | Called 'SOLUNITS' in v2.6 |
| SOURCE_FLG | VARCHAR2(10) | N | Source of data (v2.6 or METAVISION) |
| ADDITIVESDATAID | NUMBER | N | Unique row identifier |

Table: Description of the Columns in the ADDITIVES table

3.2 ADMISSIONS table

The source data for the ADMISSIONS table comes from the BIDMC admission/discharge/transfer data set, which included hospital admissions and discharges for all patients from 2 January 2001 to 31 October 2012.

The ADMISSIONS table in MIMIC2V26 has a date range of 3 April 2001 to 16 September 2008. As mentioned earlier, the date range for new patient admissions from MetaVision database is 12 July 2007 - 25 September 2012. Therefore, some ICU patients in the MetaVision adult patients table have been included in the MIMIC2V26 database.

The data mapping and merging process between MIMIC-II v2.6 and the MetaVision Database started by filtering out new hospital admissions first;

among the new hospital admissions, there are old patients and new patients. For old patients, we needed to map to the existing SUBJECT_ID; for new patients, we generated new SUBJECT_IDs.

Some changes to the ADMISSIONS table in v3.0 are as follows:

1. For new admissions, the ADMIT_DT and DISCH_DT in the v3.0 ADMISSIONS table contain date and time information; data coming from MIMIC-II v2.6 only contains date information.
2. Three new columns were added to this table – ‘ADM_DIAGNOSIS’, ‘FIRST_SERVICE_UNIT’, ‘LAST_SERVICE_UNIT’

| Column name | Data type | New Column | Remark |
|------------------|---------------|------------|--|
| HADM_ID | NUMBER | N | Primary Key |
| SUBJECT_ID | NUMBER | N | Foreign Key, referring to D_PATIENTS table |
| ADMIT_DT | DATE | N | Admission Date |
| ADMIT_TIME | TIMESTAMP(6) | Y | Detailed admission time for new patients |
| DISCH_DT | DATE | N | Discharge date |
| DISCH_TIME | TIMESTAMP(6) | Y | Detailed discharge time for new patients |
| ADM_DIAGNOSIS | VARCHAR2(250) | Y | Diagnosis on admission |
| FIRST_SERVICE | VARCHAR2(4) | Y | First service unit |
| LAST_SERVICE | VARCHAR2(4) | Y | Last service unit |
| ADMISSIONSDATAID | NUMBER(38) | Y | Unique row identifier |

Table: Description of the columns in the **ADMISSIONS** table

3.3 CENSUSEVENTS table

The CENSUSEVENTS table tracks the changes of beds or care units and transfer of patients. For MIMIC2V30, this table is generated based on the PATIENTTRACKING table in the MetaVision database.

| Column name | Data type | New Column | Remarks |
|--------------------|--------------|------------|--|
| CENSUS_ID | NUMBER | N | Primary key |
| SUBJECT_ID | NUMBER | N | Foreign key, referring to D_PATIENTS table |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUEVENTS table |
| INTIME | TIMESTAMP(6) | N | ICU admission time |
| OUTTIME | TIMESTAMP(6) | N | ICU discharge time |
| CUID | NUMBER(7) | N | Foreign key – referring to D_CAREUNITS table |
| LOS | NUMBER | N | ICU length of stay in minutes |
| DESTCAREUNIT | NUMBER(7) | N | Destination care unit |
| DISCHSTATUS | VARCHAR2(20) | N | Discharge status |
| CENSUSEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the **CENSUSEVENTS** table

3.4 CHARTEVENTS table

The CHARTEVENTS table is the largest table in the database and contains all bedside patient records. In version 2.6, the CHARTEVENTS table has about 196 million rows of data; in version 3.0, the row count of the CHARTEVENTS table is 234 million.

One change we made to the CHARTEVENTS table in v3.0 is that we renamed CHARTTIME column to TIME and REALTIME column to VALIDATIONTIME. The new names were introduced to avoid confusion often associated with the CHARTTIME and REALTIME columns in v2.6. The new names in v3.0 should be easier to understand: TIME refers to the actual time the measurements were taken, and VALIDATIONTIME refers to the time when the values of the measurements were recorded.

For the new data coming from MetaVision, the event time is recorded as TIME and followed by the KEYINTIME; we adapted the naming conventions of the new data source. Another new column from the MetaVision database is called COMMENTS, which contains units of measure and the normal range of a measurement. This column can be very useful to users.

Please note that there is no VALUE2 for the new data coming from MetaVision. One good example is the recording of blood pressure:

In MIMIC2V26, the itemid=51 (LABEL= 'Arterial BP') included VALUE1 and VALUE2 for systolic and diastolic blood pressures. For new patients in MIMIC2V30, there are two ITEMIDs for blood pressure measurements: for systolic blood pressure, the ITEMID=220179, and for diastolic blood pressure, ITEMID=220180.

| Column name | Data Type | New Column | Remarks |
|-------------|-----------|------------|--------------------------------------|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | Y | Foreign key, referring to ADMISSIONS |

| Column name | Data Type | New Column | Remarks |
|--------------|---------------|------------|--|
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| LABEL | VARCHAR2(100) | Y | Included for easy word-based searches |
| TIME | TIMESTAMP(6) | N | Called 'CHARTTIME' in v2.6 |
| ELEMID | NUMBER(7) | N | The ELEMENTID of the chart event |
| KEYINTIME | TIMESTAMP(6) | N | Called 'REALTIME' in v2.6 |
| CGID | NUMBER(7) | N | Foreign key, referring to D_CAREGIVERS |
| CUID | NUMBER(7) | N | Foreign key, referring to D_UNITS |
| VALUE1 | VARCHAR2(110) | N | Can be numeric or alphabetic values |
| VALUE1NUM | NUMBER | N | Numeric values only |
| VALUE1UOM | VARCHAR2(120) | N | Unit of measure for VALUE1 |
| COMMENTS | NCLOB | Y | New data from MetaVision, contains units and normal range of the measurements. |
| VALUE2 | VARCHAR2(110) | N | For old data only, Can be numeric or alphabetic values |
| VALUE2NUM | NUMBER | N | For old data only, Numeric values only |
| VALUE2UOM | VARCHAR2(20) | N | For old data only, Unit of Measure for vlaue2 |
| RESULTSTATUS | VARCHAR2(20) | N | For old data (v2.6) only |
| STOPPED | VARCHAR2(20) | N | For old data (v2.6) only |
| WARNING | NUMBER(1) | Y | For new data |
| ERROR | NUMBER(1) | Y | For new data |

Table: Description of the columns in the CHARTEVENTS table

3.5 CPTEVENTS table

The CPTEVENTS table is new to v3.0 of the MIMIC-II database.

| Column name | Data type | New Column | Remarks |
|-----------------|--------------------------|------------|-----------------------|
| SUBJECT_ID | NUMBER(7) | Y | Foreign key. |
| HADM_ID | NUMBER(7) | Y | Foreign key. |
| CPT_CD | VARCHAR ₂ (8) | Y | ? |
| CPTEVENTSDATAID | NUMBER | Y | Unique row identifier |

3.6 D_CAREGIVERS table

The Caregiver IDs (CGID) are stored in table D_CAREGIVERS, which contains about 11,000 rows in version 2.6 and about 15,500 rows in version 3.0. However, we discovered that in version 2.6, one caregiver could be assigned with multiple CGIDs. In version 3.0, we added one new column called CG_UNIQUEID, which is the unique ID for caregivers. For the multiple CGIDs for one Care Giver, we chose one ID as the active one and assigned status 'A' (Active) in the CGID_STATUS column, all other CGIDs were assigned status 'M' (Merged), indicating a 'merged' status of the CGID. Only the CGID with CGID_status='A' was used in other tables like MEDEVENTS, CHARTEVENTS, etc.

Another change to this table in version 3.0 is that we added a new column - 'DESCRIPTION', which gives more detailed information about the Care giver. For example, a 'MD' can be 'Attending' or 'Resident/Fellow/PA/NP'.

| Column name | Data type | New Column | Remarks |
|--------------------|---------------|------------|--|
| CGID | NUMBER | N | Care giver ID (the old ones from v2.6 is not unique) |
| CG_UNIQUEID | NUMBER | Y | Unique ID of a care giver |
| LABEL | VARCHAR2(6) | N | Title of Care Giver |
| DESCRIPTION | NVARCHAR2(30) | Y | More detailed description of care giver |
| CGID_STATUS | VARCHAR2(1) | Y | 'A' indicates an active CGID, 'M' indicates a merged CGID. |
| D_CAREGIVERSDATAID | NUMBER(38) | Y | Unique row identifier |

Table: Description of the columns in the D_CAREGIVERS table

3.7 D_CAREUNITS table

This table did not change much between version 2.6 and version 3.0, the only difference is that CUID 54 used to be CSRU, but it is now called CVICU, so the label of this care unit in version 3.0 includes both names.

| Column name | Data type | New Column | Remarks |
|-------------|-----------|------------|--------------|
| CUID | NUMBER | N | Care unit ID |

| Column name | Data type | New Column | Remarks |
|-------------------|--------------|------------|-----------------------|
| LABEL | VARCHAR2(20) | N | Title of Care Giver |
| D_CAREUNITSDATAID | NUMBER(38) | Y | Unique row identifier |

Table: Description of the columns in the D_CAREUNITS table

3.8 D_ITEMS table

In version 2.6, the ITEMID and labels (descriptions) for different events tables (such as CHARTEVENTS, MEDEVENTS, IOEVENTS, LABEVENTS) are stored in separate tables; the ranges of the ITEMIDs in these tables are listed in Table 2.

| Table name | Range of ITEMID |
|--------------------|-----------------|
| D_Chartitems | 1 - 20009 |
| D_Meditems | 1 - 405 |
| D_IOitems | -1 - 6807 |
| D_Labitems | 50001 - 50735 |
| D_Codeditems | 60001 - 101885 |
| D_Demographicitems | 200001 - 200088 |

Table: The ITEMS tables in version 2.6

In version 3.0, we combined all D_...ITEMS tables from v2.6 and the MetaVision PARAMETERS (ITEMS) to form the new D_ITEMS table.

When we attempted to merge the Metavision data with MIMIC2V26 data, one of the big challenges was to properly map and merge the D_...ITEMS table. Since Metavision data does not separate ITEMIDs into the same categories (Med, IO, Coded, Lab, Chart etc.) and their names can be totally different, it is nearly impossible to map them directly to the six different D_...ITEMS tables and the ITEMIDs in MIMIC2V26. To solve the problem, we took the approach of combining all D_...ITEMS tables in v2.6 and the PARAMETERS Table in MetaVision, thus forming the new D_ITEMS table.

Please note that, in version 2.6 and earlier versions of MIMIC2 database, one specific ITEM can have more than one ITEMID. This is still the case in version 3.0; users will have to add the MetaVision ITEMID to the list of ITEMIDs by running a name (or word)-based search in the D_ITEMS table.

Since we needed to merge all the D_...ITEMS tables into one table in version 3.0, we had to make sure different types of ITEMIDs (from different D_...ITEMS tables in version 2.6) are within their own numeric range (no overlapping). Therefore, two types of ITEMIDs (MED and IO) from version 2.6 had to be shifted to a higher range of integers to avoid overlap with ITEMIDs from D_Chartitems (see Table 2).

The 'ORIGIN' column added to the new D_ITEMS table indicates the source table of the data (ITEMIDs). The following table lists the ORIGINS and ITEMID ranges in version 3.0.

| v3.0 Table name | ORIGIN | Range of ITEMID | Difference | Source table in v2.6 database |
|-----------------|---------------|-----------------|-------------------|-------------------------------|
| D_ITEMS | CHART | 1 - 20009 | None | D_Chartitems (v2.6) |
| MED | 30001 - 30405 | + 30000 | D_Meditems (v2.6) | |
| IO | 40000 - 46808 | + 40001 | D_IOitems (v2.6) | |

| v3.0 Table name | ORIGIN | Range of ITEMID | Difference | Source table in v2.6 database |
|-----------------|-----------------|----------------------|---------------------------|-------------------------------|
| LAB | 50800 – 51554 | Re-generated ITEMIDs | D_ Labitems (v2.6) | |
| CODED | 60001 - 101885 | None | D_Codeditems (v2.6) | |
| DEMOGRAPHIC | 200001 - 200088 | none | D_Demographicitems (v2.6) | |
| METAVISION | 220003 - 228647 | +220000 | MetaVision DB | |

Table: The D_ITEMS table in version 3.0 and ranges of ITEMIDs

Since the D_ITEMS table in v3.0 combined all six of the D_...ITEMS tables in v2.6 and we kept all related columns, the D_ITEMS table does have more columns than any of its source tables. The following table lists the column names, data types and source tables of all columns in MIMIC2V30.D_ITEMS table.

| Column name | Data type | New column | Source tables/Database |
|--------------|---------------|------------|---|
| ITEMID | NUMBER(7) | N | D_Chartitems, D_Meditems, D_IOitems, D_Codeditems, D_Labitems, D_Demographicitems and METAVISION Database |
| LABEL | VARCHAR2(100) | N | D_Chartitems, D_Meditems, D_IOitems, D_Codeditems, D_Demographicitems and METAVISION Database |
| ABBREVIATION | VARCHAR2(50) | Y | METAVISION Database |
| ORIGIN | VARCHAR2(12) | Y | The origin of the ITEMID (v2.6 or Metavision) |
| CODE | VARCHAR2(10) | N | D_Codeditems |
| CATEGORY | VARCHAR2(50) | N | D_Chartitems, D_IOitems, D_Codeditems, D_Labitems, D_Demographicitems and METAVISION Database |
| UNITID | NUMBER(5) | Y | METAVISION Database |
| UNITNAME | VARCHAR2(50) | Y | METAVISION Database |

| Column name | Data type | New column | Source tables/Database |
|-------------------|---------------|------------|-----------------------------|
| TYPE | VARCHAR2(40) | N | D_Codeditems and METAVISION |
| DESCRIPTION | VARCHAR2(150) | N | D_Chartitems, D_Codeditems |
| LOWNORMALVALUE | FLOAT(126) | Y | METAVISION Database |
| HIGHNORMALVALUE | FLOAT(126) | Y | METAVISION Database |
| ALLERGYACTION | NUMBER(3) | Y | METAVISION Database |
| LOINC_CODE | Varchar2(7) | N | Lab data from BIDMC |
| LOINC_DESCRIPTION | Varchar2(100) | N | Lab data from BIDMC |
| OLD_LABITEMID | NUMBER(7) | Y | D_Labitems |
| OLD_TEST_NAME | VARCHAR2(50) | Y | D_Labitems |
| OLD_LOINC_CODE | VARCHAR2(7) | Y | D_Labitems |
| D_ITEMSATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the D_ITEMS table

3.9 D_PATIENTS table

The source table for new patients added to D_PATIENTS comes from the PATIENTS table in the MetaVision (for ICU Adult patients) database; the date range is 12 July 2012 - 25 September 2012.

The structure of the D_Patients table in version 3.0 did not change much, but we did add a new column - the first 3 digits of zip codes. This information should provide new information for geographic based studies. Table 2 lists all columns in the D_PATIENTS table.

In addition to data from source databases and data sets, this table also incorporates DOD (date of death) information from social security up to Feb. 2013.

Another change to this table is that we shifted the ages of all patients over age 90 to an older age (over 200) for de-identification purposes. In the old version (2.6), only patients who are alive and over 90 were shifted. This change is to minimize confusion for users who are interested in age related studies.

Table 3.11: Description of the columns in the D_PATIENTS table

| Column name | Data type | New Column | Remarks |
|---------------------|-------------|------------|--|
| SUBJECT_ID | NUMBER(7) | N | Primary key |
| SEX | VARCHAR2(1) | N | Gender (M/F) |
| DOB | DATE | N | Date of birth of the patientcd |
| DOD | DATE | N | Date of death of the patient. Null if alive as of February 2013 (the date of export of social security data) |
| HOSPITAL_EXPIRE_FLG | VARCHAR2(1) | N | Whether or not the patient died in the hospital |
| ZIPCODE | VARCHAR2(5) | Y | First three digits of the patient's home zipcode |
| D_PATIENTSDATAID | NUMBER(38) | Y | Unique row identifier |

3.10 D_UNITS table

The D_UNITS table is new to v3.0 of the MIMIC-II database.

| Column name | Data type | New Column | Remarks |
|---------------|---------------|------------|--------------------------------------|
| UNITID | NUMBER(7) | ? | ID of the unit of measurement. |
| UNITNAME | NVARCHAR2(7) | ? | Name of the unit of measurement. |
| MULTIPLIER | FLOAT | ? | ? |
| ADDITION | FLOAT | ? | ? |
| ISBASEUNIT | NUMBER(1) | ? | ? |
| ISRELATIONAL | NUMBER(1) | ? | ? |
| ISTIME | NUMBER(1) | ? | ? |
| ISVOLUME | NUMBER(1) | ? | ? |
| CATEGORY | NVARCHAR2(50) | ? | Category of the unit of measurement. |
| D_UNITSDATAID | NUMBER | ? | Unique row identifier. |

3.11 DEMOGRAPHIC_DETAIL table

This table contains patient demographic information such as ethnicity, religion, marital status as well as admission source, admission type and insurance information. For version 3.0, this table contains ITEMID as well as descriptions, making word-based searches much easier.

| Column name | Data type | New Column | Remarks |
|----------------------------|--------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Primary key |
| HADM_ID | NUMBER(7) | N | Foreign key referring to ADMISSIONS table |
| MARITAL_STATUS_ITEMID | NUMBER(7) | N | The ID of the marital status |
| MARITAL_STATUS_DESCR | VARCHAR2(50) | N | Description of the marital status |
| ETHNICITY_ITEMID | NUMBER(7) | N | The ID of the ethnicity |
| ETHNICITY_DESCR | VARCHAR2(60) | N | Description of the ethnicity |
| OVERALL_PAYOR_GROUP_ITEMID | NUMBER(7) | N | The itemid for the payor group |
| OVERALL_PAYOR_GROUP_DESCR | VARCHAR2(50) | N | Description of the payor group |
| RELIGION_ITEMID | NUMBER(7) | N | The ID of the religion |
| RELIGION_DESCR | VARCHAR2(50) | N | Description of the religion |
| ADMISSION_TYPE_ITEMID | NUMBER(7) | N | The ID of the admission type |
| ADMISSION_TYPE_DESCR | VARCHAR2(50) | N | Description of the admission type |
| ADMISSION_SOURCE_ITEMID | NUMBER(7) | N | The ID of the admission source |
| ADMISSION_SOURCE_DESCR | VARCHAR2(50) | N | Description of the admission source |
| DEMOGRAPHIC_DETAILDATAID | NUMBER(7) | Y | Unique row identifier |

Table : Description of the columns in Demographic_Detail table

3.12 DRGEVENTS table

Another table that contains diagnosis related data is the DRGEVENTS table; we included descriptive columns for the ITEMID in the new version. The following table lists all columns of DRGEVENTS in v3.0.

| Column name | Data type | New Column | Remarks |
|-----------------|---------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign Key – referring to D_PATIENTS table |
| ITEMID | NUMBER(7) | N | Foreign Key – referring to ADMISSIONS table |
| TYPE | VARCHAR2(12) | Y | Type of DRG event |
| CODE | VARCHAR2(10) | Y | Code for the DRG event |
| DESCRIPTION | VARCHAR2(100) | Y | Description of the DRG event |
| COST_WEIGHT | NUMBER(7) | Y | The weight for the DRG event |
| DRGEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the DRGEVENTS table

3.13 ICD9 table

The ICD9 table is an important table for users to check patient diagnoses. The structure of this table did not change in the new version.

But for the first time, the admission diagnosis (*adm_diagnosis*) information is now available in the ADMISSIONS table in v3.0. (This diagnosis is

assigned by the admitting office at the moment of admission based on input from the admitting physician. It may be modified after the patient is treated in the hospital.)

| Column name | Data type | New Column | Remarks |
|-------------|---------------|------------|--|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS table |
| HADM_ID | NUMBER(7) | N | Foreign key, referring to ADMISSIONS table |
| SEQUENCE | NUMBER(7) | N | |
| CODE | VARCHAR2(100) | N | |
| DESCRIPTION | VARCHAR2(100) | N | |
| ICD9DATAID | NUMBER | Y | Unique row identifier |

3.14 ICUSTAYEVENTS table

The ICUSTAYEVENTS table is generated from the CENSUSEVENTS table. An ICUSTAY_ID is generated to mark any new ICUSTAY events for patients. In many cases, patients can be in and out of the ICU care units multiple times during one hospital admission. For these cases, we set the following rule regarding ICUSTAY_IDs:

For patients transferred out of ICU units but re-admitted to the same or different ICU care unit within 24 hours, it is considered as one ICUSTAY event with the same ICUSTAY_ID. However, if the patient was re-admitted back to the same or different ICU care unit after 24 hours, it is considered as a new ICUSTAY event and is assigned a new ICUSTAY_ID.

| Column name | Data type | New Column | Remarks |
|------------------|--------------|------------|---|
| ICUSTAY_ID | NUMBER(7) | N | Primary key |
| SUBJECT_ID | NUMBER | N | Foreign Key – referring to D_PATIENTS table |
| INTIME | TIMESTAMP(6) | N | ICU admission time |
| OUTTIME | TIMESTAMP(6) | N | ICU discharge time |
| LOS | NUMBER | N | ICU length of stay in minutes |
| FIRST_CAREUNIT | NUMBER | N | First care unit |
| LAST_CAREUNIT | NUMBER | N | Last care unit |
| ADMISSIONSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the ICUStayevents table

3.15 IOEVENTS table

In version 2.6, patient input/output (IO) data is recorded in the IOEVENTS, D_IOITEMS, DELIVERIES, TOTALBALEVENTS and ADDITIVES tables.

In version 3.0, we retired the DELIVERIES table since the data contained in this table (RATE, RATEUOM etc.) are included in the IOEVENTS table.

As mentioned earlier, the D_IOITEMS table has been merged into the D_ITEMS table.

Please note that the ITEMIDs for IO and ADDITIVES ITEMS have been shifted up by 40001 to avoid overlapping with ITEMIDs for the

CHART ITEMS (refer to table 3).

As with the MEDEVENTS table, the IOEVENTS and ADDITIVES tables in v3.0 have some new columns like 'ORDERID', a foreign key referring to the ORDERENTRY table. Users can get more detailed medical order-related information from the ORDERENTRY table.

As in the MEDEVENTS table, the new IO data includes STARTTIME and ENDTIME, making calculations of total INPUT/OUTPUT volumes much easier.

Another change to these tables is that the 'LABEL' of ITEMID is included in the table; users can do word-based searches right on the events table, no need to join with the D_ITEMS table first.

| Column name | Data Type | New Column | Remarks |
|-------------|----------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |
| ORDERID | NUMBER(7) | Y | Foreign key, referring to ORDERENTRY |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| LABEL | NVARCHAR2(366) | Y | Label for the IO event, included for easy word-based searches |
| CHARTTIME | TIMESTAMP(6) | N | Used for old data, null for new data |
| ELEMID | NUMBER(7) | N | Element ID of a multi-component IO event |
| ALTID | NUMBER(7) | N | Alternate ID of the IO event |
| REALTIME | TIMESTAMP(6) | N | Used for old data, null for new data |
| STARTTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| ENDTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| CGID | NUMBER | N | Foreign key, referring to D_CAREGIVERS |

| Column name | Data Type | New Column | Remarks |
|----------------|----------------|------------|--|
| CUID | NUMBER | N | Foreign Key – referring to D_CAREUNITS table |
| VALUE | NUMBER | N | Called 'VOLUME' in v2.6 |
| UOM | NVARCHAR2(101) | N | Called 'VOLUMEUOM' in v2.6 |
| UNITSHUNG | NUMBER(5) | N | Called 'SOLVOLUME' in v2.6 |
| UNITSHUNGUOM | VARCHAR2(20) | N | Called 'SOLUNITS' in v2.6 |
| NEWBOTTLE | NUMBER | N | New bottle attached |
| STOPPED | VARCHAR2(20) | N | Stopped recording |
| ESTIMATE | VARCHAR2(20) | N | Estimate? |
| IOEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the IOEVENTS table

3.16 LABEVENTS table

In v3.0, the LABEVENTS table was re-generated from the raw lab tests data set from BIDMC. As there have been additions of new lab tests over the years or name changes of lab tests, and the majority of lab tests do not have LOINC codes, it was very hard to map to the Lab ITEMIDs in v2.6. Therefore, the ITEMIDs for Labevents are re-generated based on current lab tests. However, whenever possible, the old lab ITEMID was mapped and listed in the D_ITEMS table (ORIGIN='LAB') (see table 4). Also, we tried our best to map to the current LOINC codes as well.

Like other facts (...events) tables in v3.0, we included related ITEMID descriptive columns like 'TESTNAME', 'FLUID', 'CATEGORY' and 'LOINC_CODE', much easier for word-based searches.

Please note that we collect all lab events for a patient independent of when they were done. Some lab events are from subsequent clinic visits, for example.

| Column name | Data Type | New Column | Remarks |
|-----------------|---------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | N | Foreign key, referring to ADMISSIONS |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| CHARTTIME | TIMESTAMP(6) | N | Time of lab event. |
| TEST_NAME | VARCHAR2(50) | Y | Included for easy word-based searches |
| VALUE | VARCHAR2(200) | N | The result value of the lab event |
| VALUENUM | NUMBER | N | The numeric representation of the laboratory test if the result was numeric |
| VALUEUOM | VARCHAR2(15) | N | Units of measurement of the value of the lab event |
| FLAG | VARCHAR2(10) | Y | Flag or annotation on the lab result |
| FLUID | VARCHAR2(40) | Y | Type of fluid sample. |
| CATEGORY | VARCHAR2(20) | Y | Category of the lab event |
| LOINC_CODE | VARCHAR2(15) | Y | LOINC code for the lab event |
| LABEVENTSDATAID | NUMBER | Y | Unique row identifier |

3.17 Table: Description of the columns in the LABEVENTS table

layout: page title: "LCP_COMORBIDITY_SCORES" category: dat date: 2015-04-22 22:45:10 order: 18 —

3.18 LCP_COMORBIDITY_SCORES table

| Column name | Data type | New Column | Remarks |
|--------------------------|-----------|------------|---------|
| SUBJECT_ID | NUMBER(5) | N | ? |
| HADM_ID | NUMBER(5) | N | ? |
| CATEGORY | CHAR(10) | N | ? |
| CONGESTIVE_HEART_FAILURE | NUMBER(5) | N | ? |
| CARDIAC_ARRHYTHMIAS | NUMBER(5) | N | ? |
| VALVULAR_DISEASE | NUMBER(5) | N | ? |
| PULMONARY_CIRCULATION | NUMBER(5) | N | ? |
| PERIPHERAL_VASCULAR | NUMBER(5) | N | ? |
| HYPERTENSION | NUMBER(5) | N | ? |
| PARALYSIS | NUMBER(5) | N | ? |
| OTHER_NEUROLOGICAL | NUMBER(5) | N | ? |
| CHRONIC_PULMONARY | NUMBER(5) | N | ? |
| DIABETES_UNCOMPLICATED | NUMBER(5) | N | ? |

| Column name | Data type | New Column | Remarks |
|----------------------|-----------|------------|---------|
| DIABETES_COMPLICATED | NUMBER(5) | N | ? |
| HYPOTHYROIDISM | NUMBER(5) | N | ? |
| RENAL_FAILURE | NUMBER(5) | N | ? |
| LIVER_DISEASE | NUMBER(5) | N | ? |
| PEPTIC_ULCER | NUMBER(5) | N | ? |
| AIDS | NUMBER(5) | N | ? |
| LYMPHOMA | NUMBER(5) | N | ? |
| METASTATIC_CANCER | NUMBER(5) | N | ? |
| SOLID_TUMOUR | NUMBER(5) | N | ? |
| RHEUMATOID_ARTHRITIS | NUMBER(5) | N | ? |
| COAGULOPATHY | NUMBER(5) | N | ? |
| OBESITY | NUMBER(5) | N | ? |
| WEIGHT_LOSS | NUMBER(5) | N | ? |
| FLUID_ELECTROLYTE | NUMBER(5) | N | ? |
| BLOOD_LOSS_ANEMIA | NUMBER(5) | N | ? |
| DEFICIENCY_ANEMIAS | NUMBER(5) | N | ? |
| ALCOHOL_ABUSE | NUMBER(5) | N | ? |
| DRUG_ABUSE | NUMBER(5) | N | ? |
| PSYCHOSES | NUMBER(5) | N | ? |

| Column name | Data type | New Column | Remarks |
|------------------------------|-----------|------------|-----------------------|
| DEPRESSION | NUMBER(5) | N | ? |
| LCP_COMORBIDITY_SCORESDATAID | NUMBER(5) | N | Unique row identifier |

3.19 LCP_DAILY_SAPSI table

| Column name | Data type | New Column | Remarks |
|-----------------|-----------|------------|---------|
| SUBJECT_ID | NUMBER(7) | N | ? |
| ICUSTAY_ID | NUMBER(7) | N | ? |
| ICUSTAY_DAY | NUMBER(7) | N | ? |
| AGE_SCORE | NUMBER | N | ? |
| BUN_SCORE | NUMBER | N | ? |
| GCS_SCORE | NUMBER | N | ? |
| GLUCOSE_SCORE | NUMBER | N | ? |
| HCT_SCORE | NUMBER | N | ? |
| HR_SCORE | NUMBER | N | ? |
| POTASSIUM_SCORE | NUMBER | N | ? |
| SODIUM_SCORE | NUMBER | N | ? |
| RR_SCORE | NUMBER | N | ? |

| Column name | Data type | New Column | Remarks |
|-----------------------|-----------|------------|-----------------------|
| SYSABP_SCORE | NUMBER | N | ? |
| TEMPERATURE_SCORE | NUMBER | N | ? |
| URINE_SCORE | NUMBER | N | ? |
| WBC_SCORE | NUMBER | N | ? |
| HC03_SCORE | NUMBER | N | ? |
| SAPSI_SCORE | NUMBER | N | ? |
| LCP_DAILY_SAPSIDATAID | NUMBER | Y | Unique row identifier |

3.20 LCP_DAILY_SOFA table

| Column name | Data type | New Column | Remarks |
|----------------------------|-----------|------------|---------|
| SUBJECT_ID | NUMBER(7) | N | ? |
| ICUSTAY_ID | NUMBER(7) | N | ? |
| ICUSTAY_DAY | NUMBER(7) | N | ? |
| RESPIRATORY_FAILURE | NUMBER | N | ? |
| NEUROLOGICAL_SCORE | NUMBER | N | ? |
| CARDIOVASCULAR_SCORE_FINAL | NUMBER | N | ? |
| HEPATIC_SCORE | NUMBER | N | ? |

| Column name | Data type | New Column | Remarks |
|----------------------|-----------|------------|-----------------------|
| HEMATOLOGIC_SCORE | NUMBER | N | ? |
| RENAL_SCORE | NUMBER | N | ? |
| SOFA_TOTAL | NUMBER | N | ? |
| LCP_DAILY_SOFADATAID | NUMBER | N | Unique row identifier |

3.21 LCP_ELIXHAUSER_SCORES table

| Column name | Data type | New Column | Remarks |
|-----------------------------|-----------|------------|-----------------------|
| SUBJECT_ID | NUMBER(8) | N | ? |
| HADM_ID | NUMBER(8) | N | ? |
| HOSPITAL_MORT_PT | NUMBER(3) | N | ? |
| TWENTY_EIGHT_DAY_MORT_PT | NUMBER(3) | N | ? |
| ONE_YR_MORT_PT | NUMBER(3) | N | ? |
| TWO_YR_MORT_PT | NUMBER(3) | N | ? |
| ONE_YEAR_SURVIVAL_PT | NUMBER(3) | N | ? |
| TWO_YEAR_SURVIVAL_PT | NUMBER(3) | N | ? |
| LCP_ELIXHAUSER_SCORESDATAID | NUMBER | Y | Unique row identifier |

3.22 LCP_VENTILATION table

| Column name | Data type | New Column | Remarks |
|-----------------------|-----------|------------|-----------------------|
| SUBJECT_ID | NUMBER(7) | X | ? |
| HADM_ID | NUMBER(7) | X | ? |
| ICUSTAY_ID | NUMBER(7) | X | ? |
| SEQ | NUMBER | X | ? |
| STARTTIME | X | X | ? |
| ENDTIME | X | X | ? |
| LCP_VENTILATIONDATAID | NUMBER | Y | Unique row identifier |

3.23 MEDEVENTS table

In version 3.0, a new table – ORDERENTRY, which contains all medical treatment order information, is added to medication related tables. MEDEVENTS, ADDITIVES and IOEVENTS now all contain ORDERID, which is a foreign key referring to the ORDERENTRY table.

One big difference you may notice is that all new medication records have START and END times; users can easily calculate the total amount of medication using these two columns. Because of this, the A_MEDDURATIONS table is no longer needed. But users can still use that table in v2.6 for any checking and calculations for the old data.

The following table lists the columns of MEDEVENTS; new columns are noted.

| Column name | Data Type | New Column | Remarks |
|--------------|---------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |
| ORDERID | NUMBER(7) | Y | Foreign key, referring to ORDERENTRY |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| LABEL | VARCHAR2(100) | Y | Included for easy word-based searches |
| SOLITEMID | NUMBER(7) | N | ITEMID of the solution used in the medication event |
| SOLITEMLABEL | VARCHAR2(100) | Y | Label of the solution used in the medication event. Included for easy word-based searches |
| CHARTTIME | TIMESTAMP(6) | N | Used for old data, null for new data |
| ELEMID | NUMBER(7) | N | Element ID for the event |
| REALTIME | TIMESTAMP(6) | N | Used for old data, null for new data |
| STARTTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| ENDTIME | TIMESTAMP(6) | Y | Used for new data, null for old data |
| VALUE | NUMBER | N | Dosage of the medication event. Called 'DOSE' in v2.6 |
| UOM | VARCHAR2(100) | Y | Units of measurement of the medication event. Called 'DOSEUOM' in v2.6 |
| SOLITEMVALUE | NUMBER | N | Volume of solution used in the medication event. Called 'SOLVOLUME' in v2.6 |
| SOLITEMUOM | VARCHAR2(100) | N | Units of the volume of solution used in the medication event. Called 'SOLUNITS' in v2.6 |
| CGID | NUMBER | N | Foreign key, referring to D_CAREGIVERS |
| CUID | NUMBER | N | Foreign Key – referring to D_CAREUNITS table |
| STOPPED | VARCHAR2(20) | N | Medication stopped |

| Column name | Data Type | New Column | Remarks |
|-----------------|-----------|------------|-----------------------|
| MEDEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the MEDEVENTS table

3.24 MICROBIOLOGYEVENTS table

The MICROBIOLOGYEVENTS table in v3.0 also included names, descriptions of the ITEMIDs. The following table lists all the columns in this table in v3.0, all new columns are noted.

| Column name | Data Type | New Column | Remarks |
|----------------|---------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | N | Foreign key, referring to ADMISSIONS |
| TIME | DATE | N | 'CHARTTIME' in v2.6 |
| SPEC_TYPE_CD | VARCHAR2(10) | Y | Code of the specimen type tested. Included for easy word-based searches |
| SPEC_ITEMID | NUMBER(7) | N | The ID of the specimen tested. Foreign key, referring to D_ITEMS |
| SPEC_TYPE_DESC | VARCHAR2(100) | Y | Description of the specimen type. Included for easy word-based searches |
| ORG_CD | VARCHAR2(4) | Y | Code of the organism tested. Included for easy word-based searches |
| ORG_ITEMID | NUMBER(7) | N | The ID of the organism tested. Foreign key, referring to D_ITEMS |
| ORG_NAME | VARCHAR2(100) | Y | Name of the organism tested for. Included for easy word-based searches |

| Column name | Data Type | New Column | Remarks |
|--------------------------|---------------|------------|--|
| ISOLATE_NUM | VARCHAR2(10) | N | The isolate number for the test. |
| AB_CD | VARCHAR2(2) | Y | Code for the antibacterium used. Included for easy word-based searches |
| AB_ITEMID | NUMBER(7) | N | ID of the antibacterium used. Foreign key, referring to D_ITEMS. |
| AB_NAME | VARCHAR2(100) | Y | Name of the antibacterium used. Included for easy word-based searches |
| DILUTION_AMOUNT | VARCHAR2(10) | N | The dilution amount tested for |
| DILUTION_COMPARISON | VARCHAR2(10) | N | The comparison used against the dilution amount, for the test: either <= , =, >=, or null when not applicable |
| INTERPRETATION | VARCHAR2(1) | N | The interpretation of the test: (R)esistant, (P)ending, (I)ntermediate, or (S)usceptible (or null when not applicable) |
| MICROBIOLOGYEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the V3.0 MICROBIOLOGYEVENTS table

3.25 NOTEEVENTS table

In version 3.0, we added three new types of notes in the NOTEEVENTS table: ECG reports, Echo reports, and the physician notes from MetaVision.

Here is a list of NOTES categories in v3.0 and v2.6 (Extracted from the NOTEEVENTS table, exact upper/lower case match).

| Categories of Notes in v3.0 | Categories of Notes in v2.6 |
|-----------------------------|-----------------------------|
| ECG_REPORT | (Not available in v2.6) |
| ECHO_REPORT | (Not available in v2.6) |

| Categories of Notes in v3.0 | Categories of Notes in v2.6 |
|-----------------------------|-----------------------------|
| DISCHARGE_SUMMARY | DISCHARGE_SUMMARY |
| NURSING/OTHER | Nursing/Other |
| PROVIDER_NOTE | (Not available in v2.6) |
| RADIOLOGY_REPORT | RADIOLOGY_REPORT |

Table: Comparison of Notes categories* in NOTEEVENTS table*

The Nursing/Other category contains the nursing and respiratory therapist notes collected (2008 or earlier) from the CareVue system. Provider notes collected from the MetaVision are under the PROVIDER_NOTE category and include notes by physicians, nurses, therapists and others. The table structure of NOTEEVENTS did not change between v2.6 and v3.0. However, the CHARTTIME of DISCHARGE_SUMMARY notes used DISCHARGE_TIME in v3.0 while the ADMISSION_TIME was used in v2.6.

Note: Some entries in the NOTEEVENTS table contain empty text due to the null entry in the original text. These entries will be removed in the final release to avoid confusion.

| Column name | Data Type | New Column | Remarks |
|-------------|-----------|------------|---|
| REC_ID | NUMBER | Y | Primary key |
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | N | Foreign key, referring to ADMISSIONS |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |

| Column name | Data Type | New Column | Remarks |
|------------------|----------------|------------|--|
| ELEM_ID | NUMBER(7) | N | Element ID of each note |
| CHARTTIME | TIMESTAMP(6) | N | Datetime of the note request |
| REALTIME | TIMESTAMP(6) | N | Datetime of the note request |
| CGID | NUMBER(7) | N | Foreign key, referring to D_CAREGIVERS |
| CORRECTION | CHAR(1) | N | Is the note a correction to a previous note? |
| CUID | NUMBER(7) | N | Foreign key, referring to D_CAREUNITS |
| CATEGORY | VARCHAR2(26) | N | Type of note |
| TITLE | VARCHAR2(255) | N | Title of the note |
| TEXT | CLOB | N | Main body of the note |
| EXAM_NAME | VARCHAR2(100) | N | Name of the examination |
| PATIENT_INFO | VARCHAR2(4000) | N | Patient information |
| NOTEEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the Columns in the NOTEEVENTS table

3.26 ORDERENTRY table

In version 3.0, a new table – ORDERENTRY, which contains all medical treatment order information, is added to medication related tables. MEDEVENTS, ADDITIVES and IOEVENTS now all contain ORDERID, which is a foreign key referring to the ORDERENTRY table.

Since the new source database, MetaVision, has totally different schema design and table structures, we added new columns to the medication-related tables while trying to preserve all the data and columns from the old version.

Here is a list of all columns in the newly added table – ORDERENTRY.

| Column name | Data Type | Remarks |
|---------------|-----------------|---|
| ORDERID | NUMBER(7) | Primary key |
| LINKORDERID | NUMBER(7) | Link to the ORDERID |
| SUBJECT_ID | NUMBER(7) | Foreign key, referring to D_PATIENTS |
| ICUSTAY_ID | NUMBER(7) | Foreign key, referring to ICUSTAYEVENTS |
| CGID | NUMBER | Foreign key, referring to D_CAREGIVERS |
| ISSUEDATE | TIMESTAMP(6) | Issue date for the order |
| ORDERCATEGORY | VARCHAR2(84) | Category for the order |
| PATIENTWEIGHT | NUMBER(12) | Weight of the patient in grams |
| ISOPENBAG | NUMBER(1) | Unknown |
| CANCELREASON | NUMBER(5) | Unknown |
| COMMENTS | NVARCHAR2(1000) | Comments |

| Column name | Data Type | Remarks |
|--------------------|----------------|---|
| LOCATIONNAME | NVARCHAR2(153) | Body location |
| ROUTE | NVARCHAR2(50) | Route of administration |
| DURATION | NUMBER(12) | Duration of the order |
| DURATIONUOM | VARCHAR2(70) | Units of measurement of the order duration |
| TOTALVOLUME | NUMBER(12) | Total volume of order event |
| TOTALVOLUMEUOM | VARCHAR2(70) | Units of the order event |
| CONTINUEINNEXTDEPT | NUMBER(1) | Order continued in external department? (0/1) |
| ORDERENTRYDATAID | NUMBER | Unique row identifier |

3.27 *Table: Description of the columns in the ORDERENTRY table*

layout: page title: "POE_MED_ORDER" category: dat date: 2015-04-22 22:45:11 order: 27 —

3.28 POE_MED_ORDER table

Another table that is related to medication is POE_MED_ORDER. The source data for this table comes from Beth Israel Deaconess Medical Center datasets, not from the MetaVision database. This table documents medications that were *ordered* not administered, and includes orders well

beyond the ICU stay.

In version 2.6, this table was divided into two tables, POE_MED and POE_ORDER. However, in the new data set we have already combined the data from these two tables, so we just created one table.

Table 3.29: Description of the columns in the POE_MED_ORDER table

| Column name | Data Type | Remarks |
|-------------------|---------------|--|
| SUBJECT_ID | NUMBER(7) | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | Foreign key, referring to ADMISSIONS |
| ICUSTAY_ID | NUMBER(7) | Foreign key, referring to ICUSTAYEVENTS |
| STARTTIME | TIMESTAMP(6) | Start date of the POE order |
| ENDTIME | TIMESTAMP(6) | Stop date of the POE order |
| DRUG_TYPE | VARCHAR2(80) | Type of drug |
| DRUG | VARCHAR2(80) | Name of the drug |
| DRUG_NAME_POE | VARCHAR2(80) | Name of the drug(2). Column to be removed. |
| DRUG_NAME_GENERIC | VARCHAR2(50) | Generic name of the drug |
| FORMULARY_DRUG_CD | VARCHAR2(90) | Formulary drug code |
| GSN | VARCHAR2(180) | Generic Sequence Number |
| NDC | VARCHAR2(90) | National Drug Code |
| PROD_STRENGTH | VARCHAR2(90) | Product strength |
| DOSE_VAL_RX | VARCHAR2(90) | Value of the dose received |

| Column name | Data Type | Remarks |
|---------------------|--------------|----------------------------|
| DOSE_UNIT_RX | VARCHAR2(90) | Units of the dose received |
| FORM_VAL_DISP | VARCHAR2(90) | Unknown |
| FORM_UNIT_DISP | VARCHAR2(90) | Unknown |
| ROUTE | VARCHAR2(60) | Route of administration |
| POE_MED_ORDERDATAID | NUMBER | Unique row identifier |

3.29 PROCEDUREEVENTS table

In v2.6, PROCEDUREEVENTS table is a relatively simple table, containing only 5 columns: SUBJECT_ID, HADM_ID, ITEMID, SEQUENCE_NUM, PROC_DT.

In v3.0, six new columns are added to this table as shown in the following table. The new procedures all have ORDERIDs, related order information can be found in ORDERENTRY table. We also included 'LABEL' for each ITEMID, make it easier for word-based searches. Also, each new procedure has a 'START' and 'END' time.

In v2.6, checking for INTUBATION/EXTUBATION event and time was not an easy task. In the new version, it is very easy to find these events in the PROCEDUREEVENTS table.

| Column name | Data Type | New Column | Remarks |
|-------------|-----------|------------|--------------------------------------|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| HADM_ID | NUMBER(7) | N | Foreign key, referring to ADMISSIONS |

| Column name | Data Type | New Column | Remarks |
|-----------------------|---------------|------------|--|
| ORDERID | NUMBER(7) | Y | Foreign key, referring to ORDERENTRY |
| ORDERCATEGORYNAME | VARCHAR2(30) | Y | Name of the order category |
| ITEMID | NUMBER(7) | N | Foreign key, referring to D_ITEMS |
| LABEL | VARCHAR2(100) | Y | Label of the procedure event, included for easy word-based searches |
| PROC_DT | DATE | N | The date on which the procedure event occurred |
| STARTTIME | TIMESTAMP(6) | Y | Timestamp to accompany PROC_DT. Used for new data, null for old data |
| ENDTIME | TIMESTAMP(6) | Y | Timestamp to accompany PROC_DT. Used for new data, null for old data |
| CGID | NUMBER(7) | Y | Foreign key, referring to D_CAREGIVERS |
| PROCEDUREEVENTSDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the PROCEDUREEVENTS table

3.30 TOTALBALEVENTS table

In version 2.6, patient input/output (IO) data is recorded in the IOEVENTS, D_IOITEMS, DELIVERIES, TOTALBALEVENTS and ADDITIVES tables.

As with the MEDEVENTS table, the IOEVENTS and ADDITIVES tables in v3.0 have some new columns like 'ORDERID', a foreign key referring to the ORDERENTRY table. Users can get more detailed medical order-related information from the ORDERENTRY table.

As in the MEDEVENTS table, the new IO data includes STARTTIME and ENDTIME, making calculations of total INPUT/OUTPUT volumes much easier.

Another change to these tables is that the 'LABEL' of ITEMID is included in the table; users can do word-based searches right on the events table, no need to join with the D_ITEMS table first.

Please note that the ITEMIDs for IO and ADDITIVES ITEMS have been shifted up by 40001 to avoid overlapping with ITEMIDs for the CHART ITEMS (refer to table 3).

| Column name | Data Type | New Column | Remarks |
|-------------|---------------|------------|---|
| SUBJECT_ID | NUMBER(7) | N | Foreign key, referring to D_PATIENTS |
| ICUSTAY_ID | NUMBER(7) | N | Foreign key, referring to ICUSTAYEVENTS |
| CHARTTIME | TIMESTAMP(6) | N | Time of total balance event. |
| ELEMID | NUMBER | N | The element ID of the total balance |
| REALTIME | TIMESTAMP(6) | N | Time of inputting total balance event. |
| CGID | NUMBER | N | Foreign key, referring to D_CAREGIVERS |
| CUID | NUMBER | N | Foreign key, referring to D_CAREUNITS |
| ITEMID | NUMBER | N | Foreign key, referring to D_ITEMS |
| LABEL | VARCHAR2(100) | Y | Label of the total balance event |
| VOLUME | VARCHAR2(100) | N | Called 'PERVOLUME' in v2.6 |
| CUMITEMID | NUMBER | Y | To be merged with itemid. |
| CUMLABEL | VARCHAR2(40) | Y | To be merged with label. |
| CUMVOLUME | VARCHAR2(100) | N | Cumulative volume of the total balance events over the period |

| Column name | Data Type | New Column | Remarks |
|---------------------|---------------|------------|---|
| UOM | NVARCHAR2(10) | Y | Units of measurement of the cumulative volume |
| ACCUMPERIOD | VARCHAR2(100) | N | The accumulation period |
| APPROX | VARCHAR2(100) | N | Is the measurement an approximation? |
| RESET | NUMBER | N | Reset the balance |
| STOPPED | VARCHAR2(20) | N | Stopped recording the balance |
| TOTALBALEVENTDATAID | NUMBER | Y | Unique row identifier |

Table: Description of the columns in the TOTALBALEVENTS table