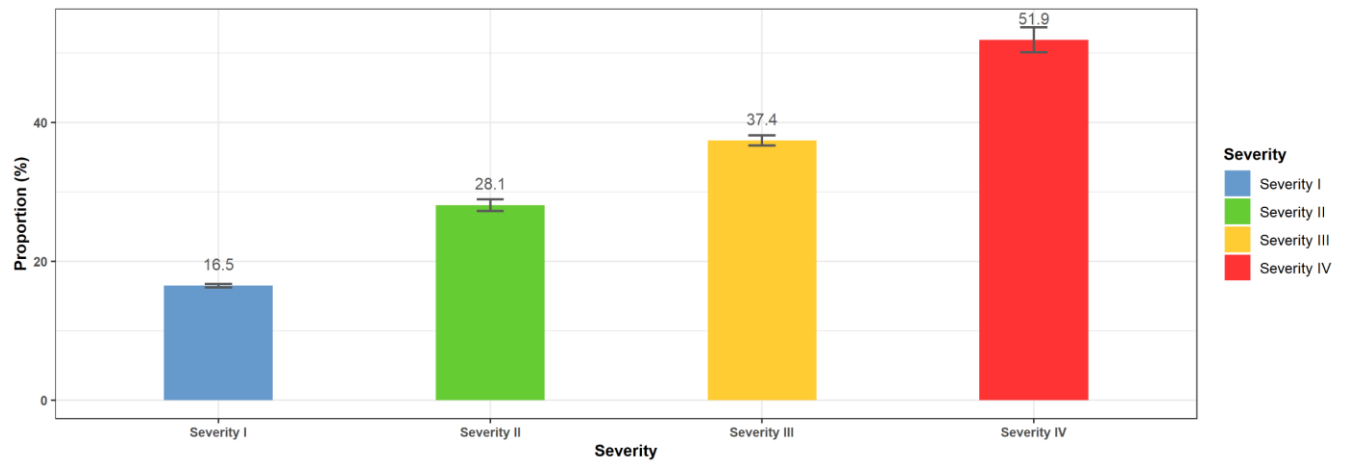


The nationwide retrospective cohort study by Health Insurance Review and Assessment Service proves that asthma management decreases the exacerbation risk of asthma.

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SUPPLEMENTARY FIGURE



Supplementary Figure S1. Exacerbation rate in each severity cluster. Exacerbation rate and its 95% confidence interval in each severity cluster.

SUPPLEMENTARY TABLES

Supplementary Table S1. The list and rank of asthma medication according to the GINA guideline

Component	Type	Rank	Prescription period	Exacerbation
LTRA				
Montelukast	Oral	1	1	0
Pranlukast	Oral	1	1	0
Zafirlukast	Oral	1	1	0
Xanthine				
Aminophylline	Oral	1	1	0
Aminophylline	intravenous	1	1	0
Theophylline	Oral	1	1	0
Bamiphylline	Oral	1	1	0
Diethylaminoethyltheophylline	Oral	1	1	0
Oxtriphylline	Oral	1	1	0
doxofylline	Oral	1	1	0
LABA				
Bambuterol	Oral	1	1	0
Clenbuterol	Oral	1	1	0
Formoterol	Oral	1	1	0
Tulobuterol	patch	1	1	0
ICS				
Low-dose ICS				

Budesonide	Inhaler	1	30	0
Ciclesonide	Inhaler	1	30	0
beclomethasone	Inhaler	1	1	0
Fluticasone propionate	Inhaler	1	30	0
Medium- to high-dose ICS				
Budesonide	Inhaler	2	30	0
Fluticasone propionate	Inhaler	2	30	0
ICS/LABA				
Formoterol	Inhaler	2	30	0
Fluticasone & Vilanterol	inhaler	2	30	0
Systemic corticosteroid				
Betamethasone < 2.4mg		4	1	1
Deflazacort < 30mg		4	1	1
Dexamethasone < 3mg		4	1	1
Hydrocortisone < 80mg		4	1	1
Methylprednisolone < 16mg		4	1	1
Prednisolone < 20mg		4	1	1

Supplementary Table S2. OR and 95% confidence interval (CI) of adjusting covariates to exacerbation in whole-group model

Variable	OR	95% Lower CI	95% Upper CI	P-value
Period				
1 st	1.28	1.23	1.33	<.0001
2 nd	1.09	1.05	1.13	<.0001
3 rd	reference			
Severity				
II	1.7	1.6	1.81	<.0001
III	1.87	1.73	2.02	<.0001
IV	1.01	0.83	1.22	0.9401
I	reference			
Total rank	1.0013	1.0011	1.0014	<.0001
Sex				
Male	1.03	1	1.06	0.09
Female	reference			
Age				
15- 34	0.73	0.69	0.77	<.0001
35-44	0.93	0.88	0.97	0.003
45-54	1.03	0.98	1.08	0.24
55-64	1.07	1.02	1.12	0.007
65-	reference			
MPR				
0 (No history)	4.75	4.35	5.2	<.0001
1 (-20%)	1.62	1.55	1.7	<.0001
2 (20%-80%)	1.69	1.62	1.76	<.0001
3 (80%-)	reference			
Comorbidity				
No	0.96	0.93	1	0.04
Yes	reference			

Supplementary Table S3. Exacerbation in the following year according to severity of the tertiary hospital patients

Severity	No exacerbation	With exacerbation	Total	P-value
I	5,041 (81.5) *	1,144 (18.5)	6,185	<.0001
II	4,060 (75.8)	1,297 (24.2)	5,357	
III	3,875 (65)	2,088 (35)	5,963	
IV	1,086 (49.6)	1,103 (50.4)	2,189	
Total	14,062	5,632	19,694	

*(): percentage of patients by exacerbation (%)

Supplementary Table S4. Exacerbation in the following year according to severity of primary clinic patients

Severity	No exacerbation	With exacerbation	Total	P-value
I	64,383 (83.6) *	12,607 (16.4)	76,990	<.0001
II	3,933 (68.3)	1,826 (31.7)	5,759	
III	6,566 (61.2)	4,163 (38.8)	10,729	
IV	341 (44)	435 (56)	776	
Total	75,223	19,031	94,254	

*(): percentage of patients by exacerbation (%)