

# 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

# Diagnosis-Related Groups (DRG)

## 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

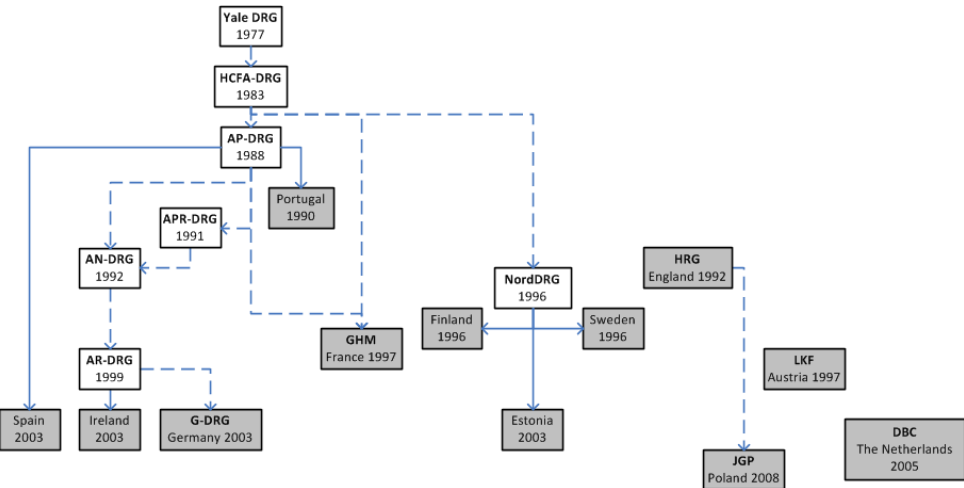


Figure based on <http://www.fischer-zim.ch/textk-pcs/index.htm> & Schreyögg et al. (2006)

# Diagnosis-Related Groups (DRGs)

## General Description

All adopted DRG systems have a *similar* general structure

- 1 Allocation 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

# Diagnosis Treatment Combinations (DBC)

## 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			Developments		Documentation		Conclusion
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		AP-DRG (678)	HRG (1389)	NordDRG (794)	AR-DRG (665)	GHM (2297)	LKF (979)	G-DRG (1200)	JGP (518)
Error				99	99 (A)	90		9	
Pre-MDC				1	01 (A)			Prä (A)	
Nervous System	1	A		01 (B)	01			01 (B)	A
		B		2					
Eye	2	C		02 (C)	02				
Ear, Nose, Mouth & Throat	3	D		03 (D)	03			02 (C)	B
		E		4					
Respiratory System	4	F		04 (E)	04			03 (D)	C
		G		5				04 (E)	D
Circulatory System	5	H		05 (F)	05			05 (F)	E
Vascular Diseases (only JGP)		I		6					
Digestive System	6	J		06 (G)	06				
		K		7					
Hepatobiliary System & Pancreas	7	L		07 (H)	07			06 (G)	Q
		M		8					
Musculoskeletal System & Connective Tissue	8	N		08 (I)	08			07 (H)	F
		O		9				08 (I)	G
Skin, Subcutaneous Tissue & Breast	9	P		30					
Breast Problem (only NordDRG)		Q		22	09 (J)	09			
Burns	22	R		10				09 (J)	H
Endocrine, Nutritional & Metabolic System	10	S		22 (Y)	22				
		T		11	10 (K)	10		22 (Y)	
Kidney & Urinary Tract	11	U		12				10 (K)	J
Male Reproductive System	12	V		13	11 (L)	11			
Female Reproductive System	13	W		14	12 (M)	12		11 (L)	K
Pregnancy, Childbirth & Puerperium	14	X		15	13 (N)	13		12 (M)	
Newborn & Other Neonates (Perinatal Period)	15	Y		16	14 (O)	14		13 (N)	L
		Z		17	15 (P)	15		14 (O)	
Blood, Blood Forming Organs & Immunological Disorders	16			18	16 (Q)	16		15 (P)	
Myeloproliferative DDs (Poorly Differentiated Neoplasms)	17			19	17 (R)	17		16 (Q)	M
				20	18 (S/T)	18		17 (R)	N
Infectious & Parasitic DDs	18			21	19 (U)	19		18 (S/T)	
Human Immunodeficiency Virus Infection	24			21	20 (V)	20		18 (S)	
Mental Diseases & Disorders	19			22	19 (U)	19		19 (U)	
Alcohol/Drug Use or Induced Mental Disorders	20			23	20 (V)	20		20 (V)	S
Injuries, Poison & Toxic Effect of Drugs	21			24	21 (W/X)	21		21 (W)	
				25				21 (W)	
Multiple Significant Trauma	25			23				21 (W)	
Factors Influencing Health Status	23			23 (Z)	23			23 (Z)	
Other									

Introduction

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History

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General Grouping Process

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Developments

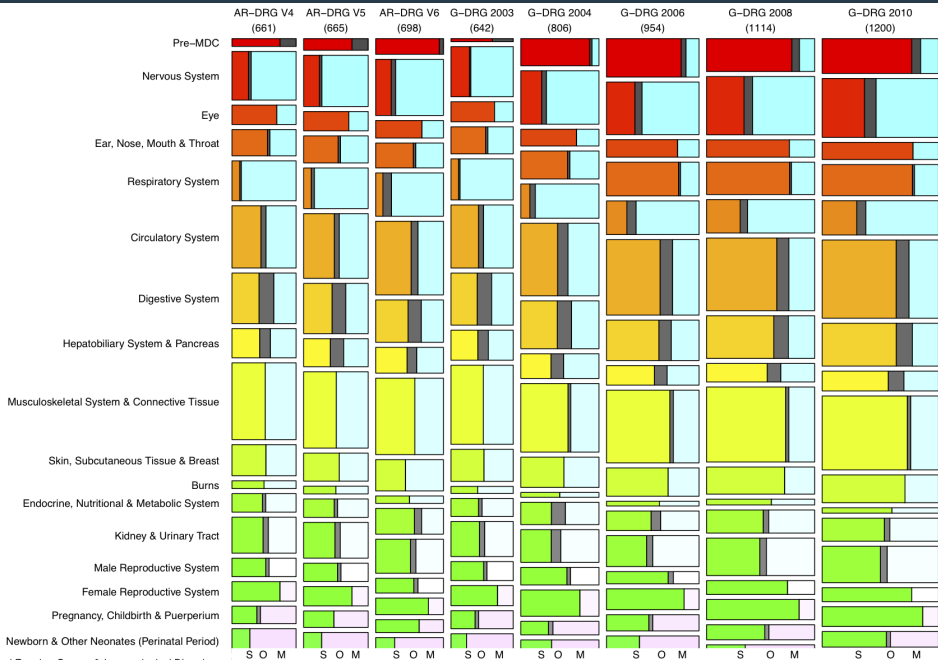
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		AP-DRG	AR-DRG	G-DRG	GHM	NordDRG	HRG	JGP	LKF	DBC
<b>Classification Variables</b>										
<i>Patient characteristics</i>										
Age		x	x	x	x	x	x	x	x	-
Gender		-	-	-	-	x	-	-	-	-
Diagnoses		x	x	x	x	x	x	x	x	x
Neoplasms / Malignancy		x	x	x	-	-	-	-	-	-
Body Weight (Newborn)		x	x	x	x	-	-	-	-	-
Mental Health Legal Status		-	x	x	-	-	-	-	-	-
<i>Medical and management decision variables</i>										
Admission Type		-	-	-	-	-	x	x	-	-
Procedures		x	x	x	x	x	x	x	x	x
Mechanical Ventilation		-	-	x	x	-	-	-	-	-
Discharge Type		x	x	x	x	x	x	x	-	-
LOS / Same Day Status		-	x	x	x	x	x	x	-	-
<i>Structural characteristics</i>										
Setting (inpatient, outpatient, ICU etc.)		-	-	-	x	-	-	-	-	x
Stay at Specialist Departments		-	-	-	-	-	-	-	x	-
Medical Specialty		-	-	-	-	-	-	-	-	x
Demands for Care		-	-	-	-	-	-	-	-	x
<b>Severity / Complexity Levels</b>		3*	4	unlimited	5**	2	3	3	unlimited	-
Aggregate case complexity measure		-	PCCL	PCCL	x	-	-	-	-	-
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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

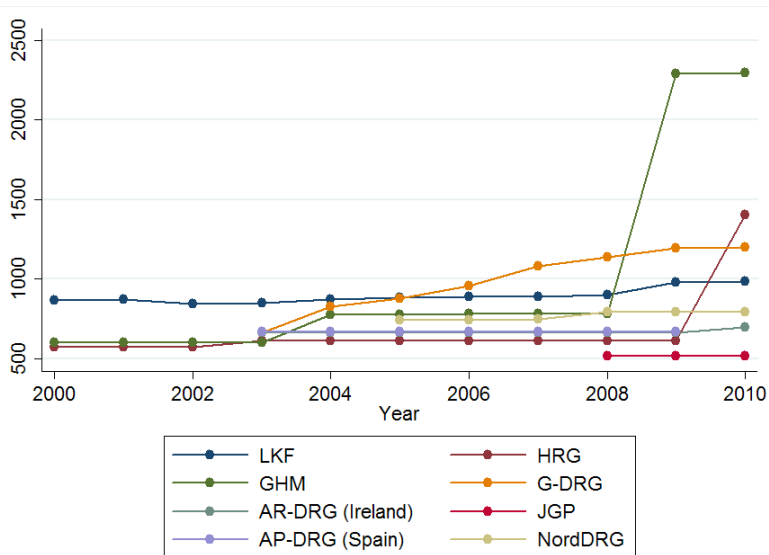
## Observations

- 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

Country	Inpatient	Day-cases	Psychiatry	Rehabilitation
Austria	+	+	-	-
England	+	+	in the process of extension	
Estonia	+	+	-	-
Finland	+	+	+	+
France	+	+	in the process of extension	
Germany	+	+	planned for 2013	-
Netherlands	+	+	+	+
Ireland	+	+	-	+
Poland	+	+	in the process of extension	
Portugal	+	+	-	-
Spain	+	-	-	-
Sweden	+	+	+	+

# No. of Groups increases



# Diagnosis and Procedure coding

<b>Country</b>	<b>Diagnosis coding</b>	<b>Procedure coding</b>
Austria	ICD-10-BMSG-2001	Leistungskatalog
England	ICD-10	OPCS
Estonia	ICD-10	NCSP
Finland	ICD-10-FI	NCSP-FI
France	CIM-10	CCAM
Germany	ICD-10-GM	OPS
Ireland	ICD-10-AM	ACHI
Netherlands	ICD-10	Elektronische DBC Typeringslijst
Poland	ICD-10	ICD-9-CM
Portugal	ICD-9-CM	ICD-9-CM
Spain	ICD-9-CM	ICD-9-CM
Sweden	ICD-10-SE	KVÅ (Swedish adaption of NCSP)
NordDRG	ICD-10	NCSP

# 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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