

Finding Hospital Inpatient Stays in CDS

This document presents one logical approach; it is not study specific. Users should assess whether the code in this document fits their particular study need. Please consult with the study PI, Office of Integrated Veteran Care (IVC), CREEK, HERC and/or VIREC regarding study-specific questions.

Revision History

Author(s)	Date	Description
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Caution

The IVC_CDS schema and tables within are still undergoing validation. Table structure is unlikely to change often, but data are still being incorporated and validated.

Introduction

This document focuses on identifying claims for acute hospital inpatient stays (excludes skilled nursing facilities, home health, hospice, residential psychiatric, etc.). [Appendix A](#) presents Place of Service (PoS) and Bill Type (BT) code pairs that may be useful in identifying these other types of care.

Hospital inpatient stays can be identified from the CDWork.ivic_cds.CDS_claim_header (BT and PoS) and CDWork.ivic_cds.CDS_claim_lines (PoS and revenue code). In CDS_Claim_Header, bill type and place of service codes should both be used in order to identify all information associated with inpatient hospital stays because CDS_claim_header contains both institutional (which uses BT codes) and professional (which uses PoS codes) claims. The research question should inform whether only Institutional or Institutional and Professional claims are needed (e.g., if only length of stay is needed, pulling from just Institutional claims is appropriate, but if all diagnoses and procedures are needed, a fuller picture might be gained by pulling both Institutional and Professional claims).

Three data points may be used to categorize the type of encounter a claim is submitted for: type of bill (BT), revenue code, and place of service (PoS)¹. BT and revenue code can be found on Institutional claims; PoS is found on Professional claims.¹ The CDS_claim_header table contains data on many different types of encounters. Using values in these three fields (BT, revenue code, and PoS) allows us to classify the type of encounter for which a claim is submitted.

- *Bill Type*: Four-digit code identifying the location (e.g., hospital, nursing facility) and type of bill (e.g., admit through discharge, replacement, interim); the first digit (a leading 0) is ignored and excluded. The Bill_type field on CDWork.ivic_cds.CDS_Claim_Header contains BT values. A full breakdown of BT codes can be found [here](#).

¹ Unlike in PIT, where some institutional claims had non NULL PoS values, PoS is only filled in for professional claims in CDS. We recommend against using the POS field on Institutional claims as the CMS UB92 form does not contain a POS field; thus, it is unclear how this variable is being populated on these claim types.

- **Revenue Code:** Four-digit code, often starting with 0, that represents ancillary services received during a procedure (CPT or ICD) such as supplies, room and board, or technology help. These values can be found in the Revenue_Code field on CDWork.ivc_cds.CDS_Claim_Line. A full breakdown of revenue code values can be found [here](#). Revenue codes 100 through 249 are generally considered inpatient. Although it is beyond the scope of this document, revenue codes can additionally be used to differentiate between different types of inpatient stays.²
- **Place of Service:** Two-digit codes representing the setting care was received in. The Place_of_service_ID field can be found on CDWork.ivc_cds.CDS_Claim_header and CDWork.ivc_cds.CDS_Claim_Line. A full breakdown of PoS codes can be found [here](#).

The values of each code type that indicate that a claim is for an acute inpatient stay are listed in Table 1. To identify institutional hospital inpatient claims in the ivc_cds schema, the query presented in this document relies on the BT variable (values starting with 11x, 12x, 41x, 42x, and 44x). Notably, for institutional claims, there is little disagreement between these BT values and revenue codes found on the corresponding claim lines (values 100 through 249) (0.94% disagreement in Table 2). There is high agreement between BT on Institutional claims and PoS on corresponding professional claims. Bill Type values starting with 12 designate services received during an inpatient stay and may overlap with a claim having a TB starting with 11. Bill Type values starting with 41 identify stays at religious nonmedical hospitals³, while values starting with 42 and 44 identify services received during a stay at a religious nonmedical hospital.

Table 1. Inpatient Code Values

Code Type	Inpatient-related Values
Bill Type	11x, 12x, 41x, 42x, and 44x
Revenue Code	100-249
Place of Service	21

Table 2. Agreement between Type of Bill and Inpatient Revenue Code⁴

N Claim Submissions	% Claim Submissions	Inpatient Type of Bill Status	Inpatient Revenue Code Status
295362	0.92%	Has inpat ToB	No inpat revenue code
2872851	8.94%	Has inpat ToB	Has inpat revenue code
28823625	89.72%	No inpat ToB	No inpat revenue code
134292	0.42%	No inpat ToB	Has inpat revenue code

Table 3. Distribution of Place of Service Codes for ANY Professional Claims that coincide with Institutional Inpatient Claims⁴

N Professional Claim Submissions	% Professional Claim Submissions	PoS Code Category
26133991	19.07%	Inpatient
7069	0.01%	Multiple PoS at line level
1091	0.00%	No PoS code

² Revenue codes starting with '020' (e.g., '0201', '0202', etc.) correspond with Intensive Care Unit charges, and researchers should consider whether they want to count these as acute inpatient care.

https://resdac.org/sites/datadocumentation.resdac.org/files/Revenue_Center_Code_Table_FFS.txt

³ [Religious Nonmedical Health Care Institutions | CMS](#)

⁴ Calculated from data pulled on 2023 March 30.

110883461	80.92%	Other
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Table 4. Overlap Between Institutional and Professional Inpatient claims

Claim Type	With Other Claim Type?	N Claim Submissions	% of claim Type
Institutional	No professional match	554304	17.50%
Institutional	Has professional match	2613909	82.50%
Professional	No institutional match	4855090	18.58%
Professional	Has institutional match	21278901	81.42%

[Appendix B](#) contains the code used to generate Table 2, Table 3, and Table 4.

1. CDS Header

The first query identifies claim submissions with either a BT or PoS value indicating inpatient stays. *Make sure to read the notes following the query*

```
/* 1.1 )-----  
                If interested in limiting by claim status, look at values in this table  
*/  
select *  
from CDWork.ivc_cds.CDS_Claim_Status  
  
/* 1.2 )-----  
                Pull claim submissions for inpatient stays  
*/  
  
drop table if exists #header_inpatient  
  
select  
    ClaimSID -- Primary key used to join to other CDS tables  
    , ClaimID -- Claim # in source system  
    , Source_Key -- Primary key in source system  
    , Source_System  
    , IsCurrent, Modified_Date -- could use recieved_date instead  
    , Bill_Type, Place_of_Service_ID  
    , Claim_Form_Type, Claim_Status_ID, clm_status.Status_Description  
    , Admission_Date, Admission_Hour, Admission_Source_ID, Admission_Type_ID  
    , Discharge_Date, Discharge_Hour, Discharge_Status_ID  
    , Service_Start_Date, Service_End_Date  
    , DRG_Number  
    , Patient_ICN  
into #header_inpatient  
from CDWork.ivc_cds.CDS_Claim_Header as head  
left outer join CDWork.ivc_cds.CDS_Claim_Status as clm_status  
                on head.Claim_Status_ID=clm_status.Status_ID  
where (  
    (Bill_Type like '1[12]%' ) -- Bill Type 11% are traditional inpatient claims, while 12% are  
usually considered services provided during inpatient stays. 12% claims do not always have a  
corresponding 11% claim  
    or (Bill_Type like '4[124]%' )  
    or Place_of_Service_ID in ('21') -- could include 'UNKNOWN' PoS values also:  
(10,27,28,29,30,35,36,37,38,39,40,43,44,45,46,47,48,59,63,64,99)  
    )  
    -- and clm_status.Status_Description not in (72 /*'DENIED'*/,73 /*'VOID'*/, 84  
/*'REJECTED'*/, 90 /*'CA - REJECT'*/) -- edit to match your study's needs  
    -- should limit by service_start_date, recieved_date, or load_date until there is a partition  
key on the table
```

/*

NOTE 1: No partition key currently exists on any ivc_cds views

NOTE 2: IsCurrent flag is not currently correct for all claim systems and may be removed from the table

NOTE 3: VISTA claims may have 'XX' for PoS, indicating that there are multiple PoS values at the line level.

NOTE 4: Many professional inpatient claims have a NULL Admission_Date in addition to a handful of institutional claims

Additionally, Admission_Date can be before Service_Start_Date

```
select count(claimsid) as n_subs, Status_Description
from #header_inpatient
where Admission_Date < Service_Start_Date
group by Status_Description
```

-- looking at alignment of servicestart and admission date

```
select count(ClaimSID) as n_submissions
, case when Admission_Date= Service_Start_Date then 'same'
      when Admission_Date < Service_Start_Date then 'admit before service start'
      when Admission_Date > Service_Start_Date then 'admit after service start'
      when Admission_Date is null then 'no admit'
      when Service_Start_Date is null then 'no service start date --BAD'
      else 'CHECK BAD'
      end as date_comparison
, Claim_Form_Type
from #header_inpatient
group by case when Admission_Date= Service_Start_Date then 'same'
          when Admission_Date < Service_Start_Date then 'admit before service start'
          when Admission_Date > Service_Start_Date then 'admit after service start'
          when Admission_Date is null then 'no admit'
          when Service_Start_Date is null then 'no service start date --BAD'
          else 'CHECK BAD'
          END
          , Claim_Form_Type
```

NOTE 5: Service_Start_Date is NULL for a handful of FBCS (n=7) and VISTA/Fee (n=617) submissions

NOTE 6: Rows with PAID status may not be the most recent submission additionally, rows with the most recent modified date for a claim may not be PAID.

drop table if exists #order_table

```
;with get_dups as (
  select ClaimID, count(Source_Key) as n
  from #header_inpatient
  group by ClaimID
  having count(Source_Key) > 1
)
, make_rn as (
  select gd.ClaimID, hi.ClaimSID, hi.IsCurrent, hi.Modified_Date, hi.Status_Description
  ,ROW_NUMBER() over(partition by gd.claimid order by hi.modified_date desc) as
  clm_sub_order -- most recent modification should have lower number
  from get_dups as gd
  inner join #header_inpatient as hi on gd.ClaimID=hi.ClaimID
)
, make_grp as (
  select *
  ,case when clm_sub_order=1 and Status_Description='PAID' then 'most recent and
PAID'
        when clm_sub_order > 1 and Status_Description='PAID' then 'prior sub and
PAID'
        when clm_sub_order =1 and Status_Description <> 'PAID' then 'most recent
and NOT PAID'
```

```
                when clm_sub_order >1 and Status_Description <> 'PAID' then 'prior sub
and NOT PAID'
                else 'CHECK BAD'
                end as test
            from make_rn
        )
select m1.claimid, m1.clm_sub_order, m1.test as newest_sub, m2.test as second_newest_sub
into #order_table
from make_grp as m1
left outer join make_grp as m2 on m1.ClaimID=m2.ClaimID and m2.clm_sub_order=2
where m1.clm_sub_order=1

select count(claimid) as n_claims, newest_sub, second_newest_sub
from #order_table
group by newest_sub, second_newest_sub

drop table if exists #order_table
```

*/

2. (Optional) Align Institutional and Professional claim submission header data

Depending on your study needs, you may want to align the institutional and professional claims by date of service. The query below creates a table with PatientICN in the first column followed by institutional claim information and then professional claim information.

```
/* 2.1 )-----
           combining institutional header and professional header records together via
Patient_ICN and dates
*/

drop table if exists #combined_inst_prof_inpatient
; with only_inst as (
    select *
    from #header_inpatient
    where Claim_Form_Type='I'
)
, only_prof as (
    select *
    from #header_inpatient
    where Claim_Form_Type='P'
)

select coalesce(inst.patient_icn, prof.Patient_icn) as Patient_ICN
      , inst.Claim_Form_Type as inst_claim_type
      , inst.ClaimSID as inst_claimsid, inst.Service_Start_Date as inst_service_start_date,
inst.Service_End_Date as inst_service_end_date, inst.Admission_Date as inst_admission_date,
inst.Status_Description as inst_status, inst.Source_System as inst_source_system
      , prof.Claim_Form_Type as prof_claim_type
      , prof.ClaimSID as prof_claimsid, prof.Service_Start_Date as prof_Service_Start_Date,
prof.Service_End_Date as prof_Service_End_Date, prof.Admission_Date as prof_Admission_Date,
prof.Status_Description as prof_status, prof.Source_System as prof_source_system
into #combined_inst_prof_inpatient
from only_inst as inst
full join only_prof as prof
      on inst.Patient_ICN=prof.Patient_ICN
      and (
          (prof.service_start_date >= inst.Service_Start_Date
           and prof.Service_End_Date <= inst.Service_End_Date
          )
          OR (prof.service_start_date >= inst.Admission_Date
             and prof.Service_End_Date <= inst.Service_End_Date)
      )
)
```

3. Find professional claims with inpatient lines

The PoS value on the line may be different from what is on the header. This may be caused by 1) in VISTA more than one PoS value is present in FeeServiceProvided resulting in an "XX" value in CDS_Claim_Header or 2) in eCAMS or CCRS the line PoS being different from the header.

3.1. Identify professional claims with inpatient PoS on a line that was not on the claim submission header

```
/* 3.1 )-----  
*/  
select head.ClaimSID -- Primary key used to join to other CDS tables  
      , head.ClaimID -- Claim # in source system  
      , head.Source_Key -- Primary key in source system  
      , head.Source_System  
      , head.IsCurrent, head.Modified_Date -- could use recieved_date instead  
      , head.Bill_Type, head.Place_of_Service_ID --the header will not show inpatient code  
values for BT and PoS  
      , head.Claim_Form_Type, head.Claim_Status_ID, clm_status.Status_Description  
      , head.Admission_Date, head.Admission_Hour, head.Admission_Source_ID,  
head.Admission_Type_ID  
      , head.Discharge_Date, head.Discharge_Hour, head.Discharge_Status_ID  
      , head.Service_Start_Date, head.Service_End_Date  
      , head.DRG_Number  
      , head.Patient_ICN  
      , line.Line_Number, line.Place_Of_Service_ID as line_Place_Of_Service_ID,  
line.Service_End_Date as line_Service_End_Date, line.Service_Start_Date as  
line_Service_Start_Date  
into #line_inpatient  
from CDWork.ivc_cds.CDS_Claim_Line as line  
left outer join #header_inpatient as headinpat  
              on line.ClaimSID=headinpat.ClaimSID  
inner join CDWork.ivc_cds.CDS_Claim_Header as head  
          on line.ClaimSID=head.ClaimSID  
left outer join CDWork.ivc_cds.CDS_Claim_Status as clm_status  
              on head.Claim_Status_ID=clm_status.Status_ID  
where headinpat.ClaimSID is null  
and line.Place_Of_Service_ID in (21)  
  
/* 3.2 )-----  
          Counting how many additional professional claims this pulls  
*/  
select count(distinct ClaimSID) as n_claim_submissions  
from #line_inpatient  
  
-- 20,191 is a small proportion of the 25,402,045 professional claims we already pulled (adds  
0.079%)
```

3.2. Combing Professional lines with Claim submission header information

Similar to step 2, but additionally incorporating claim information for professional claims that only have an inpatient PoS on the line level.


```

/* 3.3 )-----
           How you would add the lines to the combined header table
*/
-- combining institutional header and professional header + LINE records together via
Patient_ICN
drop table if exists #combined_inst_prof_wLINES_inpatient
; with only_inst as (
    select *
    from #header_inpatient
    where Claim_Form_Type='I'
)
, only_prof as (
    select *
    , type='header'
    , null as line_number
    from #header_inpatient
    where Claim_Form_Type='P'

    UNION

    select ClaimSID, ClaimID, Source_Key, Source_System, IsCurrent, Modified_Date,
    Bill_Type ,line_Place_Of_Service_ID -- USING LINE VALUE
    ,Claim_Form_Type, Claim_Status_ID, Status_Description
    ,Admission_Date, Admission_Hour, Admission_Source_ID, Admission_Type_ID
    ,Discharge_Date, Discharge_Hour, Discharge_Status_ID
    ,line_Service_Start_Date as service_start_date --USING LINE VALUE
    ,line_Service_End_Date as service_end_date --USING LINE VALUE
    ,DRG_Number, Patient_ICN
    , type='line'
    ,Line_Number
    from #line_inpatient
)
select coalesce(inst.patient_icn, prof.Patient_icn) as Patient_ICN
,inst.Claim_Form_Type as inst_claim_type
, inst.ClaimSID as inst_claimsid, inst.Service_Start_Date as inst_service_start_date,
inst.Service_End_Date as inst_service_end_date, inst.Admission_Date as
inst_admission_date, inst.Status_Description as inst_status, inst.Source_System as
inst_source_system
, prof.Claim_Form_Type as prof_claim_type
, prof.ClaimSID as prof_claimsid, prof.Service_Start_Date as prof_Service_Start_Date,
prof.Service_End_Date as prof_Service_End_Date, prof.Admission_Date as
prof_admission_date, prof.Status_Description as prof_status, prof.Source_System as
prof_source_system
, prof.line_number, prof.type
into #combined_inst_prof_wLINES_inpatient
from only_inst as inst
full join only_prof as prof
    on inst.Patient_ICN=prof.Patient_ICN
    and (
        (prof.service_start_date >= inst.Service_Start_Date
        and prof.Service_End_Date <= inst.Service_End_Date
        )
        OR (prof.service_start_date >= inst.Admission_Date
        and prof.Service_End_Date <= inst.Service_End_Date)
    )
)

```

Appendix A

A list of ToB and PoS code sets for other potential types of inpatient stays is presented below. They are a place to start and have not been tested; please contact VIREC and/or a program office and use your best judgement before applying them.

Type of Care	Bill Type and Place of service Code Values
Residential Psychiatric	<pre>select top 10 claimsid from CDWork.ivc_cds.CDS_Claim_Header as head where ((Bill_Type like '1[12]%') or (Bill_Type like '4[124]%') or Place_of_Service_ID in ('51','55','56'))</pre>
Skilled Nursing / Nursing Home	<pre>select top 10 claimsid from CDWork.ivc_cds.CDS_Claim_Header as head where ((Bill_Type like '1[5678]%') or (Bill_Type like '2[1245678]%') or Place_of_Service_ID in ('31','32','33'))</pre>
Hospice	<pre>select top 10 claimsid from CDWork.ivc_cds.CDS_Claim_Header as head where ((Bill_Type like '8[12]%') or Place_of_Service_ID in ('34'))</pre>

Appendix B

```
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-- 1) Pull all header information

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/* 1.1 )-----
        If interested in limiting by claim status, look at values in this table
*/
select *
from CDWork.ivc_cds.CDS_Claim_Status

/* 1.2 )-----
        Pull claim submissions for inpatient stays
*/

drop table if exists #header_inpatient

select
  ClaimSID -- Primary key used to join to other CDS tables
  , ClaimID -- Claim # in source system
  , Source_Key -- Primary key in source system
```

```

    , Source_System
    , IsCurrent, Modified_Date -- could use recieved_date instead
    , Bill_Type, Place_of_Service_ID
    , Claim_Form_Type, Claim_Status_ID, clm_status.Status_Description
    , Admission_Date, Admission_Hour, Admission_Source_ID, Admission_Type_ID
    , Discharge_Date, Discharge_Hour, Discharge_Status_ID
    , Service_Start_Date, Service_End_Date
    , DRG_Number
    , Patient_ICN
into #header_inpatient
from CDWork.ivc_cds.CDS_Claim_Header as head
left outer join CDWork.ivc_cds.CDS_Claim_Status as clm_status
                on head.Claim_Status_ID=clm_status.Status_ID
where (
    (Bill_Type like '1[12]%' ) -- Bill Type 11% are traditional inpatient claims, while 12% are
usually considered services provided during inpatient stays. 12% claims do not always have a
corresponding 11% submission
    or (Bill_Type like '4[124]%' )
    or Place_of_Service_ID in ('21') -- could include 'UNKNOWN' PoS values also:
(10,27,28,29,30,35,36,37,38,39,40,43,44,45,46,47,48,59,63,64,99)
)
-- and clm_status.Status_Description not in ('DENIED','VOID','REJECTED','CA - REJECT') -- edit
to match your study's needs
-- should limit by service_start_date, recieved_date, or load_date until there is a partition
key on the table

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-- 2) TABLE 2

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/* 2.1 )-----
           Institutional headers with inpatient ToB values: joining header information to lines
*/

drop table if exists #check_rev_code_overlap

select head.claimsid, head.bill_type, line.Revenue_Code
into #check_rev_code_overlap
from #header_inpatient as head
left outer join CDWork.ivc_cds.CDS_Claim_Line as line
                on head.claimsid=line.ClaimSID
                and ( line.Revenue_Code like '[0][1]%'
                    OR line.Revenue_Code like '1[0-9][0-9]'
                    OR line.Revenue_Code like '[0][2][01234]%'
                    OR line.Revenue_Code like '[2][0-4]%'
                )
                and line.Claim_Form_Type='I' -- only looking for institutional claim lines
where head.Claim_Form_Type ='I'

/* 2.2.1 )-----
           Identifying Institutional headers without inpatient ToB values

```

```

*/

drop table if exists #non_inpat_inst_header

select h_wo_inpat.claimsid, h_wo_inpat.Bill_Type
into #non_inpat_inst_header
from CDWork.ivc_cds.CDS_Claim_Header as h_wo_inpat
left outer join #header_inpatient as h_w_inpat
on h_wo_inpat.ClaimSID=h_w_inpat.ClaimSID
and h_w_inpat.Claim_Form_Type='I'

where h_wo_inpat.Claim_Form_Type='I' and
h_w_inpat.ClaimSID is null

/* 2.2.2 )-----
Institutional headers without inpatient ToB values: joining header information to lines
*/

drop table if exists #check_rev_code_overlap2

select head.claimsid, head.bill_type, line.Revenue_Code
into #check_rev_code_overlap2
from #non_inpat_inst_header as head
left outer join CDWork.ivc_cds.CDS_Claim_Line as line
on head.claimsid=line.ClaimSID
and ( line.Revenue_Code like '[0][1]%'
OR line.Revenue_Code like '1[0-9][0-9]'
OR line.Revenue_Code like '[0][2][01234]%'
OR line.Revenue_Code like '[2][0-4]%'
)
and line.Claim_Form_Type='I' -- only looking for institutional claim lines

/* 2.2.3 )-----
Institutional headers without inpatient ToB values: Making summary tables
*/

;with make_tbl2 as (
select count(distinct claimsid) as n_claim_submissions
, 'No inpat ToB' as ToB_Status
, case when revenue_code is not null
then 'has inpat revenue code'
else 'no inpat revenue code'
end as rev_code_check
from #check_rev_code_overlap2
group by case when revenue_code is not null then 'has inpat revenue code'
else 'no inpat revenue code'
end

UNION

select count(distinct claimsid) as n_claim_submissions
, 'Has inpat ToB' as ToB_Status
, case when revenue_code is not null
then 'has inpat revenue code'
else 'no inpat revenue code'
end as rev_code_check

```

```

        from #check_rev_code_overlap
        group by case when revenue_code is not null then 'has inpat revenue code'
        else 'no inpat revenue code'
        end
    )
select *
from make_tbl2

/* 2.3 )-----
           Count check and dropping tables
*/

select count(claimsid) as n
from CDWork.ivc_cds.CDS_Claim_Header
where Claim_Form_Type='I'

drop table if exists #check_rev_code_overlap
drop table if exists #check_rev_code_overlap2
drop table if exists #non_inpat_inst_header

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-- 3) Table 3

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-- | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~

; with institutional_inpat as (
    select ClaimSID, Patient_ICN, Service_End_Date, Service_Start_Date, Admission_Date
    from #header_inpatient
    where Claim_Form_Type = 'I'
)
, get_prof as ( -- merging cdwork.ivc_cds.cds_claim_header directly onto institutional_inpat with a
where clause to limit to professional results in an estimated subtree cost > 17k (and ran for ~40
minutes without returning results)
select prof.claimsid, prof.Patient_ICN, prof.Service_Start_Date, prof.Service_End_Date,
prof.Place_of_Service_ID
    from CDWork.ivc_cds.CDS_Claim_Header as prof
    where prof.Claim_Form_Type='P'
)
, together as (
    select prof.claimsid, prof.Place_of_Service_ID
    from get_prof as prof
    inner join institutional_inpat as i
        on prof.Patient_ICN=i.Patient_ICN
        and (
            (prof.service_start_date >= i.Service_Start_Date

```

```

prof.Service_End_Date <= i.Service_End_Date
                                                                )
                                                                OR
                                                                )
                                                                and
                                                                )
                                                                and
                                                                )
)
select count(claimsid) as 'N Professional Claim Submissions'
, case when Place_of_Service_ID = '21'
      then 'Inpatient'
      when Place_of_Service_ID = 'XX'
      then 'Multiple PoS at line level'
      when Place_of_Service_ID is null
      then 'No PoS code'
      else 'Other' end as 'PoS Code Category'
from get_prof
group by case when Place_of_Service_ID = '21'
      then 'Inpatient'
      when Place_of_Service_ID = 'XX'
      then 'Multiple PoS at line level'
      when Place_of_Service_ID is null
      then 'No PoS code'
      else 'Other'
      end

-- | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ |
-- | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ |

-- 4) Table 4

-- | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ |
-- | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ | ~ |

/* 4.1 )-----
      combining institutional header and professional header records together via Patient_ICN
and dates
*/

drop table if exists #combined_inst_prof_inpatient
; with only_inst as (
      select *
      from #header_inpatient
      where Claim_Form_Type='I'
)
, only_prof as (
      select *
      from #header_inpatient
      where Claim_Form_Type='P'
)

select coalesce(inst.patient_icn, prof.Patient_icn) as Patient_ICN
, inst.Claim_Form_Type as inst_claim_type
, inst.ClaimSID as inst_claimsid, inst.Service_Start_Date as inst_service_start_date,
inst.Service_End_Date as inst_service_end_date, inst.Admission_Date as inst_admission_date,
inst.Status_Description as inst_status, inst.Source_System as inst_source_system
, prof.Claim_Form_Type as prof_claim_type

```

```

        , prof.ClaimSID as prof_claimsid, prof.Service_Start_Date as prof_Service_Start_Date,
        prof.Service_End_Date as prof_Service_End_Date, prof.Admission_Date as prof_Admission_Date,
        prof.Status_Description as prof_status, prof.Source_System as prof_source_system
    into #combined_inst_prof_inpatient
    from only_inst as inst
    full join only_prof as prof
        on inst.Patient_ICN=prof.Patient_ICN
        and (
            (prof.service_start_date >= inst.Service_Start_Date
             and prof.Service_End_Date <= inst.Service_End_Date
            )
            OR (prof.service_start_date >= inst.Admission_Date
              and prof.Service_End_Date <= inst.Service_End_Date)
        )
)

/* 4.2 )-----
        combining institutional header and professional header records together via Patient_ICN
and dates
*/

; with get_cnts as (
    select count(distinct inst_claimsid) as n_claim_submissions
    , 'institutional' as type
    , case when prof_claimsid is not null
            then 'has prof'
            else 'no prof'
        end as w_prof
    from #combined_inst_prof_inpatient
    where inst_claimsid is not null
    group by case when prof_claimsid is not null then 'has prof' else 'no prof'
    end

    UNION

    select count(distinct prof_claimsid) as n_claim_submissions
    , 'professional' as type
    , case when inst_claimsid is not null then 'has inst' else 'no inst'
    end as w_prof
    from #combined_inst_prof_inpatient
    where prof_claimsid is not null
    group by case when inst_claimsid is not null then 'has inst' else 'no inst'
    end
)
select *
from get_cnts

```