

Use of Databases for Health Resource Utilization (HRU) and Cost Analyses in EU-5: Results from a Focused Literature Review



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BACKGROUND

- ◆ Databases are essential tools for pharmaco-economic research.¹
- ◆ North America has large administrative claims (pharmacy and/or medical), hospital databases, and electronic medical record (EMR) databases.²
- ◆ Databases in Europe are scarcer, integrated primary and secondary care data are rare, and claims with corresponding cost values are largely nonexistent.

OBJECTIVE

- ◆ To explore the use of databases for health resource utilization (HRU) and cost analyses in EU-5 during the past 5 years.

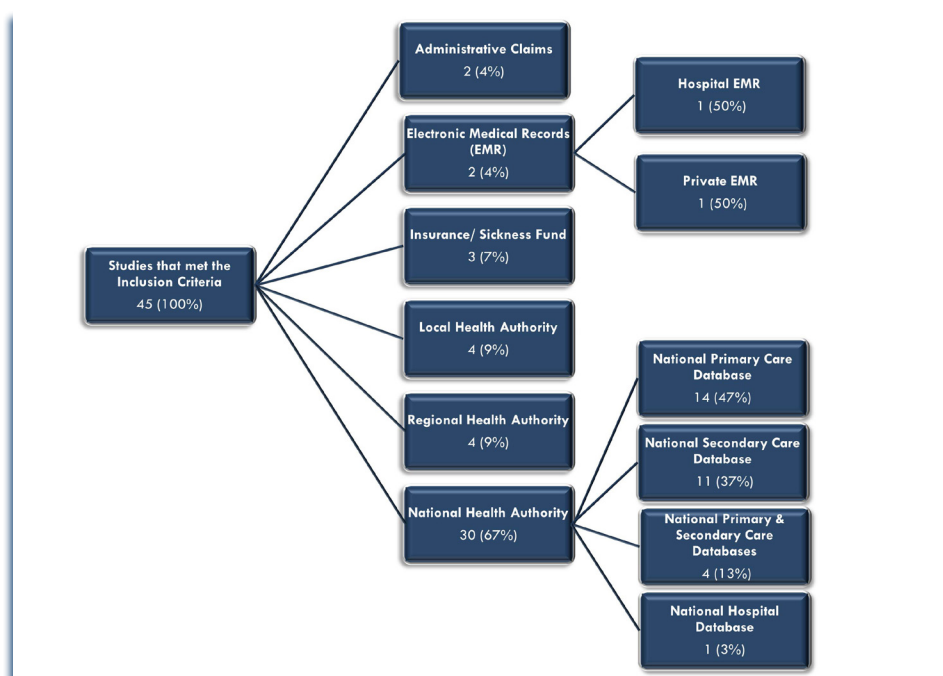
METHODS

- ◆ Targeted literature review conducted using PubMed/MEDLINE and Embase
- ◆ Search terms and variations of those included:
 - ◆ Secondary care or hospitalization
 - ◆ Health resources/utilization
 - ◆ Databases
 - ◆ EU-5 (United Kingdom (UK), France, Germany, Italy, and Spain)
- ◆ Publication time frame: January 1, 2011 to December 31, 2015.
- ◆ Exclusion criteria: Abstract unavailable, language other than English, no original research (e.g., concept papers, letters)
- ◆ Key data abstracted:
 - ◆ Objective
 - ◆ Type of data source
 - ◆ Cost analysis performed
 - ◆ Design
 - ◆ Detailed HRU categories

RESULTS

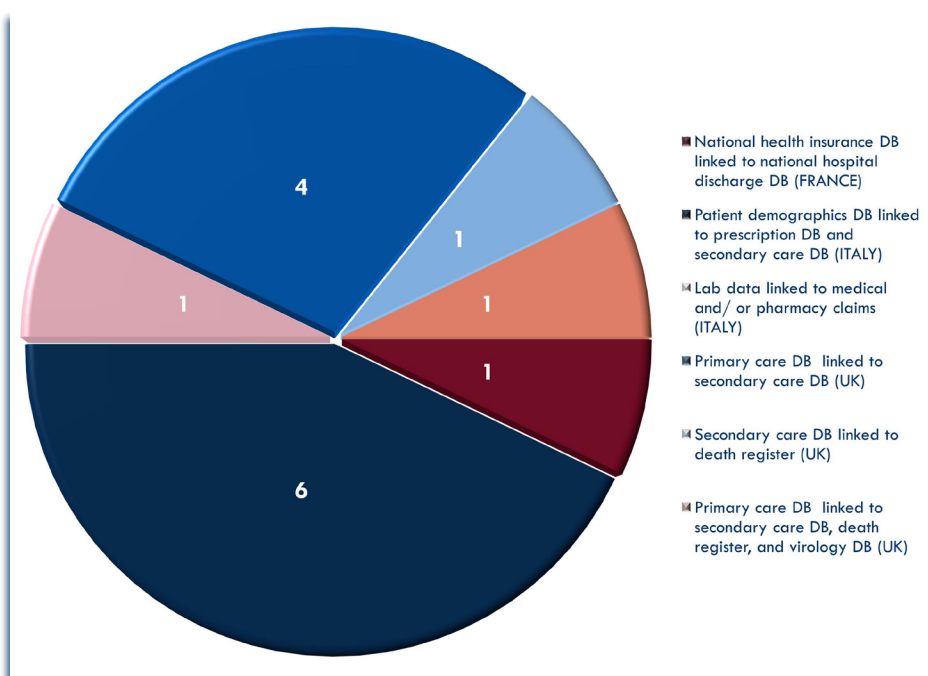
- ◆ Our search yielded 146 abstracts, of which 45 (31%) were retained for analysis: 10 were conference presentations and 35 were full papers.
- ◆ Twenty studies were conducted in the UK, 11 in Italy, 8 in Germany, 5 in France, and 1 in Spain.
- ◆ Figure 1 depicts the categories of data sources used.
 - ◆ Thirty studies used national health authority databases, of which 14, 12, and 4 were primary care, secondary care, and both primary and secondary care databases, respectively.
 - ◆ All other data source categories were much less used (up to 4 studies each).
- ◆ Data sources by country are detailed in Table 1.
 - ◆ National databases mainly utilized in countries with a national health system (PMSI in France, CPRD/THIN/HES in the UK).
 - ◆ Local/regional databases utilized in countries where healthcare is devolved to the regions (Italy).
 - ◆ No clear picture on the use of database sources in Germany (each of the 8 studies used a different database).
- ◆ Fourteen studies (31%) performed data linkage (Figure 2).
 - ◆ UK: 6/20 studies (30%) linked primary care (CPRD, THIN), secondary care (HES), and/or death register data
 - ◆ Italy: 7/11 (64%) linked patient demographics, prescription, and/or secondary care data
- ◆ Though search terms included "health resources/utilization" and "secondary care" or "hospitalization", not all studies complied with stated criteria: 41 (89%) included HRU data, and 37 (80%) included inpatient stay data.
- ◆ Main categories of HRU variables included in studies were inpatient stays (80% of studies), drugs (65%), specialist visits (57%), and primary care visits (43%) (Figure 3).
- ◆ Twenty-seven studies (56%) compared outcomes between cohorts.
- ◆ Thirty-one studies (67%) calculated direct medical costs; with costing sources detailed in 20/31 (65%) of studies (Table 2).

Figure 1. Categorization of Data Sources (45 Studies Reviewed)



EMR, electronic medical record

Figure 2. Types of Data Linkages Recorded (14 Studies)



DB, database

Table 1. Data Sources by Country and Type of Database*

Country	Administrative Claims	Electronic Medical Records	Insurance/Sickness Fund	Local Health Authority	Regional Health Authority	National Primary Care	National Secondary Care	National Primary and Secondary Care
France			◆ Database of an Insurance Fund (#7)				◆ PMSI (#12, #28, #45) ◆ French national insurance information system (#40)	
Germany	Health Risk Insurance (#22)	IMS Disease Analyzer (#4)	◆ Techniker Krankenkasse (#5) ◆ DAK-Gesundheit (#31)	◆ CONTENT (#33)		◆ Data acquisition system for prospective surveillance (#26)	◆ Not available (#23, #29)	
United Kingdom						◆ CPRD (#1, #6, #15, #24, #25, #36, #37, #39, #42, #44) ◆ THIN (#20, #21, #38)	◆ HES (#10, #27, #35) ◆ Hepatitis C Virus Research UK database [3]	◆ CPRD and HES (#9, #30) ◆ Hospital discharge, primary care, death register, Health Protection Scotland Virology database (#32)
Italy		The Study Research Centre of Italian Society of Emergency Medicine (#34)		◆ Administrative data (#14) ◆ Bologna local health authority (#8) ◆ Not available (#13)	◆ CSI-Piemonte (#41) ◆ Veneto Hospital discharge database (#2) ◆ Automated system database (#11) ◆ Not available (#18)		◆ NHS Beneficiaries (#17, #18)	◆ Health Search Database (#19)
Spain	Not available (#43)							

CPRD, Clinical Practice Research Datalink; HES, Hospital Episode Statistics; NHS, National Health Service; PMSI, Programme de Médicalisation des Systèmes d'Information; THIN, the Health Improvement Network

Figure 3. Health Resource Use Categories Measured

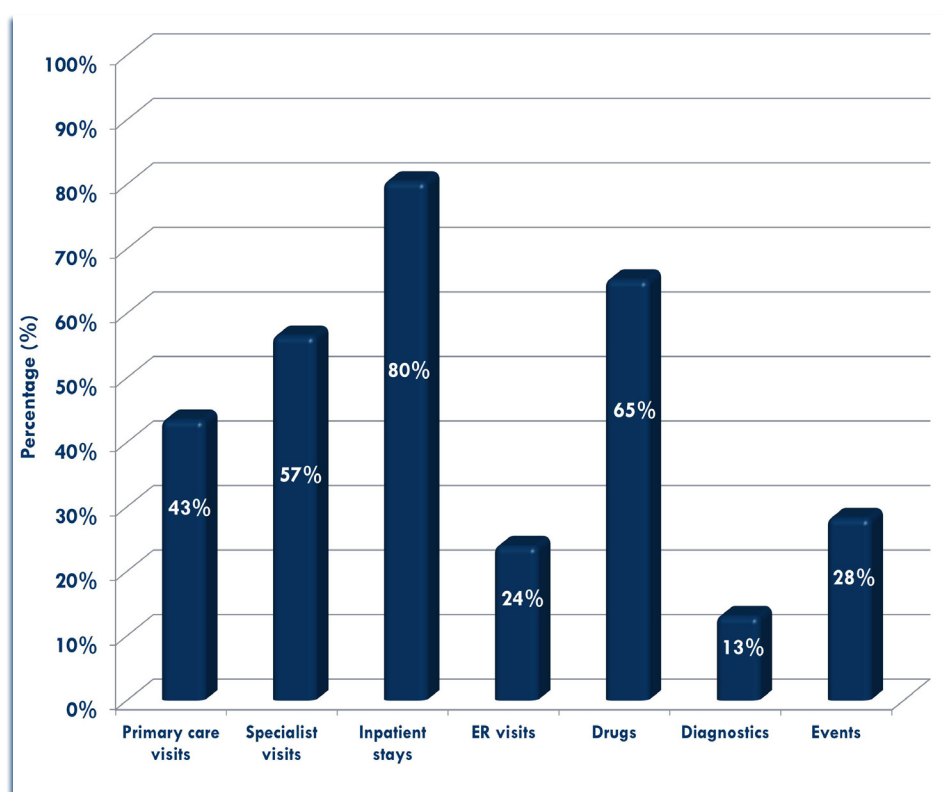


Table 2. Costing Source for 21 Studies

Country (Study #)	Claims	DRGs	Medical Services Fees/Health Providers Reimbursement	National Drug Formulary	Retail Prices/Drug Tariffs	National Health Service Costs/Specialist Referral Cost	Other Sources
France (#45)		✓					
France (#12)		✓					
Germany ≈ (#23)		✓					
Germany (#33)				✓*			
Germany (#26)		✓	✓		✓		
Germany ≈ (#29)		✓	✓				✓'
Germany ≈ (#51)		✓					
Germany ≈ (#31)		✓					
Italy (#19)	✓^			✓			✓
Italy (#2)		✓					
Italy (#11)			✓				
Spain (#43)					✓	✓	
UK (#21)		✓				✓	
UK (#6)						✓	
UK (#37)		✓		✓		✓	✓-
UK (#39)	✓§					✓	
UK (#27)							✓-
UK (#44)				✓		✓	
UK (#20)	✓					✓	
UK (#30)				✓	✓	✓	

DRGs, Diagnosis-Related Groups; HRGs: Healthcare Resource Groups; NHS: National Health Service
 *Germany Pharmacy Barcode (PZN); ≈Indirect costs were calculated using the human capital method; Rehabilitation Statistics; §SIMG Database; §IMS PADDs Database; ||Hospital Registries; -Personal Social Services Research Unit (PSSRU)

REFERENCES

1. Tyree PT, Lind BK, Lafferty WE. Challenges of using medical insurance claims data for utilization analysis. *Am J Med Qual* 2006;21(4):269-275.
2. Riley GF. Administrative and claims records as sources of health care cost data. *Med Care* 2009;47 (7 Suppl 1):S51-S55.



*The full list of reviewed studies is available on our website as an attachment to the abstract.

CONCLUSIONS

- ◆ This sample of studies across EU-5 shows that the types of databases used are intricately linked to each country's health system (e.g., national vs. regional responsibility).
- ◆ Linkage of primary and secondary care data occurs with greater frequency in the United Kingdom (link between CPRD and HES) and Italy (link between prescription and secondary care data).
- ◆ Contrary to the US, where claims values are available, the only method for cost analyses in Europe continues to be multiplying resource use with unit values. This may have implications for the reliability of cost results because of variability by cost type and source.