EE226

Health System Impact of Nirmatrelvir/Ritonavir in Reducing Hospitalizations Among Elderly COVID-19 Patients in Sweden

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OBJECTIVE

- Nirmatrelvir/ritonavir (NMV/r) is an antiviral agent indicated for adults at increased risk for progression to severe COVID-19, regardless of vaccination status, and is reimbursed in Sweden according to label.
- Both the pivotal clinical trial EPIC-HR [1] and real-world evidence [i.a. 2,3,4] have shown that the NMV/r is effective in preventing hospitalization and death regardless of vaccination status and COVID-19 variant.
- This study assesses the potential of NMV/r to alleviate the burden on health care systems in terms of reducing hospitalizations due to COVID-19 by treating patients before being hospitalized.

METHODS

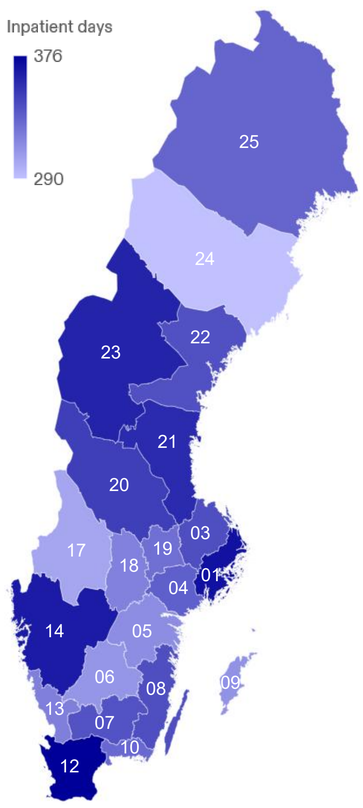
- This study employed a previously published and validated closed-cohort, static, cost-effectiveness model to compare NMV/r against Standard of Care, which excludes antiviral agents, in an outpatient setting [5].
- The model differentiated hospitalization risks by vaccination status and comorbidity levels across the age cohorts 70-79 and 80+ for each Swedish region (n=21).
- Recent data on vaccination status (**Table 1**: never vaccinated; vaccinated before October 1, 2024; vaccinated between October 1, 2024 and March 19, 2025) established the proportion of patients per risk group in each region [6].
- Baseline hospitalization and mortality risks were sourced from a Swedish, nationwide, uniquely granular, Omicron-era, real-world study [7].
- NMV/r effectiveness were sourced from an Omicron-era US real-world study [2].
- The study quantified the reduction in inpatient days when treating 1,000 patients with NMV/r compared to SoC.

Table 1: Vaccination coverage

Region	70-79 years			80+ years		
	<180 days	>180 days	Never vaccinated	<180 days	>180 days	Never vaccinated
Sweden	**67.0%**	**28.3%**	**4.7%**	**77.1%**	**19.6%**	**3.3%**
Stockholm	64.6%	29.1%	6.3%	72.1%	23.8%	4.1%
Uppsala	66.4%	30.3%	3.3%	82.5%	15.4%	2.2%
Södermanland	68.9%	27.2%	3.9%	85.0%	12.3%	2.7%
Östergötland	73.1%	23.3%	3.6%	78.5%	18.9%	2.6%
Jönköping	74.1%	22.2%	3.7%	84.3%	12.9%	2.8%
Kronoberg	68.8%	26.5%	4.7%	75.5%	20.8%	3.7%
Kalmar	69.1%	26.7%	4.7%	77.2%	19.8%	3.7%
Gotland	72.8%	23.9%	3.2%	78.1%	19.6%	2.3%
Blekinge	70.4%	25.2%	4.3%	78.3%	18.7%	3.0%
Skåne	62.4%	31.7%	5.9%	77.6%	18.0%	4.4%
Halland	72.5%	23.3%	4.2%	78.4%	18.6%	3.1%
Västra Götaland	63.2%	32.1%	4.7%	73.3%	23.3%	3.3%
Värmland	76.2%	19.9%	4.0%	85.4%	11.8%	2.8%
Örebro	72.7%	23.2%	4.1%	78.0%	19.0%	3.0%
Västmanland	70.3%	25.7%	3.9%	82.5%	14.7%	2.8%
Dalarna	65.3%	31.1%	3.6%	84.2%	13.1%	2.6%
Gävleborg	64.6%	31.0%	4.4%	77.0%	16.7%	3.3%
Västernorrland	67.5%	28.6%	3.9%	74.0%	23.2%	2.8%
Jämtland	63.5%	32.1%	4.3%	77.2%	19.7%	3.1%
Västerbotten	76.2%	21.4%	2.4%	81.4%	16.9%	1.7%
Norrbotten	68.5%	28.2%	3.3%	72.1%	25.7%	2.2%

RESULTS

Figure 1: Number of saved inpatient days per 1,000 treated - 70 years old



#	Region	Inpatient days
01	Stockholm	368
03	Uppsala	341
04	Södermanland	333
05	Östergötland	313
06	Jönköping	309
07	Kronoberg	339
08	Kalmar	341
09	Gotland	311
10	Blekinge	329
12	Skåne	376
13	Halland	319
14	Västra Götaland	364
17	Värmland	302
18	Örebro	318
19	Västmanland	326
20	Dalarna	348
21	Gävleborg	357
22	Västernorrland	340
23	Jämtland	360
24	Västerbotten	290
25	Norrbotten	331

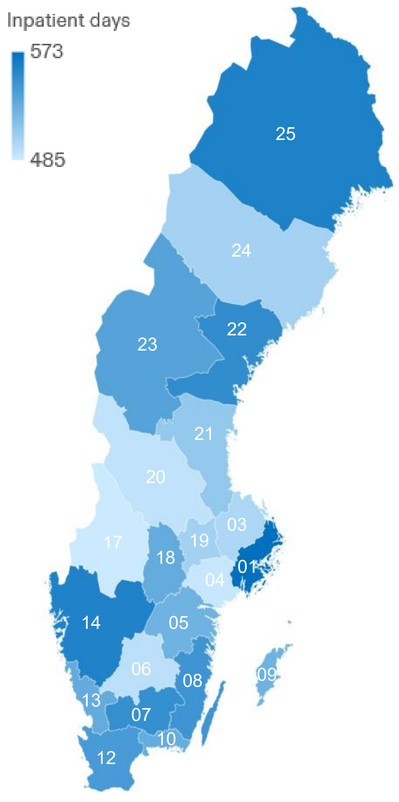
- **The results show that the benefit of treating patients aged 70 or higher with NMV/r is substantial in all regions in terms of freeing up hospital beds**.
- **Table 1** shows that more than two thirds of all patients aged 70 + were recently vaccinated.
- There is a substantial difference between the regions in the fraction of patients recently vaccinated. For patients aged 70–79 years, values ranged from 63.5 to 76.2, while for those aged 80+ years, they ranged from 72.1 to 85.4.
- Regionally treating random cohorts of 1,000 patients aged 70-79 results in between 290 and 376 saved inpatient days, depending on regional vaccination status (**Figure 1)**.
- When the age group treated was 80+, saved inpatient days increased to between 485 and 573, depending on regional vaccination status (**Figure 2)**.
- Nationally, treating a random cohort of 1,000 patients aged 70-79 results in 347 saved inpatient days.
- When the age group treated was 80+, saved inpatient days increased to 538 on a national average.
- When focusing treatment on non-recently vaccinated patients (>180 days post-vaccination), saved inpatient days increased to 621 for patients age 70-79.
- For the group non-recently vaccinated patients aged 80+, the number of saved inpatient days increased to 972 when 1,000 patients were treated.

Limitations

- This study only quantified the impact of treating patients 70+ with NMV/r. Additional data is necessary for making similar quantification for younger patients.

RESULTS (continued)

Figure 2: Number of saved inpatient days per 1,000 treated - 80 years old



#	Region	Inpatient days
01	Stockholm	573
03	Uppsala	499
04	Södermanland	487
05	Östergötland	525
06	Jönköping	492
07	Kronoberg	550
08	Kalmar	546
09	Gotland	525
10	Blekinge	529
12	Skåne	542
13	Halland	530
14	Västra Götaland	559
17	Värmland	485
18	Örebro	530
19	Västmanland	503
20	Dalarna	490
21	Gävleborg	509
22	Västernorrland	552
23	Jämtland	536
24	Västerbotten	502
25	Norrbotten	560

CONCLUSIONS

- **This study suggests that utilization of NMV/r in patients aged 70 or higher can substantially alleviate the burden of COVID-19 on health care systems in terms of freeing up hospital beds for other prioritized patients.**
- **A higher proportion of non-recently vaccinated patients increases the value of treating patients with NMV/r.**
- **Even in a population with relatively high vaccination coverage, such as Sweden, substantial quantities of hospital resources can be freed up if patients are treated with NMV/r**
- **If COVID-19 vaccination coverage would fall, the value of treating patients with NMV/r increases further in terms of reducing the need for hospital beds.**

References

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Disclosures

Study funded by Pfizer AB.

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Presented at ISPOR Europe; November 9-12, 2025; Glasgow, Scotland, UK