

## ***CARDIOLOGY UPDATES NEWSLETTER***

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***Dear Doctor,***

***Greetings from Micro Labs Limited. We are happy to bring you “Cardiology updates” which contains latest and interesting news in the field of Cardiology***

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## To assess the associations of obstructive sleep apnea risk and sleep duration with ideal cardiovascular health metrics in Haemolysis patients

### Introduction:

Cardiovascular disease (CVD) is the principal cause of mortality in patients with end-stage renal disease on haemodialysis (HD). The relative risk of death from CVD in HD patients is 20 times progressive than in individuals with normal renal function<sup>1</sup>. The prevalence is increased by increasing age, male sex, higher body mass index and ranges, according to some estimations, from 9% to 38% in general population. OSA is recognized to be an independent cardiovascular risk factor. The incidence of cardiovascular mortality, myocardial infarction, stroke, and unplanned revascularization in patients undergoing percutaneous coronary intervention was higher in the OSA group<sup>2</sup>. The aim of this study was to explore the separated and combined associations of OSA risk and sleep duration with ideal CVH metrics in HD patients

### Method:

A total of 470 HD participants were included in this study. Sleep duration was measured as self-reported average sleep time during the previous month and OSA risk was evaluated by using STOP-BANG questionnaire. Participants were distributed into three groups by the number of ideal CVH metrics: 0-2, 3-4, and 5-7. To model the associations of CVH metrics with sleep duration, OSA risk, ordinal logistic regression was performed.

### Results:

In total of 470 HD patients 281 men and 189 women, included in this study. They were allocated into three groups according to the number of ideal CVH metrics: 0-2 (poor CVH, n = 88), 3-4 (intermediate CVH, n = 273), 5-7 (ideal CVH, n = 109, reference group). poor and intermediate CVH individuals had poorer CVH indicators including BMI, smoking, physical activity, salty diet, glucose, blood lipids and blood pressure when compared with patients with ideal CVH. As shown in figure 1, Patients who reported '7-9 h' sleep duration and OSA risk (-) were set as the reference group, the short sleeper (< 7h) combined OSA risk (+) was associated with lower ORs of better CVH among HD patients. HD patients with poor and moderate CVH had higher age, and potassium, they were also more probable to be male, drinker, fluid overload, shorter sleepers and at higher OSA risk.

|                                                                                              | Sleep duration  |       |                 |       |                 |       |
|----------------------------------------------------------------------------------------------|-----------------|-------|-----------------|-------|-----------------|-------|
|                                                                                              | 7h              |       | 7-9h            |       | 9h              |       |
|                                                                                              | OR(95%CI)       | P     | OR(95%CI)       | P     | OR(95%CI)       | P     |
| OSA risk( )                                                                                  | 0.28(0.13,0.60) | 0.001 | 0.58(0.29,1.16) | 0.123 | 0.36(0.11,1.15) | 0.084 |
| OSA risk (-)                                                                                 | 0.57(0.27,1.20) | 0.141 | Reference       |       | 0.89(0.35,2.25) | 0.804 |
| Abbreviations: OR, Odds Ratio; 95%CI, 95% confidence interval; OSA, obstructive sleep apnea. |                 |       |                 |       |                 |       |

Figure 1 Associations between number of Ideal Cardiovascular Health Metrics and sleep duration stratified according to OSA risk

### Discussion:

Sleep complaints, including OSA risk and short sleep duration, are associated with higher risk of CVD events in several epidemiological studies and the similar results were found in study conducted by Hausler et.al<sup>3</sup>. Sleep complaints may also be associated with other modifiable lifestyle behaviours, including diet, physical activity and smoking which was supported by the study conducted by Dashti et.al.<sup>4</sup>

**Conclusion:** Study found that OSA risk and short sleep duration are associated with poor CVH in haemodialysis patients and it concludes that sleep characteristics may be important to consider when assessing the risk of cardiovascular disease in HD patients as sleep may be a crucial factor associated with the maintenance of ideal cardiovascular health metrics.

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## A retrospective study to assess the Impact of Socio-demographic Characteristics on Time in Outpatient Cardiology Clinics

**Introduction:** Time spent accessing healthcare is an important measure of service quality and strain, as patients wait in multiple settings in the community for primary care, specialist and allied health appointments, and in waiting rooms in emergency and outpatient clinics<sup>1</sup>. Time spent waiting for health care presents a potential blockade to health system access and appointment. Patients wait at multiple points of their interaction with health systems. Waiting times for elective surgery and ED care are a regularly included key performance indicator for health services. Factors that influence various types of waiting times may be dissimilar and may have various impacts<sup>2</sup>. As Patient satisfaction is considered an important dimension of the quality of health care. There are two important determinants of contentment are how long the patient waits to see the clinician and the duration of the consultation<sup>3</sup>. The objective of this study is to assess the impact of socio-demographic characteristics on time in outpatient cardiology clinics.

**Method:** A Retrospective study conducted in cardiology clinic across 3 public hospitals between 2014 and 2019. Data related to age, gender, Indigenous status, country of birth, language spoken at home, number of comorbidities, and postcode were collected. By measuring the difference between time arrived and time departed total clinic time was calculated which is a convenience measure taken by administration staff as part of the usual clinic workflow. A cox proportional hazards model was used, adjusting for visit type, clinic, and referral source.

**Results:** A total of 22367 patients were included in which Only 7823 (35.0%) were born in Australia and 8452 (37.8%) were in the lowest Socio economic status (SES) quintile. Median total clinic time was 84min (IQR 58-130). New patients and those referred from the emergency department were the most likely to spend longer in clinic Those of lower SES spent less time in clinic irrespective of their age, gender, number of comorbidities, country of birth or language spoken at home. However, after adjustment for visit type, clinic, and referral source, there was no interaction between SES and any of the identified demographic. Patients of lower SES were more likely to attend follow-up appointments, clinics with short clinic time and be referred from sources other than the emergency department, compared to patients of higher SES in the unadjusted model, low SES patients spent less time in clinic than those of high SES as shown in figure 2.

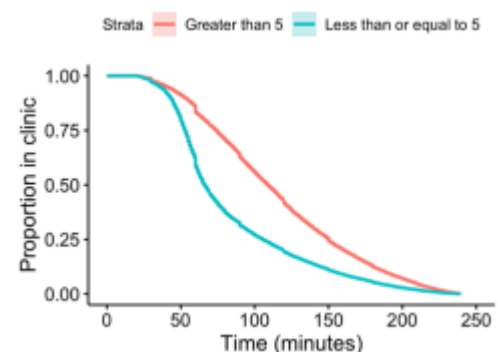


Figure 2 Socio economic status (IRSD  $\leq 5$  vs  $>5$ ) and time leaving clinic

**Discussion:**

In this study, lower SES patients were more likely to attend follow-up appointments and clinics with smaller waits. It is found that lower SES patients had shorter consult times, which was the primary driver for a shorter total clinic time and these results were supported by the study conducted by Britt et.al<sup>4</sup>.

**Conclusion:** Study found that accessing healthcare presents an important time burden for patients at all levels of the health system and older patients spent longer in clinic, but no change for low SES or other demographically disadvantaged patients was identified.

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## Preeclampsia in Daughters Is Associated with CVD in Parents

### Introduction:

Women with a history of preeclampsia have greatly amplified risks of cardiovascular disease compared with women without the history<sup>1</sup>. As World health organization represents preeclampsia (PE) is an important problem in obstetrics, affecting 2–8% of pregnancies and is the most common causes of maternal morbidity and mortality<sup>2</sup>. Physiological pregnancy is characterized by high blood volume, low vascular resistance, and blood pressure decrease, especially in the first and second trimesters. low circulating blood volume, high blood pressure, and high vascular resistance were observed in PE<sup>2</sup>. Increased risks of ischemic heart disease and cerebrovascular disease events and overall CVD mortality after PE was observed. During the early 10-year period following delivery, the risk for CVD, heart failure and stroke are relatively high. The connotation between PE and early CVD progression is not totally understood<sup>3</sup>. The objective of this study is to evaluate the preeclampsia in daughters is associated with CVD in parents.

### Method:

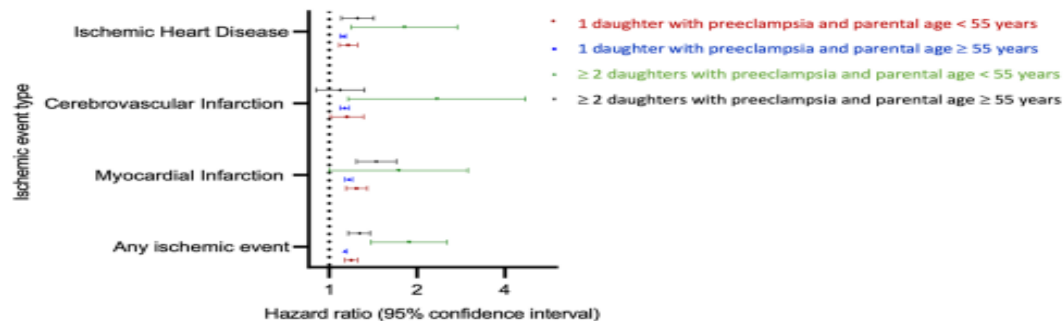
All women in Denmark  $\geq 15$  years of age with one or more pregnancy of  $>20$  weeks' duration between 1978 and 2017 were identified and parents using the Danish Family Relations Database the parents were considered. Number of daughters with preeclampsia complicating one or more pregnancies was the exposure. A daughter was considered to have preeclampsia in a given pregnancy if she was registered in the National Patient Register with preeclampsia, eclampsia or haemolysis or elevated liver enzymes and low platelets (HELLP) syndrome. A parent was considered to have had CVD on the date of his/her first registration in the National Patient Register or Causes of Death Register with myocardial infarction, cerebrovascular infarction disorder.

### Results:

A total of 1,299,310 persons who had one or more daughters with eligible pregnancies between 1978 and 2017 were considered. The majority of parents that is 56% had one daughter, 34% had two daughters, and only 10% had three or more daughters. Having one daughter with a history of preeclampsia was associated with a 19% increase in the rate of any parental CVD at  $<55$  years of age, compared without preeclampsia. As shown in figure 2 Having two or more daughters with a history of preeclampsia was more strongly associated with parental CVD in this age group. During follow-up, 87,251 parents had one or more daughters with preeclampsia. Examination of gestational age at preeclampsia onset in daughters, the results suggested that

preterm pre-eclampsia, particularly in multiple daughters, might be most strongly associated with CVD in parents.

**Figure: 2 Hazard ratios for cardiovascular disease in parents by parental age, number of daughters with preeclampsia**



### Discussion:

Several studies have linked preeclampsia with increased risk of later CVD<sup>4</sup>, strength of association for mothers and fathers supports the hypothesis that preeclampsia is linked with CVD through common heritable factors. Stronger associations for mothers than for fathers was seen and strong familial aggregation of preeclampsia in the female line as decidedly smaller coupled with mothers' increased risk of CVD after their own preeclampsia.

### Conclusion:

Cohorts having one or more daughters with a history of preeclampsia was associated with increases in the risk of CVD in parents and this study suggest that suggest that preeclampsia and CVD share common genetic mechanism

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## Fusobacterium nucleatum endocarditis- A Case Report

**Introduction:** Fusobacteria is anaerobic gram-negative rods that commonly inhabit the oral cavity which can cause rare and deadly diseases in humans if enters into the bloodstream<sup>1</sup>. It is also gastrointestinal, urogenital and upper respiratory tract. It plays a role in causing the infections like sinusitis, periodontitis, pulmonary infection, intra-abdominal infection, septic arthritis, osteomyelitis and endocarditis<sup>2</sup>. Even though, Fusobacterium is associated with healthy tissue, there is increasing evidence showing the pathogenic potential of this bacterium in wide array of human diseases and also it has been shown to enhance disease severity, there remains a critical knowledge gap surrounding the biochemical mechanisms that allow fusobacterium to migrate from the oral cavity and control disease progression<sup>3</sup>. The aim of this is to report a case of fusobacterium nucleatum endocarditis.

### Case Report

A male patient of age 86-year-old with a past medical history of chronic atrial fibrillation, pacemaker insertion, diabetes mellitus type 2, dyslipidemia, and coronary artery disease with history of coronary bypass surgery. Recent tooth extraction was made presenting to the emergency department with vague symptoms of weakness in his lower extremities, light headedness, and on-and-off pain in his right elbow for a few days. No further complaints except fever of 100.8°. The patient was given IV fluids and discharged home.

The patient admitted to the ER within less than 24 hours after being dis- mechanical valve replacement at the aortic and mitral valve revealed a thrombus from left atrium. indicted with a fever of 102° and chills. except for haematuria in his urine no infection was found. Another time, the patient was sent home but re-admitted a third time two days later with high-grade fevers with a max of 104°. He was admitted for sepsis of unknown origin and started on vancomycin and piperacillin-sulbactam after blood cultures were obtained.

Ultrasound examination of the liver was highly indicative of an abscess for which a drain was placed by a Radiologist. A week after initial blood cultures were drawn, *Fusobacterium nucleatum* cultivated in one of two sets. As shown in figure 3 transthoracic echocardiogram was unremarkable. Given the suspicion of possible septic emboli, a transesophageal echocardiogram was done revealing a 0.6 cm × 0.6 cm vegetation on the anterior portion of the mitral valve. The patient was then successfully treated with a six-week course of ampicillin-sulbactam based on the cultural sensitivity and his hepatic drain was discontinued after 2 weeks. The patient recovered and remained asymptomatic after a full course of antibiotic treatment.



*Figure 3 Transesophageal Echocardiogram*

### **Discussion:**

The patient above presented with fevers, one positive blood culture for *Fusobacterium nucleatum*, and concern for septic emboli given his liver abscess and reoccurring joint pain. High clinical suspicion for possible endocarditis warranted a transthoracic and transesophageal echocardiogram, which later demonstrated mitral valve endocarditis.

### **Conclusion:**

Study concludes that, it is important to consider endocarditis in patients with persistent fever and transesophageal echo cardiogram can be a very helpful tool for substantiating the diagnosis of endocarditis.

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