

Expected value of perfect implementation of Icosapent ethyl in Sweden

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Summary findings

Clinical practice variations in introducing icosapent ethyl will result in suboptimal treatments, inefficiency, health losses, and increased costs in Sweden and between regions. Investments in strategies to reach perfect implementation and to reduce uneven implementation will results in significant health gains. This study suggest that efforts should be put into eliminating low and regional variations of implementation of icosapent ethyl.

Background

Icosapent ethyl reduces the risk of cardiovascular (CV) disease recurrence in statin-treated patients with elevated levels of triglycerides or patients with diabetes and an additional CV risk factor. Icosapent ethyl is deemed to be cost-effective and is approved by the European Medicines Agency and by the Swedish Dental and Pharmaceutical Benefits board. Yet, the benefits of Icosapent ethyl is not realized until it is implemented into clinical practice.

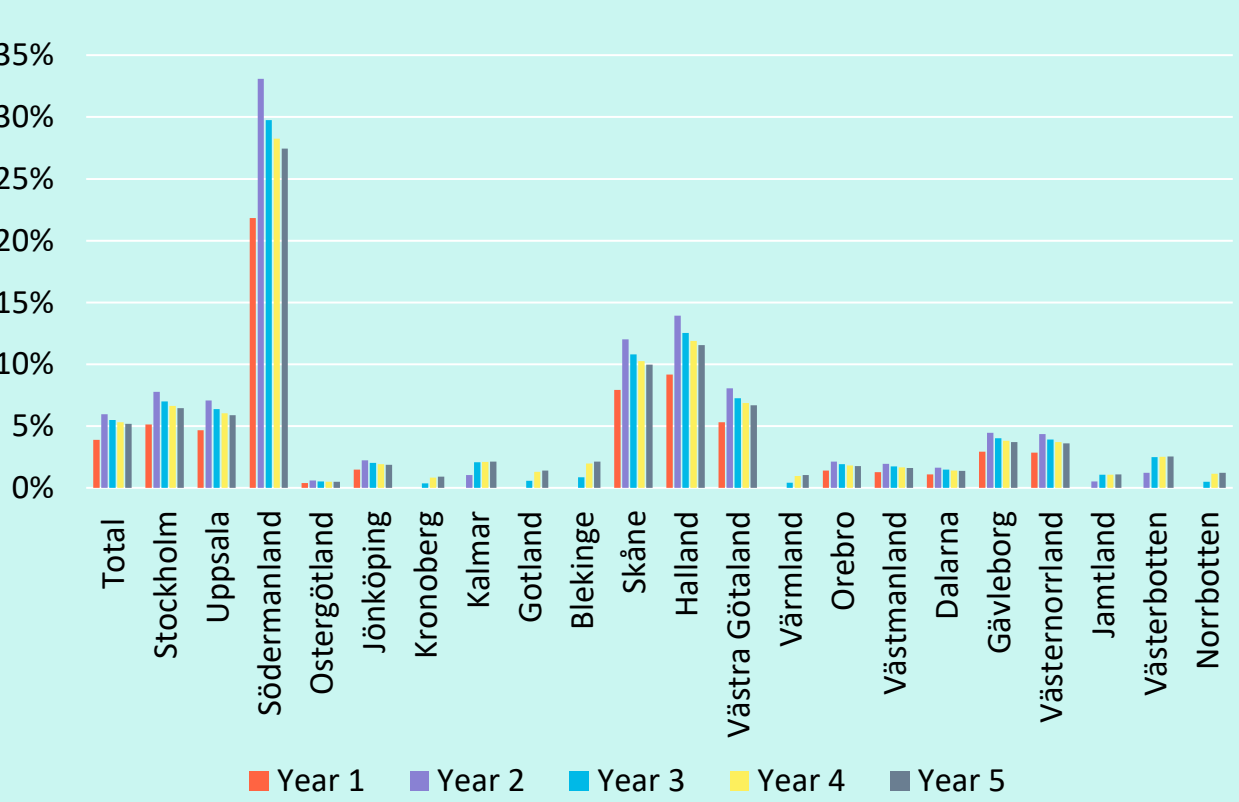
Aim

This study aims to estimate the expected value of perfect implementation (EVPIM) of icosapent ethyl in Sweden and to analyse regional differences in implementation.

Method

By combining epidemiological data with net benefits, the expected gains, and losses of improved implementation of Icosapent ethyl was estimated over a five-year period. The implementation analysis was based on a framework developed by Fenwick et al.¹ and further developed by Johannesen et al.² to estimate the expected value of increasing implementation from a current level to a perfect or improved level of implementation. The absolute and relative values was estimated by using existing cost-effectiveness evidence and event data from the phase 3 trail REDUCE-IT³. The SWEDEHEART register was used to estimate the eligible population, which is patients with indication at the first follow-up outpatient visit 8-10 weeks post-MI. The current numbers of prescriptions was used to extrapolate the current level of implementation (Figure 1).

Figure 1. Current level of implementation by region.



Results

About 3% of the nationwide suboptimal implementation is represented by by not reaching the highest observed level of implementation straight away (slow) and 97% by not reaching from the highest observed to the perfect level (low). This equals an EVPIM estimate of 1 195 QALYs and € 52 million (Table 1). By reaching perfect implementation an additional 31 512 patients would be treated over five years and 1 143 CV events may be avoided, including 102 deaths, 77 strokes and 298 MIs. By eliminating regional variations, in comparison to the highest implementing region, an additional 7 745 patients would be treated, and 296 CV events may be avoided. This equals an EVPIM estimate of 294 QALYs and € 13 million.

Table 1. Expected value of improved implementation in Sweden.

Year	1	2	3	4	5	Total
Perfect	2 286	4 523	6 706	8 830	10 899	33244
Current	89	270	366	458	549	1732
Difference	2197	4253	6339	8372	10350	31512
pEVPIM QALYs	83	161	240	317	392	1 195
pEVPIM € (millions)	3.6	7.0	10.4	13.7	17.0	51.7
Value of eliminating suboptimal implementation (QALYs)						
Slow	17	11	7	3	0	38
Low	66	151	233	314	392	1 157
Value of eliminating regional variations (QALYs)						
1 st	16	47	62	77	93	294
2 nd	5	14	18	22	27	86
3 rd	3	10	14	17	20	65
Total number of CV events avoided						
Total	85	163	235	300	360	1143
Death	8	15	21	27	32	102
Stroke	6	11	16	20	24	77
MI	22	43	61	78	93	298
Unstable angina	10	19	28	36	43	135
Revascularization	39	75	108	140	169	530

The regional analysis (Table 2 & Figure 2) show that there is large regional variations of implementation, accounting for on average 23% (ranging from 19 to 28%) of the suboptimal implementation.

Table 2. Expected value of improved implementation by region.

	Patients	Euro*	QALYs	Slow	Low	Delayed	Regional	Event**
Stockholm	5 576	9.18	211	4.2%	95.9%	-	23.4%	203
Uppsala	286	0.43	11	3.8%	96.2%	-	23.9%	10
Södermanland	194	0.35	7	23.1%	76.9%	-	-	8
Östergötland	1 908	3.12	72	0.3%	99.7%	-	28.1%	68
Jönköping	1 364	2.25	52	1.1%	98.9%	-	27.1%	49
Kronoberg	916	1.47	35	0.3%	99.1%	20.6%	22.0%	33
Kalmar	953	1.56	36	1.0%	92.0%	7.0%	25.7%	35
Gotland	294	0.52	11	0.5%	78.9%	20.7%	21.8%	11
Blekinge	560	0.95	21	0.7%	78.5%	20.8%	21.4%	20
Skåne	3 778	6.23	143	6.7%	93.3%	-	20.3%	139
Halland	1 072	1.73	41	7.9%	92.1%	-	18.8%	40
Västra Götaland	4 963	8.14	188	4.3%	95.7%	-	23.2%	181
Värmland***	25	0.04	1	0.4%	79.0%	20.6%	22.0%	1
Örebro	856	1.39	32	1.1%	98.9%	-	27.2%	31
Västmanland	1 505	2.51	57	1.0%	99.0%	-	27.3%	54
Dalarna	1 112	1.82	42	0.8%	99.2%	-	27.5%	40
Gävleborg	1 464	2.42	56	2.3%	97.7%	-	25.7%	53
Västernorrland	1 695	2.77	64	2.3%	97.8%	-	25.7%	61
Jämtland	628	1.04	24	0.5%	92.6%	6.9%	26.3%	23
Västerbotten	797	1.30	30	1.2%	91.8%	7.0%	25.4%	29
Norrbotten	1 559	2.60	59	0.4%	79.0%	20.7%	21.9%	56

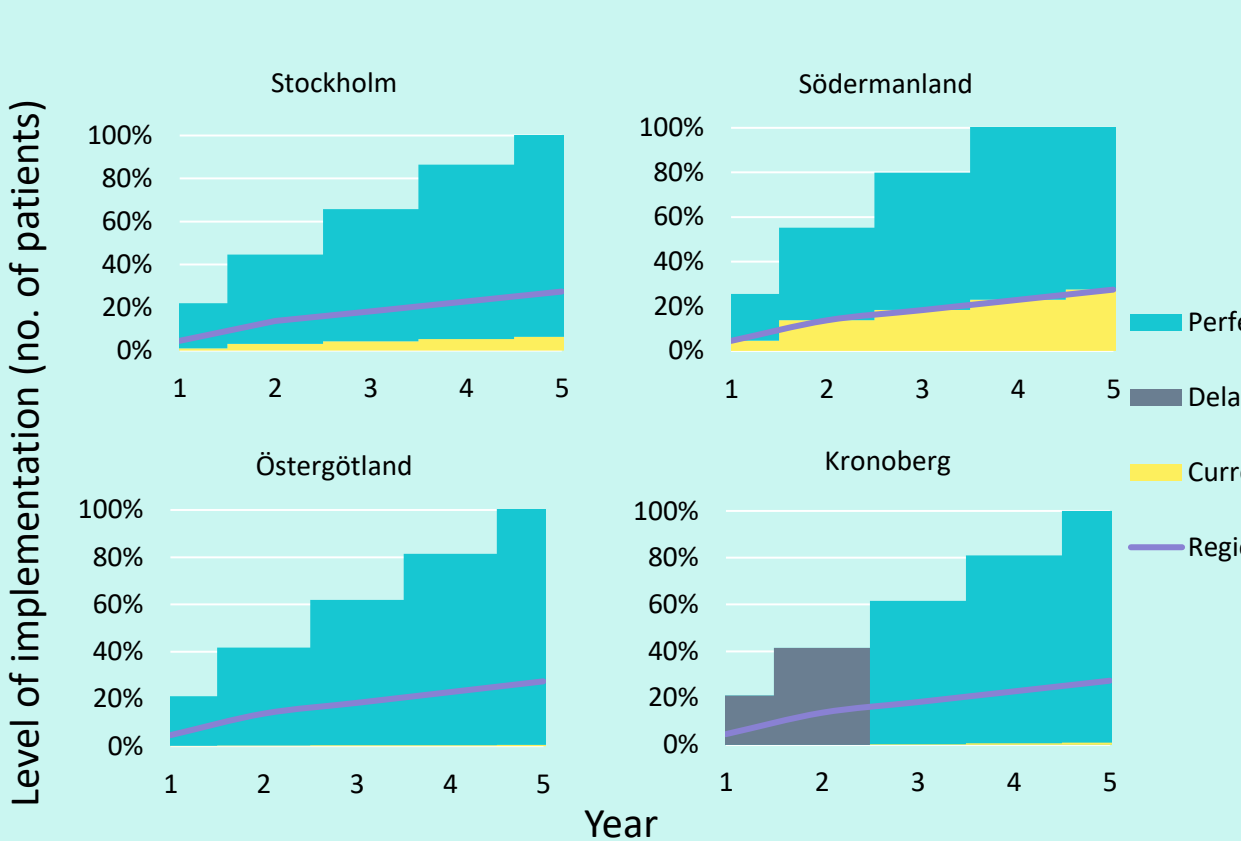
Note: *Millions. **Number of avoided CV events.

***Do not measure triglyceride levels.

Slow implementation accounts for on average 3% (ranging from 0.3% to 23.9%) of the suboptimal implementation, while low implementation accounts for the largest share, on average 91% (ranging from 77 to 99.7%). Delaying implementation until year 2 following the reimbursement decision accounts for about 7% of the suboptimal implementation and delaying to year 2 accounts for about 21%.

The EVPIM estimate of eliminating regional variation in the region with the lowest average level of implementation, Östergötland, is 20 QALYs and 19 avoided CV events. The same expected value for Stockholm is 25 QALYs and 47 avoided CV events, for Västra Götaland 22 QALYs and 42 CV events and for Skåne 14 QALYs and 28 CV events.

Figure 2. Expected level of suboptimal implementation in selected regions.



Discussion

The results suggest that strategies to reach perfect implementation up to a cost of € 52 million is cost-effective. The cost of specific implementation strategies needs to be considered when deciding about the allocation of scarce resources for implementation purposes. The average nationwide level of implementation over five years is 5.3%, while the average level in the highest implementing region is 28.5%. The large regional variations indicate that further investigations is needed to understand why they differ. A key challenge of this study is the uncertainty regarding current level of implementation due to the prospective nature of the study and lack of reliable data of current and future levels of implementation.

References

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