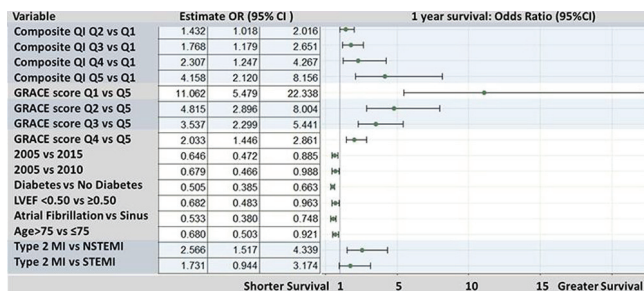Emile Muller, Mulhouse, France; [9]Clinic Pasteur of Toulouse, Toulouse, France; [10]Toulouse Rangueil University Hospital (CHU), Toulouse, France

Aim: ESC-Acute Cardiac Care Association Quality Indicators (QI) are suitable to assess the quality of care, but temporal changes and the relation between the composite QI and outcomes are poorly documented.

Methods: QIs were extracted from the 3 French nationwide registries FAST-MI 2005 (n=3740), FAST-MI 2010 (n=4160) and FAST-MI 2015 (n=5291). The degree of implementation of each QI and an opportunity-based composite QI were calculated in each cohort. The relation between quintiles of the composite QI, and survival at one year was determined using multivariate logistic regression, adjusted for period, type of AMI, quintiles of GRACE risk score, LVEF, age, diabetes and atrial fibrillation.

Results: The degree of implementation ranged from 12% (statins high intensity at discharge in 2005) to 89% (betablocker use in patients with LVEF<0.40 in 2015). There was a significant increase over time in all QIs measured, as well as in the composite QI (0.67±0.19 in 2005, 0.73±0.19 in 2010 and 0.77±0.20, p<0.001 for trend). One year survival increased from 85.2% in 2005 to 91.5% in 2010 and 92.7% in 2015 (p<0.001 for trend). The composite QI was independently related with 1 year survival: adjusted ORs were 1, 1.43, 1.77, 2.30 and 4.16 from lowest to highest quintile of composite QI (figure).

Variable	Estimate OR (95% CI)			1 year survival: Odds Ratio (95%CI)
Composite QI Q2 vs Q1	1.432	1.018	2.016	
Composite QI Q3 vs Q1	1.768	1.179	2.651	
Composite QI Q4 vs Q1	2.307	1.247	4.267	
Composite QI Q5 vs Q1	4.158	2.120	8.156	
GRACE score Q1 vs Q5	11.062	5.479	22.338	
GRACE score Q2 vs Q5	4.815	2.896	8.004	
GRACE score Q3 vs Q5	3.537	2.299	5.441	
GRACE score Q4 vs Q5	2.033	1.446	2.861	
2005 vs 2015	0.646	0.472	0.885	
2005 vs 2010	0.679	0.466	0.988	
Diabetes vs No Diabetes	0.505	0.385	0.663	
LVEF <0.50 vs ≥0.50	0.682	0.483	0.963	
Atrial Fibrillation vs Sinus	0.533	0.380	0.748	
Age>75 vs <75	0.680	0.503	0.921	
Type 2 MI vs NSTEMI	2.566	1.517	4.339	
Type 2 MI vs STEMI	1.731	0.944	3.174	
	Shorter Survival	1	5	10	15	Greater Survival

Conclusions: Quality of care in AMI, as assessed by the composite ESC-ACCA QI, improved between 2005 and 2015, with a parallel decrease in 1 year mortality. A gradual relation between adjusted survival and the opportunity-based composite QI was observed, suggesting that the composite QI is a valid measure of quality.

P833
From coronary to critical cardiovascular care unit: cause of mortality and patients profile analysis over three decades

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Background: Coronary Care Units (CCU) were founded in the sixties to reduce mortality in acute myocardial infarction (AMI) patients by monitoring the hearth rhythm to treat earlier the main AMI complications. However, in the XXI century, the old CCU has changed into a Critical Cardiovascular Care Unit with a different profile of patients.

Purpose: The main is to analyze the global mortality of a University hospital CCU and the profile of patients from 1989 to 2017.

Method: Between February 1989 and December 2017, 18,334 patients were consecutively admitted in the Coronary Care Unit of a University Hospital. Depending on the year of admission, patients were classified in five groups: 1989–1994: n=3,034, period 1; 1995–1999: n=2,261, period 2; 2000–2004: n=2,826, period 3; 2005–2009: n=3,294, period 4 and 2010–2015: n=6,919, period 5). We analyze the trend of mortality in the CCU in these five periods and compare the diagnosis at admission of all patients.

Results: Mean age was 63.5 (SD 13.0) years and 74% were men. Elderly patients (over 75-years) admitted increased from period 1 to 5 (10%, 15.2%, 19.3%, 24.7%, 27.3%, p<0.001). The global CCU mortality in all periods was 5.4% and it was reduced from period 1 to 5 (6.8%, 7.6%, 5.6%, 4.6%, 4.5%, p<0.001). The cause of death have change with less death due to acute coronary syndrome (ACS), from period 1 to 5: 66.7%, 55.2%, 57.3%, 47.7% and 45.5% and more death due to malignant arrhythmias (1.9%, 6.4%, 5.7%, 10.5% and 16.2%) and other diagnosis (12.6% in period 1 vs 21.8% in period 5), all p<0.001. The diagnosis at admission have been change with less ACS from period 1 to 5: 72.6%, 78.2%, 68.3%, 69.2% and 62.8%; and more admissions due to heart failure (6,0%, 6.5%, 5.3%, 6.2% and 8.6%) and malignant arrhythmias (0.8%, 1.6%, 2.4%, 3.1% and 4.0%), all p<0.001.

Conclusions:, Global mortality in the CCU has been reduced in the last three decades from 6.8% to 4.5%, even though patients admitted in the CCU were older than first periods. There is an important change of the cause of death, with less death due to ACS and more death due to malignant arrhythmias and other diagnosis. Although acute coronary syndrome is still the main diagnosis, heart failure and arrhythmias increased in the last years.

P834
Validation of the CREST risk score in out of hospital cardiac arrest

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Introduction: The CREST model has recently been devised to allow for estimation of circulatory risk and improve the triage of survivors of cardiac arrest without ST-segment–elevation myocardial infarction at the point of care. This model is yet to be validated in a real world patient population.

Purpose: The aim of this study was to assess the usefulness of the CREST model risk score in predicting outcomes of patients resuscitated after out-of-hospital cardiac arrest (OOHCA).

Methods and results: We retrospectively analyzed the data of patients admitted to our hospital between October 2014 and June 2017 with OOHCA who were resuscitated via conventional cardiopulmonary resuscitation. We calculated the CREST risk score on admission and assessed its usefulness in predicting in-hospital mortality and neurological outcome.
Among 323 patients, the mean age was 62.4 (±14.7 years) 132 (40.9%) of patients died in-hospital, and 107 (33.1%) had favourable neurological outcome. 212 (65.7%) of patients were diagnosed as ST-elevation MI or equivalent, 64 (19.8%) as Non-ST elevation MI and 14.7% as other diagnoses (e.g Cardiomyopathy). Among all the study patients, the CREST risk score was lower in survivors than in non-survivors and in favorable than in unfavorable neurological outcome groups (p<0.001, respectively). Aside from previous Hx of coronary artery disease (p=0.156) all of the individual CREST component were predictors of either outcome; non-shockable rhythm at presentation (Odds Ratio (OR) 13.3, CI: 6.4 - 27.7, P=0.0001,) EF <30% (OR:3.6, CI 1.8 - 7.4, p=0.0001), Shock (OR = 4.2, CI 2.5- 7.4, p=0.0001) and Ischaemia Time >25 min (OR = 8.1 CI 4.4–15, P=0.0001). Increasing CREST scores were associated with worse outcomes (CREST score of 0, 0 adverse outcome, score of 1, 32.9%, score of 2, 48.5%, score of 3, 81.3% and 4, 92.9%). Multivariate analysis showed significant association between the CREST risk score and poor outcome (OR, 1.98; 95% confidence interval, 1.56–3.99).

Conclusion: The CREST model may help predict the in-hospital mortality and neurological outcome associated with resuscitated patients with OOHCA regardless of the cause of arrest. This score could be used to potentially highlight patients where treatment (before or after ROSC) is futile either for use of healthcare resources or more importantly for sites planning to participate in research trials to improve outcomes in this much needed area.

P835
Cardiac arrest and takotsubo syndrome: clinical and prognostic implications

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Background: Cardiac arrest (CA) has been reported in association with takotsubo syndrome (TTS), but only fragmentary and scarce evidence details the frequency and the clinical aspects of this event.

Purpose: To investigate the prevalence, the clinical features and the prognostic implications of CA in TTS.

Methods: Occurrence of CA and its underlying rhythm were searched in patients' records from a large international registry. Main study outcome was 60-day mortality. The factors predicting the risk to develop CA in the acute phase after presentation were investigated.

Results: Out of a total cohort of 2,098 patients from the International Takotsubo (InterTAK) Registry, 170 (8.1%) required initial medical or mechanical resuscitation due to the absence of signs of circulation; of these, 124 had CA as the underlying cause and required cardiopulmonary (mechanical) resuscitation. Out of the patients with known underlying rhythm were included in the present analysis. Patients with CA were younger (61.9 vs. 67.3 years, P<0.001), more frequently male (17.5% vs. 9.1%, P=0.005) and presented higher prevalence of apical type (81.6% vs. 70.9%), atrial fibrillation (AF, 21.1% vs. 6.4%, P<0.001), and physical triggers (60.2% vs. 33.8%, P<0.001). They showed a longer corrected QT-interval (474.6 vs. 457.7 ms, P<0.001) and lower left ventricular ejection fraction (33.5% vs. 41.3%, P<0.001) on admission. The majority of the patients had CA at presentation (84, 81.6%), whereas 19 (18.4%) developed CA in the acute phase after presentation. Patients with CA had a higher 60-day mortality compared to patients without CA (40.3% vs. 4.0%, P<0.001). Among the patients without CA at presentation, AF (hazard ratio [HR] 4.47, 95% confidence interval [CI] 1.48–13.5, P=0.008), ST-segment elevation on admission (HR 3.71, 95% CI 1.34–10.3, P=0.012) and C-reactive protein levels on admission (HR 2.03, 95% CI 1.03–4.02, P.042) were associated with a higher risk of developing CA in the acute phase after presentation, whereas female gender (HR 0.28, 95% CI 0.10–0.77, P=0.014) was protective.

Conclusions: CA may occur with TTS and is associated with an increased risk

of death at the short-term follow-up. Clinical, electrocardiographic and laboratory parameters may help to identify the patients with a higher risk of developing CA in the acute phase after presentation.

P836
Benzodiazepine-free cardiac anesthesia for reduction of delirium (B-Free): a two-centre pilot study to determine the feasibility of a multi-centre, randomized, cluster crossover trial

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Background: Postoperative delirium affects 15–30% of adult cardiac surgery patients and is associated with adverse outcomes. Intensive care unit (ICU) data suggest that benzodiazepines are linked to delirium. While the benefit of alternate forms of sedation after cardiac surgery have been studied, no trials have examined the impact of changes to intraoperative benzodiazepine use.
Purpose: To determine the feasibility of a multicentre, randomized cluster crossover trial evaluating whether an institutional policy of limited intraoperative benzodiazepine administration (B-Free) during adult cardiac surgery was associated with a decrease in the incidence of postoperative delirium, when compared with a policy of "ad libitum" intraoperative benzodiazepine administration.
Methods: We conducted a two-centre, pilot randomized cluster crossover trial with four-four-week crossover periods. We obtained research ethics board approval for waiver of individual patient consent in both sites; all patients undergoing cardiac surgery during the pilot period were studied. Each site was randomized to either the B-Free or ad libitum policy and then alternated between intervention arms during the remaining 3 crossover periods. Our feasibility outcomes were: 1) obtaining at least one postoperative Confusion Assessment Method (CAM) delirium evaluation in 95% of enrolled patients, 2) obtaining at least one CAM per 24h in the ICU in 90% of enrolled patients, and 3) to achieve adherence to each of the intervention arm policies in 80% of patients. In one site, we evaluated the incidence of intraoperative awareness using serial Brice questionnaires and blinded adjudication, aiming to demonstrate an incidence of intraoperative awareness during the limited benzodiazepine period of ≤2%.
Results: We studied 800 patients, of which 362/388 (93.3%) of patients managed during the ad libitum periods and 365/412 (88.6%) of patients managed during the B-Free periods were managed according to the appropriate policy. We have obtained outcomes for 750/800 (93.8%) patients; remaining patients are still being entered into administrative databases. Of these, 735/750 (98.0%) had at least one CAM, and 692/750 (92.3%) had at least one CAM per 24h in ICU. We screened 521/540 (96.5%) enrolled patients at one site for intraoperative awareness; 19/540 (3.5%) of patients were not screened because of intraoperative death, transfer or death prior to extubation, or communication barrier. 1/521 (0.2%), managed during the B-Free period but who received benzodiazepine, was adjudicated as having awareness.
Conclusions: Data obtained demonstrates the feasibility of conducting a multicentre, randomized, cluster crossover trial evaluating whether an institutional policy of limited intraoperative benzodiazepine use during adult cardiac surgery is associated with a decrease in the incidence of postoperative delirium, when compared with a policy of "ad libitum" intraoperative benzodiazepine use.

P837
Glucocorticoid use after ROSC improves outcomes in cardiac arrest survivors

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Background: The effect of glucocorticoid use following cardiac arrest on the outcomes of cardiac arrest survivors remains controversial.
Objective: To evaluate the ramifications of glucocorticoid use during post-arrest care by using a population–based analysis
Methods: 22,768 adult non-traumatic cardiac arrest survivors during the time period of 2004 through 2011 were identified from the Taiwan National Health Insurance Research database. After excluding 1,118 patients who received steroids during cardiopulmonary resuscitation (CPR), 2398 patients who received steroids for >1 month, and 23 patients who received a prednisolone equivalent dose >1250 mg/day, 19,229 patients were classified into the steroid and non-steroid groups based on whether steroid was used or not during hospitalization. A propensity score was used to match patient underlying characteristics, steroid use prior to cardiac arrest, the vasopressors and shockable rhythm during CPR, hospital classification, socioeconomic status and years. The effect of steroid on survival to discharge and 1-year overall survival was determined by logistic regression analysis.

Results: There were 5,445 patients in each group after propensity score matching. 1,294 patients (23.76%) in the steroid group survived to hospital discharge, as compared with 1,004 patients (18.44%) in the non-steroid group (adjusted OR, 1.47; 95% CI, 1.33–1.63; p<0.0001). The 1-year overall survival rate was also significantly higher in the steroid group than in the non-steroid group (16.46% vs. 12.23%; adjusted OR, 1.56; 95% CI, 1.38–1.77; p<0.0001). A subgroup analysis showed that steroid use during hospitalization benefits survival to discharge, regardless of age, gender, underlying diseases (DM, COPD, asthma), and shockable rhythm. In a dose-ranging analysis, the positive affect of steroid use on outcomes was observed only in the range of low steroid doses. A high steroid dose after cardiac arrest was significantly associated with worse outcomes.
Conclusion: Glucocorticoid use after ROSC may be associated with better survival to hospital discharge and 1-year survival among cardiac arrest survivors.

P838
### Resuscitation attempt and survival after out-of-hospital cardiac arrest

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Background: Although resuscitation initiated by emergency medical services (EMS) is associated with an improvement in survival after out-of-hospital cardiac arrest (OHCA), the proportion of OHCA without resuscitation attempt has been reported to represent more than one-third of all cases in the developed world. Temporal changes in resuscitation attempt, associated factors and interplay with survival are not well described.
Purpose: To assess overall trends in resuscitation attempt and survival considering all OHCA cases through a community-based study.
Methods: Between 2011 and 2016, all cases of OHCA occurring in a large area encompassing a residential population of 6.7 million were prospectively included, in collaboration with EMS, all 48 area hospitals and forensic units. Data were analyzed from medical reports after central adjudication.
Results: Among 15,207 OHCA (mean age 70.7±16.9 years, 61.6% male), 5,486 (36.1%) did not undergo further resuscitation by EMS. The annual standardized OHCA incidence was 46.2 (95% CI 44.4–48.1) per 100,000 person-years for EMS-resuscitated cases versus 72.5 (95% CI 70.2–74.9) per 100,000 person-years for all OHCA. In multivariate analysis, factors significantly associated with no EMS resuscitation attempt included age (OR 1.06 per year, 95% CI 1.05–1.06, p<0.001), female sex (OR 1.21, 95% CI 1.10–1.32, p<0.001), occurrence of SCA at home (OR 3.38, 95% CI 2.86–4.01, p<0.001), absence of bystander (OR 1.94, 95% CI 1.74–2.16, p<0.001), no bystander CPR (OR 1.93, 95% CI 1.73–2.16, p<0.001), and non-shockable initial rhythm (OR 5.77, 95% CI 4.72–7.11, p<0.001). During the study period, a significant increase in the proportion of bystander CPR (31.7% to 41.8%, p<0.001) and initial shockable rhythm (15.5% to 21.4%, p<0.001) was observed, associated with a better survival at hospital discharge among OHCA cases with EMS resuscitation attempt (7.3% to 9.5%, p=0.02). However, the proportion of patients without EMS resuscitation attempt increased progressively over time (from 34.0% to 39.3%, p for trend <0.001) due to a concomitant increase in factors associated with lack of resuscitation. Overall, considering all OHCA, the annual survival rates remained stable over this five-year period (4.8% to 5.7%, p for trend =0.17).

Survival rate at hospital discharge
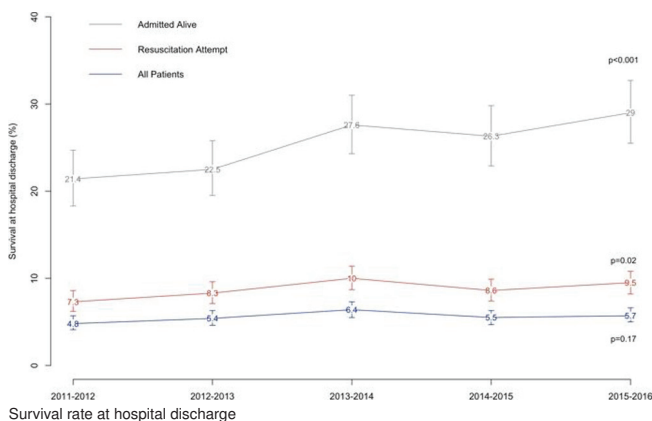
Conclusion: There is a need for targeted strategies to rectify remediable causes of lack of resuscitation such as improving response times and public education. At the same time, contemporary improvements in pre- and in-hospital management notwithstanding, considerable room for improvement in survival rates exists even in patients undergoing initial resuscitation.