**Details of statistical modeling**

Our prognostic model consists of two parts: a prognostic index derived by a Cox model and heart failure (HF) subtype (HFrEF, HFmrEF, and HFpEF) specific baseline hazards derived by a Weibull model.

Step 1:

A Cox proportional hazards regression stratified by study *u* and HF subtype *v* was used to estimate the effects of the predictor variables, with the following hazard function:

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Where is the value of patients *i* on predictor *j* and the respective regression coefficient and the unspecified baseline hazard for study *u* and HF subtype *v*.

Step 2:

A Weibull proportional hazards regression stratified by HF subtype *v* was used to estimate baseline hazards, with the following hazard function:

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with the baseline hazard function defined as

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Where is already estimated from the previous Cox model in step 1 and is the baseline scale parameter for HF subtype *v*. The shape parameter was assumed to remain constant across patients with the same HF subtype.

Finally, survival can be calculated as follows:

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