

Table 5

SQL Data Definition Language (DDL) Minimum Construct Set

DDL Constructs	Justification
Schemas	A schema defines a portion of a database owned by a particular user. Access can be limited by schemas; therefore, they are important constructs not only for storing logically related tables, but for ensuring security as well.
Tables and attributes	The basic data structures for information storage.
Constraints: primary key, foreign key, default values, optional, and domain	Constraints are integral to supporting data integrity. Primary keys enforce entity integrity (a unique record identifier such as patient ID), and foreign keys enforce referential integrity (a reference value in one table must exist in another, e.g., an encounter must be for an existing patient). Default values, optional modifiers, and domain constraints bound and control data entry.
Indices	An index is a data structure designed to improve the performance of query processing. Without indices, entire tables would need to be read from the hard disk, incurring massive overhead. Therefore, indices are vital to the successful implementation of a database, especially on a large scale (such as the typical size of an electronic health record) and during analysis (e.g., analytics, decision support, and data warehousing). At a minimum, students should understand the necessity, performance benefits, basic creation, and default instantiation (e.g., primary keys) of indices.
Views	Views, which are essentially stored queries, provide two main advantages. First, complex queries requiring real-time data can be stored and accessed the way a table would be; this process minimizes query writing and errors. Second, views are used as a security apparatus, in which a user has access to, for example, only a portion of a table. At a minimum, students should understand the basic uses and definition of views.