**Assumptions**

* All hospitals are vaccination locations (converse does not hold).
* A nurse works up to one location a day.
* A person’s phone number is unique.
* A batch cannot be shared among vaccination locations.
* A nurse can only have one employer.
* A nurse cannot be fired.
* Multiple nurses cannot be in charge of one slot.
* The slot is only concerned with the scheduling of an injection and nothing beyond that (so it doesn’t have to record whether the injection was a success). Or we assume that every slot results in the successful administration of the vaccine (if the slot has the necessary relationships).
* Only slot duration and number of vials available can affect how many slots a location can have a day.

**Restrictions**

* A nurse cannot be in two slots with overlapping times.
* A person’s date of registration is after the date of birth.
* A batch’s expiry date has to be after the manufacturing date.
* A batch cannot be related to more vials than its number of vials attribute.
* If a nurse oversees a slot, it should also be assigned to the workday of the vaccination location hosting the slot for that day.
* The vial used in a slot must be a part of the batch that the vaccination location owns.
* A person cannot be given vaccine doses with differing brand names.
* A person cannot be assigned to more slots than the required number of doses.
* A person cannot be assigned to two slots that are closer together date and time-wise than the waiting period of the vaccine (if the vaccine requires two or more doses per person).
* A vaccination location with no batches should not be creating slots (unless maybe the location is expecting a batch).
* Should not be able to create anymore slots if the vaccination location has no more available vials.
* A person under 65 years old cannot be in the over 65 category. Likewise for the below 10 years old category. Checks should be made every now and then.
* If a person belongs to two or more categories, it has to be assigned to the highest priority category it can be a part of.
* You can’t modify a slot during or after the scheduled time.

**Relational Translation**

People(hinsurnum, name, phone, city, streetaddr, postalcode, dateofbirth, gender, regdate, cname)

* cname references Categories

Categories(name, priority)­­

Nurses(licenseno, name, hospname)

* hospname references Hospitals

Hospitals(name)

* name references Locations

Locations(name, streetaddr, city, postalcode)

WorkingDays(name, date)

* name references Locations

Slots(name, date, time, tentnum, hinsurnum, allocdate, licenseno, num)

* name, date references WorkingDays
* hinsurnum references People
* licenseno references Nurses
* num references Vials

Vaccines(name, numdoses, waitingperiod)

Batches(name, batchnum, manufacdate, expirydate, numvials, lname)

* name references Vaccines
* lname references Locations

Vials(name, batchnum, num)

* name, batchnum references Batches

NurseDay(licensno, name, date)

* licenseno references Nurses
* name, date references WorkingDays

I combined the relation(s)…

* Assignment(hinsurnum, cname) into People
  + hinsurnum referenced People
  + cname referenced Categories
* Employment(licenseno, name) into Nurses
  + licenseno referenced Nurses
  + name referenced Hospitals
* InCharge(S, licenseno), Allocation(S, hinsurnum, allocdate), UsedIn(S, num) into Slots
  + S=name, date, time, tentnum referenced Slots
  + licenseno referenced Nurses
  + hinsurnum referenced People
  + num referenced Vials
* Shipped(name, batchnum, lname) into Batches
  + name, batchnum referenced Batches
  + lname referenced Locations

So that the key constraint can be enforced. With key constraint enforced, participation constraint will have to be enforced in the next part of the project with SQL’s NOT NULL.

For Hospitals ISA Locations, a query wanting all the Locations will have to go through both tables.