The purpose of a risk model is to use data from prior to/at the start of an intervention (in this case the intervention of the resuscitation team) to predict the likelihood of an outcome.

What do the NCAA risk models allow you to do?

NCAA risk models enable fair comparisons to be made between hospitals for the first time, whereby differences in the patient/event characteristics (e.g. age, presenting rhythm, etc.) that would be expected to result in differences in outcomes, are taken into account. Risk adjusted comparative analyses are included in the quarterly cumulative NCAA Report provided to participating hospitals.

What are the outcomes predicted by the NCAA risk models?

The NCAA risk models predict two outcomes:
1) ROSC greater than 20 minutes; and
2) survival to hospital discharge.

Participating hospitals can compare predicted (i.e. expected) outcomes with the actual (i.e. observed) outcomes for their hospital, and against NCAA data. Hospitals can also compare their risk adjusted outcomes against other participating hospitals (anonymised).

Which patient/event characteristics are used in the NCAA risk models?

The patient/event characteristics used in the NCAA risk models to predict outcomes are:
- Age in years
- Sex (only used in the model for ROSC greater than 20 minutes)
- Length of stay in hospital prior to arrest
- Reason for admission to/attendance at/visit to hospital
- Location of arrest
- Presenting/first documented rhythm
- Interactions between location of arrest and presenting/first documented rhythm (allowing for a different effect of presenting/first documented rhythm depending on the location of the arrest)

How were the NCAA risk models developed?

NCAA risk models were developed using data from over 22,000 in-hospital cardiac arrests in 143 hospitals participating in NCAA between 2011 and 2013 (Harrison et al). The models will be regularly recalibrated to ensure ongoing fit and accuracy of risk adjusted comparative analyses provided to participating hospitals.

What data are included/excluded from NCAA risk models?

All patients meeting the scope of NCAA (receiving chest compressions and/or defibrillation and attended by a hospital-based resuscitation team in response to a 2222 call) are included in the NCAA risk models and risk adjusted comparative analyses, except:
- arrests where the location was pre-hospital; and
- subsequent arrests of the same patient within the same hospital stay.

Supported by: Resuscitation Council (UK) and Intensive Care National Audit & Research Centre (ICNARC)