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Forecasting uptake of novel drugs used for atopic dermatitis in Sweden based on historic Real World Evidence

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Conclusions

The number of patients receiving novel treatments for atopic dermatitis is forecasted to increase substantially in Sweden over the next five years, creating additional health gains at a reasonable cost per patient. The high patient numbers will however increase total treatment costs substantially.

To avoid unnecessary financial strain on the health care system, it is crucial to tailor the right treatment to the right patient, also considering the financial implications.

By prioritizing the most cost-effective therapies in line with treatment guidelines, substantial savings can be achieved while maximizing patient benefits.

Background

Atopic dermatitis (AD) is a chronic, relapsing inflammatory skin disease that affects a significant portion of the population, leading to a considerable burden on both patients and healthcare systems. Recent advancements have introduced several novel biologic therapies, including Janus kinase (JAK) inhibitors (abrocitinib, baricitinib, upadacitinib) and interleukin (IL) inhibitors (dupilumab, tralokinumab, lebrikizumab).

In Sweden, these therapies have been assessed as cost-effective, and are recommended nationally and regionally [e.g. 1, 2, 3, 4]. However, the financial impact of substantial uptake needs further investigation. This study aims to model the future uptake of novel AD treatments in Sweden over a five-year period, providing valuable insights into the projected economic burden and potential strategies to optimize treatment choices.

Methods

We obtained individual-level, monthly, drug dispensation data from the Swedish Prescribed Drug Register for the period between January 2018 and September 2025. The cohort covered the entire Swedish population but only included patients with AD[5]. Since patients normally do not collect drugs on a monthly basis, actual patient numbers are (much) higher.

To predict future trends, we applied the Auto-Regressive Integrated Moving Average (ARIMA) model to estimate the number of patients expected to receive novel AD treatments by 2030. The ARIMA model was selected based on its ability to account for past trends, seasonal effects, and noise in the data, making it suitable for forecasting healthcare resource use.

Treatment costs were estimated using the list price of the medications, adjusted for average dose strength, initiation timing, and assuming full compliance with treatment regimens. A limitation is that we do not account for treatment cessation. Since first-year treatment costs are higher for some products, this underestimates total costs and potential savings.

References: 1. TLV 2022. "Beslut Cibinqo". Dnr 1603/2022. **2.** Region Skåne Läkemedelsrådet 2025. "Systembehandling vid atopisk dermatit." Doc id: L1HU5-06. **3.** Region Stockholm Janusinfo 2025. "Behandling av atopisk dermatit (AD) med interleukin (IL)-hämmare och januskinas (JAK)-hämmare". **4.** Läkemedelsverket 2023. "Atopiskdermatit – behandlingsrekommendation." **5.** National Board of Health and Welfare. The Prescribed Drug Register and Patient Register. AD defined as patient with: "DRUG" AND [ICD10KOD AND/OR VERKSKOD AND/OR SPKKOD]. [ICD10KOD = L20.0-L20.9; VERKSKOD = 211; SPKOD = 08,0899,80060,80600]. **6.** Vittrup et al. 2024. "Risk Factors that Impact Treatment with Oral Janus Kinase Inhibitors Among Adult Patients with Atopic Dermatitis: A Nationwide Registry Study." doi: 10.2340/actadv.v104.18638

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Results

In September 2025, 2,817 patients in Sweden were dispensed one of the drugs (**Figure 1**). Forecasting with ARIMA, an additional 2,767 patients were predicted to be dispensed on of the drugs in September 2030, resulting in a total of 5,584 patients. As these are monthly dispensations, actual patient numbers are higher. Most patients were projected to use dupilumab (68%), followed by upadacitinib (11%) at the end of the forecast period (**Figure 2**).

Figure 1: Monthly number of patients with a novel AD drug dispensed, until September 2025.

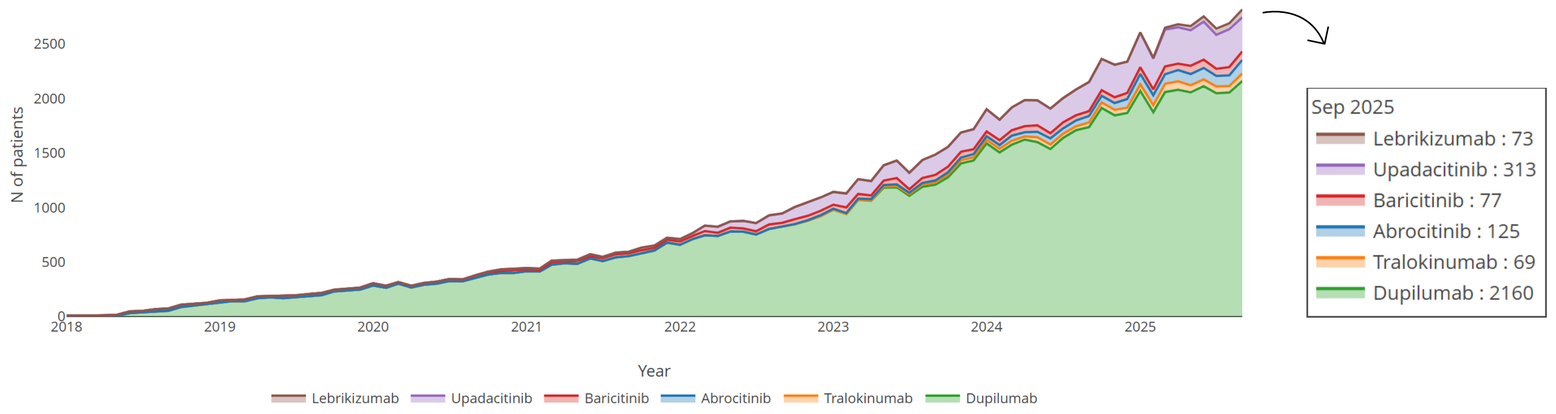


Figure 2: Forecasted number of patients with a novel AD drug dispensed, until September 2030.

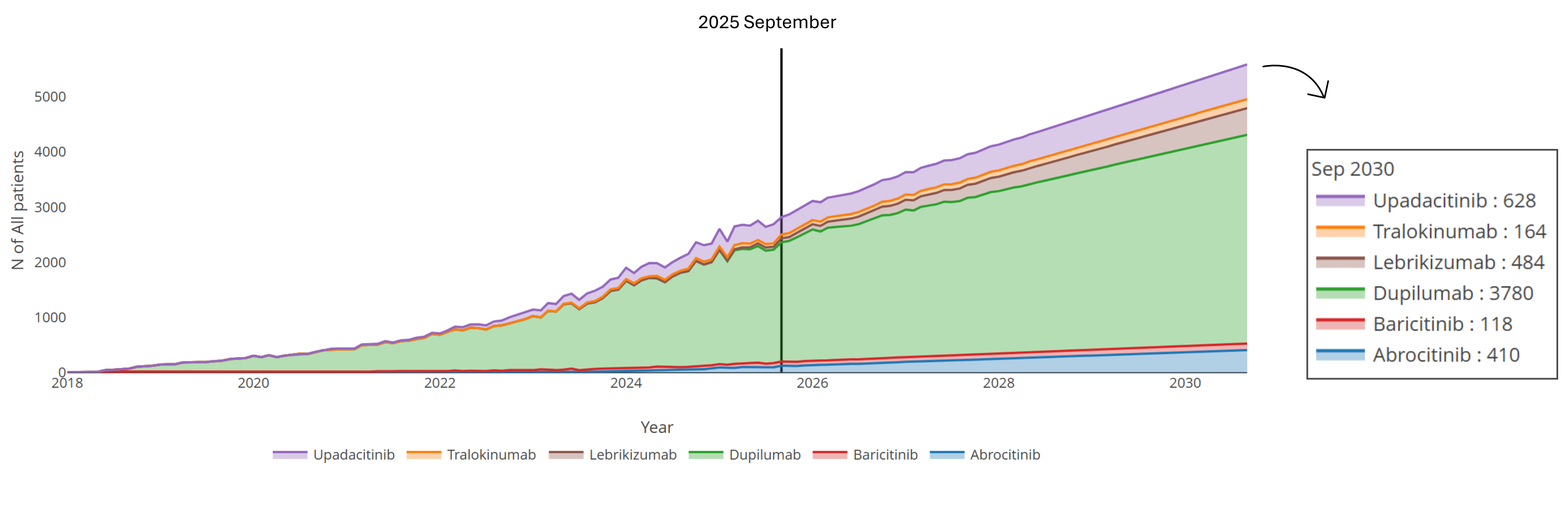
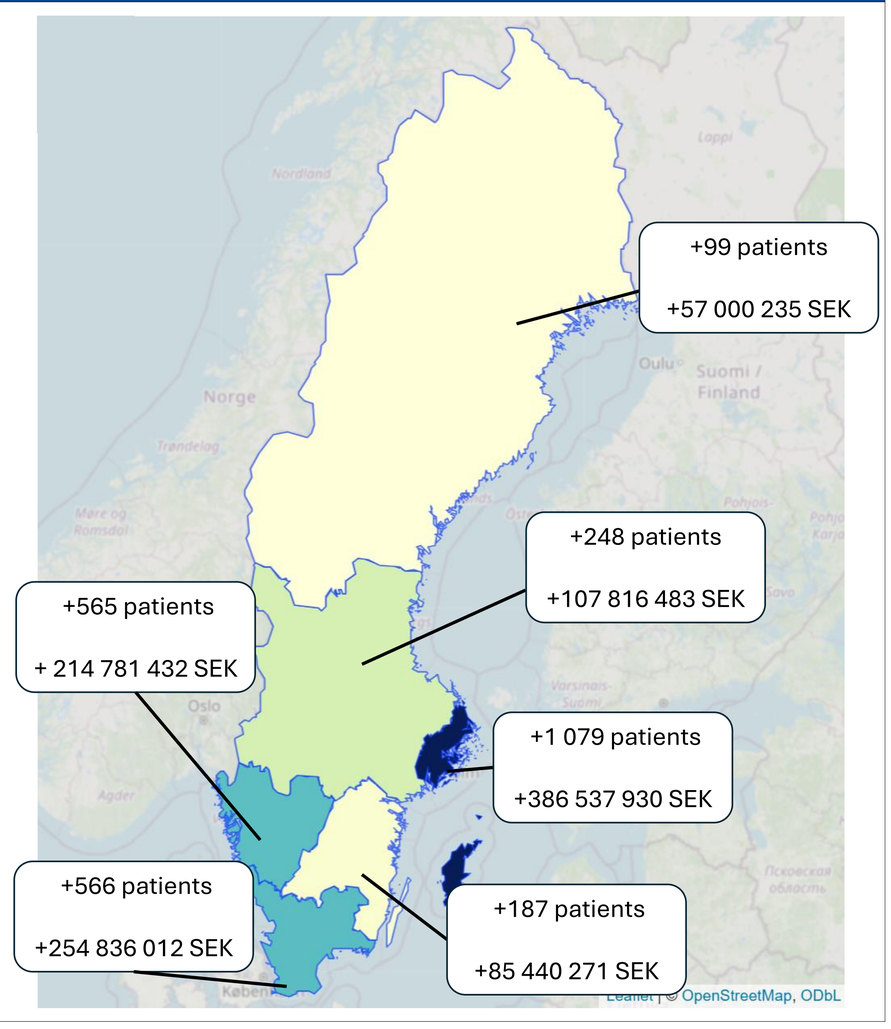


Figure 3: Forecasted 5-year increase in number of patients and associated costs of novel AD drugs, per health care region.



The total projected cost increase over the five-year period was estimated to SEK 1.1 billion. Significant regional variability was observed in the forecasted uptake of these treatments, highlighting differences in treatment preferences across the health care regions. The largest increase in the number of patients was observed in the Stockholm–Gotland health care region, which accounted for 59% of the total additional patients, with an estimated increase of 1,079 patients (**Figure 3**).

On a national level, our analysis indicates a clear opportunity to reduce treatment-related costs. Not all patients are suitable for JAK-treatment, but according to a Danish study [6] about 70% are. If, hypothetically, 70% of the increase in patients on dupilumab over the next five years instead were to initiate treatment with the most cost-effective treatment abrocitinib [2], an estimated cost saving of SEK 108 million could be realized across Sweden. The potential for cost savings varies considerably across the health care regions depending on forecasted future utilization (**Table 1**).

Table 1: Forecasted increase in patient numbers with dupilumab and abrocitinib, associated treatment costs, and potential for cost savings over a 5-year period

	Predicted cost increase if current trend continues				Predicted cost saving over 5 years if 70% og patients initiate of Abrocitinib instead of Dupliumab		Predicted cost savings as share of total predicted costs
	Dupilumab		Abrocitinib				
Region	Number of additional patients	Predicted Cost Increase (SEK)	Number of additional patients	Predicted Cost Increase (SEK)	Number of patients switching	Cost saving (SEK) [A]	Cost savings [A] / Total Costs [Fig 3]
Sweden	1620	658 949 858	285	81 309 679	1134	108 378 023	9,9%
Northern Health Care Region	99	42 210 243	0	0	69	6 929 874	12,2%
Midsweden Health Care Region	138	53 710 712	71	20 446 598	97	8 879 928	4,5%
Stockholm–Gotland Health Care Region	490	199 015 741	319	87 102 453	343	32 749 732	8,5%
Southeast Health Care Region	106	40 816 904	8	12 202 393	74	6 720 925	7,9%
Western Health Care Region	260	98 650 019	37	10 662 428	182	16 258 743	7,6%
Southern Health Care Region	501	220 343 568	11	6 370 429	351	36 281 814	14,2%

Note: the number of additional patients and predicted cost increase for the Health Care Regions may not match the total for Sweden due to the forecasting model.