The development of European Patient Classification Systems

DRG systems in Europe

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# Outline

1. Introduction
2. History
3. General Grouping Process
4. Developments
5. Documentation
6. Conclusion
Patient Classification System (PCS)

Description

- instrument to divide patients into a manageable number of homogenous groups
- used to describe hospital products
- used for benchmarking or financial aspects
Background

- developed in the US in the 1970s
- the most widespread PCS in Europe
- grouping according to
  - primary diagnosis
  - procedures
  - comorbidities and complications (CC)
Diagnosis-Related Groups (DRGs)

Definition

DRG systems are PCSs that have four main characteristics:

- routinely collected data
- manageable number of groups
- clinically meaningful
- economically homogenous
EuroDRG Countries Overview

EuroDRG

Countries represented in this research project either use

- an external system without / only minor changes
  - Ireland (AR-DRG), Poland (JGP), Spain and Portugal (AP-DRG)

- an external system with major own developments
  - France (GHM), Germany (G-DRG), Estonia, Finland and Sweden (NordDRG)

- a self-developed system
  - Austria (LKF), England (HRG), the Netherlands (DBC)
Historical Developments

Figure based on http://www.fischer-zim.ch/textk-pcs/index.htm & Schreyögg et al. (2006)
Diagnosis-Related Groups (DRGs)

General Description

All adopted DRG systems have a similar general structure

1 Allocated to a Major Diagnostic Category (MDC)
   - mutually exclusive categories (approx. 24-28)
   - MDCs correspond to single organ system or etiology

2 Partition by type of treatment
   - surgical / operation room partition (S)
   - medical partition (M)
   - other partition (O)
   - undifferentiated partition (U)

3 Split by procedures, comorbidities and complications, age
HRG, JGP and LKF

**General Description**

- procedures as primary grouping criteria
- diagnoses as secondary grouping criteria
- two partitions
  - procedure-driven partition (significant procedures)
  - diagnosis-driven partition (no significant procedures)
- further grouping
- Chapters correspond to medical specialties, similar to MDCs
Description

- contains 5 dimensions
  - Medical specialty
  - Type of care
  - Demand for care
  - Diagnosis
  - Treatment

- episode based (first visit - last check-up)
- high number of DBCs (possible >100,000)
- undergoing major changes
Major Diagnostic Categories (MDCs)

What is this?

- mutually exclusive categories (approx. 24-28)
- MDCs correspond to single organ system or etiology
- Chapters correspond to medical specialties
- *similar* structure in all countries
## Introduction

- History

## General Grouping Process

<table>
<thead>
<tr>
<th>AP–DRG</th>
<th>HRG</th>
<th>NordDRG</th>
<th>AR–DRG</th>
<th>GHM</th>
<th>LKF</th>
<th>G–DRG</th>
<th>JGP</th>
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## Developments

- Pre–MDC
- Nervous System
- Eye
- Ear, Nose, Mouth & Throat
- Respiratory System
- Circulatory System
- Vascular Diseases (only JGP)
- Digestive System
- Hepatobiliary System & Pancreas
- Musculoskeletal System & Connective Tissue
- Skin, Subcutaneous Tissue & Breast
- Breast Problem (only NordDRG)
- Burns
- Endocrine, Nutritional & Metabolic System
- Kidney & Urinary Tract
- Male Reproductive System
- Female Reproductive System
- Pregnancy, Childbirth & Puerperium
- Newborn & Other Neonates (Perinatal Period)
- Blood, Blood Forming Organs & Immunological Disorders
- Myeloproliferative DDs (Poorly Differentiated Neoplasms)
- Infectious & Parasitic DDs
- Human Immunodeficiency Virus Infection
- Mental Diseases & Disorders
- Alcohol/Drug Use or Induced Mental Disorders
- Injuries, Poison & Toxic Effect of Drugs
- Multiple Significant Trauma
- Factors Influencing Health Status
- Other

## Documentation

## Conclusion

- Conrad Kobel

DRG systems in Europe
<table>
<thead>
<tr>
<th>Introduction</th>
<th>History</th>
<th>General Grouping Process</th>
<th>Developments</th>
<th>Documentation</th>
<th>Conclusion</th>
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<td>Respiratory System</td>
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<td>Endocrine, Nutritional &amp; Metabolic System</td>
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<td>Kidney &amp; Urinary Tract</td>
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<td>Female Reproductive System</td>
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<tr>
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<td>Pregnancy, Childbirth &amp; Puerperium</td>
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DRG systems in Europe
### Introduction

#### History

#### General Grouping Process

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<td>(642)</td>
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#### Developments

#### Documentation

#### Conclusion

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**DRG systems in Europe**
## Classification Variables

### Patient characteristics

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<thead>
<tr>
<th>Variable</th>
<th>AP-DRG</th>
<th>AR-DRG</th>
<th>G-DRG</th>
<th>GHM</th>
<th>NordDRG</th>
<th>HRG</th>
<th>JGP</th>
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<th>DBC</th>
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<td>x</td>
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<td>Body Weight (Newborn)</td>
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### Medical and management decision variables

<table>
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<tr>
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<th>AP-DRG</th>
<th>AR-DRG</th>
<th>G-DRG</th>
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### Structural characteristics

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<th>AR-DRG</th>
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<th>GHM</th>
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<th>JGP</th>
<th>LKF</th>
<th>DBC</th>
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<td>Setting (inpatient, outpatient, ICU etc.)</td>
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<td>Stay at Specialist Departments</td>
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<td>Demands for Care</td>
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<td>-</td>
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<td>x</td>
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</table>

### Severity / Complexity Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>AP-DRG</th>
<th>AR-DRG</th>
<th>G-DRG</th>
<th>GHM</th>
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<td>3*</td>
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<td>-</td>
<td>-</td>
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<tr>
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<tr>
<td>5**</td>
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<td>Aggregate case complexity measure</td>
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<td>5**</td>
<td>2</td>
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How are patient and treatment characteristics used?

**GHM**

- 4 levels of severity defined by the most severe secondary diagnosis
- Age has systematic impact
  - > 79 years: increases all levels by one
  - > 69 years: increases only levels 1 and 2 by one
  - < 2 years: increases level 1 by one
- Minimum LOS required, otherwise severity level decreased

**HRG**

- Levels of severity correspond to the most severe complication
How are patient and treatment characteristics used?

**AR-DRG and G-DRG**

- Patient Clinical Complexity Level (PCCL) defined for each BaseDRG
- PCCL (5 levels) is calculated as the cumulative effect of all secondary diagnoses
- max. 4 DRGs per BaseDRG in AR-DRG
- no limit in G-DRG
Developments

Observations

- refinement of severity levels (e.g. GHM, HRG)
- inclusion of medical innovations
- extension of coverage
  - outpatients
  - ambulatory care
  - mental health care
  - long-term care
## Coverage

<table>
<thead>
<tr>
<th>Country</th>
<th>Inpatient</th>
<th>Day-cases</th>
<th>Psychiatry</th>
<th>Rehabilitation</th>
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<tbody>
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<tr>
<td>England</td>
<td>+</td>
<td>+</td>
<td>in the process of extension</td>
<td></td>
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<tr>
<td>Estonia</td>
<td>+</td>
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<td>-</td>
</tr>
<tr>
<td>Finland</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>France</td>
<td>+</td>
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<td></td>
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<tr>
<td>Germany</td>
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<td>+</td>
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<td>Netherlands</td>
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<td>Poland</td>
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<td>in the process of extension</td>
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<tr>
<td>Portugal</td>
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<tr>
<td>Spain</td>
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<td>Sweden</td>
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</table>
No. of Groups increases
## Diagnosis and Procedure coding

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<thead>
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<th>Country</th>
<th>Diagnosis coding</th>
<th>Procedure coding</th>
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<tbody>
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<td>Spain</td>
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<td>ICD-9-CM</td>
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<tr>
<td>Sweden</td>
<td>ICD-10-SE</td>
<td>KVÅ (Swedish adaption of NCSP)</td>
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<tr>
<td>NordDRG</td>
<td>ICD-10</td>
<td>NCSP</td>
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</table>
Diagnosis coding

Diagnoses

- Standard: International Statistical Classification of Diseases and Related Health Problems (ICD)
- most countries use ICD-10, with country specific modification
- different coding standards exist
- Spain and Portugal still use ICD-9
Procedure coding

Procedures

- no general standard exist
- most countries have developed an own catalogue of procedures
- major differences in granularity
- Austria: 1,500 items
- Germany: 30,000 items
Conclusion

DRGs as hospital product

- general structure is similar
- information used is similar
- how this information is applied differs
Chances for Harmonization

possible steps towards a common European DRG-system

1. harmonization of coding (e.g. procedures, diagnosis)
   - mapping (as a first step)
2. common European discharge dataset
3. limited coverage
Thank you for your Attention!

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