**Handout for the Analytics Academy (Part 2: Answers to the Exercises)**

**Exercise #1**

SELECT DISTINCT

value\_set\_name,

code\_system\_name,

code\_value,

code\_description  
FROM hedis\_value\_set\_codes  
WHERE latest = 'TRUE'  
 AND value\_set\_name = 'Alcohol Use Disorder'  
 AND code\_system\_name = 'ICD10CM'  
ORDER BY value\_set\_name, code\_system\_name, code\_value, code\_description

**Exercise #2**

**Step #1:** Find the Value Set(s) referring to pneumococcal vaccines. Look for codes in both the HEDIS and eCQM Value Sets

SELECT DISTINCT

value\_set\_name,

code\_system\_name,

code\_value,

code\_description

FROM hedis\_value\_set\_codes

WHERE latest = 'TRUE'

AND value\_set\_name ILIKE '%pneumococc%'

AND code\_system\_name = 'CVX'

ORDER BY value\_set\_name, code\_system\_name, code\_value, code\_description

SELECT DISTINCT

value\_set\_name,

code\_system\_name,

code\_value,

code\_description

FROM cqm\_value\_set\_codes

WHERE latest = 'TRUE'

AND value\_set\_name ILIKE '%pneumococc%'

ORDER BY value\_set\_name, code\_system\_name, code\_value, code\_description

**Step #2:** JOIN the HEDIS Value Set table to the immunizations table (eCW) or the relevant\_immunizations table (eCW and NextGen) and use the appropriate Value Set OID

SELECT DISTINCT  
 vaccinename,  
 count(patientid) AS count  
FROM immunizations  
 INNER JOIN hedis\_value\_set\_codes ON hedis\_value\_set\_codes.code\_value = immunizations.cvx\_code  
 AND hedis\_value\_set\_codes.latest = 'TRUE'  
 AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1921'  
WHERE givendate BETWEEN '2021-05-01' AND '2022-04-30'  
GROUP BY vaccinename

SELECT DISTINCT  
 vaccine\_name,  
 count(patient\_id) AS count  
FROM relevant\_immunizations  
 INNER JOIN hedis\_value\_set\_codes ON hedis\_value\_set\_codes.code\_value = relevant\_immunizations.cvx\_code :: VARCHAR  
 AND hedis\_value\_set\_codes.latest = 'TRUE'  
 AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1921'  
WHERE applied\_on BETWEEN '2021-05-01' AND '2022-04-30'  
GROUP BY vaccine\_name

**Exercise #3**

**Step #1:** Find and explore the Value Set

SELECT DISTINCT

value\_set\_name,

value\_set\_oid,

code\_system\_name,

code\_value,

code\_description

FROM hedis\_value\_set\_codes

WHERE latest = 'TRUE'

AND value\_set\_name = 'Alcohol Counseling or Other Follow Up Care'

ORDER BY value\_set\_name, code\_system\_name, code\_value, code\_description

**Step #2:** Link the Value Set codes to billed CPT codes and assessment ICD-10 codes

**(eCW)**

SELECT DISTINCT \*

FROM(SELECT

relevant\_patients.id AS patient\_id,

servicedt :: DATE AS performed\_on

FROM relevant\_patients

INNER JOIN edi\_invoice ON edi\_invoice.patientid = relevant\_patients.id

AND edi\_invoice.deleteflag = 0

AND edi\_invoice.voidflag = 0

INNER JOIN edi\_inv\_cpt ON edi\_inv\_cpt.invoiceid = edi\_invoice.id

INNER JOIN hedis\_value\_set\_codes

ON hedis\_value\_set\_codes.code\_value = LEFT(edi\_inv\_cpt.code, 5)

AND hedis\_value\_set\_codes.latest = 'TRUE'

AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1437'

AND hedis\_value\_set\_codes.code\_system\_name = 'CPT'

UNION

SELECT

relevant\_visits.patient\_id,

relevant\_visits.visit\_date :: DATE AS performed\_on

FROM relevant\_visits

INNER JOIN diagnosis ON diagnosis.EncounterId = relevant\_visits.id

INNER JOIN itemdetail ON itemdetail.itemid = diagnosis.itemid AND propID = 13

INNER JOIN hedis\_value\_set\_codes

ON hedis\_value\_set\_codes.code\_value = itemdetail.value

AND hedis\_value\_set\_codes.latest = 'TRUE'

AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1437'

AND hedis\_value\_set\_codes.code\_system\_name = 'ICD10CM') AS alc\_counsel\_temp

**(NextGen)**

SELECT DISTINCT \*

FROM(SELECT

person\_surrogate\_key.person\_key AS patient\_id,

patient\_encounter.enc\_timestamp :: DATE AS performed\_on

FROM patient\_encounter

INNER JOIN charges ON charges.source\_id = patient\_encounter.enc\_id

INNER JOIN person\_surrogate\_key ON person\_surrogate\_key.person\_id = patient\_encounter.person\_id

INNER JOIN hedis\_value\_set\_codes

ON hedis\_value\_set\_codes.code\_value = charges.service\_item\_id

AND hedis\_value\_set\_codes.latest = 'TRUE'

AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1437'

AND hedis\_value\_set\_codes.code\_system\_name = 'CPT'

UNION

SELECT

person\_surrogate\_key.person\_key AS patient\_id,

patient\_encounter.enc\_timestamp :: DATE AS performed\_on

FROM encounter\_diags

INNER JOIN person\_surrogate\_key ON person\_surrogate\_key.person\_id = encounter\_diags.person\_id

INNER JOIN patient\_encounter ON patient\_encounter.enc\_id = encounter\_diags.enc\_id

INNER JOIN hedis\_value\_set\_codes

ON hedis\_value\_set\_codes.code\_value = encounter\_diags.icd9cm\_code\_id

AND hedis\_value\_set\_codes.latest = 'TRUE'

AND hedis\_value\_set\_codes.value\_set\_oid = '2.16.840.1.113883.3.464.1004.1437'

AND hedis\_value\_set\_codes.code\_system\_name = 'ICD10CM') AS alc\_counsel\_temp

**Exercise #4**

Answers do not involve SQL code. See the answer slides.

**Exercise #5**

--Defines the universe

DROP TABLE IF EXISTS universe;

CREATE TEMPORARY TABLE universe AS

SELECT DISTINCT

relevant\_patients.id,

relevant\_patients.mrn,

relevant\_patients.last\_name,

relevant\_patients.first\_name,

relevant\_patients.date\_of\_birth,

extract(YEAR FROM age('2022-01-01', relevant\_patients.date\_of\_birth)) AS age

FROM relevant\_patients

WHERE extract(YEAR FROM age('2022-01-01', relevant\_patients.date\_of\_birth)) <= 12

AND relevant\_patients.inactive = 'f'

AND relevant\_patients.deceased = 'f'

AND EXISTS(SELECT FROM relevant\_visits

WHERE relevant\_patients.id = relevant\_visits.patient\_id

AND uds\_medical IS TRUE

AND visit\_date BETWEEN '2022-01-01' AND '2022-04-30');

--Risk factor #1 is persistent asthma diagnosis

DROP TABLE IF EXISTS relevant\_asthma\_temp;

CREATE TEMPORARY TABLE relevant\_asthma\_temp AS

SELECT DISTINCT patientid

FROM relevant\_asthma

WHERE persistent IS TRUE

AND started\_on <= '2022-04-30';

--Risk factor #2 is BMI Percentile above 75

DROP TABLE IF EXISTS relevant\_bmi\_percentile\_temp;

CREATE TEMPORARY TABLE relevant\_bmi\_percentile\_temp AS

SELECT patientid

FROM(SELECT DISTINCT ON (patientid)

patientid,

value,

date

FROM relevant\_bmi\_percentile

WHERE date <= '2022-04-30'

ORDER BY patientid, date DESC) AS last\_bmi

WHERE value > 75;

--Risk factor #3 is ever had positive blood lead lab

DROP TABLE IF EXISTS lead\_lab\_temp;

CREATE TEMPORARY TABLE lead\_lab\_temp AS

SELECT DISTINCT patient\_id

FROM srhc\_lead\_labs

WHERE lab\_result ILIKE '%abnormal%';

SELECT

universe.mrn,

universe.last\_name,

universe.first\_name,

universe.date\_of\_birth,

universe.age,

CASE WHEN relevant\_asthma\_temp.patientid IS NULL THEN FALSE ELSE TRUE END AS has\_asthma,

CASE WHEN relevant\_bmi\_percentile\_temp.patientid IS NULL THEN FALSE ELSE TRUE END AS has\_high\_bmi,

CASE WHEN lead\_lab\_temp.patient\_id IS NULL THEN FALSE ELSE TRUE END AS has\_positive\_lead\_lab

FROM universe

LEFT JOIN relevant\_asthma\_temp ON relevant\_asthma\_temp.patientid = universe.id

LEFT JOIN relevant\_bmi\_percentile\_temp ON relevant\_bmi\_percentile\_temp.patientid = universe.id

LEFT JOIN lead\_lab\_temp ON lead\_lab\_temp.patient\_id = universe.id

WHERE relevant\_asthma\_temp.patientid IS NOT NULL

OR relevant\_bmi\_percentile\_temp.patientid IS NOT NULL

OR lead\_lab\_temp.patient\_id IS NOT NULL;