

Supplemental materials for:

Shin D, Cho J, Yang H, et al. Impact of continuity of care on mortality and health care costs: a nationwide cohort study in Korea .*Ann Fam Med.* 2014;12(6):534-541.

Appendix 1. Continuity of care indices.

To evaluate continuity of care, we calculated standard indices based on administrative data on outpatient consultations.^{18,35} There are several alternative indices of continuity of care, reflecting different dimensions of continuity of care such as density and dispersion. We selected the three most commonly used indices, the Most Frequent Provider Continuity (MFPC) index, the Modified, Modified Continuity Index (MMCI), and the Continuity of Care (COC) index, to assess different aspects of continuity of care and to evaluate whether our results were robust to the choice of measure.

We calculated continuity of care indices initially for the 2-year period after an initial new claim for a diagnosis of hypertension, diabetes, hypercholesterolemia, or its complications during 2003 – 2004 in patients with at least four claims during the first 2 years after the initial visit. Subsequently, we calculated continuity of care indices for each consecutive 2-year period for each patient.

For a 2-year window, let M_i represent the total number of visits for patient i ($i = 1, \dots, N$), M_{ij} represent the total number of outpatient visits for patient i to provider j ($j = 1, \dots, J_i$), and J_i represent the total number of providers for patient i . The MFPC index³⁶ estimates the proportion of outpatient visits that a patient has with his/her most frequent provider, calculated as

MFPC values range from $1/J_i$, when each visit is made to a different provider, to

1, when all visits are made to the same provider. As an illustration,³⁵ let's imagine two patients with 8 outpatient visits in the 2-year period. Patient 1 visited 3 providers (ABAACAAA) and patient 2 visited 4 providers (ABCBADEA). For patient 1, $MFPC_1 = 6/8 = 0.75$, while for patient 2, $MFPC_2 = 3/8 = 0.375$.

The MMCI focuses on the dispersion between providers and is based only on the number of providers and number of visits.^{26,37} The MMCI was calculated as

For a given patient, the MMCI increases as the number of providers decreases. MMCI values range from 0, when each visit is made to a different provider, to 1, when all visits are made to the same provider. For patient 1, $MMCI_1 = (1 - 3/8.1)/(1 - 1/8.1) = 0.718$, while for patient 2, $MMCI_2 = (1 - 5/8.1)/(1 - 1/8.1) = 0.437$.

Finally, the COC index weights both the frequency of visits to each provider and the dispersion of visits between providers.³⁸ The COC index was calculated as

COC values range from 0, when each visit is made to a different provider, to 1, when all visits are made to the same provider. For patient 1, $COC_1 = [(6^2 + 1^2 + 1^2) - 8]/[8*(8-1)] = 0.536$, while for patient 2, $COC_2 = [(3^2 + 2^2 + 1^2 + 1^2 + 1^2) - 8]/[8*(8-1)] = 0.143$.

Appendix 2. Description of screening subsample data (N=18,206).

Characteristics	N (%)
Age, years	
Mean (SD)	53.3 (11.4)
Median (range)	53 (20-92)
Gender	
Male	10,549 (57.9)
Female	7,657 (42.1)
Income level	
Premium(KRW), mean (SD)	44,506 (32,298)
1st quartile (low)	4,998 (27.5)
2nd quartile	4,392 (24.1)
3rd quartile	4,618 (25.4)
4th quartile (high)	4,198 (23.1)
Place of residence	
Metropolitan area	9,265 (51.5)
City area	6,397 (35.6)
Rural area	2,319 (12.9)
Charlson comorbidity score	
Mean (SD)	0.51 (0.82)
Median (range)	0 (0-11)
Number of visit during first two year	
Mean (SD)	14.5 (7.9)
Median (range)	14 (4-70)
Smoking	
None	11,971 (65.8)
Past	2,045 (11.2)
Current	4,190 (23.0)
Drinking	
None	10,258 (56.3)
Current	7,948 (43.7)
Body mass index	
Mean (SD)	24.7 (3.2)
<18.5 (underweight)	307 (1.7)
18.5-23 (normal)	4,872 (26.8)

23-25 (overweight)	4,995 (27.4)
>25 (obese)	8,032 (44.1)
Continuity of care indices, Median (interquartile range)	
Most frequent provider continuity (MFPC)	0.88 (0.67-1.00)
Modified, modified continuity index (MMCI)	0.93 (0.84-1.00)
Continuity of care index (COC)	0.77 (0.49-1.00)

SD: standard deviation; KRW: Korean Won (1USD=1,100 KRW, as of 2012)

Appendix 3. Risk of death and cardiovascular outcomes by level of continuity of care in screening subsample (N=18,206).

	Most frequent provider continuity (MFPC)		Modified, modified continuity index (MMCI)		Continuity of care index (COC)	
	Above median	Below median	Above median	Below median	Above median	Below median
All cause death						
No. of deaths (mortality rate per 1,000 py)	335 (7.5)	465 (10.3)	309 (7.0)	491 (10.7)	335 (7.5)	465 (10.3)
Crude HR (95% CI)	Ref	1.37 (1.19-1.58)	Ref	1.53 (1.33-1.76)	Ref	1.38 (1.20-1.59)
Multivariable-adjusted HR (95% CI)	Ref	1.13 (0.98-1.31)	Ref	1.23 (1.06-1.43)	Ref	1.13 (0.98-1.31)
Cardiovascular mortality						
No. of deaths (mortality rate per 1,000 py)	77 (1.7)	107 (2.4)	64 (1.4)	120 (2.6)	77 (1.7)	107 (2.4)
Crude HR (95% CI)	1.00 (Ref)	1.37 (1.02-1.84)	1.00 (Ref)	1.80 (1.33-2.44)	1.00 (Ref)	1.38 (1.03-1.85)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.08 (0.80-1.46)	1.00 (Ref)	1.44 (1.05-1.97)	1.00 (Ref)	1.08 (0.80-1.46)
Non-cardiovascular mortality						
No. of deaths (mortality rate per 1,000 py)	258 (5.8)	358 (7.9)	245 (5.6)	371 (8.1)	258 (5.8)	358 (7.9)
Crude HR (95% CI)	1.00 (Ref)	1.37 (1.17-1.61)	1.00 (Ref)	1.46 (1.24-1.71)	1.00 (Ref)	1.38 (1.17-1.62)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.15 (0.98-1.36)	1.00 (Ref)	1.18 (1.00-1.40)	1.00 (Ref)	1.15 (0.98-1.36)
Myocardial infarction[*]						
No. of events (incidence rate per 1,000 py)	53 (1.2)	75 (1.7)	52 (1.2)	76 (1.7)	53 (1.2)	75 (1.7)
Crude HR (95% CI)	Ref	1.41 (0.99-2.00)	Ref	1.42 (1.00-2.02)	Ref	1.41 (1.00-2.01)
Multivariable-adjusted HR (95% CI)	Ref	1.41 (0.98-2.02)	Ref	1.49 (1.03-2.16)	Ref	1.42 (0.99-2.03)
Cerebral infarction[*]						
No. of events (incidence rate per 1,000 py)	138 (3.2)	230 (5.3)	135 (3.1)	233 (5.3)	138 (3.1)	230 (5.3)
Crude HR (95% CI)	Ref	1.67 (1.35-2.06)	Ref	1.69 (1.37-2.09)	Ref	1.68 (1.36-2.07)
Multivariable-adjusted HR (95% CI)	Ref	1.48 (1.20-1.84)	Ref	1.52 (1.22-1.90)	Ref	1.49 (1.20-1.85)
Cerebral hemorrhage[*]						
No. of events (incidence rate per 1,000 py)	52 (1.2)	55 (1.2)	46 (1.0)	61 (1.3)	53 (1.2)	54 (1.2)
Crude HR (95% CI)	Ref	1.04 (0.71-1.53)	Ref	1.28 (0.87-1.87)	Ref	1.01 (0.69-1.48)

Multivariable-adjusted HR (95% CI)	Ref	0.90 (0.61-1.33)	Ref	1.12 (0.75-1.67)	Ref	0.87 (0.59-1.28)
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HR: hazard ratio; CI: confidence interval; py : person-year

Multivariable-adjustment included age, gender, Charlson comorbidity index, income level (quartile), number of visit during 2003-2004 period, residential area, smoking, drinking, and body mass index (for detail, see text)

* excluding who developed the intended outcome during the first two years since diagnosis

Appendix 4. Risk of death and cardiovascular outcomes by level of continuity of care in screening subsample in time-dependent analyses (N=18,206).

	Most frequent provider continuity (MFPC)		Modified, modified continuity index (MMCI)		Continuity of care index (COC)	
	Above median	Below median	Above median	Below median	Above median	Below median
All cause death						
Crude HR (95% CI)	1.00 (Ref)	1.54 (1.34-1.78)	1.00 (Ref)	1.64 (1.42-1.89)	1.00 (Ref)	1.52 (1.32-1.76)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.35 (1.17-1.57)	1.00 (Ref)	1.42 (1.22-1.65)	1.00 (Ref)	1.33 (1.15-1.55)
Cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.38 (1.03-1.84)	1.00 (Ref)	1.82 (1.34-2.46)	1.00 (Ref)	1.38 (1.03-1.85)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.06 (0.79-1.43)	1.00 (Ref)	1.42 (1.03-1.94)	1.00 (Ref)	1.06 (0.79-1.43)
Non-cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.37 (1.17-1.61)	1.00 (Ref)	1.47 (1.25-1.72)	1.00 (Ref)	1.38 (1.18-1.62)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.14 (0.97-1.34)	1.00 (Ref)	1.17 (0.99-1.38)	1.00 (Ref)	1.14 (0.96-1.34)
Myocardial infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.53 (1.08-2.19)	1.00 (Ref)	1.51 (1.05-2.15)	1.00 (Ref)	1.53 (1.07-2.18)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.67 (1.15-2.41)	1.00 (Ref)	1.71 (1.17-2.50)	1.00 (Ref)	1.67 (1.16-2.41)
Cerebral infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.45 (1.18-1.79)	1.00 (Ref)	1.53 (1.24-1.88)	1.00 (Ref)	1.46 (1.19-1.80)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.36 (1.09-1.68)	1.00 (Ref)	1.43 (1.15-1.78)	1.00 (Ref)	1.37 (1.11-1.70)
Cerebral hemorrhage*						
Crude HR (95% CI)	1.00 (Ref)	0.97 (0.66-1.41)	1.00 (Ref)	1.06 (0.73-1.55)	1.00 (Ref)	0.99 (0.68-1.45)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	0.87 (0.59-1.29)	1.00 (Ref)	0.96 (0.64-1.43)	1.00 (Ref)	0.90 (0.61-1.34)

Multivariable-adjustment included age, gender, Charlson comorbidity index, income level (quartile), number of visit during first two years, residential area, smoking, drinking, and body mass index (for detail, see text).

Appendix 5. Risk of death and cardiovascular outcomes by level of continuity of care in time-dependent analyses

	Continuity of care index (COC) : total sample (N=47,433)			Continuity of care index (COC) : screening subsample (N=18,206)		
	Above median	Below median	Visit frequency<4	Above median	Below median	Visit frequency<4
All cause death						
Crude HR (95% CI)	1.00 (Ref)	1.41 (1.30-1.52)	1.57 (1.41-1.76)	1.00 (Ref)	1.61 (1.38-1.87)	1.36 (1.08-1.72)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	1.20 (1.10-1.29)	1.53 (1.36-1.73)	1.00 (Ref)	1.29 (1.11-1.51)	1.33 (1.04-1.71)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	1.10 (1.01-1.19)	1.54 (1.35-1.77)	1.00 (Ref)	1.19 (1.01-1.39)	1.38 (1.05-1.82)
Cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.49 (1.28-1.73)	1.35 (1.06-1.70)	1.00 (Ref)	1.62 (1.20-2.20)	0.67 (0.36-1.23)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	1.25 (1.07-1.46)	1.28 (1.00-1.64)	1.00 (Ref)	1.19 (0.88-1.63)	0.58 (0.31-1.10)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	1.06 (0.91-1.24)	1.32 (1.00-1.74)	1.00 (Ref)	1.07 (0.78-1.47)	0.56 (0.28-1.10)
Non-cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.38 (1.26-1.51)	1.65 (1.45-1.87)	1.00 (Ref)	1.60 (1.34-1.91)	1.59 (1.23-2.05)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	1.18 (1.07-1.29)	1.61 (1.41-1.85)	1.00 (Ref)	1.32 (1.11-1.59)	1.61 (1.22-2.16)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	1.11 (1.01-1.22)	1.61 (1.38-1.88)	1.00 (Ref)	1.23 (1.02-1.47)	1.71 (1.26-2.32)
Myocardial infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.58 (1.26-1.98)	1.28 (0.90-1.82)	1.00 (Ref)	1.57 (1.08-2.29)	0.96 (0.50-1.81)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	1.56 (1.25-1.96)	1.42 (0.98-2.05)	1.00 (Ref)	1.59 (1.08-2.34)	1.17 (0.59-2.32)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	1.51 (1.20-1.90)	1.43 (0.99-2.07)	1.00 (Ref)	1.45 (0.98-2.15)	1.23 (0.62-2.43)
Cerebral infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.70 (1.49-1.93)	0.99 (0.80-1.23)	1.00 (Ref)	1.83 (1.46-2.29)	0.96 (0.65-1.40)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	1.50 (1.31-1.71)	0.89 (0.71-1.12)	1.00 (Ref)	1.57 (1.25-1.97)	0.93 (0.62-1.40)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	1.37 (1.21-1.58)	0.93 (0.74-1.17)	1.00 (Ref)	1.47 (1.16-1.86)	0.95 (0.63-1.42)

Cerebral hemorrhage*

Crude HR (95% CI)	1.00 (Ref)	1.02 (0.81-1.28)	0.72 (0.49-1.07)	1.00 (Ref)	1.08 (0.73-1.60)	0.52 (0.24-1.13)
Multivariable-adjusted HR (95% CI)*	1.00 (Ref)	0.93 (0.73-1.17)	0.62 (0.41-0.94)	1.00 (Ref)	0.90 (0.60-1.35)	0.50 (0.22-1.10)
Multivariable-adjusted HR (95% CI)**	1.00 (Ref)	0.87 (0.68-1.10)	0.65 (0.43-0.98)	1.00 (Ref)	0.85 (0.56-1.29)	0.51 (0.23-1.15)

HR: hazard ratio; CI: confidence interval; py: person-year
Multivariable-adjustment included age, gender, Charlson comorbidity index, income level (quartile), number of visit during first two years, residential area (for detail, see text).

Multivariable-adjustment included age, gender, income level (quartile), residential area, Charlson comorbidity index (as time-dependent covariate), number of visit (as time-dependent covariate), tertiary hospital visit (as time-dependent covariate) (for detail, see text).

Screening subsamples were further adjusted with smoking, drinking, body mass index.

Appendix 6. Risk of death and cardiovascular outcomes by level of continuity of care in time-dependent analyses: with comorbidity index, visit frequency, and tertiary hospital visit as time-dependent covariates (N=47,433)

	Most frequent provider continuity (MFPC)		Modified, modified continuity index (MMCI)		Continuity of care index (COC)	
	Above median	Below median	Above median	Below median	Above median	Below median
All cause death						
Crude HR (95% CI)	1.00 (Ref)	1.48 (1.38-1.59)	1.00 (Ref)	1.49 (1.39-1.61)	1.00 (Ref)	1.48 (1.38-1.59)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.23 (1.14-1.33)	1.00 (Ref)	1.17 (1.09-1.27)	1.00 (Ref)	1.23 (1.14-1.32)
Cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.54 (1.34-1.78)	1.00 (Ref)	1.68 (1.46-1.94)	1.00 (Ref)	1.55 (1.34-1.78)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.13 (0.98-1.30)	1.00 (Ref)	1.20 (1.03-1.39)	1.00 (Ref)	1.15 (0.99-1.32)
Non-cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.27 (1.17-1.38)	1.00 (Ref)	1.29 (1.19-1.40)	1.00 (Ref)	1.27 (1.17-1.37)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.27 (1.17-1.39)	1.00 (Ref)	1.16 (1.06-1.27)	1.00 (Ref)	1.26 (1.15-1.37)
Myocardial infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.56 (1.27-1.92)	1.00 (Ref)	1.45 (1.17-1.78)	1.00 (Ref)	1.54 (1.25-1.89)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.57 (1.27-1.94)	1.00 (Ref)	1.46 (1.18-1.82)	1.00 (Ref)	1.55 (1.25-1.92)
Cerebral infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.52 (1.34-1.71)	1.00 (Ref)	1.51 (1.34-1.71)	1.00 (Ref)	1.54 (1.36-1.74)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.32 (1.16-1.50)	1.00 (Ref)	1.30 (1.15-1.48)	1.00 (Ref)	1.34 (1.18-1.52)
Cerebral hemorrhage*						
Crude HR (95% CI)	1.00 (Ref)	0.95 (0.76-1.18)	1.00 (Ref)	1.04 (0.83-1.29)	1.00 (Ref)	0.98 (0.79-1.22)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	0.84 (0.67-1.05)	1.00 (Ref)	0.88 (0.70-1.11)	1.00 (Ref)	0.86 (0.69-1.07)

HR: hazard ratio; CI: confidence interval; py : person-year

Multivariable-adjustment included age, gender, income level (quartile), residential area, Charlson comorbidity index (as time-dependent covariate), number of visit (as time-dependent covariate), tertiary hospital visit (as time-dependent covariate) (for detail, see text).

Appendix 7. Risk of death and cardiovascular outcomes by level of continuity of care in screening subsample in time-dependent analyses ;with comorbidity index, visit frequency, and tertiary hospital visit as time-dependent covariates (N=18,206).

	Most frequent provider continuity (MFPC)		Modified, modified continuity index (MMCI)		Continuity of care index (COC)	
	Above median	Below median	Above median	Below median	Above median	Below median
All cause death						
Crude HR (95% CI)	1.00 (Ref)	1.54 (1.34-1.78)	1.00 (Ref)	1.64 (1.42-1.89)	1.00 (Ref)	1.52 (1.32-1.76)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.27 (1.10-1.48)	1.00 (Ref)	1.31 (1.12-1.53)	1.00 (Ref)	1.25 (1.08-1.45)
Cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.38 (1.03-1.84)	1.00 (Ref)	1.82 (1.34-2.46)	1.00 (Ref)	1.38 (1.03-1.85)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.05 (0.78-1.43)	1.00 (Ref)	1.33 (0.96-1.85)	1.00 (Ref)	1.03 (0.76-1.40)
Non-cardiovascular mortality						
Crude HR (95% CI)	1.00 (Ref)	1.37 (1.17-1.61)	1.00 (Ref)	1.47 (1.25-1.72)	1.00 (Ref)	1.38 (1.18-1.62)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.34 (1.13-1.59)	1.00 (Ref)	1.30 (1.09-1.56)	1.00 (Ref)	1.32 (1.11-1.57)
Myocardial infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.53 (1.08-2.19)	1.00 (Ref)	1.51 (1.05-2.15)	1.00 (Ref)	1.53 (1.07-2.18)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.57 (1.08-2.27)	1.00 (Ref)	1.57 (1.07-2.29)	1.00 (Ref)	1.57 (1.08-2.27)
Cerebral infarction*						
Crude HR (95% CI)	1.00 (Ref)	1.45 (1.18-1.79)	1.00 (Ref)	1.53 (1.24-1.88)	1.00 (Ref)	1.46 (1.19-1.80)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	1.29 (1.04-1.60)	1.00 (Ref)	1.34 (1.07-1.68)	1.00 (Ref)	1.30 (1.05-1.62)
Cerebral hemorrhage*						
Crude HR (95% CI)	1.00 (Ref)	0.97 (0.66-1.41)	1.00 (Ref)	1.06 (0.73-1.55)	1.00 (Ref)	0.99 (0.68-1.45)
Multivariable-adjusted HR (95% CI)	1.00 (Ref)	0.84 (0.56-1.25)	1.00 (Ref)	0.91 (0.60-1.36)	1.00 (Ref)	0.87 (0.58-1.29)

Multivariable-adjustment included age, gender, income level (quartile), residential area, smoking, drinking, body mass index, Charlson comorbidity index (as time-dependent covariate), number of visit (as time-dependent covariate), tertiary hospital visit (as time-dependent covariate) (for detail, see text).

Appendix 8. Comparison of healthcare use and costs by continuity of care in screening subsample (N=18,206).

	Most frequent provider continuity (MFPC)		Modified, modified continuity index (MMCI)		Continuity of care index (COC)	
	Above median	Below median	Above median	Below median	Above median	Below median
Healthcare utilization, mean (S.E.)						
Total inpatient days (2005-2010)	5.0 (0.5)	8.2 (0.5)	4.9 (0.5)	8.2 (0.5)	5.0 (0.5)	8.2 (0.5)
Difference (95% CI)	3.2 (1.7 – 4.6)		3.3 (1.8 – 4.7)		3.2 (1.8 – 4.6)	
Total outpatient days (2005-2010)	21.5 (0.3)	24.6 (0.3)	21.2 (0.3)	24.8 (0.3)	21.5 (0.3)	24.6 (0.3)
Difference (95% CI)	3.1 (2.3 – 3.9)		3.5 (2.7 – 4.3)		3.1 (2.3 – 3.9)	
Healthcare cost, mean (S.E.)						
Total inpatient cost (2005-2010), USD	654.7 (40.5)	1031.7 (40.1)	635.0 (41.2)	1046.1 (40.4)	652.8 (40.5)	1034.5 (40.3)
Difference (95% CI)	376.8 (264.3 – 489.5)		410.8 (295.6 – 526.1)		381.5 (268.9 – 494.2)	
Total outpatient cost (2005-2010), USD	378.7 (13.5)	463.1 (13.4)	370.5 (13.7)	470.0 (3.4)	378.4 (13.5)	463.6 (13.4)
Difference (95% CI)	84.2 (46.8 – 121.5)		99.2 (60.9 – 137.5)		84.9 (47.7 – 122.5)	
Total cost (2005-2010), USD	1033.5 (44.1)	1494.8 (43.8)	1005.5 (44.9)	1516.0 (44.0)	1031.2 (44.1)	1498.2 (43.9)
Difference (95% CI)	461.0 (338.3 – 583.8)		510.0 (384.5 – 635.6)		466.7(343.8 – 589.5)	

CI: confidence interval; USD: United States Dollar; 1USD=1,100 Korean Won, as of 2012

Multivariable-adjustment included age, gender, Charlson comorbidity index, income level (quartile), number of visit during first two years, residential area, smoking, drinking, and body mass index (for detail, see text).

All P-values comparing above to below median utilization and cost parameters <0.001.