

## Add transition of care handling to CDM

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### Owner

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### Details

#### Background

Presently, patient’s transition between visits/place of service is not explicitly represented in CDM. There is no explicit connection between two consecutive visits; examples are transfers from emergency room to inpatient admission or from inpatient admission to a rehabilitation facility. The only way to derive this connection is by visit start and end dates that are not necessarily accurate. There is no explicit representation of patient’s death in-hospital. Visit admission source and discharge disposition are currently stored in the Observation table and linked to Visit\_Occurrence table via visit\_occurrence\_id.

#### Proposed Changes

We propose the following changes to the model that will support analyzing patient’s transition between places of service. These transitions do not include patient’s transition within the same

visit, for example, transition from ICU to a hospital floor within the same hospital admission. The only exception is transition from emergency department to inpatient admission, and only in case, when the source system explicitly separates the two visits. The case when this separation is not possible is described below.

1. Move attributes representing admitting source and discharge disposition to Visit\_Occurrence table as first class attributes.  
This change will eliminate the need to join Visit\_Occurrence and Observation tables to link visit and visit attributes. It will also simplify ETL from the source by targeting only one table rather than splitting attributes related to a visit to two tables.
2. Represent transition of care by two explicitly linked visits (e.g. from emergency room to inpatient admission) in the Fact\_Relationship table.  
This addition will provide an unambiguous link between two connected visits.

### Admitting Source

Add the following admitting source fields to Visit\_Occurrence table:

Field	Type	Required	Description
admitting_source_concept_id	Integer	No	A foreign key to the predefined concept in the Place of Service Vocabulary reflecting the admitting source for a visit.
admitting_source_value	Varchar(50)	No	The source code for the admitting source as it appears in the source data.

### Discharge Disposition

Add the following discharge disposition to Visit\_Occurrence table:

Field	Type	Required	Description
discharge_to_concept_id	Integer	No	A foreign key to the predefined concept in the Place of Service Vocabulary reflecting the discharge disposition for a visit.
discharge_to_source_value	Varchar(50)	No	The source code for the discharge disposition as it appears in the source data.

In addition to the “Place of Service” vocabulary, the following SNOMED concepts for discharge disposition can be used:

Patient died: 4216643  
Absent without leave: 44814693  
Patient self-discharge against medical advice: 4021968

### Convention for handling death in hospital

In case when patient died during admission (Visit\_Occurrence. discharge\_disposition\_concept\_id = 4216643 'Patient died'), a record in the Death table should be created with death\_type\_concept\_id = 44818516 ("EHR discharge status "Expired").

### Convention for linking connected visits:

Create two visit linking records in the Fact\_Relationship table: one using relationship\_concept\_id 35022490 ('Patient moved to') and the other using relationship\_concept\_id 35022489 ('Occurs after').

An example is below:

Domain_concept_id_1	fact_id_1	Domain_concept_id_2	fact_id_2	relationship_concept_id
Visit	46233680	Visit	35022490	Patient moved to
Visit	35022490	Visit	46233680	Patient moved from

### Convention for representing linked emergency room – inpatient admission visits:

Some EMR systems combine emergency room followed by inpatient admission into one visit, and it is close to impossible to separate the two. To annotate this visit type, a new visit type concept **"Emergency Room and Inpatient Admission" is proposed.**

### Use cases, analytical questions

- Analysis of continuity of care
- Key clinical outcomes - e.g. risk factors for being transferred
- Readmission analysis, readmission inclusion and exclusion criteria

### Importance, also with respect to other projects

This change is an important enhancement to the model and can be implemented immediately without impacting other projects.

This change will have an immediate effect on three OMOP-based CDRNs: NYC-CDRN representing over 2.5 million patients; pSCANNER covering over 21 million patients; and PEDSnet which includes eight of the nation's largest children's hospitals and provides service to 4.6 million children per year.

**Consequences of doing it and not doing it including technical (e.g. implications on vocab, existing software), resources**

This change will enhance representation and analysis of transition of care in OMOP CDM and simplify ETL for the sites that are presently using Observation table.

It will have no implications on vocabulary or existing software.