

Uncovering the cost landscape of congenital heart disease (CHD) with a life course perspective: a systematic review of healthcare utilization by lesion type and age



UNIVERSITY OF
GOTHENBURG

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S. Pardhan^{1,2}, P. Moons², Z. Mandalenakis³, H. Gyllensten¹.

1) Health and Care Sciences, Sahlgrenska Academy, Gothenburg University, Gothenburg, Sweden; 2) Department of Public Health and Primary Care, KU Leuven University, Leuven, Belgium, 3) Adult Congenital Heart Unit, Department of Medicine, Sahlgrenska Academy, Gothenburg University, Gothenburg, Sweden.

Background

- CHD is the most common congenital malformation, often requiring lifelong complex management
- Variable care trajectories exist

Purpose

- To synthesize available evidence on healthcare utilization and cost data in CHD, disaggregated by lesion type and age, to identify patterns, data gaps, and methodological inconsistencies in cost reporting

Method

- Follows PRISMA 2020 Guidelines, and registered with PROSPERO (CRD42022206632).
- Costs converted to 2024 (INT\$)

Eligibility Criteria

- Original and peer-reviewed
- Report monetary costs of healthcare utilization by individual CHD lesion groups from 2000 onwards
- Clearly reported pediatric cases (<18 years) separately from adult cases (≥18 years).
- Excluded papers focusing on etiology, diagnosis or screening for CHD

Key Results

- 60 papers (to date) included
- Most studies from USA and China
- Level of care heavily under reported (predominantly tertiary care)
- Life-course perspective missing (lack analysis for adolescent group, and only 1 exploring older children)
- Although in aggregate key cost factors are being reported (Table 1), gross inconsistencies in cost factors across individual papers presenting high variability in costs values and components (Table 2)

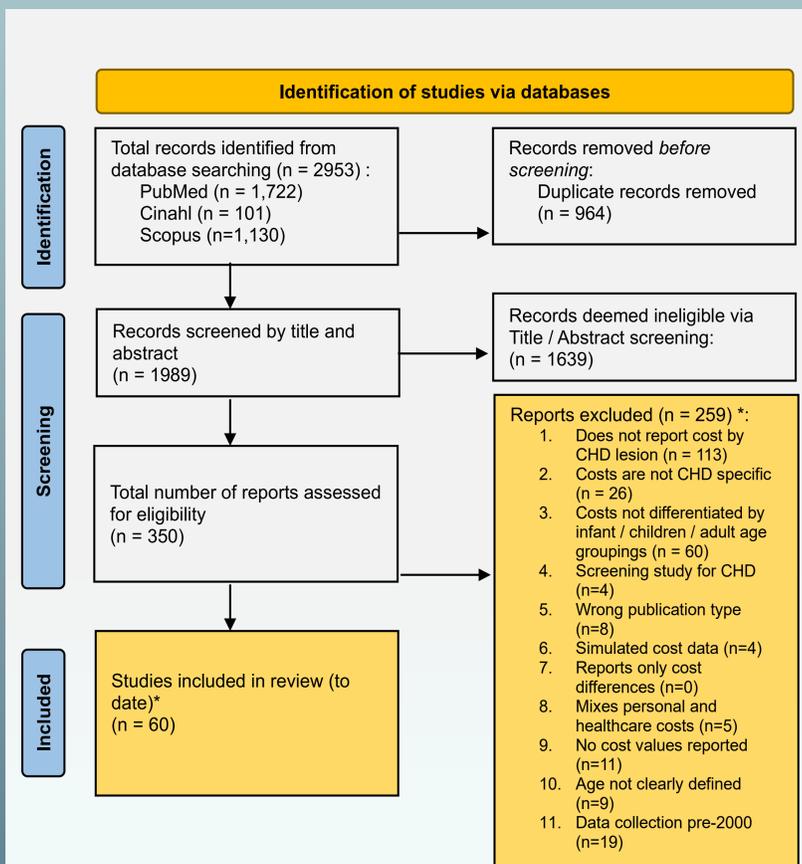


Figure 1: Flow chart.

Lesion	# Papers	Pre-op Diagn.	Cost of Repair (hosp)	Cost post repair	Billed / indirect costs
ASD	10	X	X	X	
SV	9	X	X	X	X
HLHS	13	X	X	X	

Table 1: Overall cost factors

Key Outcomes

Create a cost model for future CHD studies (and other complex chronic conditions) to anchor cost analysis

	Direct hospital costs Related to actual repair											Direct hospital costs post repair					
	Pre-op diag	Pre-op fact	Post-op	Adjuv/ therap	Diag Tests	Peri-op	Op(Proc) Costs	Rx	Post-op compli	Post-op diag	Cost of hosp for repair	Subq hosp (card)	Subq hosp (non-card)	Diag post-hosp (repair) Rx	Post Surg	Out pt	FU
ASD	2	5	6-7	1	3	3	4	1	3-5	1	9	1	-	1-2	0-1	1	1-2
SV	1	3-4	5	-	-	-	4-6	-	4	0	3	7	2	-	-	-	-
HLHS	4	9	9	4	3-4	6-7	10	2-3	7-8	1-2	8	4	2	-	1	1	2

Table 2: Number of articles reporting the following cost factors

Take home message

CHD cost evidence is inconsistent, tertiary-care focused, and missing a life course perspective

For additional information, please contact:
Name: Salma Pardhan
E-mail: salma.pardhan@gu.se