

Extraction scripts for MIMIC and EICU

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EICU_CONSORT1.SQL

```
SET SEARCH_PATH TO eicu;
```

```
DROP TABLE IF EXISTS hypernatremia.EICU_CONSORT1;
```

```
CREATE TABLE hypernatremia.EICU_CONSORT1 AS (
```

```
WITH tmp1 AS (
```

```
SELECT * FROM PATIENT
```

```
WHERE age != '> 89' AND age != ''
```

```
)
```

```
, tmp2 AS (
```

```
SELECT DISTINCT patientunitstayid,
```

```
CAST (age AS integer)
```

```
FROM tmp1
```

```
ORDER BY patientunitstayid
```

```
)
```

```
SELECT * FROM tmp2
```

```
WHERE age >= 18 AND age <= 90
```

```
ORDER BY patientunitstayid
```

```
)
```

EICU_CONSORT2.SQL

```
SET search_path TO eicu;
```

```
DROP TABLE IF EXISTS hypernatremia.EICU_ConSORT2; -- 142.418 distinct patients
```

```
CREATE TABLE hypernatremia.EICU_ConSORT2 AS (
```

```
WITH tmp1 AS (
```

```
SELECT l.*
```

```
FROM lab l
```

```
INNER JOIN hypernatremia.EICU_ConSORT1 c1
```

```
ON l.patientunitstayid = c1.patientunitstayid
```

```

WHERE l.labname = 'sodium' AND l.labresultoffset > 0
ORDER BY l.patientunitstayid, l.labresultoffset
)
, tmp1_bis AS (
SELECT ROW_NUMBER() OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset), -- to count how
many measures we have for each ICUstay_id
tmp1.*
FROM tmp1
ORDER BY patientunitstayid, labresultoffset
)
, tmp2 AS (
SELECT DISTINCT tmp1.row_number, MAX(tmp1.row_number) OVER(PARTITION BY
tmp1.patientunitstayid) AS MAX_ROW_NUMBER,
tmp1.patientunitstayid, tmp1.labresult, tmp1.labresultoffset
FROM tmp1_bis tmp1
ORDER BY patientunitstayid, labresultoffset
)
SELECT patientunitstayid, labresult, labresultoffset
FROM tmp2
WHERE MAX_ROW_NUMBER >= 2
)

```

[EICU_CONSORT3.SQL](#)

```
SET SEARCH_PATH TO EICU;
```

```
DROP TABLE IF EXISTS hypernatremia.EICU_Consort3; -- 96.590 patients
```

```
CREATE TABLE hypernatremia.EICU_Consort3 AS (
```

```
WITH tmp1 AS (
```

```
SELECT patientunitstayid,
```

```
MIN(labresultoffset) OVER (PARTITION BY patientunitstayid) AS min_labresultoffset, labresultoffset,
```

```
LAG(labresultoffset) OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset) AS
labresultoffset_lag,
```

```

labresult,
LAG(labresult) OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset) AS labresult_lag
FROM hypernatremia.EICU_CONSORT2
ORDER BY patientunitstayid, labresultoffset
)
, tmp2 AS ( -- excluding the patients with one of the first two values out of range
SELECT tmp1.*,
CASE WHEN (labresult >= 135 AND labresult <= 145 AND labresult_lag >= 135 AND labresult_lag <= 145)
THEN 1 -- check the first 2 measures of Na
ELSE 0 END AS selected_patient -- patients with 0 will be excluded
FROM tmp1
WHERE min_labresultoffset = labresultoffset_lag -- considering only the first two measures!
ORDER BY patientunitstayid, labresultoffset
)
, tmp3 AS (
SELECT t1.patientunitstayid, t1.min_labresultoffset, t1.labresultoffset, t1.labresultoffset_lag,
t1.labresult, t1.labresult_lag
FROM tmp1 t1
INNER JOIN tmp2 ON t1.patientunitstayid = tmp2.patientunitstayid
WHERE tmp2.selected_patient = 1
ORDER BY t1.patientunitstayid, t1.labresultoffset
)
SELECT patientunitstayid, labresultoffset, labresult
FROM tmp3
)

```

EICU_CONSORT4.SQL

```
SET SEARCH_PATH TO eicu;
```

```
DROP TABLE IF EXISTS hypernatremia.EICU_Consort4; -- 88.526 patients
```

```
CREATE TABLE hypernatremia.EICU_Consort4 AS (
```

```

WITH tmp1 AS (
SELECT DISTINCT patientunitstayid,
MIN(labresultoffset) OVER (PARTITION BY patientunitstayid) AS min_labresultoffset, labresultoffset,
LAG(labresultoffset) OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset) AS
labresultoffset_lag,
labresult,
LAG(labresult) OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset) AS labresult_lag
FROM hypernatremia.EICU_CONSORT3
ORDER BY patientunitstayid, labresultoffset
)
, tmp2 AS (
SELECT DISTINCT tmp1.*,
CASE WHEN (labresult < 135 AND labresult_lag < 135) THEN 0
ELSE 1 END AS included_patient
FROM tmp1
ORDER BY patientunitstayid, labresultoffset
)
, tmp3 AS(
SELECT DISTINCT tmp2.*,
MIN(included_patient) OVER (PARTITION BY patientunitstayid) AS min_included_patient
FROM tmp2
)
SELECT DISTINCT patientunitstayid, labresultoffset, labresult
FROM tmp3
WHERE min_included_patient = 1
ORDER BY patientunitstayid, labresultoffset
)
EICU_Hypernatremic.SQL
SET SEARCH_PATH TO EICU;

```

```

DROP TABLE IF EXISTS hypernatremia_EICU_HYPER; -- 5.819 patients, 436 severe hypernatremic
CREATE TABLE hypernatremia.EICU_HYPER AS (
WITH tmp1 AS (
SELECT DISTINCT
ROW_NUMBER () OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset),
Cons4.patientunitstayid, Cons4.labresultoffset,
LAG(Cons4.labresultoffset) OVER (PARTITION BY Cons4.patientunitstayid ORDER BY Cons4.labresultoffset)
AS labresultoffset_lag,
Cons4.labresult,
LAG(Cons4.labresult) OVER (PARTITION BY Cons4.patientunitstayid ORDER BY Cons4.labresultoffset) AS
labresult_lag
FROM hypernatremia.EICU_CONSORT4 Cons4
ORDER BY patientunitstayid, labresultoffset
)
, tmp2 AS (
SELECT DISTINCT t1.*,
CASE WHEN labresult > 145 THEN 1 ELSE 0 END AS flag1 ,
CASE WHEN labresult_lag > 145 THEN 1 ELSE 0 END AS flag2,
CASE WHEN labresult > 155 THEN 1 ELSE 0 END AS flag1_severe,
CASE WHEN labresult_lag > 155 THEN 1 ELSE 0 END AS flag2_severe
FROM tmp1 t1
ORDER BY patientunitstayid, labresultoffset
)
, tmp3 AS(
SELECT DISTINCT t2.*, (flag1+flag2) AS sum_flags, (flag1_severe+flag2_severe) AS sum_flags_severe
FROM tmp2 t2
)
, tmp4 AS(
SELECT DISTINCT
t3.*, MAX(sum_flags) OVER (PARTITION BY (patientunitstayid)) AS hypernatremic_flag,

```

```

MAX(sum_flags_severe) OVER (PARTITION BY (patientunitstayid)) AS severe_hyernatremic_flag
FROM tmp3 t3

ORDER BY patientunitstayid, labresultoffset
)
, tmp5 AS (
SELECT DISTINCT *
FROM tmp4
WHERE flag1 = 1 AND flag2 = 1
ORDER BY patientunitstayid, labresultoffset
)
, tmp6 AS (
SELECT DISTINCT tmp5.*,
MIN(labresultoffset) OVER (PARTITION BY patientunitstayid) AS min_labresultoffset
FROM tmp5
ORDER BY patientunitstayid, labresultoffset
)
, tmp7 AS (
SELECT DISTINCT patientunitstayid, labresultoffset AS diagnosis_time, labresult AS first_OutOfRange_value,
labresult_lag AS second_OutofRange_value,
1 AS hypernatremic_patient,
CASE WHEN severe_hyernatremic_flag = 2 THEN 1 ELSE 0 END AS severe_hyernatremic_patient
FROM tmp6
WHERE labresultoffset = min_labresultoffset
)
SELECT * FROM tmp7
)

```

EICU_Normoatremic.SQL

```
SET SEARCH_PATH TO EICU;
```

```
DROP TABLE IF EXISTS hypernatremia.EICU_Normo; -- 82.726 patients Normoatremic
```

```

CREATE TABLE hypernatremia.EICU_Normo AS (
WITH tmp1 AS (
SELECT DISTINCT
ROW_NUMBER () OVER (PARTITION BY patientunitstayid ORDER BY labresultoffset),
Cons4.patientunitstayid, Cons4.labresultoffset,
LAG(Cons4.labresultoffset) OVER (PARTITION BY Cons4.patientunitstayid ORDER BY Cons4.labresultoffset)
AS labresultoffset_lag,
Cons4.labresult,
LAG(Cons4.labresult) OVER (PARTITION BY Cons4.patientunitstayid ORDER BY Cons4.labresultoffset) AS
labresult_lag
FROM hypernatremia.EICU_CONSORT4 Cons4
ORDER BY patientunitstayid, labresultoffset
)
, tmp2 AS (
SELECT DISTINCT t1.*,
CASE WHEN labresult > 145 THEN 1 ELSE 0 END AS flag1 ,
CASE WHEN labresult_lag > 145 THEN 1 ELSE 0 END AS flag2,
CASE WHEN labresult > 155 THEN 1 ELSE 0 END AS flag1_severe,
CASE WHEN labresult_lag > 155 THEN 1 ELSE 0 END AS flag2_severe
FROM tmp1 t1
ORDER BY patientunitstayid, labresultoffset
)
, tmp3 AS(
SELECT DISTINCT t2.*, (flag1+flag2) AS sum_flags, (flag1_severe+flag2_severe) AS sum_flags_severe
FROM tmp2 t2
)
, tmp4 AS(
SELECT DISTINCT
t3.*, MAX(sum_flags) OVER (PARTITION BY (patientunitstayid)) AS hypernatremic_flag,
MAX(sum_flags_severe) OVER (PARTITION BY (patientunitstayid)) AS severe_hypernatremic_flag
FROM tmp3 t3

```



```
ORDER BY patientunitstayid, labresultoffset
)
, Normoatremic AS( -- all the icustay_id in which the subject was normoatremic
SELECT DISTINCT patientunitstayid, NULL AS diagnosis_time
FROM tmp4
WHERE hypernatremic_flag < 2
ORDER BY patientunitstayid
)
SELECT * FROM Normoatremic
)
```

EICU_hyponatremia_first_careunit.SQL

```
DROP TABLE IF EXISTS hyponatremia.first_careunit;

CREATE TABLE hyponatremia.first_careunit AS (

WITH tmp1 AS (

SELECT DISTINCT patientunitstayid FROM hyponatremia.all_nameasures

)

, tmp2 AS (

SELECT DISTINCT t1.patientunitstayid, pat.unittype AS first_careunit

FROM tmp1 t1

LEFT JOIN eicu.patient pat ON t1.patientunitstayid = pat.patientunitstayid

ORDER BY t1.patientunitstayid

)

, tmp3 AS (

SELECT t2.*,

CASE WHEN first_careunit = 'SICU' THEN 'Surgical Intensive Care Unit'

      WHEN first_careunit = 'MICU' THEN 'Medical Intensive Care Unit'

      WHEN first_careunit = 'CSICU' THEN 'Cardiac Surgical Intensive Care Unit'

      WHEN first_careunit = 'Neuro ICU' THEN 'Neurological Intensive Care Unit'

      WHEN first_careunit = 'Cardiac ICU' THEN 'Cardiac Intensive Care Unit'

      WHEN first_careunit = 'Med-Surg ICU' THEN 'Medical-Surgical Intensive Care Unit'

      WHEN first_careunit = 'CCU-CTICU' THEN 'Coronary-Cardiothoracic Intensive Care Unit'

      WHEN first_careunit = 'CTICU' THEN 'Cardiothoracic Intensive Care Unit'

ELSE NULL END AS careunitname

FROM tmp2 t2

)

SELECT * FROM tmp3

)
```

MIMIC_CONSORT1.SQL

```
SET SEARCH_PATH TO MIMICIII; -- Path of the schema where the database is stored
```

```
DROP TABLE IF EXISTS hypernatremia.MIMIC_CONSORT1;
CREATE TABLE hypernatremia.MIMIC_CONSORT1 AS (
WITH age_tbl AS ( -- table which contains all the age for all the subjects
SELECT icu.subject_id, icu.hadm_id, icu.icustay_id,
ROUND((cast(icu.intime AS date) - CAST(patients.dob as date))/365.242,0) AS age
FROM icustays icu
INNER JOIN patients ON icu.subject_id = patients.subject_id
ORDER BY subject_id, hadm_id, icustay_id, age
)
SELECT *
FROM age_tbl
WHERE age >= 18 AND age <= 90 -- only the patients with more than 18 and less than 90 years
)
```

MIMIC_CONSORT2.SQL

```
SET SEARCH_PATH TO MIMICIII;
```

```
DROP TABLE IF EXISTS hypernatremia.MIMIC_CONSORT2;
CREATE TABLE hypernatremia.MIMIC_CONSORT2 AS (
WITH tmp1 AS -- This table contains all the sodium measures collected after the ICU admission
(
SELECT DISTINCT
l.subject_id, l.hadm_id, i.icustay_id, i.intime, l.itemid, l.charttime, l.value, l.valuenum, l.valueuom, l.flag,
i.dbsource
FROM mimicii.labevents l
INNER JOIN mimicii.icustays i ON l.hadm_id = i.hadm_id
```

INNER JOIN hypernatremia.MIMIC_CONSORT1 ag ON l.hadm_id = ag.hadm_id -- MIMIC_CONSORT1 has been generated from the script MIMIC_CONSORT1.sql

WHERE itemid IN (50824, 50983) AND charttime >= intime -- Selecting only sodium and filtering out the measures before icu admission

ORDER BY l.subject_id, l.hadm_id, charttime

) -- SELECT * FROM tmp1 --UNCOMMENT AND RUN IF YOU WANT TO CHECK!

, tmp1_bis AS(

SELECT ROW_NUMBER() OVER (PARTITION BY icustay_id ORDER BY charttime), -- to count how many measures we have for each ICUstay_id

tmp1.*

FROM tmp1

ORDER BY subject_id, hadm_id, charttime

)

, tmp2 AS (-- find the number of sodium measurement for each patient (MAX_ROW_NUMBER)

SELECT DISTINCT tmp1.row_number, MAX(tmp1.row_number) OVER(PARTITION BY tmp1.icustay_id) AS MAX_ROW_NUMBER,

tmp1.subject_id, tmp1.hadm_id, tmp1.icustay_id, tmp1.intime,

tmp1.charttime, tmp1.valuenum, tmp1.dbsource

FROM tmp1_bis tmp1

ORDER BY subject_id, charttime

)

SELECT *

FROM tmp2

WHERE MAX_ROW_NUMBER >= 2

)

MIMIC_CONSORT3.SQL

SET SEARCH_PATH TO MIMICIII;

DROP TABLE IF EXISTS hypernatremia.MIMIC_CONSORT3;

CREATE TABLE hypernatremia.MIMIC_CONSORT3 AS (

WITH tmp1 AS (

```

SELECT subject_id, hadm_id, icustay_id, intime,
MIN(charttime) OVER (PARTITION BY icustay_id) AS min_charttime, charttime,
LAG(charttime) OVER (PARTITION BY icustay_id ORDER BY charttime) AS charttime_lag, valuenum,
LAG(valuenum) OVER (PARTITION BY icustay_id ORDER BY charttime) AS valuenum_lag, dbsource
FROM hypernatremia.MIMIC_CONSORT2
ORDER BY subject_id, charttime
)
, tmp2 AS ( -- excluding the patients with one of the first two values out of range
SELECT tmp1.*,
CASE WHEN (valuenum >= 135 AND valuenum <= 145 AND valuenum_lag >= 135 AND valuenum_lag <=
145) THEN 1 -- check the first 2 measures of Na
ELSE 0 END AS selected_patient -- patients with 0 will be excluded
FROM tmp1
WHERE min_charttime = charttime_lag -- considering only the first two measures!
ORDER BY subject_id
)
, tmp3 AS (
SELECT t1.subject_id, t1.hadm_id, t1.icustay_id, t1.intime, t1.min_charttime, t1.charttime,
t1.charttime_lag, t1.valuenum, t1.valuenum_lag, t1.dbsource
FROM tmp1 t1
INNER JOIN tmp2 ON t1.icustay_id = tmp2.icustay_id
WHERE tmp2.selected_patient = 1
ORDER BY t1.subject_id, t1.charttime
)
SELECT subject_id, hadm_id, icustay_id, intime, charttime, valuenum, dbsource
FROM tmp3
)

```

MIMIC_CONSORT4.SQL

```
SET SEARCH_PATH TO MIMICIII;
```

```

DROP TABLE IF EXISTS hypernatremia.MIMIC_CONSORT4;
CREATE TABLE hypernatremia.MIMIC_CONSORT4 AS (
WITH tmp1 AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id, intime,
MIN(charttime) OVER (PARTITION BY icustay_id) AS min_charttime, charttime,
LAG(charttime) OVER (PARTITION BY icustay_id ORDER BY charttime) AS charttime_lag, valuenum,
LAG(valuenum) OVER (PARTITION BY icustay_id ORDER BY charttime) AS valuenum_lag, dbsource
FROM hypernatremia.MIMIC_CONSORT3
ORDER BY subject_id, charttime
)
, tmp2 AS (
SELECT DISTINCT tmp1.*,
CASE WHEN (valuenum < 135 AND valuenum_lag < 135) THEN 0
ELSE 1 END AS included_patient
FROM tmp1
ORDER BY subject_id, charttime
)
, tmp3 AS(
SELECT DISTINCT tmp2.*,
MIN(included_patient) OVER (PARTITION BY icustay_id) AS min_included_patient
FROM tmp2
)
SELECT DISTINCT subject_id, hadm_id, icustay_id, intime, charttime, valuenum, dbsource
FROM tmp3
WHERE min_included_patient = 1
ORDER BY subject_id, icustay_id, charttime
)

```

[MIMIC_Hypernatremic.SQL](#)

SET SEARCH_PATH TO MIMICIII;

```

DROP TABLE IF EXISTS hypernatremia.MIMIC_HYPER;
CREATE TABLE hypernatremia.MIMIC_HYPER AS (
WITH tmp1 AS (
SELECT DISTINCT
ROW_NUMBER () OVER (PARTITION BY icustay_id ORDER BY charttime) ,
Cons4.subject_id, Cons4.hadm_id, Cons4.icustay_id, Cons4.intime, Cons4.charttime,
LAG(Cons4.charttime) OVER (PARTITION BY Cons4.icustay_id ORDER BY Cons4.charttime) AS charttime_lag,
Cons4.valuenum,
LAG(Cons4.valuenum) OVER (PARTITION BY Cons4.icustay_id ORDER BY Cons4.charttime) AS valuenum_lag,
Cons4.dbsource
FROM hypernatremia.MIMIC_CONSORT4 Cons4
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp2 AS (
SELECT DISTINCT t1.*,
CASE WHEN valuenum > 145 THEN 1 ELSE 0 END AS flag1 ,
CASE WHEN valuenum_lag > 145 THEN 1 ELSE 0 END AS flag2,
CASE WHEN valuenum > 155 THEN 1 ELSE 0 END AS flag1_severe,
CASE WHEN valuenum_lag > 155 THEN 1 ELSE 0 END AS flag2_severe
FROM tmp1 t1
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp3 AS(
SELECT DISTINCT t2.*, (flag1+flag2) AS sum_flags, (flag1_severe+flag2_severe) AS sum_flags_severe
FROM tmp2 t2
)
, tmp4 AS(
SELECT DISTINCT
t3.*, MAX(sum_flags) OVER (PARTITION BY (icustay_id)) AS hypernatremic_flag, MAX(sum_flags_severe)
OVER (PARTITION BY (icustay_id)) AS severe_hypernatremic_flag

```

```

FROM tmp3 t3
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp5 AS (
SELECT DISTINCT *
FROM tmp4
WHERE flag1 = 1 AND flag2 = 1
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp6 AS (
SELECT DISTINCT tmp5.*,
--MIN(intime) OVER (PARTITION BY subject_id) AS first_intime,
MIN(charttime) OVER (PARTITION BY icustay_id) AS min_charttime
FROM tmp5
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp7 AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id, intime, charttime AS diagnosis_time, valuenum AS
first_OutOfRange_value, valuenum_lag AS second_OutofRange_value, dbsource,
1 AS hypernatremic_patient,
MIN(intime) OVER (PARTITION BY subject_id) AS first_intime,
CASE WHEN severe_hypernatremic_flag = 2 THEN 1 ELSE 0 END AS severe_hypernatremic_patient
FROM tmp6
WHERE charttime = min_charttime --AND intime = first_intime
)
, Hypernatremic_final AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id, intime, diagnosis_time, first_OutOfRange_value,
second_OutofRange_value, dbsource,
hypernatremic_patient, severe_hypernatremic_patient
FROM tmp7

```



```

WHERE intime = first_intime -- if I have multiple hypernatremic icustay, I select only the first one
ORDER BY subject_id, hadm_id, icustay_id, intime
)
SELECT *
FROM Hypernatremic_final
)

```

MIMIC_Normoatremic.SQL

```
SET SEARCH_PATH TO MIMICIII;
```

```

DROP TABLE IF EXISTS hypernatremia.MIMIC_NORMO;
CREATE TABLE hypernatremia.MIMIC_NORMO AS (
WITH tmp1 AS (
SELECT DISTINCT
ROW_NUMBER () OVER (PARTITION BY icustay_id ORDER BY charttime) ,
Cons4.subject_id, Cons4.hadm_id, Cons4.icustay_id, Cons4.intime, Cons4.charttime,
LAG(Cons4.charttime) OVER (PARTITION BY Cons4.icustay_id ORDER BY Cons4.charttime) AS charttime_lag,
Cons4.valuenum,
LAG(Cons4.valuenum) OVER (PARTITION BY Cons4.icustay_id ORDER BY Cons4.charttime) AS valuenum_lag,
Cons4.dbsource
FROM hypernatremia.MIMIC_CONSORT4 Cons4
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, tmp2 AS (
SELECT DISTINCT t1.*,
CASE WHEN valuenum > 145 THEN 1 ELSE 0 END AS flag1 ,
CASE WHEN valuenum_lag > 145 THEN 1 ELSE 0 END AS flag2,
CASE WHEN valuenum > 155 THEN 1 ELSE 0 END AS flag1_severe,
CASE WHEN valuenum_lag > 155 THEN 1 ELSE 0 END AS flag2_severe
FROM tmp1 t1
ORDER BY subject_id, hadm_id, icustay_id, charttime

```

```

)
, tmp3 AS(
SELECT DISTINCT t2.*, (flag1+flag2) AS sum_flags, (flag1_severe+flag2_severe) AS sum_flags_severe
FROM tmp2 t2
)
, tmp4 AS(
SELECT DISTINCT
t3.*, MAX(sum_flags) OVER (PARTITION BY (icustay_id)) AS hypernatremic_flag, MAX(sum_flags_severe)
OVER (PARTITION BY (icustay_id)) AS severe_hypernatremic_flag
FROM tmp3 t3
ORDER BY subject_id, hadm_id, icustay_id, charttime
)
, Normoatremic AS( -- all the icustay_id in which the subject was normoatremic
SELECT DISTINCT subject_id, hadm_id, icustay_id, intime, NULL AS diagnosis_time, dbsource,
MIN(intime) OVER (PARTITION BY subject_id) AS first_intime
FROM tmp4
WHERE hypernatremic_flag < 2
ORDER BY subject_id, hadm_id, icustay_id
)
, Normoatremic2 AS (
SELECT subject_id, hadm_id, icustay_id, intime, diagnosis_time, dbsource
FROM Normoatremic
WHERE intime = first_intime -- if I have multiple normoatremic icustay, I select only the first one
ORDER BY subject_id, hadm_id, icustay_id
)
, Normoatremic_final AS (
SELECT DISTINCT Norm.subject_id, Norm.hadm_id, Norm.icustay_id, Norm.intime, Norm.diagnosis_time,
Norm.dbsource
FROM Normoatremic2 Norm
LEFT JOIN hypernatremia.MIMIC_HYPER Hyper ON Norm.subject_id = Hyper.subject_id

```

WHERE Hyper.subject_id IS NULL -- I should eliminate, from the Normoatremic icustay_id, the ones in which the patient was hypernatremic in another icustay

ORDER BY Norm.subject_id, Norm.hadm_id, Norm.icustay_id

)

SELECT *

FROM Normoatremic_final

)

MIMIC_hyponatremia_first_careunit.SQL

DROP TABLE IF EXISTS hyponatremia.first_careunit;

CREATE TABLE hyponatremia.first_careunit AS (

WITH tmp1 AS (

SELECT pat.*, icu.first_careunit

FROM hyponatremia.all_patients pat

LEFT JOIN mimiciii.icustays icu ON pat.icustay_id = icu.icustay_id

ORDER BY pat.subject_id

)

, tmp2 AS (

SELECT tmp1.*,

CASE WHEN first_careunit = 'MICU' THEN 'Medical Intensive Care Unit'

WHEN first_careunit = 'SICU' THEN 'Surgical Intensive Care Unit'

WHEN first_careunit = 'CSRU' THEN 'Cardiac Surgery Recovery Unit'

WHEN first_careunit = 'CCU' THEN 'Coronary Care Unit'

WHEN first_careunit = 'TSICU' THEN 'Trauma/Surgical Intensive Care Unit'

ELSE NULL END AS careunit_name

FROM tmp1

)

SELECT * FROM tmp2

)

MIMIC_hyponatremia_confounders_review.SQL

```
DROP TABLE IF EXISTS hyponatremia.confounders_review;

CREATE TABLE hyponatremia.confounders_review AS (
WITH sub_cv AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id, itemid
FROM mimiciii.inpatevents_cv
WHERE itemid IN (30030, 30338, 42999, 44424, 30143)
ORDER BY subject_id, hadm_id, icustay_id
)
, sub_mv AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id, itemid
FROM mimiciii.inpatevents_mv
WHERE itemid IN (225161, 221211, 220995, 227533)
ORDER BY subject_id, hadm_id, icustay_id
)
, tmp1 AS (
SELECT * FROM sub_cv UNION SELECT * FROM sub_mv
ORDER BY subject_id, hadm_id, icustay_id
)
, tmp2 AS (
SELECT tmp1.*,
CASE WHEN itemid IN (225161, 30143) THEN 'Hypertonic Saline'
      WHEN itemid IN (30030, 30338, 42999, 44424, 221211, 220995, 227533) THEN 'Sodium
Bicarbonate'
ELSE NULL END AS administration
FROM tmp1
ORDER BY subject_id, hadm_id, icustay_id
)
, tmp3 AS (
SELECT pat.*, t2.administration
```

```
FROM hypernatremia.all_patients pat
LEFT JOIN tmp2 t2 ON pat.icustay_id = t2.icustay_id
ORDER BY pat.subject_id, pat.hadm_id, pat.icustay_id
)
, tmp4 AS (
SELECT DISTINCT t3.*,
CASE WHEN administration = 'Sodium Bicarbonate' THEN 1 ELSE 0 END AS sodium_bicarbonate,
CASE WHEN administration = 'Hypertonic Saline' THEN 1 ELSE 0 END AS hypertonic_saline
FROM tmp3 t3
ORDER BY subject_id, hadm_id, icustay_id
)
, tmp5 AS (
SELECT DISTINCT subject_id, hadm_id, icustay_id,
MAX (sodium_bicarbonate) OVER (PARTITION BY subject_id) AS sodium_bicarbonate,
MAX (hypertonic_saline) OVER (PARTITION BY subject_id) AS hypertonic_saline
FROM tmp4
ORDER BY subject_id
)
SELECT * FROM tmp5
)
```