

OBJECTIVES

Thanks to collaboration between the between the **Belgian Cancer Registry (BCR)** and the **Belgian Hematological Society (BHS)**, it was decided in 2012 to maintain a **Belgian Transplant Registry (BTR)** at the BCR. The BTR is a good starting point for reporting transplant centre-specific survival rates after HSCT as already required in other countries, in the frame of quality management system (QMS).

While performance since the introduction of the JACIE QMS has been shown to be improved for allogeneic hematopoietic stem cell transplants (HSCT), impact on autologous-HSCT remains unclear in Europe.

Our study aimed at **evaluating performance of Belgian transplant autologous-HSCT centers.**

MATERIEL & METHODS

Inclusion criteria :

- patients older than 15 ans undergoing auto-HSCT for hematological disorders (N=2697)
- centres that performed more than 5 auto-HSCT per year on average (N=17)

Variables used in the multivariable models :

- Transplant year over the 2007-2013 period
- Age at transplant [16-19, 20-39, 40-59, ≥60 years]
- Gender
- Performance status before transplant assessed with the Karnofsky scale [90-100 vs 0-80]
- Disease risk index (DRI) [low, intermediate, high and very high], combining :
 - Diagnosis
 - Disease status
 - Genetic aberrations (AML : ELN stratification – MDS : IPSS score)
- Transplant number for patients who received multiple HSCT (auto / allo)
- Time between diagnosis of the disease and auto-HSCT [<18 vs ≥18 months]

Evaluation of overall adjusted 1-year and 3-year survival rates by applying a fixed effects censored data generalized linear regression model :

- Unit of analysis : the transplant (the vital status of the patient who received multiple HSCT was only used for the last transplant, other transplants were censored at the date of the next transplant)
- Covariables retained by the backward elimination procedure (Akaike's information criterion)

: 1-yr survival : Transplant year , Perfomance status, DRI, Transplant number
3-yr survival: idem + Age at transplant; Time between diagnosis and auto-HSCT

Impact of 3 centre-related factors :

- Centre activity volume [annual number of auto-HSCT performed by each centre]
- Type of HSCT performed by each centre [exclusively autologous vs both autologous & allogeneic]
- Time between JACIE accreditation achievement by the centre and the considered transplant [10 centres achieved JACIE accreditation during the 2007-2013 period: 1 in 2008, 1 in 2009, 1 in 2010, 1 in 2011, 4 in 2012, 2 in 2013]

IMPACT OF 3 CENTRE-RELATED FACTORS

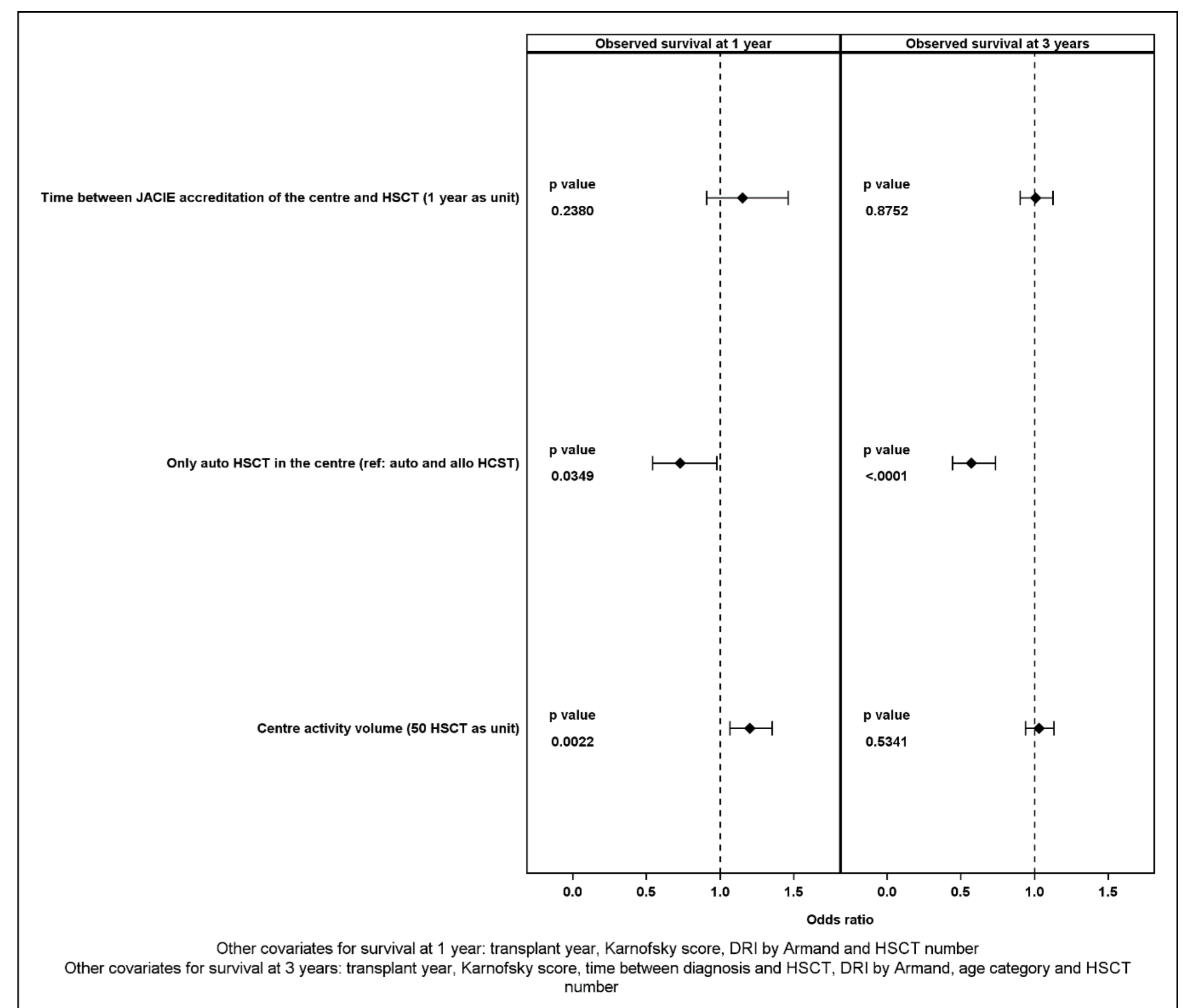
Univariable adjusted model where each of the 3 factors were individually added :

- 1-yr survival: the **3 centre-related factors** had a significant impact
- 3-yr survival : only **activity volume** and **type of HSCT** did so (but not time between JACIE accreditation achievement by centre and the considered transplant between 2007 and 2013)

Multivariable adjusted model where the 3 variables were simultaneously added :

- 1-year survival : **activity volume** (p=0,0022) and **type of HSCT** (p=0,0349) remained significant
- 3-year survivals : only **type of HSCT** (exclusively auto- vs both auto- & allo-) did so (p<0,0001)

Comparison of the 1-year (or 3-year) adjusted survival between the 17 Belgian centres regarding the 3 centre-related factors



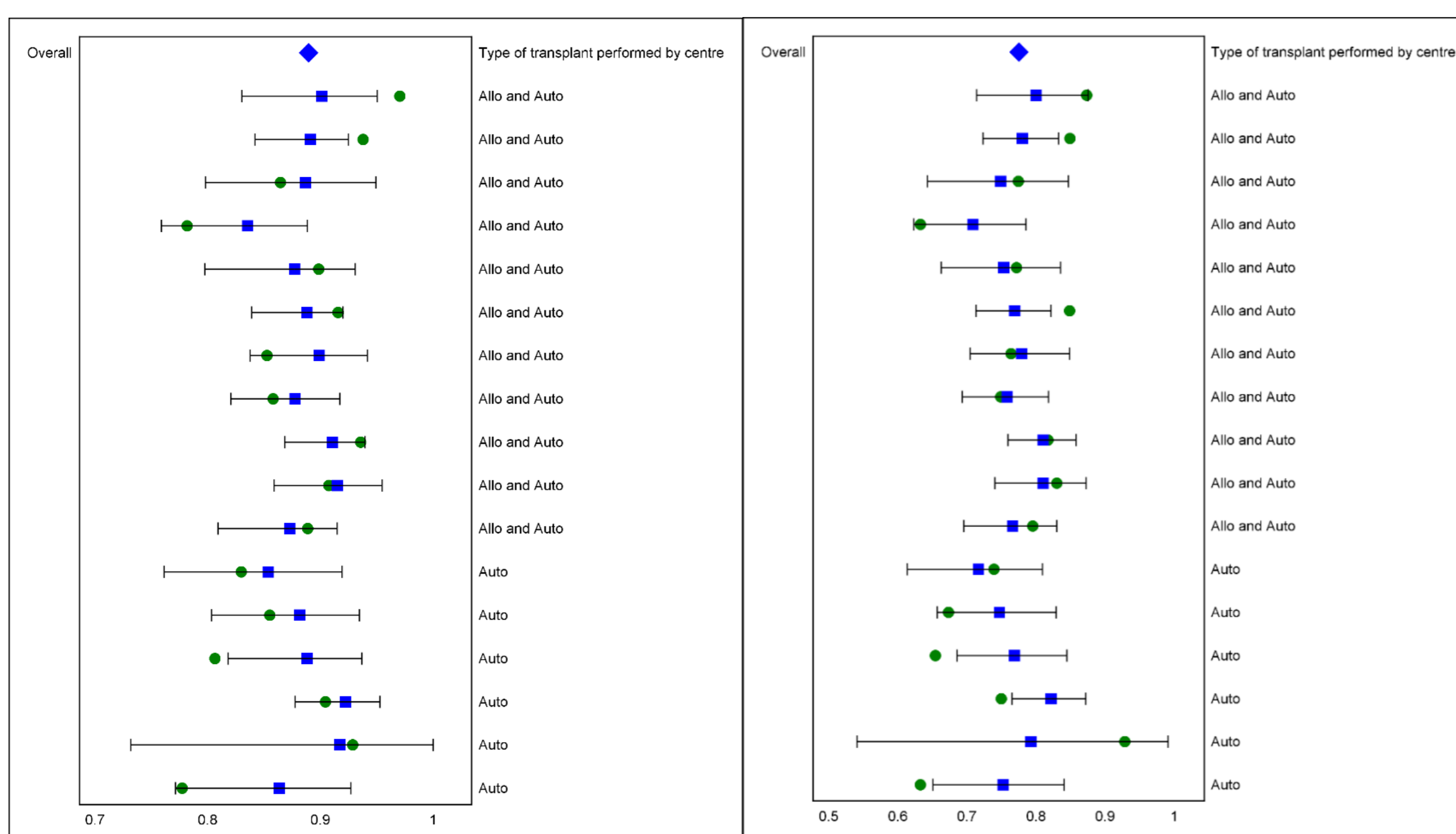
COMPARISON OF CENTRE PERFORMANCE

The **overall adjusted survival** for autologous-HSCT performed in adult patients with hematological malignancies in Belgium **was 89% at 1 year and 78% at 3 years.**

The **performance between Belgian centres was relatively homogeneous** even before national completeness of JACIE accreditation implementation by all centres.

Forest plot of the 1-year survival

Forest plot of the 3-year survival



The 1-year (or 3-year) predicted survival by the multivariable model (adjusted for case-mix) for each centre is represented by a blue square (95% confidence limits are indicated by black lines).

The overall predicted survivals are indicated by a blue diamond on the top of the forest plot.

The observed survival for each centre is represented by a green dot.

If the observed survival of a centre (green dot), is higher (or lower) than the upper (or lower) limit of the confidence interval, there is evidence of the centre over-performing (or under-performing), respectively, the overall network of Belgian centres.

The 3 centre-related indicators are related when taken 2 by 2 :

- Positive relationship between the centre activity volume and JACIE accreditation time (p<0,0001)
- Centres that perform both autologous and allo-HSCT tend to have a higher activity volume than "centres that exclusively perform auto-HSCT"(p=0,072)

CONCLUSION

The results presented here are the first on the Belgian transplant level and the first to identify **centre type** [performing exclusively autologous vs both autologous & allogeneic] **as predictor of survival after auto-HSCT.**

The absence of impact of JACIE accreditation may be explained by the strong relationship between the 3 centre-related factors and/or by the fact that the centre type **conveys a multitude of underlying complex factors including accreditation impact.** Further studies with a longer accreditation time to better assess the survival improvements of the implementation of a QMS in auto-HSCT are however, warranted.

Feedback reports for each centre with comparison to national and even international activities may stimulate continuous quality improvement in the field of HSCT.

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