METHODS A comprehensive literature search was conducted using the Cochrane Library, MEDLINE, and Scopus databases from inception to April 2015 without language restrictions. The following search terms were used: (dabigatran OR rivaroxaban OR apixaban OR edoxaban) AND (atrial fibrillation OR heart failure). The available data were extracted from the main trial publications, subgroup analyses, or supplemental appendices. Statistical analyses were performed using Revman 5.3 software.

RESULTS Four RCTs were identified and included in the present study: 19122 patients with AF and HF were allocated to a NOAC (13384 receiving single/high-dose NOAC), and 13390 to warfarin. Single/high-dose NOACs significantly reduced the incidence of stroke or systemic embolic events by 14% (Odds Ratio [OR]: 0.86, 95%Confidence interval [CI]: 0.76-0.98). Low-dose NOACs had comparable efficacy to warfarin for the stroke or systemic embolic events (OR 1.02; 95%CI: 0.86-1.21). A 24% reduction in major bleeding was seen with single/high-dose NOACs, compared with those with warfarin (OR: 0.76, 95% CI: 0.67-0.86). For low-dose NOACs, the OR for major bleeding was 0.64 but without significant difference (95%CI: 0.38-1.07). Among the 42361 patients allocated to a NOAC, the outcomes were compared between AF patients with HF and those without HF. Regardless of high- or low-dose NOAC regimen, the incidences of both major bleeding and the composite of stroke or systemic embolism in AF patients with HF were similar to those without HF. In patients with AF and HF, a 41% reduction in intracranial bleeding was observed (OR: 0.59, 95%CI: 0.40-0.86), perhaps driven by differences in comorbidities between both groups.

CONCLUSIONS Among AF patients with HF, single/high-dose NOACs have both favorable efficacy and safety profile compared with warfarin. Low-dose regimens had similar efficacy and safety as warfarin. NOACs were similarly effective or even safer in AF patients with HF compared to those without HF.

GW26-e2942
The autophagy in neuron injury after cardiopulmonary resuscitation in rats
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OBJECTIVES Recent studies show the existence of autophagy in cerebral ischemia; however, no studies have been found to examine the role of autophagy in cerebral injury after cardiopulmonary resuscitation (CPR). This study was to determine the role of autophagy in rats model of ventricular fibrillation (VF)/CPR.

METHODS Experiment 1:48 adult Wistar rats were subjected to VF by an external transthoracic alternating current, left untreated for 6 minutes, and then administered CPR to observe the existence of autophagy after return of spontaneous circulation (ROS). Experiment 2:72 rats were pretreated with intraperitoneal injections of either saline (Control group), the autophagy inducer rapamycin (Rapamycin group) or the autophagy inhibitor 3-methyladenine (3-MA group) after ROSC at once to evaluate the contribution of autophagy to neuronal injury after ROSC.

RESULTS Our results showed that autophagy activation attenuated 2 to 4 hours after ROSC and was related to the decrease in 5'-AMP-activated protein kinase (AMPK) activity after ROSC. Rapamycin treatment significantly increased the expression of LC3-II and Beclin-1 after ROSC, attenuated the activation of caspase-3, promoted neuron survival and decreased neuron apoptosis, and improved the neurological outcomes of rats. 3-MA pretreatment significantly attenuated the expression of LC3-II and Beclin-1 and worsened the neurological outcome after ROSC.

CONCLUSIONS Autophagy activation after ROSC shows remarkable tolerance to VF/CPR ischemic insults, and improves neurological outcomes.

GW26-e0263
Survival from Out-of-hospital Cardiac Arrashes without Return of Spontaneous Circulation in the Field
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OBJECTIVES Prompt and proper field resuscitation is vital for survival from out-of-hospital cardiac arrest (OHCA). Return of spontaneous circulation (ROSC) in the field is one of the most important determinants contributing to survival and favorable neurological outcomes following OHCA. However, nearly one third of the survivors in our site were patients without ROSC achieved in the field. In this study we described the demographics, pre-hospital characteristics and outcomes of patients with OHCA in our resuscitation research center, who were treated on scene and transported to hospitals, and compared survivors who did and did not have ROSC in the field, as well as those who met the universal Termination of Resuscitation (TOR, no ROSC, not EMS witnessed, and not shocked) criteria in the field.

METHODS Resuscitation Outcomes Consortium (ROC), is a clinical research network consisting of eleven regional centers and a data coordinating center in North America that has registry systems and conducts multi-center clinical trials focusing on OHCA and trauma. Its goal is to evaluate strategies for pre-hospital treatment of patients with OHCA or life-threatening trauma. Between 2006 throughout April 2011, a total of 10,994 non-traumatic OHCA cases were screened and enrolled in Dallas Fort Worth (DFW) ROC site in Texas. We included cases aged ≥18 years with non-traumatic OHCA treated and transported to a hospital within DFW ROC site. Demographic characteristics, pre-hospital factors and resuscitative interventions in the field, for all these treated and transported cases, including survivors with and without ROSC, as well as those who met TOR, were reported.

RESULTS Included were 5,099 OHCA cases; 82.1% (4,243) were patients without ROSC in the field, of which 66.6% (2,827) met TOR criteria in the field but still were treated and transported. Of treated cases, 5.6% (287) survived to hospital discharge; of the 94.4% (4,812) who died, 82.6% (3,975) died in the Emergency Department, while 17.4% (837) died in the hospital. Further analysis of the survivors showed that 72.5% (208) of the survivors had ROSC in the field, and 27.5% (79) did not. Of interest, 10.8% (31) of survivors met TOR criteria, accounting for 1.1% of this special population. EMS immediate resuscitation for witnessed arrest (OR 0.89, 95%CI 1.125-1.618), shock-able initial rhythm (OR 3.053, 95%CI 1.079-8.643), and advanced airway management (OR 0.329, 95% CI 0.104-1.041) were top three significant factors to predict survival of OHCA victims without ROSC in the field. Of concern, 1.7% (47/2827) of victims who met TOR criteria presented initial shock-able rhythm but no shocks were delivered in the field by EMS personnel.

CONCLUSIONS In the DFW ROC site, 27.5% of OHCA survivors were patients without ROSC achieved in the field and 10.8% of the survivors met Termination of Resuscitation criteria in the field. Our data suggest that all treated OHCA patients should be transported to the hospital.
expression of cyclooxygenase-2 (COX-2) was detected by immunofluorescence staining and qRT-PCR.

RESULTS After oral administration, aspirin could effectively inhibit platelet P-selectin (CD62P) expression and the ratio of TXB2 and 6-keto-PGF1α in control group, but failed to take effect in HFD/STZ-induced diabetic mice. The SA concentration in HFD/STZ-induced diabetic mice was still significantly higher than that in normal mice. Immunohistochemical analysis revealed an decreased expression of COX-2 in the HFD/STZ-induced diabetic mice by the aspirin treatment. Compared with control group, the mRNA levels for renal OAT1, OAT2 and SMCT1 were unanimously down-regulated in HFD/STZ-induced diabetic mice, in accordance with the pathological changes of kidney.

CONCLUSIONS Our study reports the novel finding that SA accumulation is largely attributed to the down-regulation of renal transporter function and acidic environment in the diabetic state.

GW26-e2301
The CHADS2, and CHA2DS2-VASc scores for predicting ischemic stroke amongst Asian patients with atrial fibrillation: A systematic review and meta-analysis
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OBJECTIVES Both the CHADS2 and CHA2DS2-VASc scores are well-validated for predicting risk of stroke among patients with atrial fibrillation (AF), but most validation studies have been in Western populations. Some uncertainty is evident for the selection of which score to guide optimal anticoagulant therapy among Asian populations with AF. We aimed to perform a systematic review and meta-analysis of available studies to compare CHADS2 and CHA2DS2-VASc scores for risk stratification and second, to establish which score has a better performance in identifying ‘truly low risk’ AF patients from Asia.

METHODS A systematic literature search of Cochrane library, Scopus, and PubMed databases was conducted using search terms including atrial fibrillation, CHADS2, and CHA2DS2-VASc. Stroke / thromboembolism outcome events at low, moderate, and high risk groups were compared in relation to both scores. Statistical analyses were performed using R version 3.2.3 software.

RESULTS 493 records were retrieved, of which 6 cohort studies focusing on non-anticoagulated patients from Asian regions were appraised and included. Absolute event rates were usually lower when patients were categorized as CHA2DS2-VASc of 0-1, rather than CHADS2 of 0-1, respectively. Meta-analysis revealed that when compared with the CHA2DS2-VASc score, the CHADS2 score improved the 71.7-fold (95% CI: 1.26-2.32) elevated risk of stroke when patients were stratified as ‘low risk’ using a CHADS2 score ≥ 2, or a 1.40-fold (95% CI: 1.20-1.64) increase with a CHADS2 score ≥ 1. A 1.9-fold (95% CI: 1.02-1.38) elevated risk was observed amongst CHADS2 score ≥ 2, but the total number of events was higher when patients were categorized as CHA2DS2-VASc ≥ 2.

CONCLUSIONS The CHA2DS2-VASc score is superior to the CHADS2 score in identifying ‘truly low risk’ Asian patients with AF. Rather than a categorical (ie. low/moderate/high risk) approach, Asian guidelines should adopt a 2-step approach, by initially identifying the low risk patients (using the CHA2DS2-VASc score) who do not need any antithrombotics, followed by which effective stroke prevention can be offered to those with ≥ 1 stroke risk factors.

GW26-e1022
Prognostic importance of C-reactive protein in acute myocardial infarction: A systematic review and meta-analysis of prospective studies
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OBJECTIVES It was controversial whether C-reactive protein (CRP) was a prognostic marker in patients with acute myocardial infarction (AMI). We undertook this meta-analysis to make it clear.

METHODS A systematic literature search was conducted using Medline, PubMed, and Web of Science for prospective studies of patients with AMI that reported outcomes according to serum CRP levels. The relationships between levels of CRP and prognosis were assessed.

RESULTS 10968 patients in 9 studies were identified. Long term follow-up varied from 6 months to 10 years. Mean level of CRP was 8.79mg/L. High CRP levels were associated with higher mortality(odds ratio, 2.40; 95% CI, 1.44 to 3.99; P<0.001) and more heart failure (odds ratio, 2.08; 95% CI, 1.49 to 2.89; P<0.001). The risk of mortality after revascularization analyses according to cut-off level of CRP. For the cut-off level of 3 mg/L and 10mg/L, the odds ratios of mortality were 2.69 (95% CI, 1.06 to 6.82, P = 0.04) and 2.32 (95% CI, 1.18 to 4.53, P=0.01), respectively.

CONCLUSIONS A high level of serum CRP was significantly associated with poor prognoses in patients with AMI.

GW26-e2308
Cystatin C is Associated with Cardiovascular Autonomic Neuropathy in Newly Diagnosed Type 2 Diabetic Patients
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OBJECTIVES Cardiovascular autonomic neuropathy (CAN) is closely associated with increased mortality in diabetic patients. Several risk factors of CAN have been clearly clarified. However, the impact of cystatin C(Cys C) on CAN is still unclear. Therefore, this study aimed to investigate the association between Cys C and CAN in newly diagnosed type 2 diabetic patients with normal renal function and urinary albumin excretion rate (UAER).

METHODS 90 newly diagnosed type 2 diabetic patients (58% male, mean age: 48 years old) were enrolled. Heart rate variability (HRV) measured using Holter were used to identify CAN. Cys C was measured by particle-enhanced turbidimetric immunoassay (PETIA). Based on the results from HRV, subjects were then further divided into two groups: diabetic patients with CAN (CAN+ group) or without CAN (CAN- group).

RESULTS The positive rate of CAN in newly diagnosed type 2 diabetic patients was 55.6%. Compared with CAN- group (n = 58), CAN+ group (n = 32) had significantly higher Cys C (0.97± 0.32 vs. 0.75 ± 0.14 mg/L, P<0.02) but no significant differences were observed in creatine, glycated hemoglobin (HbA1c) or UAER between groups. Cys C was correlated with SNNINDEX (r = -0.38, P = 0.04), Low Frequency domain(LF) (r = -0.48, P = 0.008) and Highfrequency domain(HF) (r = -0.49, P = 0.006). Logistic regression analysis revealed that Cys C was an independent risk factor of CAN in this population (OR:1.71, 95%CI:1.57-1.87, P < 0.007) after adjusting for creatine, HbA1c and systolic blood pressure.

CONCLUSIONS Prevalence of cardiovascular autonomic nerve is high in newly diagnosed type 2 diabetic patients with normal renal function and UAER. Cys C is associated with CAN in this population.

GW26-e2303
Suboptimal oral anticoagulation use among Chinese nonvalvular Atrial Fibrillation Patients: the Nanchang Atrial Fibrillation project
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OBJECTIVES Oral anticoagulation (OAC, eg. warfarin) is effective for stroke prevention in patients with atrial fibrillation (AF), but underuse of warfarin is common, and data on clinical features associated with non-use in Asian countries are limited. The present study was performed to provide insights into ‘real world’ OAC use in hospitalized nonvalvular AF patients in the Nanchang AF Project.

METHODS We studied consecutive non-valvular AF patients admitted to cardiovascular department in the second affiliated hospital of Nanchang University between May 2011 and December 2013. Antithrombotic therapy use among AF patients were analyzed in relation to age, gender, smoking status, hypertension (<40 years, 40-64 years, 65-74 years, 75 years), and CHADS2-VASc score strata (low risk (0 for male or 1 for female), 1 for male, high risk i.e. ≥ 2). Multivariate regression analysis was conducted to evaluate the predictors of warfarin use.

RESULTS Among the 1453 NVAF patients, warfarin use before admission was extremely low (9.4%) and increased to 44.7% during hospitalization. The proportions of patients on warfarin decreased with age across the four