



Llywodraeth Cymru Welsh Government

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Analysis Method Notice

Chronic Conditions (Basket of 8) Emergency Hospital Multiple Admissions

This notice describes an Analysis Method that has been developed for use in the production of published national outcome indicators, performance measures and/or currencies

The Analysis Method has been reviewed by the Analysis Methodologies Group and its output submitted to the Welsh Information Standards Board (WISB) for potential accreditation.

It should be noted that, where the data flow on which the analysis is being undertaken has not been reviewed by WISB (see 'Status of WISB Data Standards Assurance' below), accreditation of the analysis method **cannot** be interpreted as an approval of the underlying flow or of the quality of the data used.

. For further details about the group, including Terms of Reference and membership, please visit the following website:

http://howis.wales.nhs.uk/sites3/page.cfm?orgid=742&pid=56696

WISB Reference: IGRN Ref. 2007 / 026

Please address enquiries about this Analysis Method the NHS Wales Informatics Service Data Standards Team.

E-mail: data.standards@wales.nhs.uk / Tel: 029 2050 2539

WISB Appraisal Assessment	Refinement Required WISB suggests that modifications are made to the Analysis Method as outlined in the appraisal Outcome.
Status of Data Standards Assurance	WISB Reviewed The data used in this Analysis Method are based on data item standards that have been through the Information Standards Assurance Process.
WISB Outcome(s)	Outcome

Indicator

The number of emergency hospital (provider spell) multiple admissions (within a year) for basket of 8 chronic conditions.

Target:

Reduction in the number of multiple admissions for the basket of 8 chronic conditions.

Rationale / Context

Emergency admissions are acknowledged as being directly influenced by the availability and quality of a comprehensive package of services for Integrated Chronic Conditions Management in the community. This target will be achieved by improving chronic conditions management services in the community, thus stabilising acute capacity.

Communities are therefore, required to work together, with all key partners, to ensure that people have access to appropriate and evidence based services in their own homes or local communities and that the transition between primary, secondary, tertiary and social care are managed effectively to ensure that the patient pathway is smooth and efficient.

Achievement of this target primarily lies in the joint planning and proactive management of chronic conditions to improve support and services to the patient.

This measure forms part of the Welsh Government 2013/14 Tier 1 Measures.

Data Source

Admitted Patient Care data set (APC ds) / Patient Episode Database for Wales (PEDW)

Definitions:

Definitional Guidance:

The chronic conditions included in this indicator are those identified by the ICD-10 4th Edition codes listed under 'additional information'. The list of ICD-10 (4th Edition) codes correspond to those chronic conditions used within the Wales Audit Office report 'The Management of Chronic Conditions by NHS Wales', which was published in December 2008. The ICD-10 4th Edition codes have been subject to review by clinical classification experts within the NHS Wales Informatics Service to ensure they adhere to current national clinical classification standards.

The 'LHB Provider Spell' method is used in the calculation of the number of emergency admissions for patients with one of the conditions specified in the basket of 8 chronic conditions. Use of the 'LHB Provider Spell' (often informally referred to as 'super spells') method for this measure has the additional benefit in that it avoids any confusion arising from concurrent Finished Consultant Episode (FCEs).

The 'LHB Provider Spell' method can be accessed here:

INCLUDE URL

The following data items and terms are relevant

Data Items: Primary ICD Diagnostic Code Patient Classification Admission Method Start Date of Provider Spell

Terms: Hospital Classification Categories

The definitions associated with all the data items and terms above can be accessed via the NHS Wales Data Dictionary - <u>http://www.datadictionary.wales.nhs.uk</u>.

Detailed Specification

Emergency hospital readmissions are defined as the same patient being admitted to the same LHB for the same chronic condition 'category' **within a 12 month period** (i.e. 365 days or less between the discharge date (from the original admission) and the admission date (of the subsequent admission)).

Readmissions include all subsequent **emergency** admissions with an ICD-10 code for the same chronic condition 'category' rather than just those admissions where the individual ICD-10 4th Edition code is the same as the original admission. The initial (first) emergency admission is not counted as part of the indicator, only subsequent emergency admissions.

The analysis of emergency admissions includes:

- Inpatient admissions only (patient class = '1')
- All emergency admission methods, **excluding** emergency transfers (i.e. Admission Method '81' and Patient Classification '8').
- Admissions where the admitting 'Hospital Classification Category' for the Site Code of Treatment (Hospital) is acute ('A'), major acute ('B') & specialist acute sites ('D') only. Admissions to community hospitals are excluded to avoid any possibility of double counting in the event of patients being admitted into an acute site and subsequently transferred to a community hospital.
- Completed provider spells only.
- An applicable ICD-10 4th Edition primary diagnosis code associated with the minimum (admitting) episode of the LHB Provider Spell.
- Velindre NHS Trust is excluded.

Calculation:

Numerator

Number of emergency hospital (provider spell) readmissions (within a year) for the basket of 8 chronic conditions.

Denominator

n/a

Reporting Frequency

Monthly

Monthly APC ds returns must be submitted and signed off by Local Health Boards (LHBs) / Trusts on the 17th calendar day of the month. If the 17th calendar day falls on a weekend (or bank holiday), the deadline for submissions is the next available working day.

Areas for Future Development

The following points reflect considerations raised by either the Analysis Methodologies Group or WISB in terms of aspects of the Analysis Method that require further investigation or development.

For a full breakdown of the issues considered, please refer to the formal WISB Outcome for this Analysis Method, which can be access via the Information Standards Assurance website:

http://howis.wales.nhs.uk/sites3/page.cfm?orgid=742&pid=52532

1. Review of Basket of 8 Chronic Conditions

A further review of the basket of chronic conditions could consider four aspects:

- A further review from a clinical classifications perspective to ensure that the codes included were complete, consistent and meaningful for the condition types proposed. A number of extant comorbidity indices, designed to describe how ill a patient was exist. These include (but are not limited to) the American cancer co-morbidity indices, the 'Charlson Index' and current English guidance on co-morbidity coding for clinical coding.
- The second was a clinical review. It is recognised that the aim of this indicator is to identify high rates of admission within a set of categories, which would point to failings in community management of the symptoms. Existing intelligence cites known issues in relation to repeat admissions occurring which relate to age and multiple co-morbidity. Therefore, in trying to link individual admission / readmission categories to the original one, many relevant readmissions may be missed as they may be admitted with any of the categories and not be counted.

Furthermore, there are several categories not included on the list which cause frequent readmissions such as low level sepsis, urinary tract infections, substance abuse and self-harm *inter alia*. Additionally some of the current categories appear to be incomplete. For example Alzheimers is included but not other causes of dementia.

• It would be useful to explore the existence of clinically-meaningful groupings of ICD-10 codes. This could include use of groupings within the classification itself.

2. Relevant ICD-10 4th Edition Codes

As it is difficult to distinguish between the reason for admission being directly related to a chronic condition, or simply the accompanying presence of a chronic condition, consideration should be given to including both primary and secondary diagnosis (ICD-10 4th Edition) codes in the indicator.

3. Review of Data Extraction Criteria

Admitting episode is currently being used to identify chronic condition admissions, as this aligns with other WG indicators and closely aligns to the approach taken for similar indicators in England. However, further analysis of existing data should be undertaken to identify which / how many episodes should be included in any method intended to link multiple admissions for the basket of chronic conditions. The possibility of including 'Source of Admission' in the analysis method could also be explored.

4. Assessment Unit Activity

It is recommended that a review into the current inconsistencies associated with the reporting of Assessment Unit activity within the APC ds be undertaken, in order to better understand its impact on the reporting of chronic conditions multiple admissions.

WAO Chronic Conditions ICD-10 4th Edition Codes and Descriptions:

ICD-10 Code	Diagnosis	Category
J40	Bronchitis, not specified as acute or chronic	Respiratory
J41	Simple and mucopurulent chronic bronchitis	Respiratory
J42	Unspecified chronic bronchitis	Respiratory
J43	Emphysema	Respiratory
J44	Other chronic obstructive pulmonary disease	Respiratory
J45	Asthma	Respiratory
J47	Bronchiectasis	Respiratory
105	Rheumatic mitral valve diseases	Cardiovascular
106	Rheumatic aortic valve diseases	Cardiovascular
107	Rheumatic tricuspid valve diseases	Cardiovascular
108	Multiple valve diseases	Cardiovascular
109	Other rheumatic heart diseases	Cardiovascular
110	Essential (primary) hypertension	Cardiovascular
11	Hypertensive heart disease	Cardiovascular
112	Hypertensive renal disease	Cardiovascular
113	Hypertensive heart and renal disease	Cardiovascular
115	Secondary hypertension	Cardiovascular
120	Angina pectoris	Cardiovascular
125	Chronic ischaemic heart disease	Cardiovascular
134	Nonrheumatic mitral valve disorders	Cardiovascular
135	Nonrheumatic aortic valve disorders	Cardiovascular
136	Nonrheumatic tricuspid valve disorders	Cardiovascular
137	Pulmonary valve disorders	Cardiovascular
150	Heart failure	Cardiovascular
170	Atherosclerosis	Cardiovascular
G20	Parkinson's disease	Neurological
G35	Multiple sclerosis	Neurological
G40	Epilepsy	Neurological
M02	Reactive arthropathies	Musculoskeletal
M03	Postinfective and reactive arthropathies in diseases EC	Musculoskeletal
M05	Seropostivie rheumatoid arthritis	Musculoskeletal
M06	Other rheumatoid arthritis	Musculoskeletal
M07	Psoriatic and enteropathic arthropathies	Musculoskeletal
M10	Gout	Musculoskeletal
M11	Other crystal arthropathies	Musculoskeletal
M12	Other specific arthropathies	Musculoskeletal
M13	Other arthritis	Musculoskeletal
M14	Arthropathies in other diseases classified elsewhere	Musculoskeletal
M15	Polyarthrosis	Musculoskeletal
M16	Coxarthrosis [arthrosis of hip]	Musculoskeletal
M17	Gonarthrosis [arthrosis of knee]	Musculoskeletal
M18	Arthrosis of first carppmetacarpal joint	Musculoskeletal
M19	Other arthrosis	Musculoskeletal
M40	Kyphosis and lordosis	Musculoskeletal

ICD-10 Code	Diagnosis	Category
M41	Scoliosis	Musculoskeletal
M42	Spinal osteochondrosis	Musculoskeletal
M43	Other deforming dorsopathies	Musculoskeletal
M45	Ankylosing spondylitis	Musculoskeletal
M46	Other inflammatory spondylopathies	Musculoskeletal
M47	Spondylosis	Musculoskeletal
M48	Other spondylopathies	Musculoskeletal
M49	Spondylopathies in diseases classified elasewhere	Musculoskeletal
M50	Cervical disc disorders	Musculoskeletal
M51	Other intervertebral disc disorders	Musculoskeletal
M53	Other dorsopathies, not elsewhere classified	Musculoskeletal
M54	Dorsalgia	Musculoskeletal
M80	Osteoporosis with pathological fracture	Musculoskeletal
M81	Osteoporosis without pathological fracture	Musculoskeletal
M82	Osteoporosis in diseases classified elsewhere	Musculoskeletal
E10	Insulin-dependant diabetes mellitus	Diabetes
E11	Non-insulin-dependent diabetes mellitus	Diabetes
E12	Malnutrition-related diabetes mellitus	Diabetes
E13	Other specified diabetes mellitus	Diabetes
E14	Unspecified diabetes mellitus	Diabetes
160	Subarachnoid haemorrhage	CVA
161	Intracerebral haemorrhage	CVA
163	Cerebral infarction	CVA
164	Stroke, not specified as haemorrhage or infarction	CVA
165	Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	CVA
166	Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	CVA
148	Atrial fibrillation and flutter	Atrial Fibrillation
F00	Dementia in Alzheimer's disease	Alzheimers
G30	Alzheimer's disease	Alzheimers

Appendix B – SQL Code (where applicable)

Important: The following code is intended for information purposes only. It will contain references to specific references (servers, data item descriptions etc.) that are applicable within the NHS Wales Informatics Service only and therefore will not be suitable for direct application to local (LHB) data.

```
Print GETDATE()
Print('Running Chronic Conditions Script')
-- Create a temp copy of last month's data
Select * into ##last month CC
from userobj.ipu.AU Activity for Chronic Conditions
SELECT DISTINCT
patient id = CASE WHEN
                       9][0-9][0-9]'
                       and nhs no new not in
('000000000','111111111','22222222','333333333','4444444444',
'ooooooooo') THEN nhs no new
                         WHEN p.nhs no is not null THEN p.nhs no
                        WHEN s.curr_prov_unit_code <> 'Eng' THEN
s.curr prov unit code+s.crn
                         ELSE s.prov unit code+s.crn
                         END,
s.spell no AS spell,
s.fin admission year+s.fin admission month AS 'Date',
s.admission date,
s.discharge_date,
s.duration of spell,
[LHB Residence Code] = CASE WHEN
                  s.curr_dha_of_residence like '7%' THEN s.curr_dha_of_residence
                  ELSE 'Eng'
                  END,
s.curr prov unit code AS 'LHB Provider Code',
[condition] = CASE
     WHEN principal diag in ('J40','J41','J42','J43','J44','J45','J47') THEN
'Respiratory'
     WHEN principal diag in
('I05','I06','I07','I08','I09','I10','I11','I12','I13','I15','I20','I25','I34','I35',
'I36', 'I37', 'I50', 'I70') Then 'Cardiovascular'
     WHEN principal_diag in ('G20','G35','G40') Then 'Neurological'
     WHEN principal diag in
('M02','M03','M05','M06','M07','M10','M11','M12','M13','M14','M15','M16','M17','M18',
'M19', 'M40', 'M41', 'M42', 'M43', 'M45', 'M46', 'M47', 'M48', 'M49', 'M50', 'M51', 'M53', 'M54', '
M80', 'M81', 'M82') Then 'Muscuoloskeletal'
     WHEN principal diag in ('E10', 'E11', 'E12', 'E13', 'E14') Then 'Diabetes'
     WHEN principal diag in ('I60','I61','I63','I64','I65','I66')
                                                                Then 'CVA'
     WHEN principal diag in ('I48') Then 'Atrial Fibrillation'
     WHEN principal diag in ('F00', 'G30') Then 'Alzheimers'
     END,
0 AS 'Readmission Flag'
```

```
INTO ##ChronicConditions
```

FROM

```
userobj.analysis.super spells 11 12 z WITH (NOLOCK) -- Provider spells ("super
spells") table - contains only completed provider spells
      JOIN warehousedb.dbo.apc spell subset s WITH (NOLOCK) on
      z.prov unit code = s.prov unit code
      and z.spell no = s.spell no
      JOIN warehousedb.dbo.apc_episode_subset e WITH (NOLOCK) on
      s.prov_unit_code = e.prov_unit_code
      and s.spell_no = e.spell_no
      JOIN warehousedb.dbo.apc_curr_site_code c on
      c.prov unit code = e.prov unit code
      and c.episode no = e.episode no
      and c.spell no = e.spell no
      LEFT OUTER JOIN warehousedb.dbo.welsh organisation ww on
      (ww.org code = e.curr prov unit code+e.curr prov site code
      and e.curr prov unit code <> 'rt7'
      and e.episode end date < '01-Apr-2006')
      LEFT OUTER JOIN warehousedb.dbo.welsh organisation wo on
    (wo.org code = curr site code of treatment
      and (e.curr_prov_unit code = 'rt7'
      or e.episode_end_date >= '01-Apr-2006'))
      LEFT OUTER JOIN warehousedb.dbo.patient nhs p on
      s.prov unit code = p.prov unit code
      and s.spell no = p.spell no
WHERE
(prov spell order = '1' or prov spell order is null) -- Admitting spell of provider
spell
and e.episode no = (SELECT MIN(episode no)
                  FROM warehousedb.dbo.apc episode subset m
                  WHERE e.curr prov unit code = m.curr prov unit code
                  and e.spell no = m.spell no
                  GROUP BY curr_prov_unit_code, spell_no) -- Admitting episode of
spell
and patient class = '1' -- Inpatient Admissions only
and s.admission method in ('21','22','23','24','25','27','28') -- All emergency
admission methods, excluding emergency tranfers
and (ww.org type in ('A', 'B', 'D') or wo.org type in ('A', 'B', 'D')) -- Acute sites
and s.curr_prov_unit_code <> 'Eng'
and s.curr prov unit code <> 'RQF' -- Velindre Trust excluded
and fin_admission_year >= '2007'
and
      (principal_diag in ('J40','J41','J42','J43','J44','J45','J47') -- Respiratory
      or principal diag in
('I05','I06','I07','I08','I09','I10','I11','I12','I13','I15','I20','I25','I34','I35',
'I36','I37','I50','I70') -- Cardiovascular
      or principal diag in ('G20', 'G35', 'G40') -- Neurological
      or principal diag in
('M02','M03','M05','M06','M07','M10','M11','M12','M13','M14','M15','M16','M17','M18',
'M19', 'M40', 'M41', 'M42', 'M43', 'M45', 'M46', 'M47', 'M48', 'M49', 'M50', 'M51', 'M53', 'M54', '
M80', 'M81', 'M82') -- Muscuoloskeletal
      or principal diag in ('E10', 'E11', 'E12', 'E13', 'E14') -- Diabetes
      or principal diag in ('I60','I61','I63','I64','I65','I66') -- CVA
      or principal diag in ('I48') -- Atrial Fibrillation
      or principal diag in ('F00', 'G30') -- Alzheimer's
      )
ORDER BY patient id, s.admission date, s.discharge date
```

```
Exec ('Alter table ##ChronicConditions
Add Index Admission Date smalldatetime null
alter table ##ChronicConditions
Add [id] [int] IDENTITY(1,1) NOT NULL')
-- Set the readmission flag to 1 if the spell has:
-- same patient id
-- same trust code
-- same condition
-- as a previous spell, the two spells are within a year of each other, and the
second spell comes after the first
Update ##ChronicConditions
Set Readmission Flag = '1'
where LHB Provider Code+spell in (
Select distinct b.LHB Provider Code+b.spell from ##ChronicConditions a
join ##ChronicConditions b on
a.patient id = b.patient id and
                                         -- same patient id
a.LHB Provider Code = b.LHB Provider Code and
                                                     -- same trust code
a.condition = b.condition
                                    -- same condition
                                          -- the second spell comes after the first
and b.id > a.id
and datediff(day, a.discharge date, b.admission date) between 0 and 365)
                                                                           -- the
two spells are within a year of each other
-- For each month in the report, the readmission and the first admission ("index
admission") must be within the previous 12 months#
-- For example in April 2006 in the report, both the readmission and the index
admission must have been in the period May 2005-April 2006
-- Get the index admission date for each readmitted spell
Select b.LHB Provider code+b.spell readmission spell, a.admission date
index admission date
into #get index admission date holding
                                        -- drop table
#get index admission date holding
from ##ChronicConditions a
join ##ChronicConditions b on
a.patient id = b.patient id and
a.LHB Provider Code = b.LHB Provider Code and
a.condition = b.condition
and b.id > a.id
and datediff(day, a.discharge date, b.admission date) between 0 and 365
-- Some spells will have more than one possible index admission date if there have
been multiple readmissions
-- We want to take the maximum index admission date for each readmission spell
Select distinct readmission spell, max(index admission date) index admission date
                                          -- drop table #get index admission date
into #get index admission date
from #get index admission date holding
group by readmission spell
-- Set the index admission date in the base table
Update ##ChronicConditions
set Index Admission Date = g.index admission date
from ##ChronicConditions a
join #get index admission date g on
a.LHB Provider code+a.spell = g.readmission spell
-- select top 100 * from ##ChronicConditions
-- select count(*) from ##ChronicConditions
```

-- Rolling 12 month multiple admissions Truncate table userobj.ipu.AU Activity for Chronic Conditions Insert into userobj.ipu.AU Activity for Chronic Conditions Select distinct 'Rolling 12 Month Multiple Admissions' Indicator, b.Reporting_Month_Label, LHB_Residence_Code, m2.org_name as LHB_Residence_Name, LHB Provider Code, m.org name as LHB Provider Name, Condition, sum(duration of spell) as 'LOS', count (distinct LHB Provider Code+spell) as 'Count' from ##ChronicConditions e join userobj.olap admin.SaFF10 Dates b on e.admission date between b.start date and b.end date and e.Index admission date between b.start date and b.end date LEFT OUTER JOIN refdata.dbo.main org m on m.org code = e.LHB Provider Code LEFT OUTER JOIN refdata.dbo.main org m2 on m2.org code = e.LHB Residence Code where readmission flag = '1' and Reporting Month Label >= '200801' and Reporting Month Label < cast(datepart(year, dateadd(month, -3, IPU.FN LastLoadMonth())) as char(4))+right(('00'+rtrim(cast(datepart(mm, dateadd(month, -3, IPU.FN LastLoadMonth())) as char))), 2) group by b.Reporting Month Label, LHB Residence Code, m2.org name, LHB Provider Code, m.org name, Condition order by b.Reporting Month Label, LHB Residence Code, LHB Provider Code, Condition -- Monthly multiple admissions Insert into userobj.ipu.AU Activity for Chronic Conditions select distinct 'Monthly Multiple Admissions', [Date], LHB Residence Code, m2.org name as LHB Residence Name, LHB Provider Code, m.org name as LHB Provider Name, Condition, sum(duration of spell), count (distinct LHB Provider Code+spell) from ##ChronicConditions e LEFT OUTER JOIN refdata.dbo.main org m on m.org code = e.LHB Provider Code LEFT OUTER JOIN refdata.dbo.main org m2 on m2.org_code = e.LHB_Residence_Code

```
where readmission flag = '1'
and Date >= '200801'
and Date < cast(datepart(year, dateadd(month, -3, IPU.FN LastLoadMonth())) as
char(4))+right(('00'+rtrim(cast(datepart(mm, dateadd(month, -3,
IPU.FN LastLoadMonth())) as char))), 2)
group by [Date], LHB Residence Code,
m2.org name,
LHB_Provider_Code,
m.org_name, Condition
order by [Date], LHB_Residence_Code, LHB_Provider_Code, Condition
-- Rolling 12 month admissions
Insert into userobj.ipu.AU Activity for Chronic Conditions
select distinct 'Rolling 12 Month Admissions', b.Reporting Month Label,
LHB Residence Code,
m2.org name as LHB Residence Name,
LHB Provider Code,
m.org name as LHB Provider Name, Condition,
sum(duration of spell),
count (distinct LHB Provider Code+spell)
from ##ChronicConditions e
join userobj.olap admin.SaFF10 Dates b
      on e.admission date between b.start date and b.end date
LEFT OUTER JOIN refdata.dbo.main org m on
m.org code = e.LHB Provider Code
LEFT OUTER JOIN refdata.dbo.main org m2 on
m2.org code = e.LHB Residence Code
where Reporting Month Label < cast(datepart(year, dateadd(month, -3,
IPU.FN LastLoadMonth())) as char(4))+right(('00'+rtrim(cast(datepart(mm,
dateadd(month, -3, IPU.FN LastLoadMonth())) as char))), 2)
and Reporting Month Label >= '200801'
group by b.Reporting Month Label,
LHB Residence Code,
m2.org name,
LHB Provider Code,
m.org name, Condition
order by b.Reporting Month Label,
LHB Residence Code, LHB Provider Code, Condition
-- Monthly admissions
Insert into userobj.ipu.AU Activity for Chronic Conditions
select distinct 'Monthly Admissions', [Date], LHB Residence Code,
m2.org name as LHB Residence Name,
LHB Provider Code,
m.org name as LHB Provider Name, Condition,
sum(duration of spell), count (distinct LHB Provider Code+spell)
from ##ChronicConditions e
LEFT OUTER JOIN refdata.dbo.main org m on
m.org code = e.LHB Provider Code
LEFT OUTER JOIN refdata.dbo.main org m2 on
```

m2.org code = e.LHB Residence Code

where date < cast(datepart(year, dateadd(month, -3, IFU.FN_LastLoadMonth())) as char(4))+right(('00'+rtrim(cast(datepart(mm, dateadd(month, -3, IFU.FN_LastLoadMonth())) as char))), 2) and Date >= '200801' group by [Date], LHB_Residence_Code, m.org_name, LHB_Provider_Code, m.org_name, Condition order by [Date], LHB_Residence_Code, LHB_Provider_Code, Condition -- Create QA tables Truncate table userobj.ipu.AU_Activity_for_Chronic_Conditions_lastmonth Insert into userobj.ipu.AU_Activity_for_Chronic_Conditions_lastmonth Select * from ##last_month_CC Print GETDATE()

Print('Chronic Conditions Script completed successfully')