

### 論文發表注意事項

#### 【口頭論文發表】

- 試片室：7樓701C會議室及701G會議室外小房間
- 口頭報告者請務必於該場次開始前30分鐘將隨身碟自行攜帶送至試片室進行測試，以避免中途影響會議速度進行，請先行測試檔案與隨身碟讀取正常。
- 一般論文口頭發表，每題12分鐘(報告10分鐘，討論2分鐘)，請各演講者務必控制報告時間，演講時間結束後即開燈結束演講。
- 學會於90年新增『年會論文優秀論文獎』，口頭發表及壁報發表分別評分。優秀論文獎得獎名單於會員大會公佈並頒獎。
- 得獎公佈—會員大會  
時間：112年12月10日(星期日)上午11:30至12:00(請得獎者務必在現場)  
地點：701B會議室
- Our Preview Room are located outside of conference rooms 701B and 701F
- [Oral Presentation](#)

#### Presentation Time

##### **12 Minutes:**

including 10 minutes of presentation and 2 minutes of Live Q&A

#### Presentation Specification

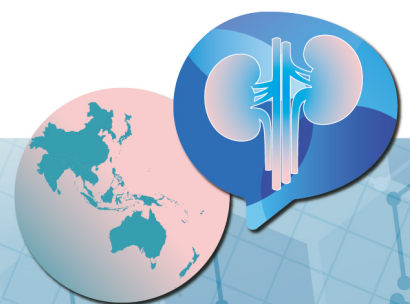
**\*All oral presentation must Present LIVE.**

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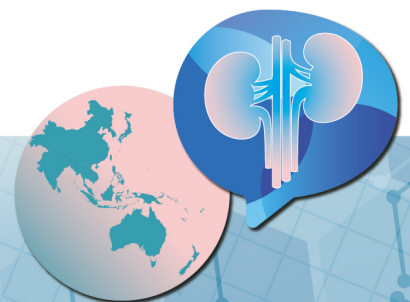
### Oral Presentation 8 (Chinese)

December 9 (Saturday), 2023 10:30 ~ 12:00

Room 6 (703)

【Clinical-6】 Chair(s) : 方華章/ Hua-Chang Fang、李佳蓉/ Jia-Jung Lee

- 10:30—10:42 1. Illicit drug use and acute kidney injury in emergency department patients  
Yu-Cheng Lin<sup>1,2</sup>, Yih-Ting Chen<sup>1,2</sup>, Cheng-Kai Hsu<sup>1,2</sup>, Chun-Yu Chen<sup>1,2</sup>, Heng-Jung Hsu<sup>1,2</sup>, Shih-Chieh Shao<sup>3</sup>, Chin-Chan, Lee<sup>1</sup>, Chiao-Yin, Sun<sup>1,2</sup>, Heng-Chih, Pan<sup>1,2</sup>, Hsien-Yi Chen<sup>2,4</sup>  
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<sup>3</sup> Department of Pharmacy, Chang Gung Memorial Hospital, Keelung, Taiwan  
<sup>4</sup> Department of Emergency Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan
- 10:42—10:54 2. The Association of Heat Stress with Renal Function in different region in Taiwan  
Wei-Yu Su, Yi-Kong Chen, You-Chi Chen, Ming-Yen Lin, Ping-Hsun Wu, Szu-Chia Chen, Yi-Wen Chiu, Jer-Ming Chang  
Division of Nephrology, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan
- 10:54—11:06 3. Indoxyl sulfate and dyscalcemia contribute to the cognitive impairment in patients with end stage renal disease by altering white matters crossing corpus callosum and fornix/stria terminalis  
Yi-Chou Hou<sup>1,2</sup>, Ruei-Ming Chen<sup>2</sup>, Yi-Chien Liu<sup>3</sup>, Kuo-Cheng Lu<sup>4</sup>, Chih-Chien Tsai<sup>5</sup>, Jiun-Jie Wang<sup>5</sup>  
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<sup>4</sup>Department of Nephrology, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei City, Taiwan  
<sup>5</sup>Department of Medical Imaging and Radiological Sciences, Healthy Aging Research Center, College of Medicine, Chang Gung University, Taoyuan, Taiwan
- 11:06—11:18 4. Optimizing Daily Albuminuria Estimation from Spot Urine with a Weight-Based Equation  
Liang-Chun Chen, Chih-Yu Yang, and Der-Cherng Tarn  
Division of Nephrology, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

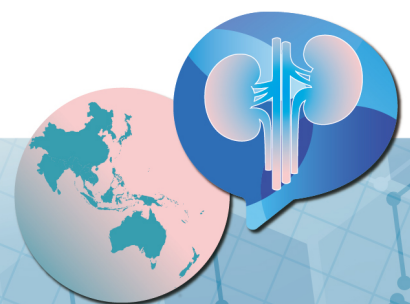


### Oral Presentation 8 (Chinese)

December 9 (Saturday), 2023 10:30 ~ 12:00

Room 6 (703)

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- 11:18—11:30      5. Efficacy of lipid-lowering drugs on cardiovascular and renal outcomes in patients with chronic kidney disease: A systematic review and network meta-analysis  
Yi-Chih Lin<sup>1,2,3</sup>, Tai-Shuan Lai<sup>1</sup>, Yi-Ting Chen<sup>1,4</sup>, Yu-Hsiang Chou<sup>1</sup>, Shuei-Liong Lin<sup>1</sup>, Yung-Ming Chen<sup>1</sup>, Kuan-Yu Hung<sup>1,5</sup>, Yu-Kang Tu<sup>3</sup>  
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<sup>4</sup> Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital  
<sup>5</sup> Graduate Institute of Clinical Medicine, Taipei Medical University & Shuang Ho Hospital, Taiwan
- 11:30—11:42      6. Gut Microbial Composition Differences in Chronic Kidney Disease Patients with Good and Poor Sleep Quality  
Yi-Chun Wang, Szu-Chun Hung  
Division of Nephrology, Taipei Tzu Chi Hospital
- 11:42—11:54      7. Taiwan Chronic Kidney Disease Prevalence, Incidence, and Risk Matrix in 2012—2020: Results from 6.8 Million Screening Population  
Ming-Yen Lin<sup>1</sup>, Jia-Sin Liu<sup>2</sup>, Yi-Ling Wu<sup>3</sup>, Chih-Cheng Hsu<sup>3</sup>, Ping-Hsun Wu<sup>1</sup>, Yi-Wen Chiu<sup>1</sup>, Shang-Jyh Hwang<sup>1</sup> on behalf of iH3 Research Group  
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**1****Illicit drug use and acute kidney injury in emergency department patients**

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**Background :**

Illicit drug lead to adverse health outcomes and economic burdens in various societies. The usage of these illicit substances is associated with considerable morbidity and mortality. Acute kidney injury (AKI), though a significant health concern, often remains underrecognized following the consumption of illicit drugs. AKI is acknowledged as a critical complication in diverse patient cohorts, yet limited research has explored the intricate relationship between AKI and illicit drug use in the prominent clinical setting for managing drug users: the emergency department (ED).

**Methods :**

This study was conducted at two branches of Chang Gung Memorial Hospital in Taiwan over a four-year period. A total of 282 patients admitted to the ED for illicit drug administration were enrolled. The study involved the retrospective collection of clinical data, urine drug screening, and extensive statistical analyses

**Results :**

The study population consisted of 282 patients, with AKI diagnosed in 27.3% of cases. the AKI group exhibited a significantly higher incidence of requiring renal replacement therapy during admission (10.4% vs. 0%;  $p < 0.001$ ) and a twenty-fold higher rate of in-hospital mortality (10.4% vs. 0.5%;  $p < 0.001$ ).

**Conclusions :**

We underscore the value of gender, oxygen saturation, urine morphine/opioid levels, and rhabdomyolysis as independent predictors of AKI among this population. Our findings also emphasize the unique susceptibility of heroin users to AKI. Notably, baseline creatinine levels independently correlate with in-hospital mortality. Moreover, AKI severity serves as a strong indicator of adverse clinical outcomes, including the increased likelihood of rhabdomyolysis, intubation, ICU admission, and in-hospital mortality.

**Key words :**

Illicit drug, heroin, acute kidney disease, cohort study

## The Association of Heat Stress with Renal Function in different region in Taiwan 探討台灣不同地區熱傷害與腎功能之關聯

Wei-Yu Su<sup>1</sup>, Yi-Kong Chen<sup>1</sup>, You-Chi Chen<sup>1</sup>, Ming-Yen Lin<sup>1</sup>, Ping-Hsun Wu<sup>1</sup>, Szu-Chia Chen<sup>1</sup>, Yi-Wen Chiu<sup>1</sup>, Jer-Ming Chang<sup>1</sup>

蘇威宇<sup>1</sup>, 陳逸剛<sup>1</sup>, 陳宥騏<sup>1</sup>, 林明彥<sup>1</sup>, 吳秉勳<sup>1</sup>, 陳思嘉<sup>1</sup>, 邱怡文<sup>1</sup>, 張哲銘<sup>1</sup>

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### Background :

Taiwan held the highest rank in terms of the incidence and prevalence of dialysis cases worldwide. Consequently, the prevention of renal function impairment has emerged as a critical healthcare concern in Taiwan. Notably prevalent in the tropical southern region of Taiwan, heat stress has been identified as a significant risk factor for renal function impairment.

### Methods :

A retrospective cross-sectional analysis was conducted utilizing data from the Taiwan Biobank (TWB). We incorporated records of the Wet Bulb Globe Temperature (WBGT) during noon time (11 am - 2 pm) and work hours (7 am - 5 pm), based on the residential addresses of the participants. We calculated the average WBGT levels for 1 year, 3 years, and 5 years prior to the survey year. The WBGT levels were analyzed using a geospatial-artificial intelligence (Geo-AI) based Ensemble Mixed Spatial Model (EMSM), covering the period from 2010 to 2020.

### Results :

A total of 121,317 participants from the TWB were included in this study. Among them, 1053 individuals were identified as belonging to the impaired renal function group (eGFR < 60, as per the CKD-EPI 2021 Equation). The cohort geographically consisted 33.1% resided in northern Taiwan, while 37.6% were located in southern Taiwan. We observed that high WBGT average levels for 1 year, 3 years, and 5 years prior to the survey year, during both noon time and work hours, there was associated with a low eGFR. Further stratification by geographic regions revealed a consistent effect in both Northern and Southern Taiwan, with a notably heightened impact observed in the southern region.

### Conclusions :

High WBGT are significantly correlated with a low eGFR, and this relationship is particularly pronounced in the southern region of Taiwan compared to other regions.

**Key words :** High Wet Bulb Globe Temperature (WBGT); Renal function; Heat stress; Southern Taiwan

## **Indoxyl sulfate and dyscalcemia contribute to the cognitive impairment in patients with end stage renal disease by altering white matters crossing corpus callosum and fornix/stria terminalis**

**硫酸吲哚酚和血鈣障礙透過影響胼胝體穹隆/終紋白質導致末期腎病患者的認知障礙**

Yi-Chou Hou<sup>1,2</sup>, Ruei-Ming Chen<sup>2</sup>, Yi-Chien Liu<sup>3</sup>, Kuo-Cheng Lu<sup>4</sup>, Chih-Chien Tsai<sup>5</sup>, Jiun-Jie Wang<sup>5</sup>  
侯羿州<sup>1</sup>, 陳瑞明<sup>2</sup>, 劉議謙<sup>3</sup>, 盧國城<sup>4</sup>, 蔡志謙<sup>5</sup>, 王俊杰<sup>5</sup>

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### **Background :**

Cognitive impairment is common in patients with end stage kidney disease (ESRD). White matter alternation is important pathologic change in cognitive impairment, and fixel-based analysis quantifies the fiber loss. The study is to elucidate the white matter alternation in uremic cognitive impairment patients .

### **Methods :**

The study period was from August 2019 to December 2020. The participants were divided into three groups according to the MMSE score and the status with end stage renal disease or not: (1) control (n=16): MMSE>24 without end stage renal disease; (2) group 2 (n=17): end stage renal disease with MMSE 25~30; (3) group 3 (n=14): end stage renal disease with MMSE 10~24. All participants received magnetic resonance imaging and hematologic and biochemical parameters. Fixel-based analysis was performed to assess the fiber density.

### **Results :**

Among the study participants, the fiber density, the fiber cross section and the summation of the fiber density and cross section were lower in the ESRD patients. The decrease in corpus callosum and fornix/stria terminalis was associated with the decrease in Montreal Cognitive Assessment (p<0.05). Among the biochemical and hematologic parameters, The concentration of calcium (8.80± 0.79mg, vs 9.27± 0.29mg for control group, p<0.05) was lower in ESRD patients. The serum concentration of calcium was positive associated with the fiber density in the corpus callosum and fornix/stria terminalis (p<0.05).

### **Conclusions :**

The white matter density decreased in the ESRD patients, and the decrease was associated with cognitive impairment. Serum calcium positively correlated with the fiber density in corpus callosum and fornix terminalis.

### **Key words :**

cognitive impairment, end-stage renal disease, leukoarariosis, fixel-based analysis, corpus callosum, hypocalcemia, secondary hyperparathyroidism

## Optimizing Daily Albuminuria Estimation from Spot Urine with a Weight-Based Equation

利用基於體重的方程式優化單次尿液蛋白尿的每日估值

Liang-Chun Chen<sup>1</sup>, Chih-Yu Yang<sup>1</sup>, and Der-Cherng Tarn<sup>1</sup>

陳亮均<sup>1</sup>, 楊智宇<sup>1</sup>, 唐德成<sup>1</sup>

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### Background :

Urine albumin/creatinine ratio (UACR) from spot urine is a surrogate for daily albuminuria. Although the relevant variables for estimating daily albuminuria have been identified, their coefficient of partial determination has remained unexplored.

### Methods :

This study examined the correlation between 24-hour albuminuria and variables. We investigated the coefficients of partial determination of independent variables and the total coefficients of determination of models composed of varying variables for estimating 24-hour albuminuria.

### Results :

Analysis of 304 24-hour urine samples revealed that UACR, body weight (BW), age, and serum urea nitrogen were significant independent variables to daily albuminuria ( $p < 0.05$ ), with partial  $R^2$  of 0.72, 0.189, 0.010, 0.005, respectively. The model of UACR and BW alone had a total  $R^2$  comparable to the Ix and Walser models equation (total  $R^2 = 0.922$  vs.  $0.923$  vs.  $0.925$ ) and surpassed the Ellam model omitted body weight (total  $R^2 = 0.878$ ). After body weight stratification, newly developed 24-hour albuminuria equations using UACR exhibited higher total  $R^2$  in all body weight ranges, except in the highest one with  $77.9 < BW \leq 137.7$  kg.

### Conclusions :

Body weight emerged as the sole significant independent variable influencing the estimation of 24-hour albuminuria from UACR, allowing the omission of other relevant variables. The 24-hour albuminuria (mg) can be estimated using the equation  $-2102 + 1080 * UACR + 33.27 * \text{body weight (kg)}$ . Through body weight-based stratification, we formulated simplified and efficient 24-hour albuminuria equations, achieving unprecedented predictive, notably when the body weight is below 77.9 kg.

### Key words :

daily albuminuria, body weight, daily albuminuria estimation, UACR

## Efficacy of lipid-lowering drugs on cardiovascular and renal outcomes in patients with chronic kidney disease: A systematic review and network meta-analysis

降脂藥物對於慢性腎臟病合併血脂異常患者在心血管事件和腎功能預後的效應：系統性回顧以及網絡統合分析

Yi-Chih Lin<sup>1,2,3</sup>; Tai-Shuan Lai<sup>1</sup>; Yi-Ting Chen<sup>1,4</sup>; Yu-Hsiang Chou<sup>1</sup>; Shuei-Liong Lin<sup>1</sup>; Yung-Ming Chen<sup>1</sup>; Kuan-Yu Hung<sup>1,5</sup>; Yu-Kang Tu<sup>3</sup>

林義智<sup>1,2,3</sup>, 賴台軒<sup>1</sup>, 陳怡婷<sup>1,4</sup>, 周鈺翔<sup>1</sup>, 林水龍<sup>1</sup>, 陳永銘<sup>1</sup>, 洪冠予<sup>1,5</sup>, 杜裕康<sup>3</sup>

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### Background and objectives:

Lowering-lipid drugs (LLDs) have been shown to help prevent major adverse cardiovascular events (MACEs) and poor renal outcomes in patients with chronic kidney disease (CKD). The effect of exact classes of LLDs on preventing MACEs and poor renal outcomes is not well characterized in the CKD population.

### Design, setting, participants, and measurements:

We performed a frequentist random-effects network meta-analysis of randomized controlled trials (RCTs) to evaluate the protective effect of the LLDs in non-dialysis CKD patients. The PubMed, Embase, Web of Science, and Cochrane Library databases were systematically searched for relevant trials published before October 31, 2022. The primary outcome was the incidence of composite MACEs. The secondary outcomes comprised all-cause mortality, end-stage kidney disease, changes in estimated glomerular filtration rate (eGFR) and proteinuria, and safety.

### Results:

Forty-nine eligible RCTs with 77,826 participants with non-dialysis CKD were included. Compared with the control group, lovastatin had the best effect on reducing the risk of MACEs (62%); rosuvastatin was most effective in reducing the risk of myocardial infarction (MI) and all-cause mortality (61% and 44%, respectively). Statin plus ezetimibe had the best beneficial effect on changes in the eGFR (mean difference, 2.35; 95% CI, 0.44–4.26 mL/min/1.73 m<sup>2</sup>).

### Conclusions:

In patients with non-dialysis CKD, lovastatin had the best efficacy in preventing MACEs, and rosuvastatin was the best in preventing MI and all-cause mortality. Statin plus ezetimibe had the best beneficial effect on changes in the eGFR.

### Keywords:

Lipid-lowering drug, chronic kidney disease, end-stage kidney disease, major adverse cardiovascular events



## Gut Microbial Composition Differences in Chronic Kidney Disease Patients with Good and Poor Sleep Quality

### 慢性腎臟疾病患者睡眠品質好壞的腸道菌差異

Yi-Chun Wang, Szu-Chun Hung

王奕淳, 洪思群

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台北慈濟醫院腎臟科

#### **Introduction:**

Poor sleep quality is a prevalent issue among chronic kidney disease (CKD) patients. While the association between sleep, the gut microbiota, and the gut-brain axis is acknowledged, their specific link to CKD remains relatively unexplored. This study delves into these interconnections, aiming to unravel potential implications for CKD

#### **Methods:**

A total of 128 CKD patients were enrolled. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), with a total score  $>6$  defining poor sleepers and 0-5 indicating good sleepers. Propensity Score Matching (PSM) was employed to balance confounding factors, resulting in 60 good sleepers and 61 poor sleepers. Fecal samples were collected, and DNA extraction was performed. Microbial composition was determined using 16S ribosomal RNA gene sequencing.

#### **Results:**

Microbial composition analysis revealed distinct clustering between the two groups, with good sleepers showing a significant separation ( $p=0.033$ ). Linear Discriminant Analysis Effect Size (LEfSe) identified 24 taxonomic features that discriminated between the groups. Genera such as *Bifidobacterium* and *Desulfovibrio* were enriched in good sleepers, while *Leptotrichia*, *Anaerofustis*, and *Bacillus* were more prominent in poor sleepers.

#### **Conclusion:**

This study suggests that CKD patients with good sleep quality exhibit a distinct fecal microbial composition compared to those with poor sleep quality. The microbial differences observed may have implications for understanding the complex interplay between sleep, microbiota, and CKD progression.

#### **Key Word:**

Sleep, microbiota and CKD

## Taiwan Chronic Kidney Disease Prevalence, Incidence, and Risk Matrix in 2012–2020: Results from 6.8 Million Screening Population

### 2012–2020 台灣慢性腎臟病盛行率、發生率及風險矩陣：結果來自於 6 百 8 十萬的篩檢母群體

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林明彥<sup>1</sup>, 劉佳鑫<sup>2</sup>, 吳宜玲<sup>3</sup>, 許志成<sup>3</sup>, 吳秉勳<sup>1</sup>, 邱怡文<sup>1</sup>, 黃尚志<sup>1</sup>, 代表 iH3 研究團隊  
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#### Background :

The updated Taiwan chronic kidney disease (CKD) prevalence, incidence, risk matrix and factors affecting these statistics are unknown.

#### Methods :

We conducted a longitudinal study to enrolled participants who attended the Taiwan Adult Preventive Health Service (TAPHS) program from 2012–2020. Kidney function was determined by estimated glomerular filtration rate calculated through CKD-Epi equation. The eGFR values were categorized as G1:  $\geq 90$ ; G2: 60-89; G3a: 45-59; G3b: 30-44; G4: 15-29; and G5:  $< 15$  ml/min/1.73 m<sup>2</sup>. The level of different degree of proteinuria tested by dipstick were classified by to be A1: -, A2:  $\pm$ , and A3:  $\geq 1+$  states results. We also decided end-stage kidney disease and death from the registry data for catastrophic illness and the national death registry, respectively.

#### Results :

Through observing their first screening visit (n=6.8 million) within the study years, we quantified the CKD prevalence was 20.8% (Early CKD: 8.42%, Late CKD: 12.43), the proportion of CKD risk matrix was 11.18% in slight, 6.65% in middle, and 2.83% in extreme high risk. The age and sex-specific CKD incidences were 12.4-60.8 per thousand person-years. The GA state transition probabilities were also displayed to identify critical transition states and factors affecting those state transition risks.

#### Conclusions :

The study quantified the prevalence and incidence of CKD in the community and explored critical state transition pathways and associated factors, which are helpful for preventive and care action support.

#### Key words :

chronic kidney disease, prevalence, incidence, state transition