



Diagnosis Related Groups (in Europe): Moving towards transparency, efficiency and quality in hospitals

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European Observatory on Health Systems and Policies





Incentives linked to different forms of hospital payment



	Productivity and number of services	Patient needs (risk acceptance)	Appropriateness and adherence to evidence-based medicine (quality of processes)	Quality of outcomes	Administrative simplicity and ease of financial sustainability
Global budget	_	(-)	Cheap and bad Undertreatmen	to	+
Per diems	(+)	0	O	propriate	e treatment
FFS	+	(+) EX	pensive and ba Overtreatmen	(—)	_

Incentives linked to different forms of hospital payment



	Productivity and number of services	Patient needs (risk acceptance)	Appropriateness and adherence to evidence-based medicine (quality of processes)	Quality of outcomes	Administrative simplicity and ease of financial sustainability
Global budget	_	(—)	(—)	0	+
Per diems	(+)	0	0	(—)	(+) / O
Simple DRGs (based on diagnosis)	ple + [cases] - [services/ consideration of		(—) [if insufficient consideration of necessary services]	(-)/0	(-) / O
FFS	+	(+)	(—)	(—)	_

Incentives linked to different forms of hospital payment



	Productivity and number of services	Patient needs (risk acceptance)	Appropriateness and adherence to evidence-based medicine (quality of processes)	Quality of outcomes	Administrative simplicity and ease of financial sustainability
Global budget	_	E	uropean countr 1990s/2000s		+
Per diems	(+)	0	19905/20005	(—)	(+) / O
Simple DRGs (based on diagnosis)	+ [cases] - [services/case]	(—) [if insufficient consideration of severity]	[if insufficient consideration of new self-	(-)/0	(-) / O
FFS	+	(+)	USA 1980s	(—)	_

→ "dumping" (avoidance), "creaming"
 (selection) and "skimping" (undertreatment)
 → up/wrong-coding, gaming





Empirical evidence (I):

hospital activity and length-of-stay under DRGs



Country	Study	Activity	ALoS
US, 1983	US Congress - Office of	V	▼
	Technology Assessment, 1985		
	Guterman et al., 1988	V	▼
	Davis and Rhodes, 1988	•	▼
	Kahn et al., 1990		•
	Manton et al., 1993	V	▼
	Muller, 1993	V	▼
	Rosenberg and Browne, 2001	▼	•

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Empirical evidence (II)

European
countries
1990s/
2000s

Country	Study	Activity	ALoS
Sweden,	Anell, 2005	A	V
early 1990s	Kastberg and Siverbo, 2007	A	V
Italy, 1995	Louis et al., 1999	▼	V
	Ettelt et al., 2006	A	
Spain, 1996	Ellis/ Vidal-Fernández, 2007	A	
Norway,	Biørn et al., 2003	A	
1997	Kjerstad, 2003	<u> </u>	
	Hagen et al., 2006	A	
	Magnussen et al., 2007	A	
Austria, 1997	Theurl and Winner, 2007		V
Denmark, 2002	Street et al., 2007	A	
Germany, 2003	Böcking et al., 2005	A	•
	Schreyögg et al., 2005		•
	Hensen et al., 2008	A	•
England,	Farrar et al., 2007	A	V
2003/4	Audit Commission, 2008	A	•
	Farrar et al., 2009		•
France, 2004/5	Or, 2009		



To get a common "currency" of hospital activity for

- transparency → performance measurement
 - → efficiency benchmarking,
- budget allocation (or division among purchasers),
- planning of capacities,
- payment (→ efficiency)



Payments for infrastructure (e.g. buildings, expensive equipment)

Payments for non-patient care activities (e.g. teaching, research, emergency availability)

Payments for patients not classified into DRG system (e.g. outpatients, day cases, psychiatry, rehabilitation)

Additional payments for specific activities for DRGclassified patients (e.g. expensive drugs, innovations), possibly listed in DRG catalogues

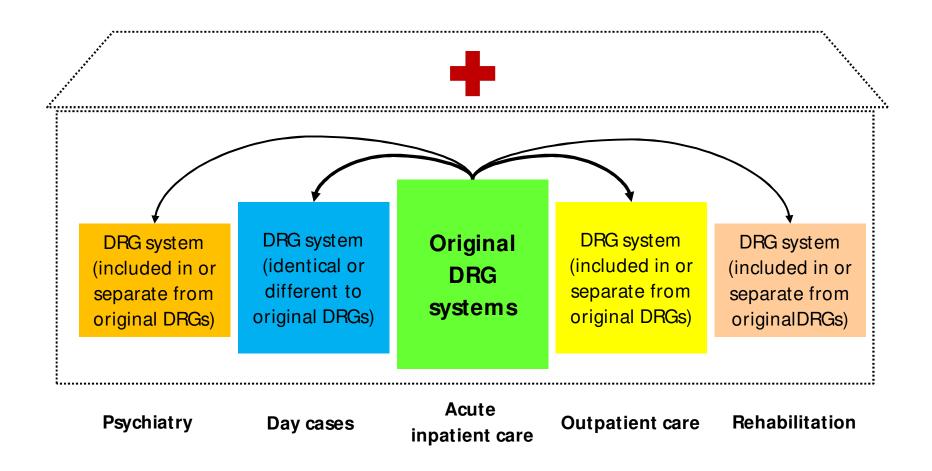
Other types of payments for DRG-classified patients (e.g. global budgets, fee-for-service)

DRG-based case payments, DRG-based budget allocation

(possibly adjusted for outliers, quality etc.)



For what types of activities? Scope of DRGs (II)





The growing scope of DRGs in Europe

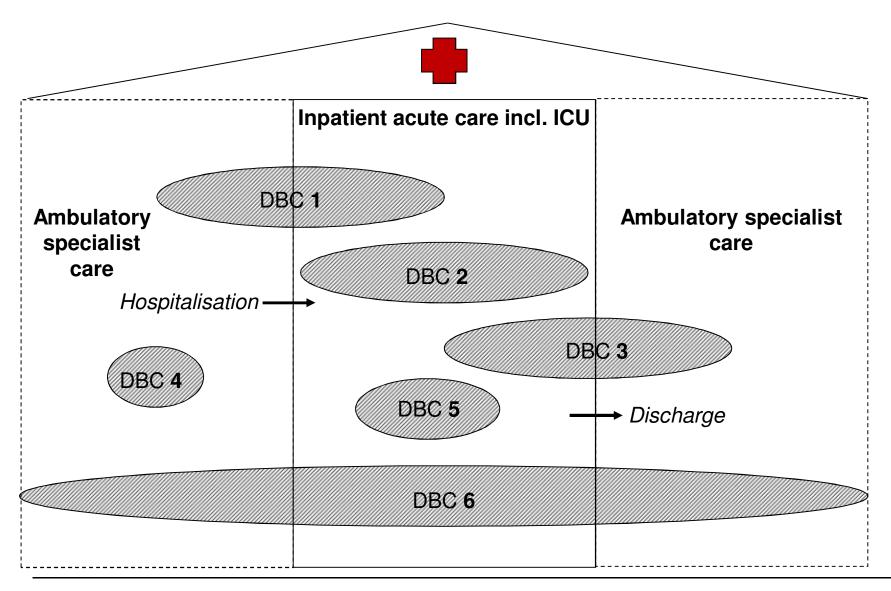
Country	Inpatient	Outpatients	Psychiatry	Rehabilitation
Austria	X	?	?	?
England	X	X	starting 2012	?
Estonia	X	starting 20xx	?	?
Finland	X	X	?	?
France	X	X	starting 20xx	starting 20xx
Germany	X	-	starting 2013	-
The Netherlands	X	X	?	?
Ireland	X	X	-	?
Poland	X	started 2011	starting 20xx	starting 20xx
Portugal	X	?	starting 20xx	?
Spain	X	starting 20xx	?	?
Sweden	X	X	?	?



Scope in the Netherlands:



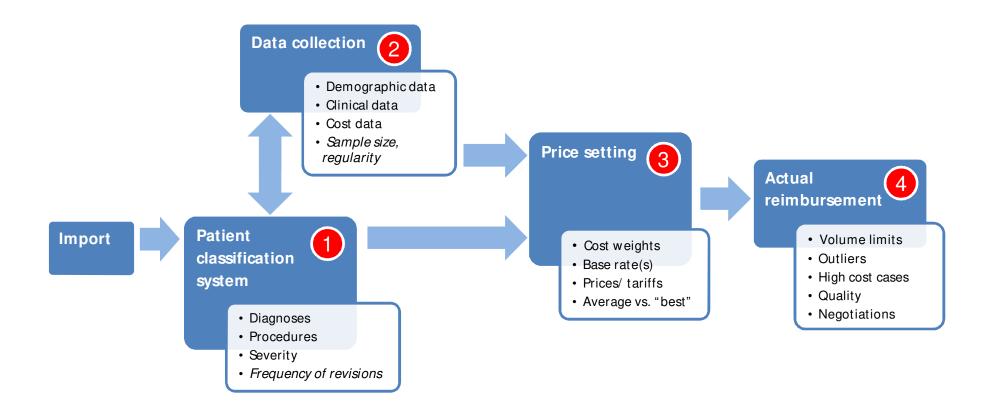
DBCs (diagnosis-treatment combinations); examples





Essential building blocks of DRG systems





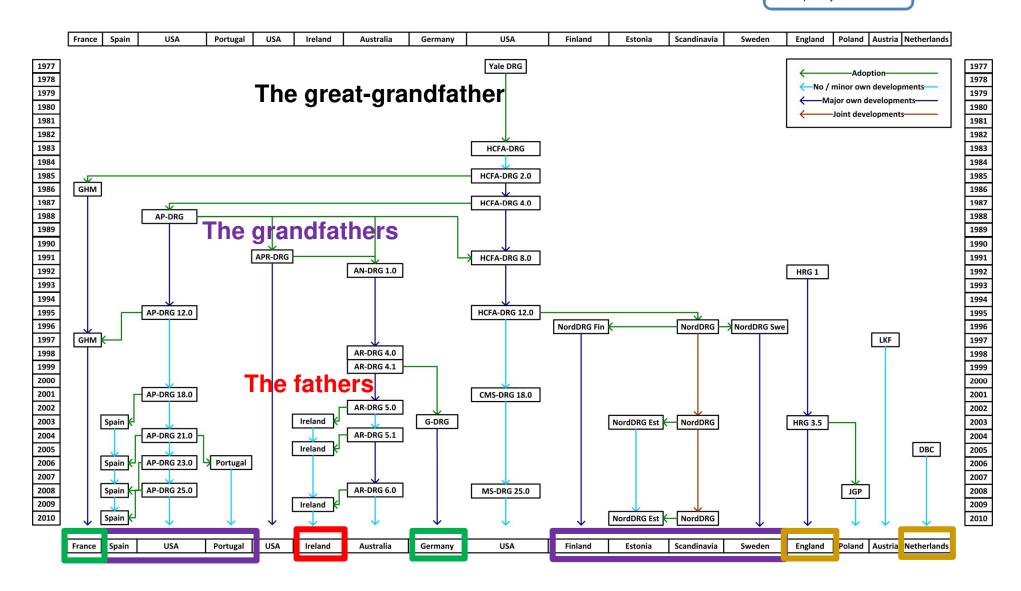
Choosing a PCS: copied,

further developed or self-developed?

Patient classification system

- Diagnoses
- · Procedures
- Severity
- Frequency of revisions

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Classification variables and severity levels in European DRG-like PCS

Patient classification system

- sification
- Diagnoses
- Procedures
- Severity
- Frequency of revisions

	AP-DRG	AR-DRG	G-DRG	GHM	NordDRG	HRG	JGP	LKF	DBC
sification Variables									
Patient characteristics									
Age	X	X	X	Х	X	X	X	X	-
Gender	-	-	-	-	X	-	-	-	-
Diagnoses	X	X	X	Х	X	X	X	X	Х
Neoplasms / Malignancy	X	X	X	-	-	-	-	-	-
Body Weight (Newborn)	X	X	X	X	-	-	-	-	-
Mental Health Legal Status	-	X	X	-	-	-	-	-	-
Medical and management decision varia	ore emp	hasis or							
Admission Type	re emp	and	-	-	-	Χ	Х	-	-
Procedures	ore eniporocedu'	res alla	X	Х	X	Χ	Х	Х	Х
Mechanical Ventilation	orocedu' ngth-of-	stay tha	X11	Х	-	-	-	-	-
Discharge Type	ngtri-or	US		Х	X	Χ	Х	-	-
LOS / Same Day Status	lU		Х	Х	X	Χ	Х	-	-
Structural characteristics									
Setting (inpatient, outpatient, ICU etc.)	-	-	-	Х	-	-	-	-	Х
Stay at Specialist Departments	-	-	-	-	-	-	-	Х	-
Medical Specialty	-	-	-	-	-	-	-	-	Х
Demands for Care	-	-	-	-	-	-	-	-	Х
erity / Complexity Levels	3*	4	unlimited	5* *	2	3	3	unlimited	_
Aggregate case complexity measure	Ū	PCCL	PCCL	X	_	ŭ	Ŭ	2	

PCCL = Patient Clinical Complexity level

^{*} not explicitly mentioned (Major CCs at MDC level plus 2 levels of severity at DRG level)

^{** 4} levels of severity plus one GHM for short stays or outpatient care

PCS: the German approach

No significant differences in

the resource comsumption

50% unsplit

Implausibility of major diagnosis,

characteristics etc.

medical procedures, demographic

Surgical

Partition

unsplit

DRGs (n=294)

n=294

Patient classification system

- Diagnoses
- Procedures
- Severity

Transplantation,

Pre-MDC

...

Medical

Partition

split

DRGs (n= 906)

n=300

ventilation etc.

• Frequency of revisions

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MDC 23

+ no (essential) procedure for

the respective MDC

Significant differences in

the resource comsumption

On average 3

levels (but up

to ca. 10)

MDC 1 MDC 2 MDC 3 Major diagnosis

+ at least one surgical procedure, but one other procedure being essential for the respective MDC

Error DRG

Case data

Major

Other

Partition

Basis DRGs (G-DRG Version 2010 : n=594)

Co-morbidity, medical procedures,

age, clinical severity, complication, cause of hospital discharge

diagnosis

NB: Three partitions

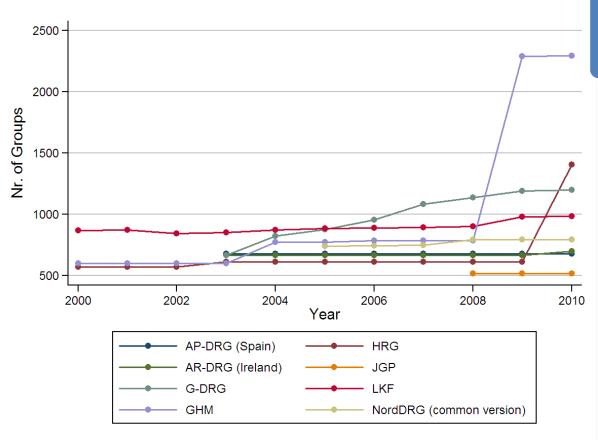
one for nonsurgical procedures!

8 November 2011



Basic characteristics of DRG-like PCS in Europe





Patient	classification
system	

- Diagnoses
- Procedures
- Severity
- Frequency of revisions

-	AP-DRG	AR-DRG	G-DRG	GHM	NordDRG	HRG	JGP	LKF	DBC
DRGs / DRG-like groups	679	665	1,200	2,297	794	1,389	518	979	≈30,000
MDCs/ Chapters	25	24	26	28	28	23	16	-	-
Partitions	2	3	3	4	2	2*	2*	2*	-





Pre-MDC Nervous System

Ear, Nose, Mouth & Throat

Respiratory System

MDC differences across DRG systems

Circulatory System

Vascular Diseases (only JGP)

Digestive System

Hepatobiliary System & Pancreas

Musculoskeletal System & Connective Tissue

Patient classification

system

Diagnoses

Procedures

Severity

• Frequency of revisions

Skin, Subcutaneous Tissue & Breast

Breast Problem (only NordDRG)

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

Infectious & Parasitic DDs

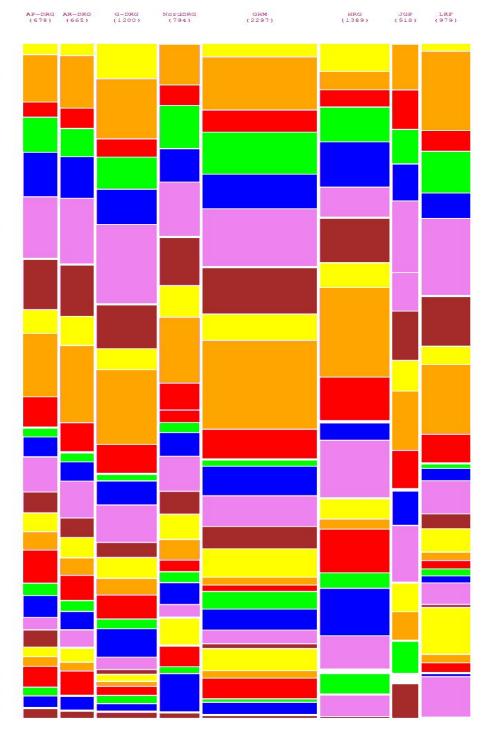
Human Immunodeficiency Virus Infection

Mental Diseases & Disorders

Alcohol/Drug Use or Induced Mental Disorders

Injuries, Poison & Toxic Effect of Drugs

Multiple Significant Trauma Factors Influencing Health Status





Main questions relating to data collection



Clinical data

- → classification system for diagnoses and
- → classification system for procedures

Data collection

- · Demographic data
- Clinical data
- Cost data
- Sample size, regularity

Cost data

- → imported (not good but easy) or
- → collected within country (better but needs standardised cost accounting)

Sample size

- → entire patient population *or*
- → a smaller sample

Many countries: *clinical data* = all patients; *cost data* = hospital sample with standardised cost accounting system



Diagnosis and procedure coding across Europe



Data collection

- Demographic data
- Clinical data
- Cost data
- Sample size, regularity

Country	Diagnosis Coding	Procedure Coding
Austria	ICD-10-AT	Leistungskatalog
England	ICD-10	OPCS - Office of Population Censuses and Surveys
Estonia	ICD-10	NCSP - Nomesco Classification of Surgical Procedures
Finland	ICD-10	NCSP - Nomesco Classification of Surgical Procedures
France	ICD-10	CCAM - Classification Commune des Actes Médicaux
Germany	ICD-10-GM	OPS - Operationen - und Prozedurenschlüssel
Ireland	ICD-10-AM	ACHI - Australian Classification of Health Interventions
The Netherlands	ICD-10	⊟ektronische 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	NCSP - Nomesco Classification of Surgical Procedures

(almost) standardised

no uniform standard available

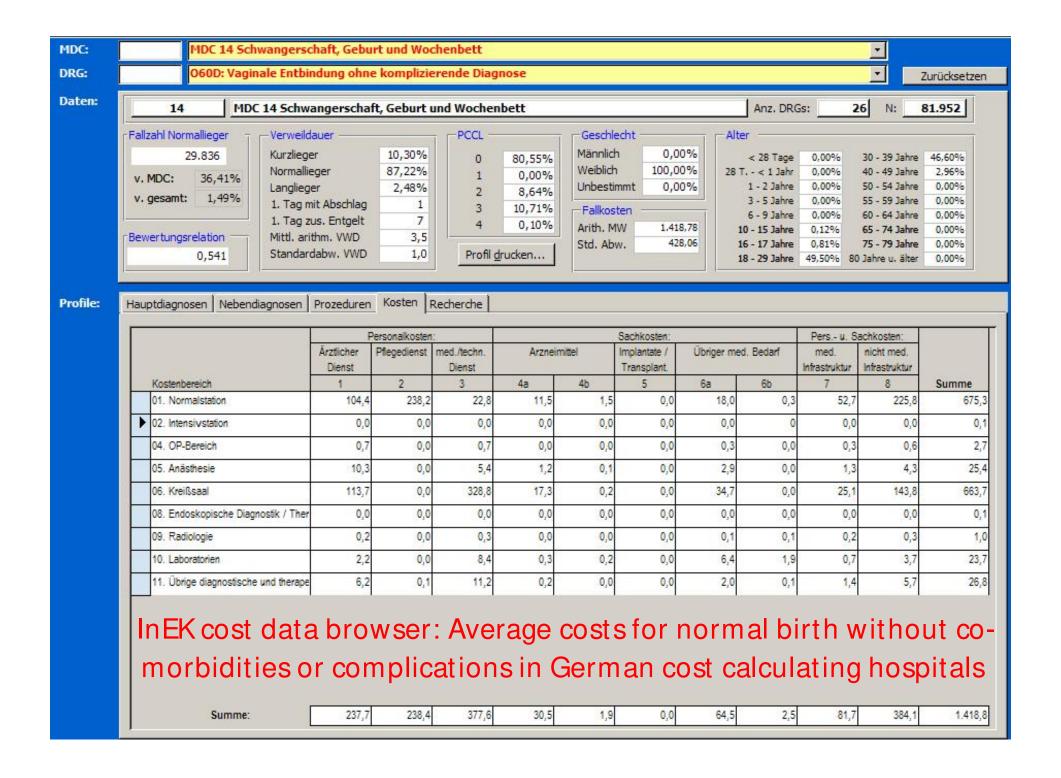


Cost accounting in hospitals: how Germany does it



Da	ata collection					С	ost- El	emer	nt Grou	ıps		
	Demographic data Clinical data Cost data Sample size, regularity		1: Labour costs of the other medical staff	Labour costs of the nursing staff	3: Labour costs of the administrative and technical staff	4a: Drug costs	4b: Drug costs (individual costs/ actual consumtion)	5: costs of implants and grafts	6a: Material costs (without drugs, implants and grafts)	6b: Material costs (individual costs/ actual consumption, without drugs, implants/ grafts	7: Medical infrastructure costs	8: Non- medical infrastructure costs
			ı	Labo	ur			Mate	rial		Infrast	ructure
	1: Normal ward	tal S	1.1	1.2	1.3	1.4a	1.4b	-	1.6a	1.6b	1.7	1.8
"	2: Intensive care unit	Hospital units with beds	2.1	2.2	2.3	2.4a	2.4b	2.5	2.6a	2.6b	2.7	2.8
Groups	3: Dialysis unit	울 - ^ -	3.1	2.3	3.3	3.4a	3.4b	-	3.6a	3.6b	3.7	3.8
2	4: Operating room		4.1	-	4.3	4.4a	4.4b	4.5	4.6a	4.6b	4.7	4.8
9	5: Anaesthesia	as as	5.1	-	5.3	5.4a	5.4b	-	5.6a	5.6b	5.7	5.8
Centre	6: Maternity room	are a	6.1	-	6.3	6.4a	6.4b	-	6.6a	6.6b	6.7	6.8
Ö	7: Cardiac diagnostics/ therapy	nt sti	7.1	-	7.3	7.4a	7.4b	7.5	7.6a	7.6b	7.7	7.8
Cost.	8: Endoscopic diagnostics/ therapy	<u> </u>	8.1	-	8.3	8.4a	8.4b	8.5	8.6a	8.6b	8.7	8.8
ŏ	9: Radiology	Diagnostic and treatment areas	9.1	-	9.3	9.4a	9.4b	9.5	9.6a	9.6b	9.7	9.8
	10: Laboratories	_ ₹ O	10.1	-	10.3	10.4a	10.4b	10.5	10.6a	10.6b	10.7	10.8
	11: Other diagnostic and therapeutic areas		11.1	11.2	11.3	11.4a	11.4b	11.5	11.6a	11.6b	11.7	11.8

99 cost categories!

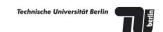




Price setting

- · Cost weights
- Base rate(s)
- Prices/ tariffs
- Average vs. "best"

- Based on good quality data (not possible if cost weights imported)
- Average costs vs. "best practice"
- "Cost weights x base rate" vs. "Tariff + adjustment"



Price setting

- · Cost weights
- Base rate(s)
- Prices/ tariffs
- · Average vs. "best"

	"cost weight" (varies by DRG)	"base rate" or adjustment
England	£ 3000	X 1.0 – 1.32 (varies by hospital)
France	€ 3000	1.0 (+/-) X (varies by region and hospital)
Germany	1.0	¥ (varies slightly by state)



Cost calculation and price setting – country experience

Price setting

- Cost weights
- Base rate(s)
- Prices/ tariffs
- Average vs. "best"

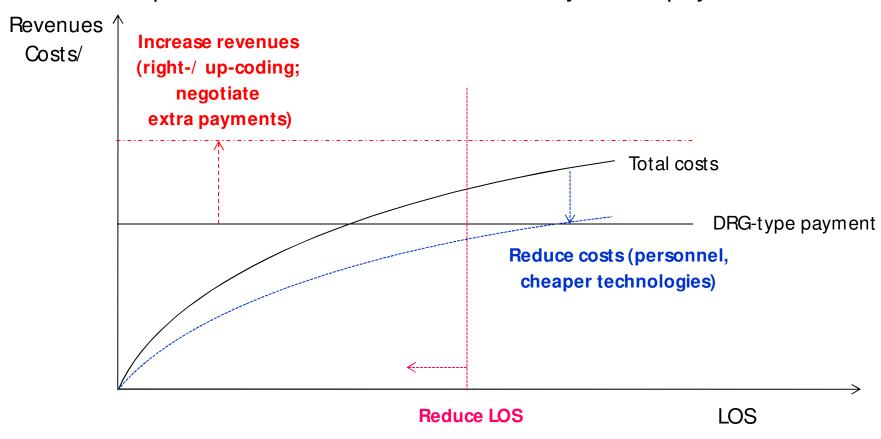
	England	France	Germany	Netherlands	
Cost data collection	Cost data collection methodology to determine payment rate				
Sample size (% of all hospitals)	All NHS hospitals	99 hospitals (5%)	253 hospitals (13%)	Resource use: all hospitals; unit costs: 15-25 hospitals (24%)	
Cost accounting methodology	Top down	Mix of top-down and bottom-up	Mainly bottom-up	Mainly bottom-up	
Calculation of hos	Calculation of hospital payment				
Payment calculation	Direct (price)	Indirect (cost-weight)	Indirect (cost-weight)	Direct (price)	
Applicability	Nationwide (but adjusted for market-forces- factor)	Nationwide (with adjustments and separate for public and private hospitals)	Cost-weights nationwide; monetary conversion state- wide	List A: nationwide List B: hospital specific	
Volume/ expenditure limits	No (plans exist for volume cap)	Yes	Yes	List A: Yes List B: Yes/No	





Being aware of strategic behaviour of hospitals in times of DRGs

Options to avoid deficits under activity based payments

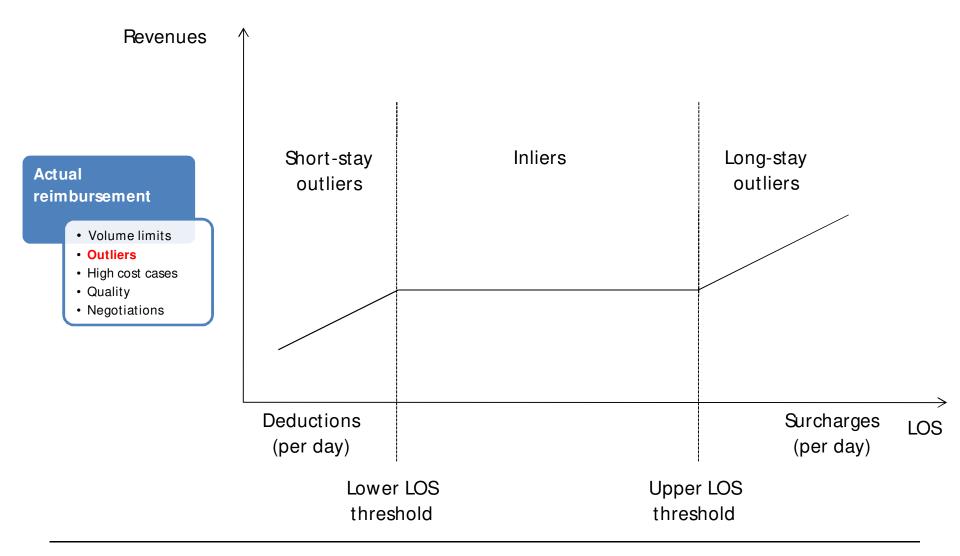






How DRG systems try to counter-act such behaviour:

1. long- and short-stay adjustments





How DRG systems try to counter-act such behaviour:

2. Fee-for-service-type additional payments

Ac	tu	al				
rei	m	bи	rse	m	ei	nt

- Volume limits
- Outliers
- High cost cases
- Quality
- Negotiations

	England	France	Germany	Nether- lands
Payments per hospital stay	One	One	One	Several possible
Payments for specific high-cost services	Unbundled HRGs for e.g.: • Chemotherapy •Radiotherapy •Renal dialysis •Diagnostic imaging •High-cost drugs	Séances GHM for e.g.: • Chemotherapy •Radiotherapy •Renal dialysis Additional payments: • ICU • Emergency care • High-cost drugs	Supplementary payments for e.g.: • Chemotherapy •Radiotherapy •Renal dialysis •Diagnostic imaging •High-cost drugs	No
Innovation- related add'l payments	Yes	Yes	Yes	Yes (for drugs)



How DRG systems try to counter-act such behaviour:

3. adjustments for quality

Actual reimbursement

- Volume limits
- Outliers
- · High cost cases
- Quality
- Negotiations

- England & Germany: no extra payment if patient readmitted within 30 days
- Germany: deduction for not submitting quality data
- England: up 1.5% reduction if quality standards are not met
- France: extra payments for quality improvement (e.g. regarding MRSA)

negotiations in the Netherlands

Actual reimbursement

- Volume limits
- Outliers
- High cost cases

Negotiations

Quality

Table 1 Negotiated prices in 2007 and 2004 for seven list B DBCs at four health insurers

	2004 price (€)	Minimum 2007 price (€)	Maximum 2007 price (€)	Mean 2007 price (€)	Price increase (%)
Hip replacement	8571	7603	11370	9097	6.3
Knee replacement	10228	9097	13000	10746	5.1
Inguinal hernia repair	2163	1529	3088	2254	4.2
Diabetes	409	385	1027	483	18.1
Tonsillectomy	740	433	1498	800	8.1
Cataract	1317	1044	1599	1381	4.8
Spinal disc herniation	3046	2413	5778	3308	8.6



Implementation: Not from one day to the next - the long way of DRG introduction in Germany

2000-2002 2003 2004 2005 2009 2010 2014 2) Budget-neutral 3) Phase of convergence 4) Discussion on future policy to state-wide base rates phase Nationwide base rate Hospital specific base rate Historical Budget 1) Phase of preparation 15 % • Fixed or maximum prices (2003)20% • Selective or uniform negotiations 20% 25% Statewide Quality Assurance (adjustments) Transformation base rate 25% 20% • Budgeting (amount of services) 20% • Dual Financing or Monistic **DRG-Budget** 15 % (2004)Hospital specific base rate



Conclusions



European countries have developed – and are continuously modifying – their own DRG systems, which

- classify patients into more groups,
- give a higher weight to procedures and to setting,
- base payment rates on actual average (or best-practice) costs,
- pay separately for high-cost and innovative technologies,
- are implemented in a step-wise manner, and thus reduce, or even avoid, the potential of risk selection and under-provision of services.



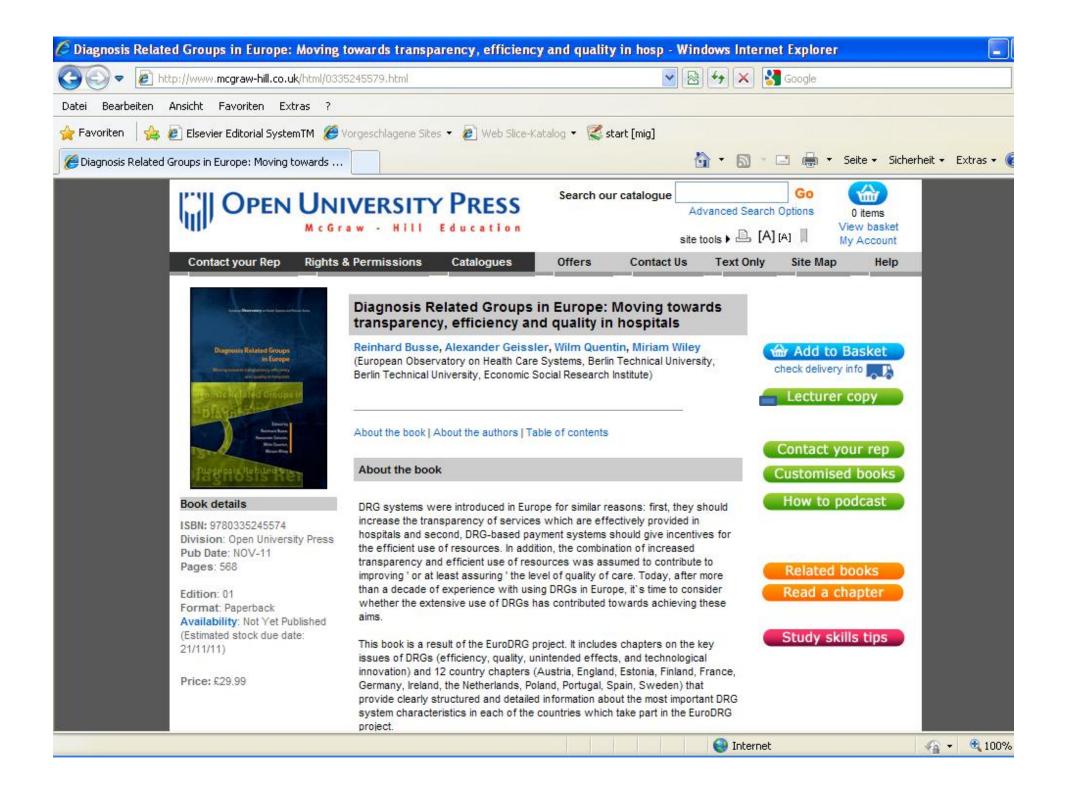


Final conference regarding policy conclusions on 17 November 2011 in Berlin:

- Are hospital services and costs across European countries really so different to justify different systems for patient classification and cost weights? Could cost differences not be handled through base rate adjustments (as in the US)?
- What do we know regarding the effects on hospital efficiency and quality of service delivery under DRGs?



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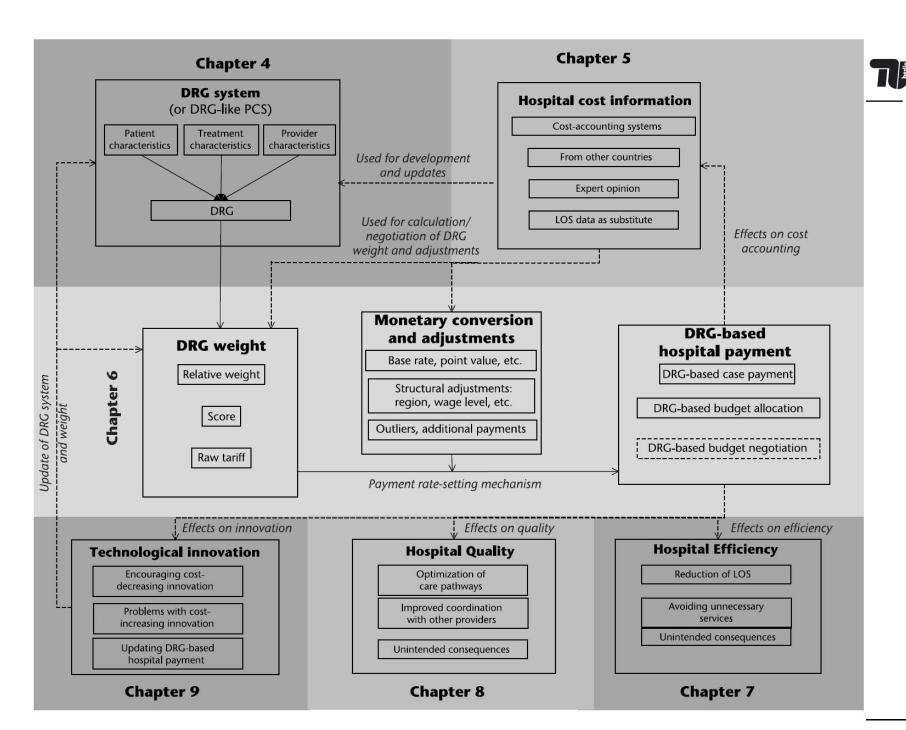
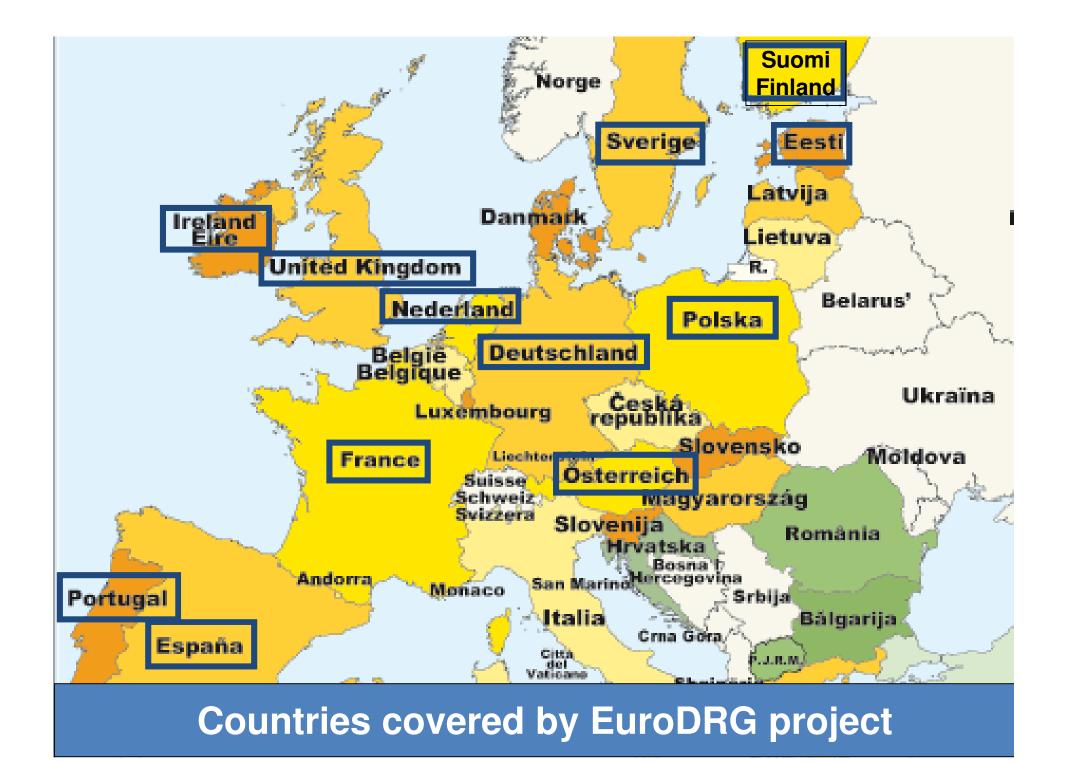


Figure 3.1 Framework for navigating through the book





EuroDRG project partners



Austria	Department for Medical Statistics, Informatics and Health Economics, Innsbruck Medical University
England/ UK	Centre for Health Economics, University of York
Estonia	PRAXIS Center for Policy Studies, Tallinn
Europe	European Health Management Association, Brussels
Finland	National Institute for Health and Welfare , Helsinki
France	École des hautes études en santé publique, Rennes & Institut de recherche et documentation en économie de la santé, Paris
Germany	Department of Health Care Management, Technische Universität Berlin
Ireland	Economic and Social Research Institute, Dublin
Netherlands	Institute for Health Policy & Management, Erasmus Universitair Medisch Centrum Potterdam
Poland	National Health Fund, Warsaw
Portugal	Avisory board member Céu Mateus
Spain	Institut Municipal d'Assistència Sanitària, Barcelona
Sweden	Centre for Patient Classification, National Board of Health and Welfare, Stockholm