Abstract P4431 – Table 1

Marital status	Type 2 diabetes			Hypertension			Hyperlipidaemia			Acute coronary syndrome		
	Prevalence N (%)	Crude mortality N (%)	Odds ratio for mortality (95% CI)	Prevalence N (%)	Crude mortality N (%)	Odds ratio for mortality (95% CI)	Prevalence N (%)	Crude mortality N (%)	Odds ratio for mortality (95% CI)	Prevalence N (%)	Crude mortality N (%)	Odds ratio for mortality (95% CI)
Single	8,411 (12.4%)	1,977 (23.5%)	–	18,562 (11.0%)	3,622 (19.5%)	–	5,530 (10.4%)	658 (11.9%)	–	2,531 (10.0%)	752 (29.7%)	–
Married	33,742 (49.5%)	8,878 (26.3%)	0.860 (0.819–0.903)***	81,075 (48.1%)	17,413 (21.5%)	0.900 (0.868–0.933)***	27,740 (52.3%)	3,497 (12.6%)	0.836 (0.769–0.909)***	11,933 (47.2%)	4,098 (34.3%)	0.863 (0.798–0.933) ***
Divorced	3,642 (5.3%)	941 (25.8%)	0.943 (0.906–0.981)**	9,087 (5.4%)	1,855 (20.4%)	0.981 (0.953–1.009)	2,998 (5.7%)	390 (13.0%)	0.956 (0.897–1.019)	1,105 (4.4%)	378 (34.2%)	1,068 (1.063–1.073)***
Widowed	11,207 (16.5%)	5,296 (47.3%)	0.965 (0.947–0.985)***	31,067 (18.4%)	12,867 (41.4%)	0.973 (0.960–0.987)***	6,628 (12.5%)	1,720 (26.0%)	0.966 (0.933–1.000)	4,004 (15.8%)	2,517 (62.9%)	0.959 (0.947–0.971)***
Common law living	12 (0.0%)	2 (16.7%)	1.138 (0.804–1.611)	38 (0.0%)	1 (2.6%)	0.695 (0.426–1.135)	11 (0.0%)	0 (0.0%)	No Deaths	5 (0.02%)	0 (0%)	No deaths
Unmarried	9,680 (14.2%)	3,475 (35.9%)	1.046 (1.034–1.059)***	25,597 (15.2%)	7,312 (28.6%)	1.034 (1.025–1.042)***	9,309 (17.5%)	1,143 (12.3%)	0.990 (0.970–1.011)	5,184 (20.5%)	1,830 (35.3%)	0.973 (0.956–0.991)**
Separated	866 (1.3%)	192 (22.2%)	0.974 (0.950–0.999)*	2,015 (1.2%)	367 (18.2%)	0.994 (0.976–1.012)	712 (1.3%)	76 (10.7%)	0.969 (0.931–1.008)	284 (1.1%)	78 (27.5%)	0.983 (0.945–1.022)
Unknown	538 (0.8%)	0 (0.0%)	No Deaths	990 (0.6%)	2 (0.2%)	0.418 (0.343–0.510)***	127 (0.2%)	0 (0.0%)	No Deaths	241 (1.0%)	0 (0%)	No deaths

Results: Amongst 929552 adult patients admitted in the study period there were 168431 patients with hypertension, 53055 with hyperlipidaemia, 68098 patients with T2DM and 25287 with ACS. Logistic regression showed that married people, compared to single people, with hypertension (OR 0.900), hyperlipidaemia (OR 0.836), T2DM (OR 0.860) and ACS (OR 0.863) had significantly lower mortality rates. Adjusted mortality was also lower in widowed patients with hypertension (OR 0.973) and T2DM (OR 0.965) and ACS (OR 0.959). Divorced patients with ACS had higher mortality rates (OR 1.068).
Conclusion: Married patients with ACS have lower mortality rates which could be due to an effect on cardiovascular risk management as a similar association was seen across cardiovascular risk factors. Our findings suggest an increased focus on social support for single patients with ACS or modifiable cardiovascular risk factors.

P4432 | BEDSIDE
Younger women are more affected by seasonality in acute myocardial infarction admission than men: Chile, 2002-2011

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In Chile, coronary heart disease is the second leading cause of death in men and women. The incidence varies according to season, being higher in winter. It is not known whether this effect is different for men and women according to age.
Methods: Population study including all AMI admission to public and private hospitals in Chile during 2002–2011. First AMI events were selected from the national hospital discharge database of the Health Statistics and Information Department of the Ministry of Health using the ICD-10 codes I21-I22. The number of admissions per month, stratified by gender and age (<50, 50–64, 65–74 and> = 75 years) was analyzed and the standardized incidence rate (SIR) for each month was estimated as the number of observed cases / number of expected cases. We used the annual average as the number of expected cases. With the variance test we evaluated the difference in monthly variability between men and women in each age group.
Results: 59,557 fatal and non-fatal AMI hospitalizations were recorded including STEMI and non STEMI cases; 68.9% were men, 82.2% were treated in public hospitals. Age distribution in men was: <50: 18.4%; 50–64: 40.3%; 65–74: 23.4% and 75 and more: 17.8%. In women: 9.5%; 26.7%; 26.8% and 37.0%, respectively. The months with the highest incidence were May, June and July (SIR: 1.10, 1.12 and 1.10). The figure shows the SIR according to age and sex. Standard deviations for each group in men and women, respectively were: <50 years 0.07 vs 0.13; 50–64 years 0.07 vs 0.10; 65–74 years 0.07 vs 0.10 and ≥75 years: 0.10 vs 12. Sex difference was only statistically significant in the youngest (under 50 years, p=0.037).

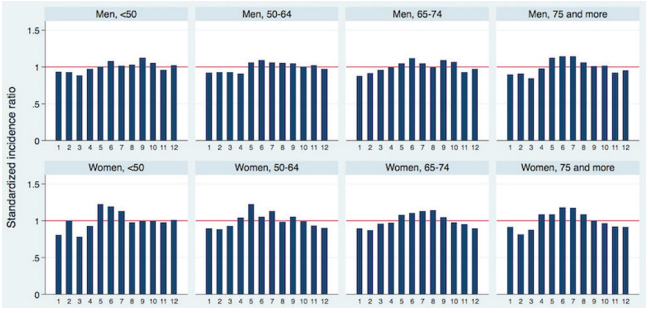

Figure 1

Conclusion: In Chile, we observed the pattern of higher frequency of hospitalizations for AMI in winter. The effect of seasonality is greater as age increases in both sexes. Younger women are more affected by seasonality compared to men.

P4433 | BEDSIDE
Long-term risk of cardiovascular disease following fertility therapy: systematic review and meta-analysis

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Importance: The use of fertility therapy is rising, but its long-term cardiovascular impact is uncertain.
Objective: To summarize evidence linking the use of fertility therapy to long-term cardiovascular outcomes.
Methods: The following databases were searched without language limits from 1946–2016: MEDLINE; Embase Classic + Embase; BIOSIS Previews; POPLINE; CINAHLPlus; The Cochrane Central Register of Controlled Trials; The Database of Abstracts of Reviews of Effects; The Cochrane Database of Systematic Reviews; LILACS; Web of Science; Scopus; manual references; and Clinical Trials registries. Two independent reviewers screened studies and assessed study quality. Inclusion criteria were human study; case control, cohort, or randomized trial design; exposure to fertility therapy clearly reported; any cardiovascular outcome; control group without fertility therapy; minimum follow-up of 1 year; estimates adjusted for age. We used random effects models to pool hazard ratio (HR) with 95% confidence interval (CI) across studies of outcomes (cardiac event, stroke, venous thromboembolism, hypertension, and/or diabetes mellitus) comparing women who received fertility therapy with those who did not.
Results (see Table 1, p. 924): Of 5,933 titles and abstracts retrieved, 61 full-text articles were assessed in detail. Six studies were included (41,910 women who received fertility therapy and 1,400,202 women who did not). There was no increase in the risk of any cardiometabolic condition (pooled HR 0.79, 95% CI 0.60–1.05; I2=77%), a cardiac event (pooled HR 0.91, 95% CI 0.67–1.25; I2=36.6%), or diabetes mellitus (pooled HR 0.93, 95% CI 0.87–1.001; I2=0%). Heterogeneity precluded pooling of data for hypertension (I2 95%) and venous thromboembolism (I2 82.3%). There was a trend toward higher risk of stroke (HR 1.25, 95% CI 0.96–1.63; I2=0).
Conclusions: Synthesis of available data does not suggest an association between fertility therapy and long-term cardiovascular complications.
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P4434 | BEDSIDE
Timing of childhood growth is associated with cardiovascular autonomc function in midlife

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Background: Early postnatal growth patterns, specifically, later peak of body mass index (BMI) during infancy (BMIP) and earlier BMI rebound in childhood (BMIR) are related to adverse outcomes in cardiometabolic markers in adulthood. However, it is unclear if these growth patterns are related to cardiovascular autonomic function in later life, an important indicator of cardiac risk. We tested the hypothesis that later BMIP and earlier BMIR would associate with poorer cardiovascular autonomic function in midlife.
Methods: At the age of 46, the 5,861 subjects of the Northern Finland Birth Cohort 1966 participated in examinations including assessments of health, life style and cardiovascular autonomic function. Cardiac baroreflex sensitivity (BRS) was analyzed by cross-spectral method based on low frequency (LF, 0.04–0.15 Hz) oscillations in R-R interval and systolic blood pressure (SBP) during sympathetic stimulus by standing position (n=2,617). LF power of SBP oscillations (LFSBP) was used to describe peripheral sympathetic modulation of blood pressure. BMI at various ages was calculated from frequent anthropometric measurements during infancy and childhood collected from clinical records. Age at BMIP and BMIR were derived from random effect models fitted at 0–1.5 years (n=3,265) and >1.5–13 years

Abstract P4433 – Characteristics of included studies

Author, year	Study design & setting	Participants	Type of fertility therapy	Outcomes	Duration of follow-up	Effect & adjustment	Risk of bias*
Udell, 2013[25]	Retrospective population-based cohort of deliveries occurring from 1993 to 2011 in Ontario, Canada	Total N=1,186,753; 6,979 fertility-treated pregnancies; 1,179,774 pregnancies without fertility therapy	Billing code for "monitoring of ovulation induction", includes many forms of assisted reproduction	Billing and diagnostic codes: Cardiovascular death, cardiac ischemia, stroke, TIA, heart failure, venous thromboembolism, chronic hypertension, diabetes mellitus, others	9.7 years	Hazard ratio	Moderate
Henriksson, 2013[20]	Case cohort design of first births following IVF and matched unassisted births from 1990 until 2008 in Sweden	N=23,498 IVF N=116,960 without IVF, matched on age and year of delivery	IVF, derived from national IVF register	Venous thromboembolism (deep venous thrombosis and pulmonary embolism) occurring during the antepartum, immediate postpartum and delayed postpartum periods (one year)	1 year	Hazard ratio	Moderate
Westerlund, 2014[24]	Case cohort design of first births following IVF and matched unassisted births from 1990 until 2008 in Sweden	N=23,498 IVF N=116,960 without IVF, matched on age and year of delivery	IVF, derived from national IVF register	Hypertension, diabetes mellitus, coronary heart disease, stroke	8.6 years	Hazard ratio	Moderate
Farland, 2015[22]	Prospective US cohort study (Nurses Health Study II), of fertile women, infertile women who used fertility therapy, and infertile women who did not use fertility therapy, who delivered between 1993 and 2009	N=7,211 who received any fertility therapy N=8,261 infertile women without fertility therapy N=14,761 never infertile women	Clomiphene citrate, gonadotropin, IUI, IVF (analyses in our review focus on IVF)	Hypertension (self-reported), validated with medical records and clinical measurement in subset	>20 years	Relative risk/Risk ratio	Moderate
Ben-Yaakov, 2016 [30]	Retrospective population-based cohort of women who delivered between 1988 and 2012 in Soroka, Israel	Total n=99,291; 4,153 pregnant using fertility therapy	IVF or OI, derived using physician billing claims in administrative health data	Cardiovascular hospitalization, simple cardiovascular events, complex cardiovascular events, cardiac noninvasive diagnostic procedure	11 years	Hazard ratio	Moderate
Nahuis, 2016[31]	Long-term observational follow-up of randomized trial of electrocautery versus gonadotropins in women with anovulatory PCOS resistant to clomiphene citrate	Total n=168 enrolled in trial. N=138 with follow-up data (n=69 with fertility treatment n=69 without fertility treatment)	Ovarian stimulation (gonadotropins) versus electrocautery of ovaries in randomized trial	Diabetes mellitus type 2, hypertension, cardiovascular disease (unspecified)	10 years	Odds ratio	Serious (Outcomes not well defined, residual confounding probable)

Abbreviations: TIA, transient ischemic attack; IVF, in vitro fertilization; OI, ovulation induction; IUI, intrauterine insemination; PCOS, Polycystic Ovarian Syndrome. *As assessed by the ABROBAT-NRSI.

(n=4,121). Statistical analysis included 413 men and 482 women without cardiorespiratory diseases and diabetes for age at BMIP and 512 men and 588 women for age at BMIR. Linear regressions between timing of growth and autonomic function were adjusted for birth (birth weight, gestational age) and maternal factors (age, anthropometry, socioeconomics, parity and gestational smoking), as well as adult variables (life style, anthropometry, metabolic status).
Results: Age at BMIR correlated positively with adult BRS in women (r=0.085, p=0.040) but not in men. This association remained significant after adjustment for birth and maternal factors (p=0.032) but not when adjusted for adult variables. In both sexes, age at BMIR correlated negatively with LFSBP (r=-0.117, p=0.008 for men, r=-0.086, p=0.037 for women). These associations remained significant after adjustment for birth and maternal factors and, in men, also when adjusted for adult variables (p=0.006). Unexpectedly, age at BMIP correlated positively with BRS in men (r=0.116, p=0.019) but not in women. This association remained significant when adjusted for birth and maternal variables (p=0.037) but not when adjusted for adult variables. Age at BMIP was associated with LFSBP neither in men nor women.
Conclusions: Earlier BMIR was associated with higher LFSBP, a surrogate measure of cardiovascular sympathetic modulation. In women, earlier BMIR was also related to depressed BRS but not independently of adult risk factors. These findings suggest that earlier BMIR, but not later BMIP, is associated poorer cardiovascular autonomic regulation in midlife.
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P4435 | BEDSIDE
Excess early postnatal weight gain and blood pressure in healthy young children

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Background: Blood pressure (BP) tracks from childhood to adulthood and early BP trajectories predict cardiovascular disease risk later in life. Excess postnatal weight gain is associated with vascular changes early in life, however to what extent it is associated to children's BP is largely unknown.
Methods and results: In 775 healthy 5-year-old children of the Wheezing-Illnesses-Study-Leidsche-Rijn (WHISTLER) birth cohort systolic and diastolic BP (SBP; DBP) were measured in sitting and supine postures, and Z-scores of individual weight gain rates adjusted for length gain rates (WLG) were calculated by using at least two weight and length measurements from birth until 3 months of age. Linear regression analyses were conducted to investigate associations between WLG and BP adjusted for sex and ethnicity.
Each standard deviation increase in WLG resulted in 0.9 mmHg (95% CI 0.2; 1.5) higher sitting SBP after adjustment for confounders. WLG was not associated to supine SBP or DBP. Especially in children in the lowest birth size decile, high excess weight gain resulted in higher SBP values compared to those children with low WLG.
Conclusion: Children with more excess weight gain in the first three months of life, particularly those with a low birth size, have higher systolic blood pressure at the age of 5 years.

P4436 | BEDSIDE
Association between SCORE and male sexual dysfunction: a hormonal and penile Doppler study

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Introduction: Erectile dysfunction (ED) is associated with increased cardiovascular disease (CVD) risk. Recent evidence supports testosterone deficiency (TD) as a key pathogenetic mechanism in the development and progression of atherosclerosis and in triggering fatal CVD events.
Purpose: The aim of this study was to evaluate the correlation between male sexuality parameters and the fatal CVD risk.
Methods: We assessed fatal CVD risk over a ten year period in a population of 765 middle-aged (mean age: 56 years) patients with vasculogenic ED using the systematic coronary risk evalution (SCORE) charts for low risk regions of Europe. ED was assessed at entry by the Sexual Health Inventory for Men (SHIM-5) score. A lower score indicates severe ED. We then measured total testosterone (TT) and peak systolic velocity (PSV) using penile Doppler ultrasound following intracavernous injection of prostaglandin E1. Penile PSV below 25 cm/ s indicates severe penile arterial insufficiency and increased CVD risk.
Results: By their SCORE chart, 55% of the patients are in the moderate risk category, and almost 26% in the high risk category, the rest of them (19%) are in the low and very high risk categories. Table shows ED parameters and TT levels according to SCORE risk categories. With increasing SCORE category, SHIM-5 score, penile PSV and TT levels decreased. Furthermore, the prevalence of TD (TT<3.5 ng/ml) and the prevalence of patients with PSV<25 cm/s increased (8 vs 14 vs 36 vs 44% and 5 vs 11 vs 27 vs 39%, respectively) (all P<0.001).

SCORE categories and ED parameters

	SCORE categories				P value
	Low	Moderate	High	Very high	
SHIM-5	14.8	13.2	12.5	11	0.01
PSV (cm/s)	40	33	30	29	0.005
TT (ng/ml)	5.38	4.72	4.14	3.92	<0.001

Conclusions: The results suggest that a considerable proportion of males with TD and penile arterial insufficiency have over 5% risk (high and very high SCORE groups) of developing a fatal CVD in 10 years and that males with lower SCORE have higher testosterone levels and better penile arterial function.