

Title: Identifying the DEAD: Development and Validation of a Patient-Level Model to Predict Death Status in Population-Level Claims

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Authors: Jenna M. Reps¹, Peter R. Rijnbeek² and Patrick B. Ryan¹

Affiliations: ¹Janssen Research and Development, Raritan, NJ; ²Erasmus MC, Rotterdam, The Netherlands

Corresponding author: jreps@its.jnj.com

Electronic Supplementary Material 1:

The parameterised sql code that can create the target population and outcome for data in the OMOP CDM format with complete death records is:

Development Target Population Code:

```
delete from @work_database.@cohort where COHORT_DEFINITION_ID=@cohort_id;
```

```
insert into @work_database.@cohort(COHORT_DEFINITION_ID, SUBJECT_ID,cohort_start_date, cohort_end_date)
```

```
select @cohort_id COHORT_DEFINITION_ID, person_id , cohort_start_date, cohort_end_date
```

```
from
```

```
( select person_id, cohort_start_date, cohort_start_date as cohort_end_date, row_number() over (order by floor((person_id%123456)/4)) as rand1
```

```
from
```

```
( select person_id, max(observation_period_end_date) as cohort_start_date
```

```
from @cdm_database_schema.observation_period
```

```
where observation_period_end_date between '2011-01-01' and '2012-11-01'
```

```
and datediff(dd,observation_period_start_date, observation_period_end_date) > 365
```

```
group by person_id
```

```
) t1
```

```
) t2
```

```
where rand1 <= 1000000;
```

```

-- add the OUTCOME
delete from @work_database.@cohort where COHORT_DEFINITION_ID=@outcome_id;

insert into @work_database.@cohort(COHORT_DEFINITION_ID, SUBJECT_ID,cohort_start_date,
cohort_end_date)
select @outcome_id COHORT_DEFINITION_ID, person_id, cohort_start_date, cohort_end_date
from
( select t2.subject_id person_id, t2.cohort_start_date, t2.cohort_start_date as cohort_end_date
  from
  (select * from @work_database.@cohort
   where COHORT_DEFINITION_ID=@cohort_id
  ) t2
  inner join @cdm_database_schema.death d1
  on t2.subject_id = d1.person_id and abs(datediff(dd,t2.cohort_start_date,d1.death_date)) <= 61
) t3;

```

External Validation Using Death At Discharge Population:

```

insert into @work_database.@cohort(COHORT_DEFINITION_ID, SUBJECT_ID,cohort_start_date,
cohort_end_date)
select top 1000 @cohort_id as COHORT_DEFINITION_ID, person_id, cohort_start_date,
cohort_start_date
from
(
  select op.person_id, max(op.observation_period_end_date) as cohort_start_date
  from @cdm_database_schema.observation_period op inner join @cdm_database_schema.death d1
  on op.person_id = d1.person_id
  where
  datediff(dd,op.observation_period_start_date, op.observation_period_end_date) > 365
  and d1.death_type_concept_id in (38003566, 38003567)
  group by op.person_id
  having abs(datediff(dd,max(op.observation_period_end_date),max(d1.death_date))) <= 30
) t1
order by person_id%4567;
-- observations with another observation (non-dead)
insert into @work_database.@cohort(COHORT_DEFINITION_ID, SUBJECT_ID,cohort_start_date,
cohort_end_date)
select top 700000 @cohort_id as COHORT_DEFINITION_ID, person_id, cohort_start_date,
cohort_end_date
from (select a.person_id, min(a.observation_period_end_date) as cohort_start_date,
      min(a.observation_period_end_date) as cohort_end_date
  from @cdm_database_schema.observation_period a
  where exists (select person_id from @cdm_database_schema.observation_period b
  where a.person_id=b.person_id and a.observation_period_end_date <
b.observation_period_start_date)
  group by a.person_id
) temp order by person_id%8776;

```

Outcome:

```
insert into @work_database.@cohort(COHORT_DEFINITION_ID, SUBJECT_ID,cohort_start_date,
cohort_end_date)
select top 1000 @outcome_id as COHORT_DEFINITION_ID, person_id, cohort_start_date,
cohort_start_date
from
( select op.person_id, max(op.observation_period_end_date) as cohort_start_date
  from @cdm_database_schema.observation_period op inner join @cdm_database_schema.death d1
  on op.person_id = d1.person_id
  where
  datediff(dd,op.observation_period_start_date, op.observation_period_end_date) > 365
  and d1.death_type_concept_id in (38003566, 38003567)
  group by op.person_id
  having abs(datediff(dd,max(op.observation_period_end_date),max(d1.death_date))) <= 30
) t1 order by person_id%4567;
```