

### Assumptions

- The employer of a nurse is a hospital that is a valid vaccination location
- Nurses are assigned to a location for the entire day and each slot can be assigned to any nurse
- Batches of vaccine sent to a vaccination location will be administered at that location
- Multiple individuals/vaccination location can have the same address (e.g. Individuals residing together/Vaccination locations in different areas of the same hospital)
- Vaccine batches only contain one kind of vaccine.

### Restrictions

- The model does not capture whether multiple doses given to a person will be of the same vaccine.
- The model does not capture whether the waiting period is respected.
- Priority numbering is exactly as described in problem statement (i.e. 1 highest to 4 lowest)
- The model does not capture the fact that only nurses assigned to a particular location are available to be assigned to the slots of that location. However, this information can be deduced from looking at the relationships of a registered individual to their assigned slot and to the vial they were administered with.
- Non-covering for the Location ISA relationship (a location does not have to be an employer of nurses).
- The relational model does not capture the participation constraint of Employer to Nurses and of Category to RegIndividuals

### Relational Translation

- Vaccines(manufacturer, numdoses, waitperiod)
- Batches(batchnum, manufacturer, date, expdate, totvials, vname)
  - manufacturer foreign key references Vaccines
  - vname foreign key references VacLocations
- Vial(vialnum, batchnum, manufacturer, licensenum, iname)
  - (batchnum, manufacturer) foreign keys reference Batches
  - Licensenum foreign key references Nurses
  - iname foreign key references RegIndividuals
- VacLocations(vname, city, postcode, street)
- Employer(ename)
  - Ename foreign key references VacLocations
- Slots(sid, time, date, vname, iname)
  - vname foreign key references VacLocations
  - iname foreign key references RegIndividuals
- Nurses(licensenum, nname, vname, ename)

- vname foreign key references VacLocations
  - ename foreign key references Employer
- NurseAssignment(licensenum, vname, date)
  - licensenum foreign key references nurses
  - vname foreign key references VacLocations
- RegIndividuals(HIN, date, name, phonenum, datebirth, gender, city, postcode, street, sid, prioritynum)
  - sid foreign key references Slot
  - prioritynum foreign key references Category
- Category(prioritynum, desc)

**Combined relations:**

- RegIndividuals-Category relationship (key+participation constraint)
- Nurses-Employer relationship (key+participation constraint)
- Slots-VacLocations relationship (key+participation constraint)
- Vials-Nurses relationship (key+participation constraint)
- Vials-RegIndividuals relationship (key+participation constraint)
- Vials-Batch relationship (weak entity)
- Batch-Vaccines relationship (weak entity)
- Slots-RegIndividuals relationship (2-way key constraint)