

Burden of Paediatric Influenza in Europe: A Gap Analysis

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Background and Objectives

- Every year, outbreaks of influenza incur a substantial burden in terms of healthcare use, healthcare costs and societal costs.¹
- European data regarding the burden of paediatric influenza are perceived as fragmented and incomplete.
- There is clearly a need to identify, evaluate and summarise published information regarding the burden of paediatric influenza and to determine to what extent studies have been conducted to assess this burden and what kinds of studies have been performed.
- The primary aim of this EU-focused analysis was to identify gaps in existing information regarding healthcare use and economic burden associated with paediatric influenza in Austria, Finland, France, Germany, Italy, The Netherlands, Spain, Sweden, and the United Kingdom.

Methods

- A structured and comprehensive literature search was performed in compliance with the QUOROM guidelines² using the following electronic databases and Internet sites:
 - PubMed
 - EMBASE
 - The Cochrane Library
 - Relevant health technology assessment (HTA) appraisals of influenza vaccination from HTA Internet sites (eg, NICE, SMC, IQWiG).
- Search terms included combinations of free text and Medical Subject Headings:
 - Health condition of interest (disease): Terms for influenza (including polymerase chain reaction [PCR]- or culture-confirmed infection, and influenza-like conditions).
 - Study type(s): Terms for cost, economic or burden analyses (eg, cost-effectiveness analysis and cost-of-illness studies), quality of life (QoL), absenteeism, and productivity.
 - Limits:
 - Published from 1970 to March 2009.
 - Excluded editorials, letters, meta-analyses, practice guidelines, or comments.
 - Restricted to paediatric patients (aged ≤18 y) and to studies conducted in humans.
 - Restricted to Austria, Finland, France, Germany, Italy, Spain, Sweden, The Netherlands, and the United Kingdom.
- Relevant data of the following types were extracted from included articles:
 - Healthcare use
 - Economic burden
 - Absenteeism and productivity losses in patients and their household contacts
 - QoL and utility data

Results

Articles Identified

- Of the 1002 and 208 articles identified from literature searches and Web site searches, respectively, 171 were retrieved for more detailed evaluation.
- After further evaluation, 40 of the 171 were included for data extraction.
- Three articles identified from reference lists of these articles were also included, resulting in 43 articles total.

Results by Burden Domain (Table 1)

Resource Use

- Most studies reporting healthcare use (31 of 32) focused on hospitalisation, clinician visits, and prescription of antibiotics, antipyretics, or analgesics.
- The expected hospitalisation rates for influenza-infected children aged ≤15 years, <3 years, and ≤1 year were 0.3% to 0.8%, approximately 10%, and 18% to 20%, respectively.
- For children aged <15 years who presented with confirmed influenza symptoms to an emergency department, the hospitalisation rate was 5% to 6%.
- Prescribing antibiotics in influenza-infected children was reported in 40% to 60% of cases in the majority of studies, regardless of age.
- Studies suggest that vaccination of children may reduce influenza-related hospitalisations by >50%, with similar levels of reduction in the prescribing of antibiotics and antipyretics.

Cost

- The number of studies specifically related to the paediatric population was small, and rarely included a breakdown by age group and disease severity.
- The largest contributor to the overall cost of influenza was loss of productivity associated with parents taking absence from work to care for sick children.
- Despite the initial cost, vaccination lowered the overall cost burden of influenza.

Absenteeism

- Data reported on absenteeism focused on missed days from school, daycare, or work by the patients themselves.
- Data on the specific impact of paediatric influenza on household contacts and on reductions in productivity were limited.
- The scope and quality of the reported data on absenteeism for the countries in this analysis varied greatly.

QoL

- Few studies report the impact of influenza on QoL; only 1 relevant study for paediatric populations was identified; this was from The Netherlands.
- QoL (particularly symptom severity and limitation of activities) was negatively affected by influenza.
- QoL was less affected in vaccinated compared with unvaccinated children.
- No studies reporting QoL data were identified for Austria, Finland, France, Spain, or Sweden.

Results by Country (Figure 1)

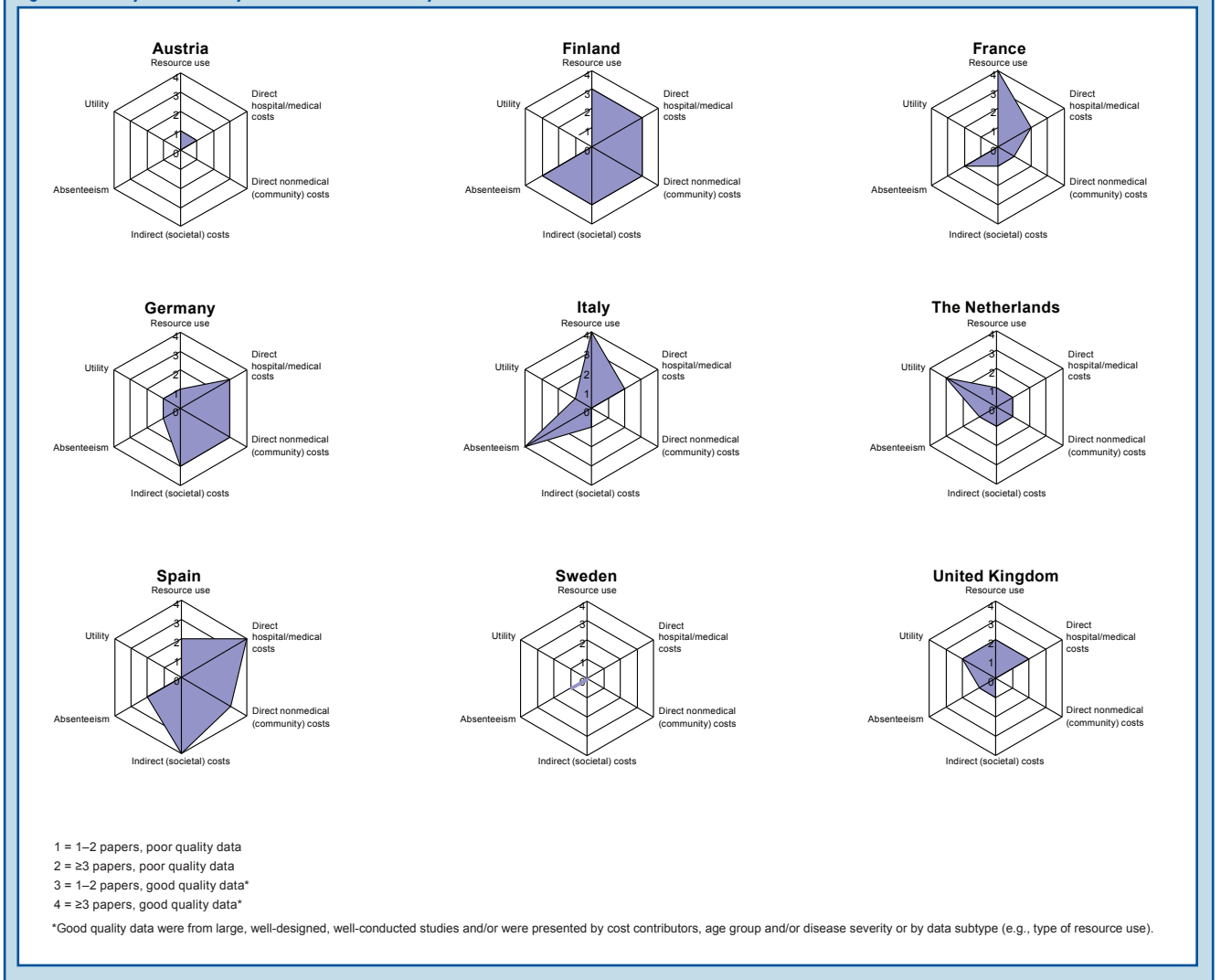
Table 1. Results by Burden Domain

	Austria	Finland	France	Germany	Italy	The Netherlands	Spain	Sweden	United Kingdom
Resource Use									
Hospitalisation	1	2	3	1	8	1	3		4
Referrals		2		1					
Antibiotics		1	6	1	6	1	2		3
Neuraminidase inhibitors			3						
Other treatment			5	1	6		3		1
Healthcare visits			4	1	7	1	2		3
Diagnostics			2		3		1		
Emergency transport				1					
Expenses to patient			1	1					
Vaccination							1		
Cost									
Hospital costs	1				1	1	3		1
Direct medical costs		2	4	2	2	1	4		4
Societal (indirect) costs		2	2	2	2	1	5		1
Direct nonmedical costs		1	1	1		1	2		
Absenteeism									
Missed school/work days of patient	1	2	1	1	8	1	3	1	1
Missed work days due to caring for child		1	2	2	2		1		
Missed school/work days of household contacts			2		7				
Reduced productivity						1			
Quality of Life and Utility Data									
Sleep disturbance				1					
Quality-adjusted life-days lost					1				
Paediatric Asthma QoL questionnaire						1			
Respiratory tract symptom scores						1			
EQ-5D questionnaire									1
Utility weights									2

EQ-5D=EuroQoL 5 Dimensions; QoL=quality of life.

The number in each cell represents the number of articles presenting data on that data type in that particular country; each article may be counted in more than one category. An empty cell represents a data type for which there are no particular data in the country of interest.

Figure 1. Quality and Quantity of Data for Each Country of Interest.



Conclusions

- **Data regarding the overall burden of paediatric influenza in the EU countries reviewed are incomplete and fragmented.**
- **Available information suggests that the burden of influenza in children is substantial in all domains reviewed and that the burden extends to close family contacts in terms of parental work productivity and workdays lost.**
- **A multinational data collection initiative providing a complete and age-stratified picture of the burden of influenza in children appears warranted.**

References

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