

### Supplemental 1: Description of the mediation analysis

To examine the socioeconomic disparities in 30-day survival mediation analysis was used. The term income disparity in 30-day survival refers to differences in 30-day survival across the income groups/quartiles. To define socioeconomic disparity in 30-day survival, we combined the theory developed for stochastic direct and indirect effects (see e.g.,[2, 3]) and counterfactual disparity measures (see e.g.,[1]). We considered a stochastic intervention that changes the chances of bystander CPR such that everybody in the population has the same chance of CPR as the highest-income group/quartile. The counterfactual 30-day survival probabilities under this stochastic intervention were defined as the 30-day survival probabilities we would observe if the chances of bystander CPR for all patients had been identical to the highest-income group/quartile. Using the observed and counterfactual 30-day survival probabilities we can define the income disparities of interest in the following way: (1) overall observed income disparity in 30-day survival, i.e., the difference in observed survival probabilities across the income groups/quartiles, (2) remaining income disparity in 30-day survival, i.e., the difference in 30-survival across the income groups/quartiles that would remain if the chances of bystander CPR for all patients were identical to the highest-income group/quartile, and (3) eliminated income disparity in 30-day survival, i.e., income disparity we would remove if the chances of bystander CPR for all patients were identical to the highest-income group/quartile. The observed 30-day survival probabilities in all four income groups/quartiles were estimated by a logistic regression model with the observed bystander CPR as explanatory variable. Using Monte Carlo approximations we estimated the counterfactual 30-day survival chances under the stochastic intervention for each income quartile separately. Thereby, for each income group/quartile (Q1, Q2, Q3), we generated 1,000 random draws of bystander CPR and for each random draw

predicted a 30-day survival probability based on the same logistic regression model as for the observed outcome but using the random draw of bystander CPR instead of the observed one. Thereafter the final estimate of the counterfactual 30-day survival probability under the stochastic intervention was computed as the average over these predicted probabilities in each income group/quartile. The random draws of bystander CPR were generated from a binomial distribution with probability equal to the probability of bystander CPR among patients in the highest-income group/quartile (Q4), estimated by a logistic regression model. All models were adjusted for age, sex, calendar year, education and comorbidities. Finally, the observed, remaining and eliminated income disparities in 30-day survival were computed as differences between suitable estimates of the observed and counterfactual 30-day survival probabilities across income quartiles. The 95% confidence intervals (CI) were computed from nonparametric bootstrap procedure with 1,000 bootstrap samples.

### References

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- 2 Didelez VDP, Geneletti S. Direct and indirect effects of sequential treatments. *arXiv* 2012.
- 3 Rudolph KE, Sofrygin O, Zheng W, et al. Robust and flexible estimation of stochastic mediation effects: a proposed method and example in a randomized trial setting. *Epidemiol Method* 2017; 7.