Supplementary 2. Type of costs, cost estimation formula and data source

Type of costs	Cost estimation formula & data source
Direct costs	C1 + C2 + C3 + C4
Direct medical costs	C1
Total medical expense in hospitalization (C1)	Individual medical treatment bill receipt (real data)
	① consultation fee
	② admission fee
	③ medication fee (including medication / injection / anesthesia / WB and blood product)
	④ treatment and surgery fee
	⑤ medical examintaion fee (including inspection / medical imaging / CT / MRI /PET / Ultrasonography)
	⑥ therapeutic materials
	⑦ the others (prosthetics, orthodontics / rehab and physiotherapy / psycotherapy)
Direct non-medical costs	C2 + C3 + C4
Family caregiver transportation fare in hospitalization (C2)	$19* LOS
	2017 Korea health panel study / 2019 Annual report on the consumer price index (referenced data), LOS : real data
Paid care cost in hospitalization (C3)	$53 * LOS
	The Social Cost of Informal Nursing Care and its Policy Implications for Integrated Nursing and Care Services (2021)(referenced data), LOS : real data
Doctor's labor cost (C4)	
Resident's labor costs (day shift)	2017 resident training environment evaluation survey results
Salary after tax	$26,760 ~ $35,935, average salary after tax : $30,851
Resident's labor costs per doctor	$37,350 ~ $52,669
	Estimating using 4 Major SIS's (Social Insurance Schemes; national pension, health insurance, employment insurance, workers' compensation insurance) and tax (income tax and resident tax)
Resident's average labor costs per doctor	$44,180
Number of inpatient per day per doctor	17
Number of inpatients per year per doctor	17*365=6,205
Total number of resident assigned to the NHG group	Total patient days of NHG group (45,196) / Number of inpatients per year per doctor (6,205) =7.3
Total Resident's labor costs in the in the NHG group	$44,180 * 7.3 = $322,514
Resident's labor costs per patient per day in the NHG group	$322,514 / 45,196 = $7
Resident's labor costs per patient in the NHG group	$7 * LOS per admission
Resident's labor costs (night shift)	2017 resident training environment evaluation survey results
Number of inpatient per day per doctor	41.8
Number of inpatients per year per doctor	41.8*365=15,257
Total number of resident assigned to the NHG group	Total patient days of NHG group (45,196) / Number of inpatients per year per doctor (15,257) =2.96 (3)

Type of costs	Cost estimation formula & data source
Total Resident's labor costs in the in the NHG group	$44,180 * 3 = $132,540
Resident's labor costs per patient per day in the NHG group	$132,540 / 45,196 = $3
Resident's labor costs per patient in the NHG group	$3 * LOS per admission
Specialist's labor costs (day shift)	2017 Specialist salary evaluation survey results
Specialist's average labor costs per doctor	average $115,452
Number of average inpatient per day per doctor	5
Number of inpatients per year per doctor	5*365=1825
Total number of specialist assigned to the NHG group	Total patient days of the control group (45,196)/1825 =45196/1825=24.7
Total specialist's labor costs in the NHG group	$115,452 *24.7= $2,851,664
Specialist's labor costs per patient per day in the NHG group	$ 2,851,664/ 45196 (total patient days) = $63
Specialist's labor costs per patient in the NHG group	$63 * LOS per admission
Hospitalist's labor costs (day shift)	A study on the implementation and the evaluation of Korean hospitalist system to improve the quality of hospitalization (phase 2)(2018)
Hospitalist's labor costs per doctor	average $115452
Total number of hospitalist assigned to the HG group	4
Hospitalist's labor costs per patient per day of AMU in the HG group	$461,808 / 7216 (Total AMU-LOS) = $64
Doctor's labor cost per patient in the HG group	
1) No referral patients	($64 +$3)* AMU-LOS
2) Referral patients	($64 +$3)* AMU-LOS+ ($63+ $7 + $3)* referral medical ward-LOS
Indirect Costs	C5 + C6 + C7 + C8
Family caregiver productivity loss according to LOS (C5)	$106 * LOS
	2017 Survey report on labor conditions by employment type (referenced data), LOS (real data)
Patient productivity loss according to ED-LOS (C6)	Hourly wage * ED-LOS * labor force participation rate (age, gender)
	2017 Survey report on labor conditions by employment type (referenced data)
	2017 Annual report on the the economically active population survey (referenced data), ED-LOS (real data)
Patient productivity loss according to LOS (C7)	Daily wage * LOS * labor force participation rate (age, gender)
	2017 Survey report on labor conditions by employment type (referenced data)
	2017 Annual report on the the economically active population survey (referenced data)
Patient productivity loss according to IHM (C8)	Annual wage * deceased patients' expected LYGs * labor force participation rate (age, gender)
	Statistics Korea. LIFE TABLES FOR KOREA, 2017 (referenced data)
	2017 Survey report on labor conditions by employment type (referenced data)
	2017 Annual report on the the economically active population survey (referenced data)
	In hospital mortality (real data)

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HG, hospitalist group; NHG, non-hospitalist group; AMU, acute medical unit; LOS, length of hospital
stay; ED, emergency department; Cost unit: USD ($1= 1307.9 KRW, year: 2023)

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