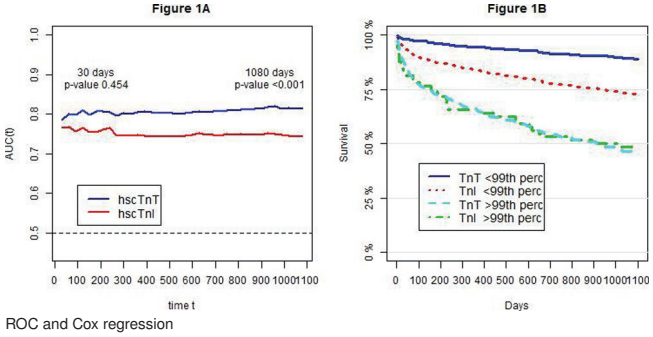
of whom 14 patients also had ID. Patients with ID and anaemia had 396 and 100 hospitalizations respectively of total 623 all-cause hospitalizations and 133 and 36 hospitalizations respectively of total 192 cardiovascular hospitalizations. Median follow up time was 4.3 years.
In univariable logistic regression analysis ID was associated with all cause hospitalization; OR: 2,26; CI: 1,02–5,02 and cardiovascular hospitalization OR: 2,05; CI: 1,06–3,95. In multivariable analyses; ID (OR: 3,92; CI: 1,42–10,72), age (OR: 1,07; CI: 1,01–1,14) and male gender (OR: 5,91; CI: 1,46–23,96) significantly predicted all-cause hospitalization.
In the multivariable analysis for cardiovascular hospitalization, ID (OR: 2,74; CI: 1,14–6,57) and age (OR: 1,07; CI: 1,01–1,12) remained significant predictors. Anaemia was not significantly associated to all cause hospitalization OR: 1,46; CI: 0,40–5,33 nor cardiovascular hospitalization OR: 2,42; CI: 0,88–6,64 in univariable logistic regression analysis.
For proportions of hospitalizations patients with ID (without anaemia) compared to patients with anaemia (without ID), had an OR: 11,96; CI: 7,67–18,65 for all-cause hospitalization and OR: 17,17; CI: 6,77–43,51 for cardiovascular hospitalization.
**Conclusions:** Elderly patients with ID had a higher risk for all cause and cardiovascular hospitalization than patients without ID and were more often hospitalized for both all-cause and cardiovascular reasons than patients with anaemia.
**Acknowledgement/Funding:** Heartlung, Västerbotten

## BEST POSTERS IN RISK ASSESSMENT – BIOMARKERS

### P4234 | BEDSIDE
### Comparison of prevalence and prognostic information of elevated high-sensitivity cardiac troponin T and I in patients without acute coronary syndrome

A. Arnadottir[1], K.R. Vestergaard[2], J. Pallisgaard[1], R. Steffensen[2], G. Soeletormos[2], J.P. Gotze[3], K.K. Iversen[1]. *[1]Herlev Hospital - Copenhagen University Hospital, Copenhagen, Denmark; [2]Hillerod Hospital, Hillerod, Denmark; [3]Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark*

**Background:** Cardiac troponin T (cTnT) and I (cTnI) are the biomarkers of choice for the diagnosis of acute myocardial infarction (AMI). They have equal diagnostic performance for diagnoses and risk stratification of patient suspicious of acute coronary syndrome (ACS). High-sensitivity assays (hs-cTn) can detect troponin levels in most individuals even in absence of AMI. This has led to an increased interest in hs-cTn for risk stratification in non-coronary and even non-cardiac conditions. However, the reason for elevation of cTn in absence of ACS is unknown and possible differences in prevalence and prognostic information of cTnT and cTnI in non-cardiac patients remain unanswered.
**Method:** Patients aged >18 years, consecutively admitted to an emergency department (ED) during a period of 14 days were included. Patients with ACS were excluded and blood serum were collected at admission and analyzed with high-sensitivity assays for cTnT (Roche) and cTnI (Siemens). Troponin levels were reported as normal or elevated according to the clinical cut-off value of 99th percentile, defined by the manufacturer. The primary outcome was all-cause mortality.
**Results:** In the study period 1097 patients were admitted to the ED. Blood serum was available in 1012 patients. Patients were exluded with ACS (n=125), no identification number (n=16), and re-admittances (n=49) leaving 822 patients included in the study. Mean age was 62 (Standard Deviation ±19), and 52% (n=428) were female. Median follow-up time was 3.0 years. During follow-up 29% (n=239) of patients died. Elevation of hs-cTn was observed in 40% (n=345) for hs-cTnT and 8% (n=64) for hs-cTnI, p<0.001. Elevation of hs-cTn had association to history of CAD with [Odds Ratio (OR) 2.5 (95% CI: 1.3–4.8 vs. 2.0 (95% CI: 1.2–3.5)] and history of HF at [OR 3.9 (95% CI: 1.7–8.8) vs. OR 5.6 (95% CI: 2.0–16.6)] for hs-cTnI and hs-TnT respectively. The relationship between elevated hs-cTn and mortality was stronger for hs-cTnT than hs-cTnI [HR 6.9 (95% CI: 5.1–9.3) vs. 2.4 (95% CI: 1.7–3.5) p<0.01].There was no difference in prognostic accuracy for short-term (30 days) mortality between hs-cTnT and hs-cTnI. However, the prognostic accuracy for long-term (3 years) mortality was superior for hs-cTnT than for hs-cTnI [area under the receivers operating curve (AUC) 0.81 (95% CI: 0.78–0.84) vs 0.74 (95% CI: 0.70–0.77) for hs-cTnI, p<0.001].



ROC and Cox regression

**Conclusion:** In unselected ED patients, without ACS, elevation above the 99th percentile is common, and more frequently seen for hs-cTnT than for hs-cTnI. Both hs-cTnI and hs-cTnT were predictive for all-cause mortality. However, hs-cTnT showed superior prognostic performance in the prediction of long-term all-cause mortality compared to hs-cTnI. There seems to be substantial differences in prevalence and prognostic information of elevated hs-cTnT and hs-cTnI in patients without ACS.
**Acknowledgement/Funding:** Forskningsfond Hillerød Hospital

### P4235 | BENCH
### Coronary artery bypass graft occlusion: predictive role of procoagulant microparticles

M. Brambilla[1], P. Canzano[1], L. Lodi[2], L. Rossetti[1], C. Tedesco[1], L. Cavallotti[1], A. Parolari[3], F. Veglia[1], E. Tremoli[1], M. Camera[4]. *[1]Cardiology Center Monzino IRCCS, Milan, Italy; [2]University of Eastern Piedmont, Dipartimento di Scienze della Salute, Novara, Italy; [3]IRCCS, Policlinico San Donato, San Donato Milanese, Italy; [4]University of Milan, Dipartimento di Scienze Farmacologiche e Biomolecolari, Milan, Italy*

**Background:** Circulating microparticles (MP) are emerging as novel players in cardiovascular disease (CVD). They are involved in intercellular communication, being vectors of biological messages, and can participate in the pathophysiology and development of disease. MP are indeed biomarkers of vascular injury and inflammation in several CVD including atherothrombosis and myocardial infarction, where elevated levels of MP have been correlated with disease severity. Graft patency is one of the major determinants of long-term outcome following coronary artery bypass graft (CABG). The issue of identifying predictors of graft patency after CABG has been addressed by studies mainly focused on the presence of conventional risk factors, features of coronary targets, or technical aspects but none has assessed the potential involvement of MP.
**Purpose:** To elucidate whether a specific signature of MP is associated with CABG occlusion.
**Methods:** MP analysis was carried out in platelet free plasma (PFP) collected from 179 patients the day before CABG (T0). After 18 months, a CT scan evaluation of graft patency was performed. The number of MP, their cell origin and the expression of platelet activation markers [Pselectin, CD40L, Tissue Factor (TF)] were evaluated in PFP by flow cytometry. Thrombin generation was measured by CAT assay. The predictive value of MP was analyzed by ROC curve and reclassification analysis by adding the pre-surgery MV levels on top of CV risk factors in a multivariate model.
**Results:** Patent and occluded grafts were observed in 75% and in 25% of patients, respectively. Analysis of MP signature at T0 indicated that patients that would have had occluded bypass at follow up had higher number of MP derived from activated-platelet while no significant differences were observed in monocyte-, granulocyte- and endothelium-derived MP. Of interest, TF+/CD41+ MP were increased in occluded compared to patent graft patients (64±40 vs 17±7 MP/μl, p=0.0002). Occluded patients had 5- and 3-times more TF+ MP (p=0.0008) and AnnV+ MP (p=0.05), respectively, compared to patent ones. Of interest, the MP-associated thrombin generation capacity significantly correlated with the number of TF+/AnnV+ MP (p=0.03). ROC curve and reclassification analysis indicated that the inclusion of the number of TF+/CD41+ MP or TF+/AnnV+ MP to CVD risk factor model resulted in a significant improvement in predicting CABG occlusion (IDI=0.160, p=0.002 and IDI=0.190, p=0.001, respectively).
**Conclusion:** These data show that patients that would have had occluded bypass-graft within 18-month post-surgery had a significant higher number of MP compared to patients with patent graft. Moreover they provide the evidence that a specific signature of MP before CABG surgery has a predictive value of graft patency.

### P4236 | BEDSIDE
### Vasopressin, measured as copeptin, in elderly individuals with or without unrecognized myocardial infarction. A report from the ICELAND MI Cohort

M.I. Smaradottir[1], K. Andersen[2], V. Gudnason[2], P. Nasman[3], L. Ryden[1], L.G. Mellbin[1]. *[1]Karolinska Institute, Department of Medicine, Stockholm, Sweden; [2]The Icelandic Heart Association Research Institute, Reykjavik, Iceland; [3]Royal Institute of Technology (KTH), Stockholm, Sweden*

**Background:** A subset of patients with myocardial infarction (MI) has minimal or no symptoms, i.e. clinically unrecognized MI (UMI). Copeptin, a marker of vasopressin, predicts cardiovascular events (CVE).
**Purpose:** To investigate the prognostic implication of copeptin in people with or without MI and to study whether it differs between UMI and recognized MI (RMI).
**Methods:** Copeptin was measured in 926 participants (age 76.0; male 48.5%) in the observational ICELAND MI study. At baseline 246 patients had hospital/surveillance records supporting a RMI (n=91) or myocardial scars detected by magnetic resonance imaging (UMI, n=155). Cox proportional hazard regression was used to assess the prognostic capability of (log) copeptin, in the multiple model adjusted for prior heart failure, fasting blood glucose, age groups and creatinine. The primary endpoint was CVE (cardiovascular death/MI/stroke/PCI/CABG) and the secondary endpoint was total mortality during 9.1 years of follow-up.
**Results:** Copeptin levels were significantly higher in participants with compared

to those without a MI (8.9 pmol/L vs. 6.4 pmol/L; p<0.01), but did not differ between the subsets with RMI vs. UMI.
In the unadjusted analysis CVE:s were predicted by copeptin in the total cohort (HR 1.60; 95% CI 1.17–2.19; p<0.01) but not after adjustments (HR 1.18; 95% CI 0.84–1.65; p=0.33).
Total mortality in the total cohort was predicted by copeptin in the unadjusted analysis. The same was found in patients with and without MI as well as in the subset with RMI, however, not in those with UMI. In the adjusted model copeptin remained as a predictor in the total cohort (HR 1.77; 95% CI 1.24–2.51; p<0.01), in all patients with MI (HR 2.20; 95% CI 1.25–3.87; p<0.01), and in those with RMI (HR 5.73; 95% CI 2.13–15.36; p<0.01).
**Conclusion:** Copeptin levels were higher for participants with MI, however no difference was seen for those with RMI or UMI. Copeptin did not remain as a significant predictor for CVE after adjustments while it was an independent predictor for total mortality in patients with MI including the subset with RMI. This implies that copeptin is a general marker of disease rather than a specific marker for cardiovascular disease.

### P4237 | BEDSIDE
### N-terminal prosomatostatin predicts vascular dementia but not alzheimers disease

H. Holm[1], K. Nagga[2], E.D. Nilsson[2], O. Melander[1], F. Ricci[3], O. Hansson[2], E. Bachus[1], M. Magnusson[4], A. Fedorowski[4] on behalf of Heart and brain failure investigation group. *[1]Skane University Hospital, Department of Clinical Sciences, Lund University, Malmo, Sweden; [2]Skane University Hospital, Clinical Memory Research Unit, Department of Clinical Sciences Malmö, Lund University, Malmö, Sweden, Malmo, Sweden; [3]G. d'Annunzio University, Department of Cardiology, Chieti, Italy; [4]Skane University Hospital, Department of Cardiology, Skåne University Hospital, Malmö, Malmo, Sweden*

**Background:** The neuropeptide somatostatin, which is widely expressed throughout the central nervous system, has been cross-sectionally reported with increased plasma levels in patients with different types of dementia. Whether or not somatostatin is prospectively associated with dementia has however not yet been clarified. We explored the longitudinal association of somatostatin with all cause dementia and dementia subtypes among community-dwelling older adults.
**Methods:** In a prospective population-based cohort, 5,347 study participants (mean age: 69±6 years, 70% male) provided plasma for determination of N-Terminal Prosomatostatin (NT-proSST) at baseline (2002–2006). Three-hundred-and-seventy-three patients (7%) were diagnosed with dementia (120 Alzheimer's disease, 83 vascular, 102 mixed, and 68 other aetiology) over a period of 4.6±1 years. The association of NT-proSST with the risk of dementia was studied using multivariable-adjusted Cox regression models controlling for traditional risk factors (age, gender, SBP, heart rate, antihypertensive treatment, smoking, diabetes, plasma-LDL and prevalent stroke).
**Results:** Higher levels of NT-proSST levels were significantly associated with increased risk of vascular dementia (hazard ratio (HR) per 1SD: 1.29, 95% confidence interval (CI), 1.04–1.60; p=0.019) whereas no longitudinal association was observed with incident Alzheimer dementia (HR per 1SD: 0.99; 95% CI, 0.82–1.21, p=0.95) or all cause dementia (HR per 1SD: 1.04; 95% CI, 0.94–1.16, p=0.43).
**Conclusion:** Here we show that elevated plasma concentration of somatostatin is an independent predictor of incident vascular dementia, which is in line with previously reported higher plasma levels of somatostatin in subject with prevalent vascular dementia. Further prospective studies for the replication of these results are called upon.
**Acknowledgement/Funding:** Swedish Medical Research Council, the Swedish Heart and Lung Foundation, the Medical Faculty of Lund University

## BEST POSTERS IN STEM CELLS

### P4239 | BENCH
### Bradykinin inhibits High Glucose-Induced Senescence of c-kit Positive Cardiac Stem Cells via B2R/PI3K/AKT/mTOR/P53 signal pathway

C. Fu[1], Y.Y.Y. Yao[2], L.B. Li[2], S.Y.N. Sun[2], T.S.X. Tang[1]. *[1]Yijishan Hospital, Cardiology, Wuhu, China People's Republic of; [2]Zhongda Hospital, Nanjing, China People's Republic of*

**Introduction:** Stress-induced premature senescence may lead to dysfunction of cardiac stem cells. The peptide bradykinin (BK) is a potent vasodilator and inflammatory mediator that can protect endothelial and myocardial cells against inflammation and ischemia injury via the B2 receptor (B2R). However, if BK can inhibits high- Glucose-Induced Senescence of c-kit Positive Cardiac Stem Cells is remain unknown.
**Purpose:** The purpose of the study is to determine the mechanism of BK inhibits High Glucose-Induced Senescence of c-kit Positive Cardiac Stem Cells
**Methods:** C-kit positive CSCs were cultured from C57BL/6J mouses. CSCs were exposed to 25mM D- glucose (D-Glu) with or without treatment with BK. β-galactosidase staining (SA-Gal) and dichlorofluorescein diacetate probe (DCFH-DA) were used to detect senescence and intra-cellular oxidative stress oxygen radicals. B2R antagonist HOE-140, phosphatidylinositol-3-kinase (PI3K) antagonist LY-294002, mTOR antagonist Rapamycin, P53 antagonist PFT-α and B2 receptor siRNA were administered to block the B2R, PI3K, mTOR and P53 signal pathway. Concentration of super oxide and ATP was analyzed. B2R expression of CSCs was determined by Flow cytometry. Western blot was applied to find senescence associated signal protein.
**Results:** BK treatment decreased senescence and intracellular oxygen radicals according SA-Gal staining (fig. 1, 200X; n=5;*p<0.05 both concentrations of BK vs D-Glu and Control, #p>0.05 vs 1.0 nM BK) and DCFH-DA (fig. 2, 200X; n=5;*p<0.05 both concentrations of BK vs D-Glu and Control, #p>0.05 vs 1.0 nM BK). Antagonists of B2R, PI3K, mTOR and siRNA blocked the protective effect of BK [fig 3, (*P<0.05 vs D-Glu+0.1nM BK, #P<0.05 vs D-Glu) and 4, (*P<0.05 vs D-Glu+0.1nM BK, #P<0.05 vs D-Glu)]. The concentration of super oxide was low and the concentration of ATP was high while BK treatment. Antagonists of B2R, PI3K, mTOR and siRNA blocked the effect of BK. P53 antagonist alone also inhibits the oxidative stress induced CSCs senescence and decrease the concentration of super oxide and increase the concentration of ATP [fig 5, (#P<0.05 vs control,*P<0.05 vs D-Glu,&P<0.05 vs D-Glu+BK) and 6, (#P<0.05 vs control,*P<0.05 vs D-Glu,&P<0.05 vs D-Glu+BK)]. B2R expression was decreased by D-Glu induced senescence (fig 7, *P<0.05 vs Control). Western blot showed that BK leads to phosphorylated AKT, mTOR elevated and P53, P16 declined compared with D-Glu treated alone. Antagonists of B2R, PI3K, mTOR and siRNA blocked the expression of signal protein which activated by BK. P53 antagonist alone also suppress the senescence protein expression (fig 8, #P<0.05 vs Control, *P<0.05 vs D-Glu).

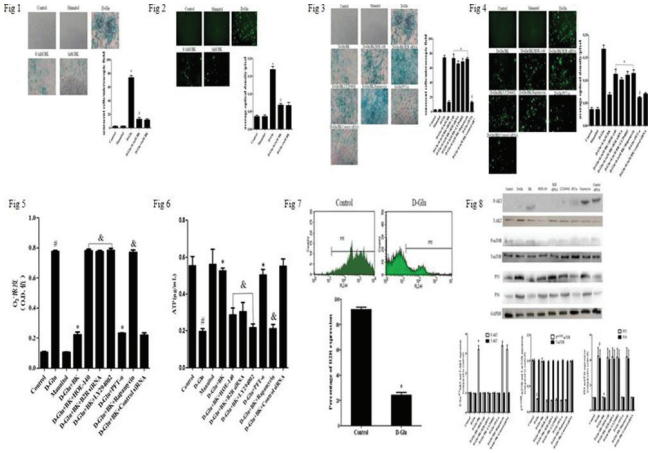



Figure 1

**Conclusion:** Bradykinin inhibits oxidative stress-induced senescence of cardiac stem cells through the B2R/PI3K/AKT/mTOR/P53 signal pathways.

### P4240 | BEDSIDE
### Endocavitary injection of bone-marrow-derived CD133+ cells in ischemic REfractory CARDIOmyopathy (RECARDIO trial)

G. Pompilio[1], B. Bassetti[1], V. Catto[1], A. Bestetti[2], S. Righetti[3], F. Celeste[1], M. Parma[3], P. Agostoni[1], D.E. Atsma[4], P. Scacciatella[5], F. Achilli[3], G. Gaipa[3], C. Carbucicchio[1]. *[1]Cardiology Center Monzino IRCCS, Milan, Italy; [2]University of Milan, Milan, Italy; [3]San Gerardo Hospital, Monza, Italy; [4]Leiden University Medical Center, Leiden, Netherlands; [5]Hospital 'Città della Salute e della Scienza di Torino', Turin, Italy*

**Background:** An increasing subset of patients with advanced coronary artery disease not eligible for mechanical revascularization exhibit severe ischemia and symptoms of angina despite optimal medical therapy. For these patients, cell therapy is emerging as a promising therapeutic option. In particular, bone marrow (BM)-derived progenitors, such as CD133 positive cells, have been proposed as an advanced therapy medicinal product (ATMP) based on their ability to contribute to neovascularization.
**Purpose:** The Phase I/II RECARDIO trial (NCT02059681) investigated whether the endocavitary injection of autologous BM-derived ATMP-CD133 is safe and can reverse symptoms and myocardial ischemia in patients with no-option refractory angina and left ventricular (LV) dysfunction.
**Methods:** Patients eligible showed i) severe angina (CCS) despite optimal medical therapy; ii) LV ejection fraction <45% and iii) evidence of reversible ischemia (>10% of LV surface) as assessed by single-photon emission computed tomography (SPECT). Enrolled subjects were allocated to standard of care (n=11) or treatment (n=9) with fluoroscopy-based percutaneous endomyocardial delivery of ATMP-CD133 into target LV ischemic territories. The injection procedure has been intraoperatively monitored by means of intra-cardiac echocardiography (ICE). When appropriate, an electro-anatomical (CARTO) mapping has been used to better characterize the target myocardial substrate. Both groups have been evaluated at 3 and 6 months as for safety and efficacy endpoints.
**Results:** Treated and control patients were comparable at baseline for clinical profile. BM aspiration (mean 357±53 mL) was safely accomplished in all treated patients (n=9). ATMP-CD133 was successfully released according to GMP-grade