

Nordic Cooperation Maintenance of NordDRG

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CEO

Nordic Casemix Centre

31 May, 2024

Bled

PCSI Conference

What is inside the black box and how to keep it running?

Kristiina Kahur, MD MPH

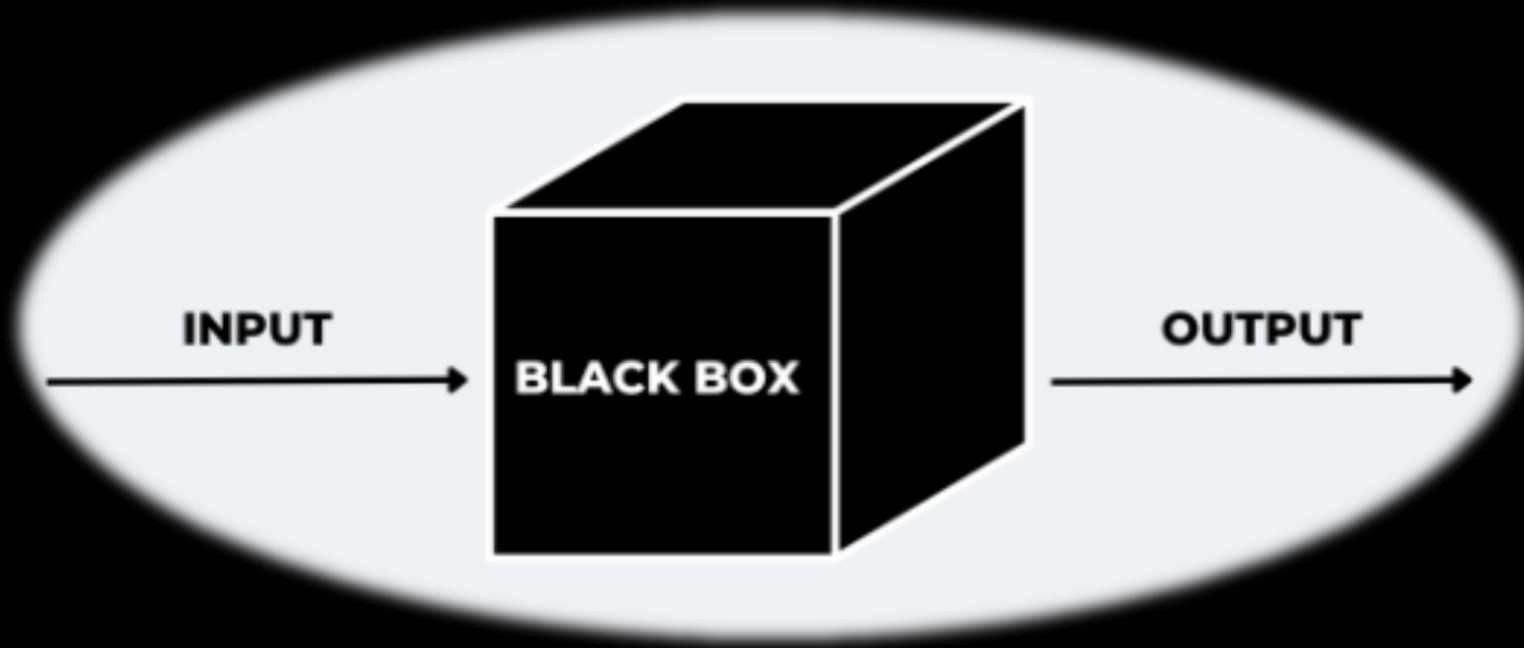
CEO

Nordic Casemix Centre

31 May, 2024

Bled

PCSI Conference



General aspects of Nordic cooperation



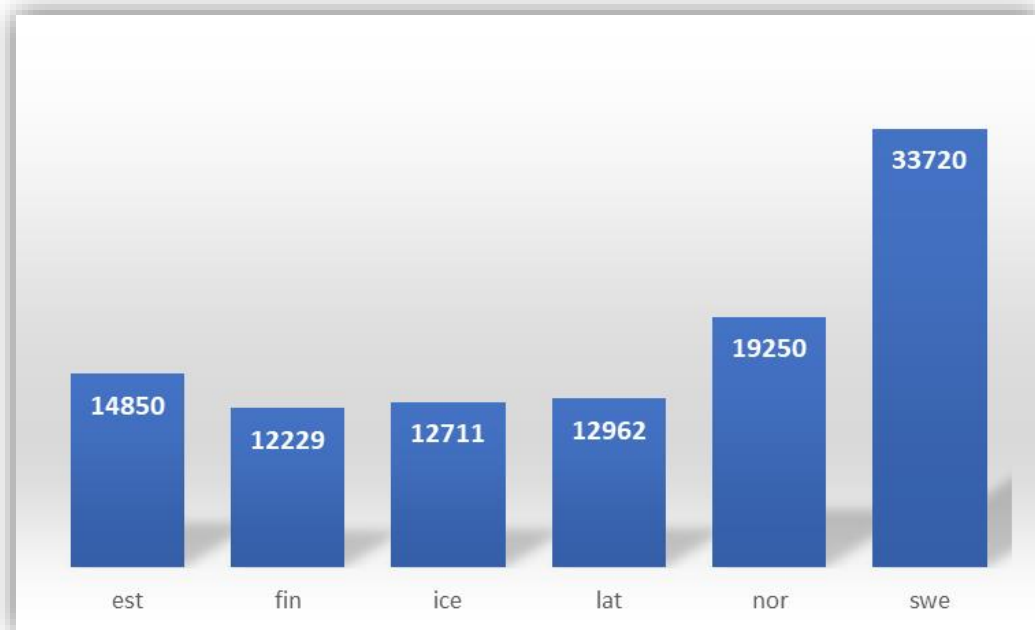
- The collaboration among Nordic countries concerning casemix work started in 1990s and was institutionalized in 1995 at University of Uppsala
- The first NordDRG version was published in 1996
- The Nordic Casemix Center was created in 2008 to continue and support casemix cooperation
- NordDRG system is owned by its members – public organizations from Denmark, Iceland, Finland, Norway, Sweden
- Affiliated partners (Estonia and Latvia)
- Use of NordDRG system is based on Agreement



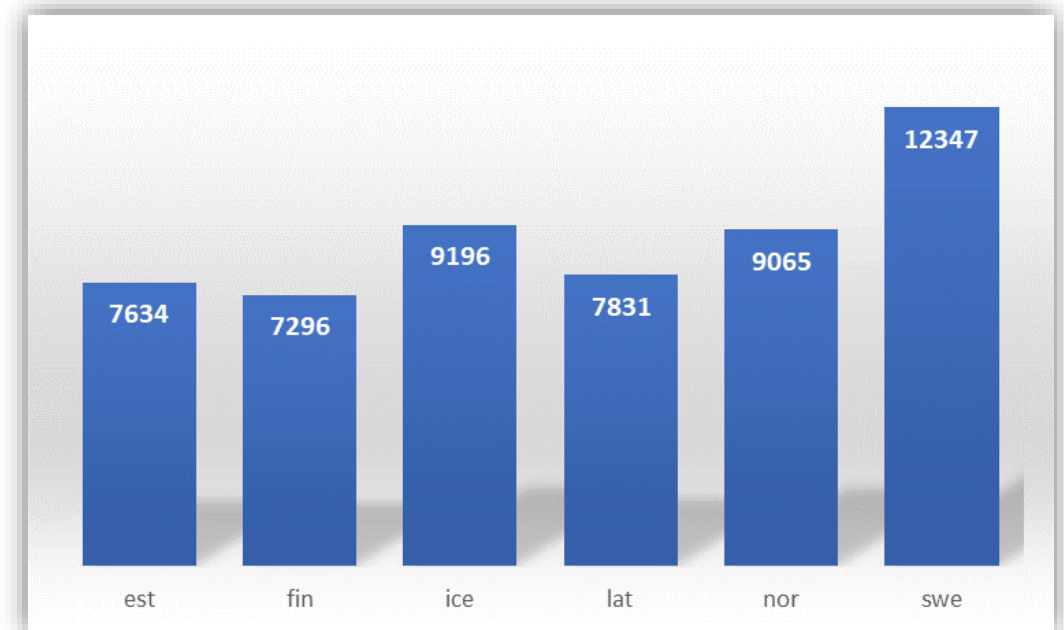
Main differences on national level (1)

- The NordDRG system relies on primary classifications such as:
 - ICD-10 for coding the diagnosis, and
 - NOMESCO Classification of Surgical Procedures (NCSP) for coding the interventions, different therapies, images, etc.
 - Some national versions also include ATC codes for coding the medicines

Diagnosis codes



Procedure codes



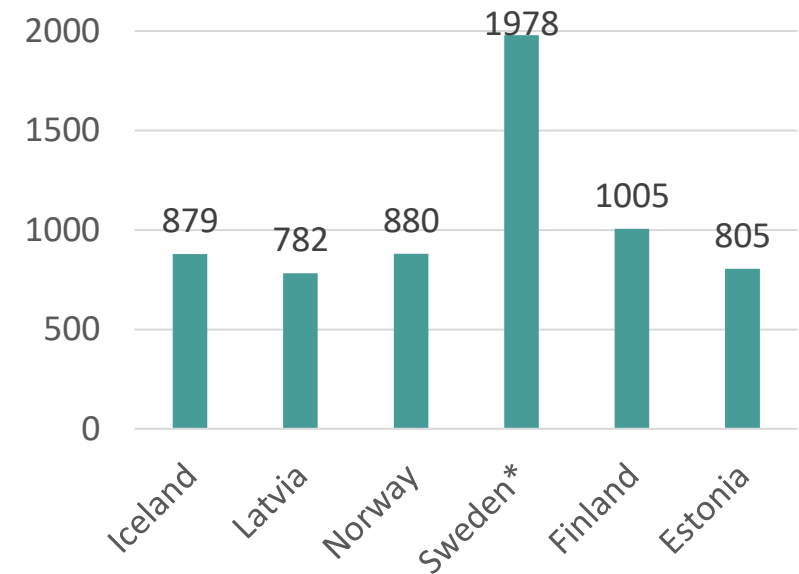
Main differences on national level (2)

Severity level MCC/CC/non-CC*

| Country | Non-CC | CC | MCC |
|---------|--------|----|----------|
| Estonia | X | X | Limited |
| Finland | X | X | X (2025) |
| Iceland | X | X | |
| Latvia | X | X | Limited |
| Norway | X | X | |
| Sweden | X | X | X |

*MCC – Major Complication/Comorbidity
CC – Complication/Comorbidity
Non-CC – without Complication/Comorbidity

of DRGs (2025PL1)



* incl. 516 primary health care DRGs

Adjustment are based on national needs
-some rules are common to all versions
-some are specific to single national version(s)



NordDRG Forum

- A virtual communication platform facilitating communication between the Expert Group and the NCC
- Registered users can:
 - submit the proposals for changing the grouping logic, features
 - Submit the updates of primary classifications (ICD-10, NCSP, ATC)
 - edit and provide updates
- Everyone else can use the Forum in 'read-only' mode

A close-up photograph of a hand holding a black pencil, positioned over a yellow ruler on a wooden desk. The hand is in the foreground, and the background is softly blurred, showing more of the desk and a person's arm in the distance.

Expert Group

- The main advisory group for discussions about NordDRG development work
- Members are nominated by participating countries (1-6 per country)
- Participation is financed by the national organizations
- The members have expertise in the DRG system and represent clinical, economic, and other relevant areas of expertise
- The meetings are arranged at least twice a year (early spring and early autumn)

NordDRG Forum

Select dashboard ⌵ 🔍 Search

Nordic Casemix Centre ♡

Dashboard Spent time Tasks Documents Roadmap News Calendar Wiki Files

Tasks (8) ⋮

| ✓ | Task ID | Tracker | Status | Priority | Subject | Target year | Start date |
|--------------------------|---------|---------|----------------|------------------|--|-------------|------------|
| <input type="checkbox"/> | 917 | Case | Further active | Minor | 2025 updates of NCSP and ICD (Estonia) | 2025 | 2024-03-18 |
| <input type="checkbox"/> | 915 | Case | Further active | Minor | CAR T cell therapy- for discussion | 2023 | 2024-03-06 |
| <input type="checkbox"/> | 898 | Case | Further active | Error correction | Obstetric ultrasound - adding PROCPR | 2025 | 2023-09-26 |
| <input type="checkbox"/> | 895 | Case | Further active | Major | Incare Rehabilitation in SWE from 2025-01-01 | 2025 | 2023-08-09 |
| <input type="checkbox"/> | 875 | Case | Further active | Error correction | Additional correction of DRG texts in Combined version | 2025 | 2023-03-29 |
| <input type="checkbox"/> | 874 | Case | Further active | Minor | Grouping of cases with stroke or neurological disease with cardiovascular impairment and implantation of cardiac pacemaker | 2025 | 2023-03-20 |
| <input type="checkbox"/> | 818 | Case | Further active | Major | Multiple CC will lead to MCC | 2024 | 2022-02-17 |
| <input type="checkbox"/> | 813 | Case | Further active | Minor | DRG-MDC vs DG-MDC | 2024 | 2022-02-01 |

[Customise](#)

 #915 - CAR T cell therapy- for discussion  

 Status: Further active

 Assignee:

 Author:

 Tracker: Case

Initiator: Norway

Target Group: ---

Owner / responsible: ---

 Priority: Minor

 Start date: 2024-03-06

 Spent time: 0.00 h

 Created: 2024-03-06 10:40

 Product backlog board: ---

MDC: ---

Target year: 2023

 Less



CAR T treatment- for discussion

CAR T-cell therapy has become an important alternative, and supplement to other types of treatment for cancer (surgery, chemotherapy, radiation therapy) along with other types of immunotherapy.

Available CAR T-cell therapies are customized for each individual patient and requires one infusion.

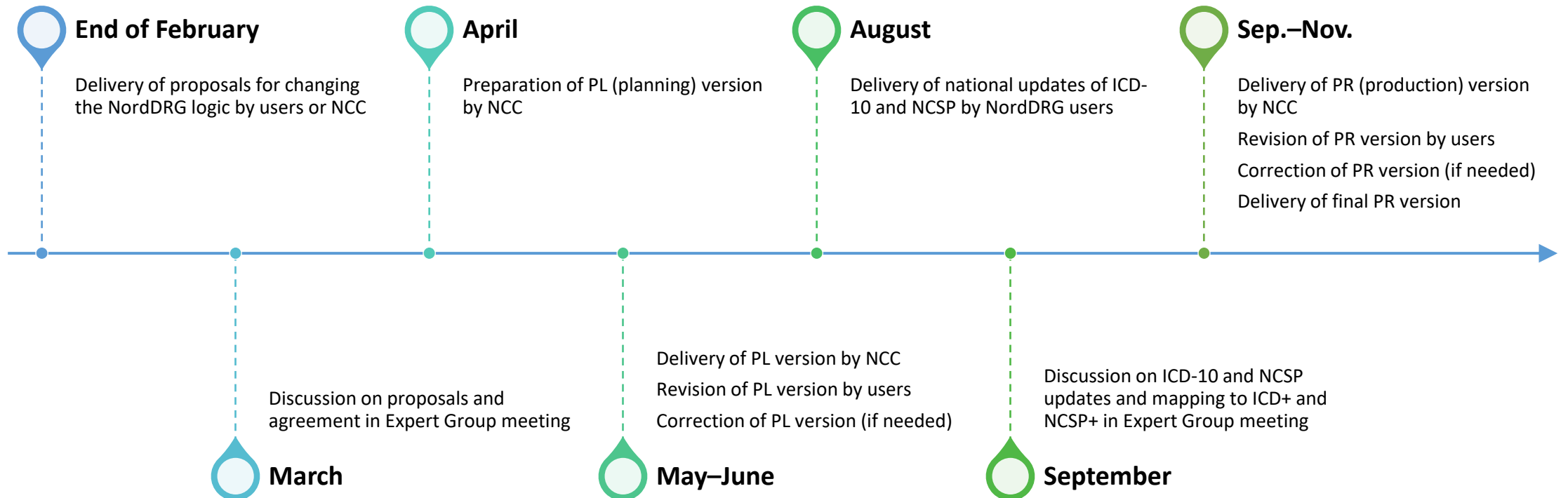
CAR T-cell therapy is a multi-step process. First blood is removed from patient to get T cells, then the CAR T- cells are made and grown in a laboratory, there after CAR T cells are infused into the patient. The CAR T cells mission in the body is then to bind to cancer cells and kill them.

In Norway as of now, there is one available treatment, with Yescarta. Yescarta has a cost for the one infusion of about 300 000 Euro. The patients stay in hospital for at least 20 days. 34 patients were treated in 2023.

Norwegian procedurecode for CAR T treatment:

RLGG15 Transfusjon av genmodifiserte autologe lymfocytter

Annual timetable



A close-up, low-angle shot of a person's hands typing on a vintage typewriter. The typewriter is dark-colored with a silver carriage and a roll of paper. The person is wearing a white long-sleeved shirt. The background is softly blurred, showing a desk with papers and a lamp, creating a warm, professional atmosphere.

NordDRG Maintenance System (NDMS)

- A program (rule editor) for maintaining and updating the NordDRG national definition tables
- The master version is managed by the NCC
- A stand-alone version (equivalent to the latest production version of NDMS) is available for participating organizations (downloadable package)
- Allows to export of definition tables in different formats

DRG Logic Rules

- Grouping Property Name
- Procedure Property Name
- Diagnosis Category Name
- Principal Diagnosis Property Name
- Complication Category Name
- Drp Name
- Drp Name Combined
- Mdc Name
- Mdc Name Combined

Search

Search from category

--/-- results

Prev Next

Filter

Filter from category

Active: Yes No

Error(s): Yes No

Sort by

9336 results

Built-in validations

- Combined
- Denmark
- Estonia
- Finland
- Iceland
- Latvia
- Norway
- Sweden

| # | ✓ | id | drg_com | agelim | sex | compl | mdc | nat_ver | dur | disch | or_proc | rtc | icd | procpro | pdgprop | dgcatt | secpro | dgprop1 | dgprop2 | dgprop3 | dgprop4 | active | ord | errors |
|----|--------------------------|-------------|---------|--------|-----|-------|-----|---------|-----|-------|---------|-----|-----|---------|---------|--------|--------|---------|---------|---------|---------|--------|-----|--------|
| 1 | <input type="checkbox"/> | #00D000002 | X09R | | | | | swe | <1 | | | 0 | + | 40V62 | | | | 99X50 | 40X00 | | | true | 25 | |
| 2 | <input type="checkbox"/> | #00D000003 | X09R | | | | | swe | <1 | | | 0 | + | | | | | 99X50 | 40X00 | | | true | 37 | |
| 3 | <input type="checkbox"/> | #00D000004 | X09R | | | | | swe | <1 | E | N | 0 | | | | | | 99X50 | | | | true | 43 | |
| 4 | <input type="checkbox"/> | #00D000005 | Z82R | | | | | swe | <1 | N | | 0 | | | | | | 99X50 | 00X90 | | | false | 50 | |
| 5 | <input type="checkbox"/> | #00D000010 | Z70R | | | | | swe | <1 | N | | 1 | - | 99V35 | | | | 99X50 | | | | true | 100 | |
| 6 | <input type="checkbox"/> | #00D000015 | Z70R | | | | | swe | <1 | N | | 1 | - | 99V22 | | | | 99X50 | | | | true | 150 | |
| 7 | <input type="checkbox"/> | #00D0000157 | Z70L | | | | | swe | >0 | N | | 1 | - | | | | | 99X50 | | | | true | 160 | |
| 8 | <input type="checkbox"/> | #00D0000164 | Z70L | | | | | swe | | E | | 1 | - | | | | | 99X50 | | | | true | 165 | |
| 9 | <input type="checkbox"/> | #00D000017 | Z90R | <0 | | | 15 | swe | | | | 9 | + | | | | | 99X50 | | | | true | 170 | |
| 10 | <input type="checkbox"/> | #00D000025 | Z76R | >6574 | | | | swe | <1 | | | 5 | + | | 00P02 | | | 99X50 | | | | true | 250 | |
| 11 | <input type="checkbox"/> | #00D000030 | Z75R | <5114 | | | | swe | <1 | | | 4 | + | | 00P01 | | | 99X50 | | | | true | 300 | |
| 12 | <input type="checkbox"/> | #00D000035 | Z77R | >45654 | | | | swe | <1 | | | 6 | + | | | | | 99X50 | | | | true | 350 | |
| 13 | <input type="checkbox"/> | #00D000038 | Z71R | | | | 99 | swe | <1 | N | | 8 | + | | | 99M02 | | 99X50 | 99X35 | | | true | 375 | |
| 14 | <input type="checkbox"/> | #00D000040 | Z71R | | | | 99 | swe | <1 | | | 8 | + | | | 99M00 | | 99X50 | | | | true | 400 | |
| 15 | <input type="checkbox"/> | #00D000041 | Z71R | | | | 00 | swe | <1 | | | 8 | + | | | 00M00 | | 99X50 | | | | true | 410 | |

NordDRG 2024PR1

Drg Name Combined

Search Sort by Add Row

Search from category Filter from category X

--/-- results

Active: Yes No
 Error(s): Yes No

3 results

| # | drg_com | drg_text_com | drg_text_short_com | mdc | nat_ver | active | errors | created_at | updated_at |
|---|---------|-------------------------------------|-------------------------------------|-----|---------------------|--------|--------|------------------|---------------------|
| 1 | 349X | Benign prostatic hypertrophy w/o cc | Benign prostatic hypertrophy w/o cc | 12 | est/lat/ice/fin/nor | true | | 12/31/1996, ... | 12/31/1996, 2:00 AM |
| 2 | 348X | Benign prostatic hypertrophy w cc | Benign prostatic hypertrophy w cc | 12 | est/lat/ice/fin/nor | true | | 12/31/1996, ... | 12/31/1996, 2:00 AM |
| 3 | 349N | Benign prostatic hypertrophy | Benign prostatic hypertrophy | 12 | swe | true | | 3/5/2010, 2:0... | 3/5/2010, 2:00 AM |

NordDRG 2025PL1

Drg Name Combined

Search Sort by Add Row

Search from category Filter from category X

--/-- results

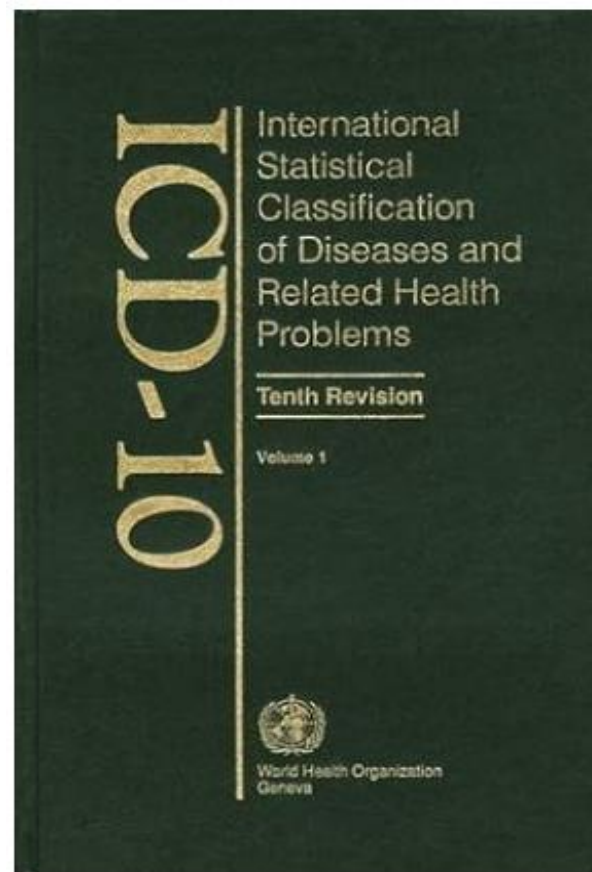
Active: Yes No
 Error(s): Yes No

3 results

| # | drg_com | drg_text_com | drg_text_short_com | mdc | nat_ver | active | errors | created_at | updated_at |
|---|---------|--------------------------------------|--------------------------------------|-----|---------------------|--------|--------|---------------------|--------------------|
| 1 | 349X | Benign prostatic hypertrophy, w/o CC | Benign prostatic hypertrophy, w/o CC | 12 | lat | true | | 12/31/1996, 2:00 AM | 5/14/2024, 2:36 PM |
| 2 | 348X | Benign prostatic hypertrophy, w CC | Benign prostatic hypertrophy, w CC | 12 | lat | true | | 12/31/1996, 2:00 AM | 5/14/2024, 2:36 PM |
| 3 | 349N | Benign prostatic hypertrophy | Benign prostatic hypertrophy | 12 | swe/est/ice/fin/nor | true | | 3/5/2010, 2:00 AM | 3/19/2024, 2:46 PM |

Maintenance of Basic Classifications (MBC)

- Maintenance of Basic Classifications (MBC)© is a program that allows linkage of national codes to the 'backbone' classification for each type of classification
 - *ICD+*, *NCSP+* and *ATC+* platforms
- Mapping makes it possible to define NordDRG grouping features and rules for the different national versions in NDMS
- The expired national codes are kept in MBC for five years



Dg Codes

Search Filter Sort by

Search from category Filter from category

Active: Yes No Error(s): Yes No

172895 results

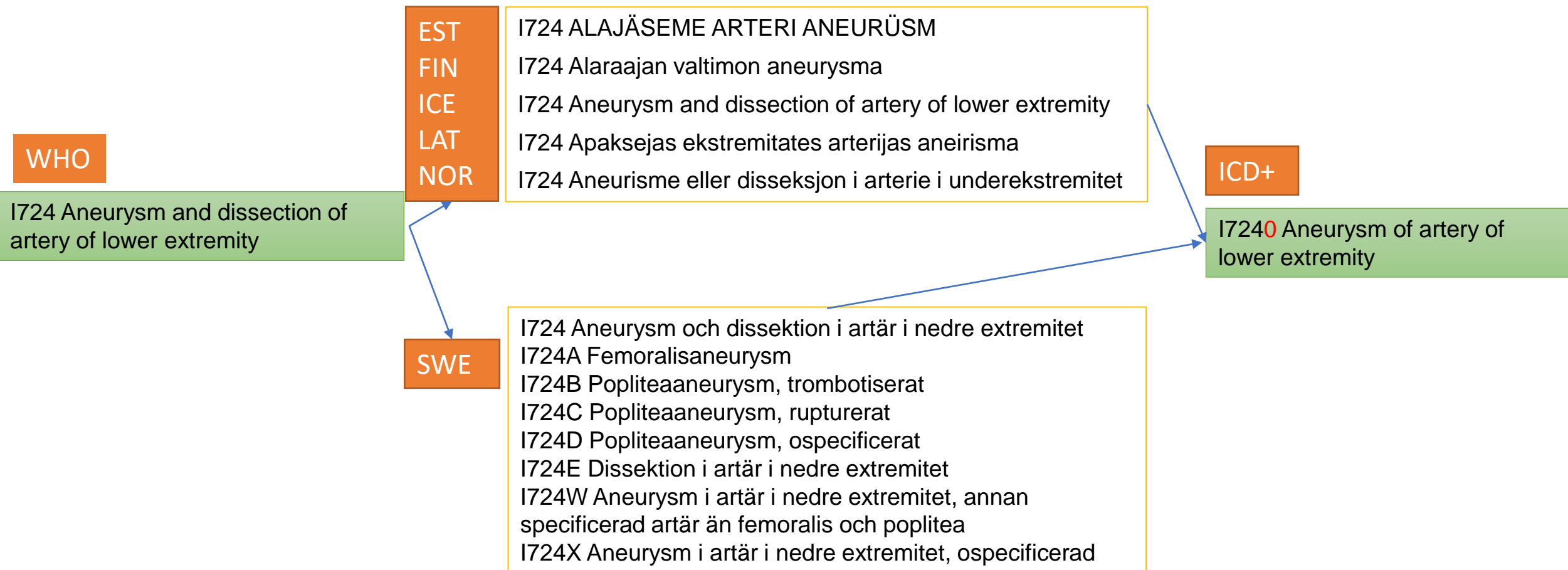


- Combined
- Denmark
- Estonia
- Finland
- Iceland
- Latvia
- Norway
- Sweden

| # | ✓ | plus1 | plus2 | text_plus | dg1 | dg2 | text_nat | ast | country | errors | created_at | updated_at | inactivated_at |
|----|--------------------------|-------|-------|---|------|-----|--|-----|---------|--------|------------------|-------------------|----------------|
| 1 | <input type="checkbox"/> | A0000 | | Cholera due to <i>Vibrio cholerae</i> 01, biovar cholerae | A000 | | Kolera orsakad av <i>Vibrio cholerae</i> 01, biovar cholerae | | swe | | 1/1/2005, 2:0... | 7/26/2020, 6:... | |
| 2 | <input type="checkbox"/> | A0010 | | Cholera due to <i>Vibrio cholerae</i> 01, biovar eltor | A001 | | Kolera orsakad av <i>Vibrio cholerae</i> 01, biovar el tor | | swe | | 1/1/2005, 2:0... | 7/26/2020, 6:... | |
| 3 | <input type="checkbox"/> | A0090 | | Cholera, unspecified | A009 | | Kolera, ospecificerad | | swe | | 1/1/2005, 2:0... | 2/9/2021, 1:4... | |
| 4 | <input type="checkbox"/> | A0100 | | Typhoid fever | A010 | | Tyfoidfieber | | swe | | 1/1/2005, 2:0... | 7/2/2020, 11:... | |
| 5 | <input type="checkbox"/> | A0110 | | Paratyphoid fever A | A011 | | Paratyfoidfieber A | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 6 | <input type="checkbox"/> | A0120 | | Paratyphoid fever B | A012 | | Paratyfoidfieber B | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 7 | <input type="checkbox"/> | A0130 | | Paratyphoid fever C | A013 | | Paratyfoidfieber C | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 8 | <input type="checkbox"/> | A0140 | | Paratyphoid fever, unspecified | A014 | | Paratyfoidfieber, ospecificerad | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 9 | <input type="checkbox"/> | A0200 | | <i>Salmonella enteritis</i> | A020 | | Salmonellaenterit | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 10 | <input type="checkbox"/> | A0210 | | <i>Salmonella septicaemia</i> | A021 | | Salmonellasepsis | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 11 | <input type="checkbox"/> | A0220 | | Localized salmonella infections | A022 | | Lokaliserade salmonellainfektioner | + | swe | | 1/1/2005, 2:0... | 5/31/2022, 2:... | |
| 12 | <input type="checkbox"/> | A0280 | | Other specified salmonella infections | A028 | | Andra specificerade salmonellainfektioner | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 13 | <input type="checkbox"/> | A0290 | | <i>Salmonella infection, unspecified</i> | A029 | | Andra salmonellainfektioner, ospecificerade | | swe | | 1/1/2005, 2:0... | 10/29/2019, 6:... | |
| 14 | <input type="checkbox"/> | A0300 | | Shigellosis due to <i>Shigella dysenteriae</i> | A030 | | Shigella dysenteriae (serogrupp A) | | swe | | 1/1/2005, 2:0... | 5/31/2022, 2:... | |
| 15 | <input type="checkbox"/> | A0310 | | Shigellosis due to <i>Shigella flexneri</i> | A031 | | Shigella flexneri (serogrupp B) | | swe | | 1/1/2005, 2:0... | 5/31/2022, 2:... | |
| 16 | <input type="checkbox"/> | A0320 | | Shigellosis due to <i>Shigella boydii</i> | A032 | | Shigella boydii (serogrupp C) | | swe | | 1/1/2005, 2:0... | 5/31/2022, 2:... | |

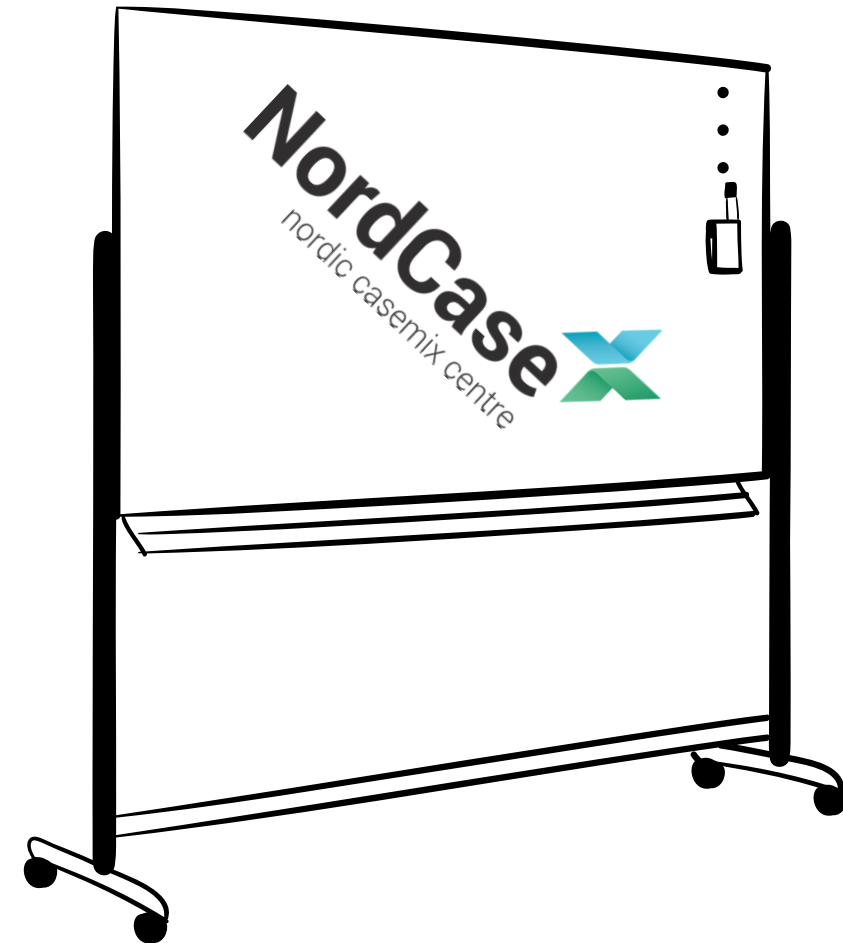
Diagnosis codes

Example of ICD-10 national modifications mapping to ICD+



NordDRG definition tables

- A 'core' of the system/black box where all information needed for grouping is included
- Maintained in NDMS
- Published in native languages, updated annually
- The definition tables are intellectual property of the national NordDRG users
- Delivered in three different formats



DRG Logic Rules

Search Filter Sort by

Search from category Filter from category Select...

Active: Yes No
 Error(s): Yes No

9336 results

| # | ✓ | id | drg_com | agelim | sex | compl | mdc | nat_ver | dur | disch | or_proc | rtc | icd | procpro | pdgprop | dgcat | secpro | dgprop1 | dgprop2 | dgprop3 | dgprop4 | active | ord | errors |
|----|--------------------------|-------------|---------|--------|-----|-------|-----|---------|-----|-------|---------|-----|-----|---------|---------|-------|--------|---------|---------|---------|---------|--------|-----|--------|
| 1 | <input type="checkbox"/> | #00D000002 | X09R | | | | | swe | <1 | | | 0 | + | 40V62 | | | | 99X50 | 40X00 | | | true | 25 | |
| 2 | <input type="checkbox"/> | #00D000003 | X09R | | | | | swe | <1 | | | 0 | + | | | | | 99X50 | 40X00 | | | true | 37 | |
| 3 | <input type="checkbox"/> | #00D000004 | X09R | | | | | swe | <1 | E | N | 0 | | | | | | 99X50 | | | | true | 43 | |
| 4 | <input type="checkbox"/> | #00D000005 | Z82R | | | | | swe | <1 | N | | 0 | | | | | | 99X50 | 00X90 | | | false | 50 | |
| 5 | <input type="checkbox"/> | #00D000010 | Z70R | | | | | swe | <1 | N | | 1 | - | 99V35 | | | | 99X50 | | | | true | 100 | |
| 6 | <input type="checkbox"/> | #00D000015 | Z70R | | | | | swe | <1 | N | | 1 | - | 99V22 | | | | 99X50 | | | | true | 150 | |
| 7 | <input type="checkbox"/> | #00D0000157 | Z70L | | | | | swe | >0 | N | | 1 | - | | | | | 99X50 | | | | true | 160 | |
| 8 | <input type="checkbox"/> | #00D0000164 | Z70L | | | | | swe | | E | | 1 | - | | | | | 99X50 | | | | true | 165 | |
| 9 | <input type="checkbox"/> | #00D000017 | Z90R | <0 | | | 15 | swe | | | | 9 | + | | | | | 99X50 | | | | true | 170 | |
| 10 | <input type="checkbox"/> | #00D000025 | Z76R | >6574 | | | | swe | <1 | | | 5 | + | | | | | 99X50 | | 00P02 | | true | 250 | |
| 11 | <input type="checkbox"/> | #00D000030 | Z75R | <5114 | | | | swe | <1 | | | 4 | + | | | | | 99X50 | | 00P01 | | true | 300 | |
| 12 | <input type="checkbox"/> | #00D000035 | Z77R | >45654 | | | | swe | <1 | | | 6 | + | | | | | 99X50 | | | | true | 350 | |
| 13 | <input type="checkbox"/> | #00D000038 | Z71R | | | | 99 | swe | <1 | N | | 8 | + | | | | | 99X50 | 99X35 | | | true | 375 | |
| 14 | <input type="checkbox"/> | #00D000040 | Z71R | | | | 99 | swe | <1 | | | 8 | + | | | | | 99X50 | | 99M00 | | true | 400 | |
| 15 | <input type="checkbox"/> | #00D000041 | Z71R | | | | 00 | swe | <1 | | | 8 | + | | | | | 99X50 | | 00M00 | | true | 410 | |

Conversion of NDMS content into csv, json and xlsx format



xlsx- human-readable format

| Name | Type | Compressed size |
|--------------------------------------|----------------------------|-----------------|
| complication_category_name.est.csv | Microsoft Excel Comma S... | |
| complication_exclusion.est.csv | Microsoft Excel Comma S... | |
| dg_nat.est.csv | Microsoft Excel Comma S... | |
| diagnosis_category_name.est.csv | Microsoft Excel Comma S... | 4 KB |
| diagnosis_feature.est.csv | Microsoft Excel Comma S... | 559 KB |
| drg_logic.est.csv | Microsoft Excel Comma S... | 55 KB |
| drg_name.est.csv | Microsoft Excel Comma S... | 19 KB |
| grouping_property_name.est.csv | Microsoft Excel Comma S... | 3 KB |
| mdc_name.est.csv | Microsoft Excel Comma S... | 1 KB |
| principal_diagnosis_property.est.csv | Microsoft Excel Comma S... | 1 KB |
| proc_nat.est.csv | Microsoft Excel Comma S... | 172 KB |
| procedure_feature.est.csv | Microsoft Excel Comma S... | 399 KB |
| procedure_property_name.est.csv | Microsoft Excel Comma S... | 6 KB |
| rtc.est.csv | Microsoft Excel Comma S... | 1 KB |
| testcase.est.csv | Microsoft Excel Comma S... | 236 KB |

Json and csv as an input for grouper software

```
{
  "drglogic": [
    {
      "id": "000D000000",
      "drg": "9990",
      "rtc": "0",
      "icd": "-",
      "mdc": null,
      "procpro": null,
      "pdgprop": null,
      "or_procedure": null,
      "dgcat": null,
      "agelim": null,
      "compl": null,
      "sex": null,
      "dgprop1": null,
      "dgprop2": null,
      "dgprop3": null,
      "dgprop4": null,
      "secpro": null,
      "disch": "N",
      "dur": "<2",
      "ord": "10000000000"
    },
    {
      "id": "000D0000101",
      "drg": "470X",
      "rtc": "1",
      "icd": "-",
      "mdc": null,
      "procpro": null,
      "pdgprop": null,
      "or_procedure": null,
      "dgcat": null,
      "agelim": null,
      "compl": null,
      "sex": null,
      "dgprop1": null,


```



Nordic DRG Grouper

- Was originally developed by Norwegian Directorate of Health and shared for free with NordDRG users
- Nordic DRG Grouper© is a program that assigns patient case information into DRGs based on NordDRG definition tables (.json)
- Designed to be used with single cases or large number of cases (batch-grouper)
- The grouper is incorporated into NDMS
- A stand-alone grouper is available for NordDRG user countries

Benefits of the Nordic cooperation

- 
- Centralized maintenance of NordDRG system allows:
 - *consistency* of national versions
 - *transparency* of black box
 - *coordinated dissemination* of information about the changes in the NordDRG
 - Access to NordDRG tools
 - The NCC is supporting national work of participating countries in specific field(s)
 - Information sharing
 - Cooperation with PCSI, NordClass, WHO etc
 - Capacity building and networking
 - The Nordic Casemix Conferences (in 2019, 2022 and 2024 in cooperation with PCSI), national casemix events, EG meetings

A 3D rendering of a transparent glass cube, resembling a gift box, centered on a white surface against a dark blue background. The cube is empty and has the text "Thank you" written inside in a white, serif font with a slight shadow. The lighting creates soft shadows on the white surface.

Thank you