Economic Burden of Chronic Myeloid Leukemia in Sweden: 2015 to 2030

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Chronic Myeloid Leukemia (CML)

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Aim
To estimate and project the prevalence costs of CML in Sweden from 2015 to 2030.

- We adopted a healthcare sector perspective, so only "direct healthcare expenditures" were considered.

Total prevalence costs

$$\underset{\parallel}{} \sum_{s=1}^{S} \Big(\text{Number of prevalent cases in state } s \Big) \times \Big(\text{Average yearly cost per patient in state } s \Big)$$

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- Prevalence, Incidence, Analysis Model (PI-AMOD) by Verdecchia et al., *Stat Med*, 1989 - CML natural history model (Chen EYT et al., *EJH*, 2025)	- Swedish CML register (detailed clinical/lab info) - Prescribed Drug Register (individual-level pricing records) - Herlund et al., *eJHaem*, 2021 - Ohm et al., *Leuk Lymphoma*, 2015 - Official price lists

Study population
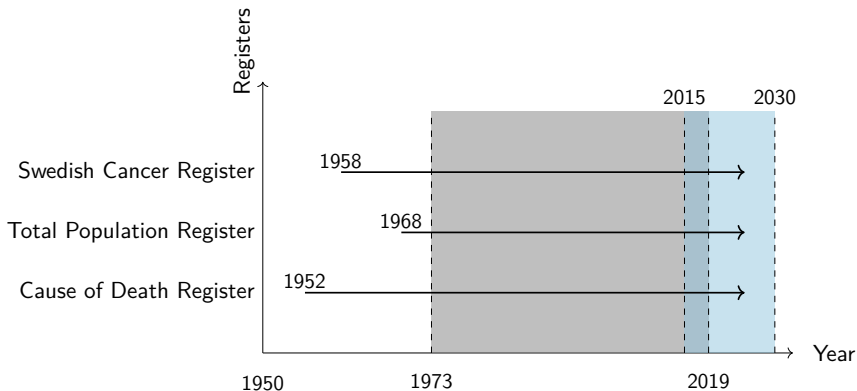
Figure: The grey-shaded area (1973-2019) represents the inclusion period for patients diagnosed with CML in Sweden. The blue-shaded area (2015-2030) represents the estimation and projection period for prevalence and prevalence costs.
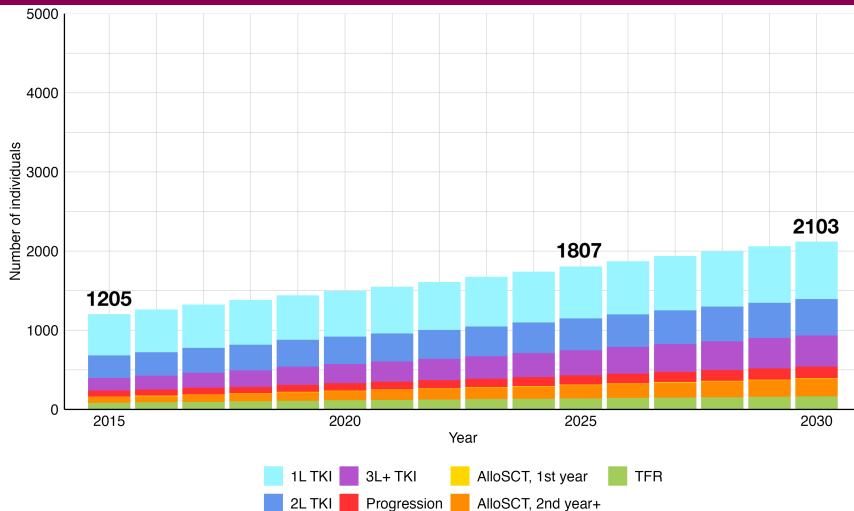
Estimating total prevalent cases
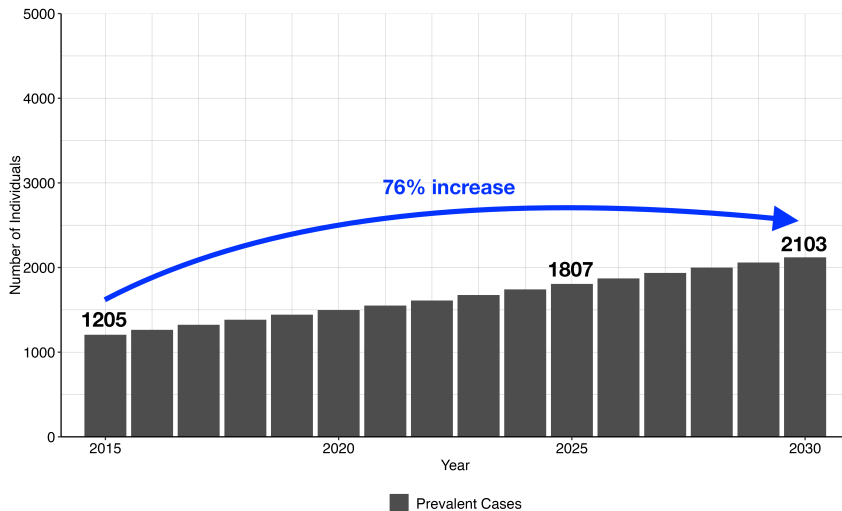
Figure: Estimated and projected prevalent cases of CML in Sweden from 2015 to 2030.

Estimating proportion of prevalent cases in states
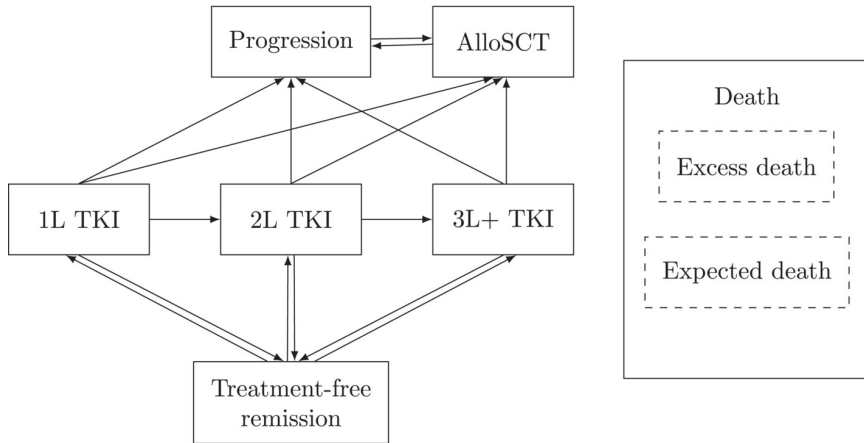
Figure: A multistate microsimulation model for CP-CML. Transitions are also assumed from every live state to the excess or expected death state (arrows not shown). 1 L, first-line; 2 L, second-line; 3 L+, third-line and later; TKI, tyrosine kinase inhibitor; AlloSCT, allogeneic stem cell transplantation. Image from: Chen EYT et al. *EJH*. 2025. Licensed under CC BY--NC 4.0.
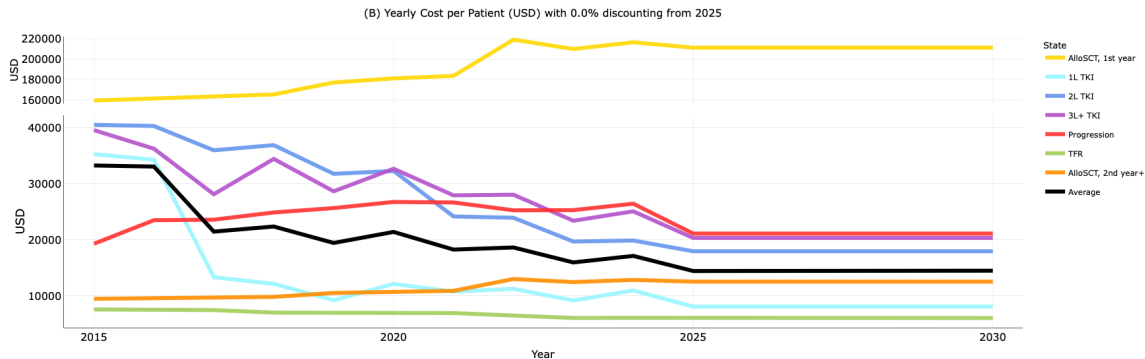
Estimating total prevalent cases

Figure: Estimated and projected prevalent cases (by state) of CML in Sweden from 2015 to 2030. 1 L, first-line; 2 L, second-line; 3 L+, third-line and later; TKI, tyrosine kinase inhibitor; AlloSCT, allogeneic stem cell transplantation.
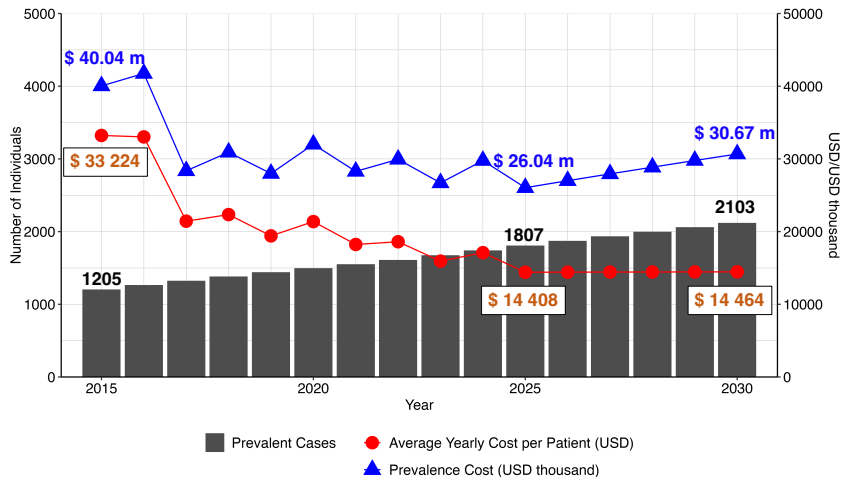
Average yearly cost per patient

(B) Yearly Cost per Patient (USD) with 0.0% discounting from 2025

Figure: Average yearly cost per patient (by state) for CML in Sweden from 2015 to 2030. 1 L, first-line; 2 L, second-line; 3 L+, third-line and later; TKI, tyrosine kinase inhibitor; AlloSCT, allogeneic stem cell transplantation.

Estimating total prevalence costs

Figure: Estimated and projected prevalent cases, average yearly cost per patient (USD), total prevalence costs (USD thousand) of CML in Sweden from 2015 to 2030.

R Shiny application
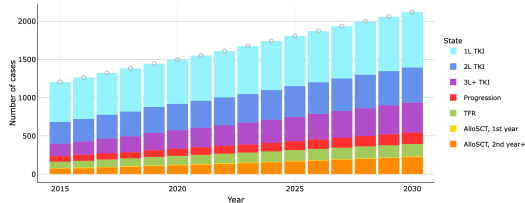
Figure: Link: `https://enochytchen.shinyapps.io/CMLEcoBurdenSE/`.

Conclusions

- The number of individuals living with CML in Sweden is expected to continue to rise.
  (Prevalence cases increase.)
- Declining treatment costs have led to an overall reduction in prevalence costs.
  (Average yearly cost per patient decreases.)
- This will likely mitigate the economic burden on the Swedish healthcare system.
  (Total prevalence costs decrease.)

Rshiny app

Slides