# 臺灣兒科醫學會第二六〇屆學術演講會時間表

## 民國 113 年 11 月 16 日(星期六)

### 研究大樓

#### (2F)第一會場

09:00 **第一單元：**
**新生兒學**
(1~8 題)
10:20
10:20 休息
10:30
10:30 **第一單元：**
**新生兒學**
(9~16 題)
11:50

13:40 **第二單元：**
**腸胃學、營養學**
(17~22 題)
14:40
14:40 休息
14:50
14:50 **第三單元：**
**心臟血管學**
(23~30 題)
16:10

#### (1F)第二會場

09:00 **第四單元：**
**感染學**
(31~38 題)
10:20
10:20 休息
10:30
10:30 **第五單元：**
**肺臟、急診及重症學**
(39~44 題)
11:30

12:00 **附加研討會**
主　題：疫苗的演進與創新：如何提升兒童疫苗接種與疾病預防?
主持人：李秉穎教授
演講者：邱政洵醫師、Prof. Emeritus Lulu C. Bravo、何宇苓醫師
13:30

13:40 **第六單元：**
**神經精神醫學**
(45~51 題)
15:00
15:00 休息
15:10
15:10 **第七單元：**
**血液學、腫瘤學**
(52~56 題)
16:00
16:00 休息
16:10
16:10 **第七單元：**
**血液學、腫瘤學**
(57~60 題)
16:50

#### (2F)第三會場

09:00 **第八單元：**
**過敏免疫風濕病學**
(61~65 題)
09:50
09:50 休息
10:00
10:00 **第八單元：**
**過敏免疫風濕病學**
(66~69 題)
10:40
10:40 休息
10:50
10:50 **第九單元：**
**醫學人文與教育**
(70~71 題)
11:10
11:10 休息
11:20
11:20 **第十單元：**
**腎臟學**
(72~75 題)
12:00

13:40 **第十一單元：**
**遺傳學、新陳代謝學**
(76~83 題)
15:00
15:00 休息
15:10
15:10 **第十二單元：**
**內分泌學**
(84~87 題)
15:50
15:50 休息
16:00
16:00 **第十三單元：**
**青少年醫學**
(88~90 題)
16:30

## 民國 113 年 11 月 17 日(星期日)

### 研究大樓

#### (2F)第一會場

09:00 **教育演講**
主　題：兒童發展篩檢服務
主持人：陳慧如醫師、麥建方醫師
演講者：葉彥伯局長、張通銘副主任、賴昇層院長

12:00 **附加研討會**
主　題：兒科COVID-19：後疫情時代的健康管理與疫苗策略
主持人：黃立民教授、邱政洵教授
演講者：黃瑽寧醫師、張鑾英教授
13:30

13:40 **頒獎**
14:10
14:10 休息
14:20
14:20 **醫學的科學、倫理與法律講座**
主　題：數位世代的哀愁與解方
主持人：倪衍玄理事長
演講者：林煜軒副研究員、吳佳儀教授
16:20

#### (1F)第二會場

10:00 **專題演講**
主　題：青少年健康促進
主持人：王麗潔醫師
演講者：林杏青醫師、廖瑞華營養師

12:00 **附加研討會**
主　題：RSV全嬰防護現況與展望
主持人：倪衍玄理事長、紀鑫醫師、黃高彬醫師
13:30 演講者：穆淑琪醫師、林千裕醫師、陳伯彥醫師

### 第二醫療大樓

#### (2F)第八會議室

09:00 **專題演講**
主　題：兒童醫療的現況與展望
主持人：陳銘仁副理事長、陳家玉院長、王志堯院長、楊俊仁院長
演講者：李旺祚院長、邱元佑主任、黃崇濱副院長、游昌憲主任
11:40

地點：臺中榮民總醫院研究大樓 (臺中市西屯區臺灣大道 4 段 1650 號)

# 一般演講：口頭報告

## 第一單元：新生兒學

**日期：民國113年11月16日(星期六)**
**時間：09:00～11:50**
**地點： (2F)第一會場**

主持人：林湘瑜、陳秀玲

09:00～09:07　1. 後 COVID-19 時代，小於 120 天的發燒嬰幼兒：無菌膿尿還是泌尿道感染？
陳映廷、藍智嵩、蔡明倫、林湘瑜、鄭皓文、楊曉涵、邱曉郁、林鴻志、沈上博
中國醫藥大學兒童醫院新生兒科

09:07～09:14　2. 探討於出生後有呼吸窘迫的新生兒，剛出生後的胃液內發炎物質與其臨床預後相關性
林威廷[1]、許育祥[2]、林毓志[1]
國立成功大學醫學院附設醫院小兒部[1];國立成功大學臨床醫學研究所[2]

09:14～09:21　3. 評估咖啡因對早產兒腎臟健康的研究回溯性病例研究結果
黃郁婷、沈上博、林湘瑜、邱曉郁、蔡明倫、陳映廷、鄭皓文、楊曉涵、林鴻志
中國醫藥大學兒童醫院新生兒科

09:21～09:28　4. 台灣早產兒發生長期眼科併發症的危險因子:一全國性病例對照研究
杜小昕[1]、黃家榆[2]、林恒君[3,4]、顏宏融[5,6,7,8,9]
澄清綜合醫院中港分院兒科部[1];佛教慈濟醫療財團法人台中慈濟醫院家庭醫學科[2];中國醫藥大學醫學院[3];中國醫藥大學附設醫院臨床試驗中心統計分析組[4];中國醫藥大學中醫系[5];中國醫藥大學附設醫院中醫部[6];中國醫藥大學附設醫院中醫藥研究中心[7];中國醫藥大學國際針灸碩士學位學程[8];中國醫藥大學中醫藥研究中心[9]

09:28～09:35　5. 以台灣新生兒醫療網絡（TNN）資料庫分析影響極低出生體重嬰兒出院時之體重百分位數的因素
魏毓嫻[3]、陳秀玲[1,2]
高雄醫學大學附設醫院小兒科部[1]、高雄醫學大學醫學院呼吸治療學系[2]、高雄醫學大學醫學系[3]

09:35～09:42　6. 母鼠懷孕時暴露柴油機廢氣微粒會加重新生兒時期高氧對於子代大鼠的肺部傷害
張毓珊[1]、周綉珠[2]、陳中明[3,4]
奇美醫院急診醫學部[1]; 臺北醫學大學醫學系解剖學暨細胞生物學科[2]; 臺北醫學大學附設醫院小兒科[3]; 臺北醫學大學醫學系小兒學科[4]

09:42～09:49　7. 間質幹細胞治療藉由恢復 neuroserpin 表現來保護新生鼠早產兒腦病變
王藍浣[1,2]、熊建瑋[3]、張菁萍[3]、林茂村[3]、陳錫洲[4]
奇美醫院兒科部[1];南台科技大學生物與食品科技系[2];奇美醫院醫學研究部[3];國防醫學院小兒學科[4]

09:49～09:56　8. 胎兒小於妊娠年齡之兒童出生第一年之體重軌跡和日後體重過重之關聯性
張毓珊[1]、余聰[2]
奇美醫院急診醫學部[1]; 國立成功大學醫學院公共衛生研究所[2]

09:56～10:20　討論

10:20～10:30　休息

## 主持人：李建忠、林明志

10:30～10:37　9. 輕度腦室內出血對極度早產兒腦微結構改變與神經發展異常的影響：定量 MRI 研究
賴美吟、許凱翔、張志丞[1]、江明洲、李建忠、朱世明、林瑞瑩、傅仁煇、徐任甫
林口長庚紀念醫院兒童內科部新生兒科、影像診斷科[1]

10:37～10:44　10. 周產期藥物使用與極度早產兒自發性腸穿孔之關聯性：以傾向分數匹配之病例對照研究
鄭惟心[1]、杜洛瑄[1]、許凱翔[1,2]、江明洲[1,2]、吳怡萱[1,2]、賴美吟[1,2]、陳又寧[1,2]、徐任甫[1,2]、朱世明[1,2]、林瑞瑩[1,2]
長庚大學醫學系[1]; 林口長庚紀念醫院新生兒科[2]

10:44～10:51　11. 母體阿斯巴甜暴露透過 NF-κB 活化影響後代肺部 Th1/Th2 細胞激素平衡
何昇遠[1,2]、莊校奇[3,4]、楊宇辰[5]、周琇珠[6]、陳中明[7,8]
臺北醫學大學臨床醫學研究所[1]; 國防醫學院三軍總醫院小兒部[2]; 臺北醫學大學呼吸治療學系 3、醫學科學研究所[4]、聯合人體生物資料庫[5]、解剖暨細胞生理學科[6]; 臺北醫學大學附設醫院小兒部[7]; 臺北醫學大學小兒學科[8]

10:51～10:58　12. 母親抗生素/類固醇使用及感染增加早產新生兒早發性敗血症風險：全國性人口研究
李浩遠[1]、蔡明倫[2,3]、沈上博[3]、陳映廷[3]、邱曉郁[4]、林湘瑜[2,3]、鄭皓文[3]、李文源[1,3]、林鴻志[3.4]
為恭紀念醫院小兒科[1]; 中國醫藥大學臨床醫學研究所[2]; 中國醫藥大學兒童醫院新生兒科[3]; 亞洲大學附屬醫院兒科[4]

10:58～11:05　13. 新生兒加護病房粘質沙雷氏菌爆發後的縱向監測：揭示傳播途徑和有效策略
李建忠[1]、邱世浩[2]、陳倩琪[2]、吳維閎[1]、江明洲[1]、朱世明[1]、邱政洵[3]
林口長庚紀念醫院兒童內科部新生兒科[1];食品工業發展研究所生物資源保存及研究中心[2];林口長庚紀念醫院兒童內科部新生兒科兒童感染科[3]

11:05～11:12　14. 從台灣新生兒網絡(TNN)數據看早產兒營養照護五年趨勢與營養指南應用情況
林湘瑜[1]、張弘洋[2]、曹伯年[3]、陳秀玲[4,5]、許雅淇[6]、陳威宇[7]、林毓志[8]
中國醫藥大學兒童醫院[1];馬偕兒童醫院小兒部[2];台大兒童醫院小兒部[3];高雄醫學大學附設醫院小兒科部[4];高雄醫學大學醫學院呼吸治療學系[5];台中榮總兒童醫學中心[6];臺北榮民總醫院兒童醫學部[7];成功大學附設醫院小兒部[8]

11:12～11:19　15. 評估台灣早產兒和住院期間併發症的醫療支出：北台灣某醫學中心
歐陽詩雯 [2,3]、詹偉添 [1,2,3,4,5,6]、張瑞幸 [1,2,3,4]、張弘洋 [1,2,3,4]、彭純芝 [1,2,3,4]、林佳瑩 [1,2,3,4]、陳佳慧 [1,2,3,4]、許瓊心 [1,2,3,4]
新生兒科 [1]、小兒部 [2]、台灣基督長老教會馬偕醫療財團法人 馬偕兒童醫院 [3];馬偕醫護管理專科學校 [4]; 馬偕醫學院 [5]; 國立臺北護理健康大學 [6]

11:19～11:26　16. 母親懷孕過程中得流感與孩童癲癇的相關性
李宜峰 [1]、林怡瑄 [1,2]、林敬恒 [4]、林明志 [1,2,3,5,6]
台中榮民總醫院兒童醫學中心 [1];國立中興大學學士後醫學系 [2];國立陽明交通大學醫學系 [3];台中榮民總醫院研究部 [4];靜宜大學食品營養學系 [5];中山醫學大學醫學系 [6]

11:26～11:50　討論

# 第二單元：腸胃學、營養學

**日期：民國113年11月16日(星期六)**
**時間：13:40～14:40**
**地點：(2F)第一會場**

## 主持人：林捷忠、蔡璟忠

13:40～13:47　17. 超音波引導穿刺切片與手術楔狀肝臟切片在黃疸嬰幼兒之診斷與比較
許家芸、張凱琪、吳嘉峯、陳慧玲、倪衍玄、戴季珊
國立臺灣大學醫學院附設醫院兒童醫院小兒部肝膽腸胃科

13:47～13:54　18. 介白素-10 受體變體和孩童發炎性腸道疾病是有關聯
陳安琪、陳德慶 [1]、廖舫敏、吳淑芬、陳偉德、林清淵 [2]
中國醫藥大學附設兒童醫院兒童肝膽腸胃科 亞洲大學附設醫院小兒科 [1];中國醫藥大學附設兒童醫院小兒腎臟科 [2]

13:54～14:01　19. 調查兒科病人肝移植後血管血栓之發生率及風險因素
朱王杰 [1]、何明志 [2]、吳嘉峯 [1] 、陳慧玲 [1]、張美惠 [1]、胡瑞恆 [3]、倪衍玄 [1]、張凱琪 [1]
國立台灣大學醫學院附設醫院小兒部 [1];國立台灣大學醫學院附設醫院新竹台大分院外科部 [2];國立台灣大學醫學院附設醫院雲林分院外科部 [3]

14:01～14:08　20. 11,000 血清蛋白的蛋白質組學分析以區分兒童克隆氏症和潰瘍性結腸炎
吳孟哲 [1]、哈蘭德 溫特 [2]
臺中榮民總醫院 兒童醫學中心 兒童肝膽腸胃科 [1];麻省總醫院 兒童發炎性腸道疾病中心 [2]

14:08～14:15　21. 闌尾切除對兒童非傷寒沙門氏菌感染風險的影響
郭君宜、黃彥筑、曾瑞如、吳孟哲、王建得、林捷忠
臺中榮民總醫院兒童醫學中心 兒童肝膽胃腸科

14:15～14:22　22. 產前空氣污染暴露與膽道閉鎖的關係
黃彥筑、曾瑞如、吳孟哲、王建得、林捷忠
臺中榮民總醫院兒童醫學中心 兒童肝膽胃腸科

14:22～14:40　討論

14:40～14:50　休息

# 第三單元：心臟血管學

**日期：民國113年11月16日(星期六)**
**時間：14:50～16:10**
**地點：(2F)第一會場**

## 主持人：李必昌、楊明浚

14:50～14:57　23. 多重 Z-Score 模型在川崎病冠狀動脈擴張檢測中的應用
郭和昌[1,2,3]、陳世興[4]、陳怡妃[5]、鄭玟瑛[5]、劉世豐[6,7]、郭明慧[1,2,3]、林昱齊[3]、陳宜惠[3,8]、陳冠瑋[1,3]
高雄長庚兒童風濕過敏免疫科[1]; 長庚大學醫學系[2]; 高雄長庚川崎症中心[3]; 淡江大學資訊工程學系[4]; 淡江大學管理科學學系[5]; 高雄長庚醫院胸腔科[6]; 高雄長庚醫院呼吸治療科[7]; 長庚大學資訊管理學系[8]

14:57～15:04　24. 新冠肺炎感染的兒科病人併發川崎症和多系統發炎徵候群的風險: 使用 TriNetX 資料庫的世代研究
相爾傑[1]、簡光仁[1]、林竹川[1]、陳俊宇[2]、魏正宗[3]、翁根本[1]
高雄榮民總醫院兒醫部[1]; 奇美醫院兒科部[2]; 中山醫學大學醫學院[3]

15:04～15:11　25. 經心導管使用新型多功能封堵器治療心室中膈缺損
廖立勤[1,2]、詹聖霖[2]、林明志[2]、李必昌[2,3,4,5]、傅雲慶[2,4,6*]
林新醫療社團法人烏日林新醫院，兒科[1]; 臺中榮民總醫院，兒童醫學中心，兒科[2]: 國防醫學院，兒科[3]: 國立陽明交通大學醫學院，兒科[4]: 馬偕兒童醫院，兒童心臟科[5]: 國立中興大學醫學院，兒科[6]

15:11～15:18　26. 透過 mRNA 表現晶片分析川崎病 AGO1、2、4 與內皮功能障礙
李榮明[1,3]、郭明慧[3,4]、黃瀛賢[3,4]、陳定濰[2,3]、郭和昌[3,4]
高雄長庚醫院藥劑部[1]; 高雄長庚醫院轉譯中心[2]; 高雄長庚醫院兒童內科部及川崎症中心[3]; 長庚大學醫學院[4]

15:18～15:25　27. 無輻射與輻射引導下的兒童房室結迴旋頻脈射頻消融術：一項多中心回顧性研究
莊傑貿[1]、李必昌[1]、范文博[2]、戴以信[3]、李昱昕[4]、彭瀠萱[5]、詹聖霖[1]、林明志[1]、傅雲慶[1]、陳適安[6]
台中榮民總醫院兒童心臟科[1];台北榮民總醫院兒童心臟科[2];中國醫藥大學附設兒童醫院兒童心臟科[3];林口長庚醫院兒童心臟科[4];中山醫學大學附設醫院兒童心臟科[5];台中榮民總醫院心血管中心[6]

15:25～15:32　28. 2009 至 2020 年台灣五歲以下兒童川崎病流行病學研究
徐萬夫[1,2]、謝凱生[3]
國防醫學院三軍總醫院小兒部[1];國立陽明交通大學急重症醫學研究所[2];中國醫藥大學兒童醫院小兒心臟科、結構/先天性心臟病及超音波中心[3]

15:32～15:39　29. 開窗關閉對 Fontan 手術病患長期預後的影響
林杏佳[1,2]、吳美環[1]、王主科[1,2]、林銘泰[1]、陳俊安[1]、盧俊維[1]、陳益祥[3]、黃書健[3]、邱舜南[1]
臺大兒童醫院小兒部[1]、臺大雲林分院小兒部[2]、臺大醫院外科部[3]

15:39～15:46　30. 經心導管關閉心室中膈缺損的初期和中期結果:單一醫學中心的經驗
陳俊宇[2]、林竹川[1]、簡光仁[1]、黃大誠[1]、謝凱生[3]、翁根本[1]
高雄榮總先天性結構性心臟病醫學中心[1]，奇美醫院兒科部[2]，中國醫藥大學兒童醫院兒童內科系[3]

15:46～16:10　討論

# 第四單元：感染學

**日期：民國113年11月16日(星期六)**
**時間：09:00～10:20**
**地點：(1F)第二會場**

## 主持人：沈靜芬、楊順成

09:00～09:07　31. 2015 年至 2024 年台灣實驗室確診 SARS-CoV-2 和流感感染兒童的流行病學和臨床表現
李浩遠[1]、陳建志[2]、張恩本[3]、李文源[4]
為恭紀念醫院小兒科[1]、檢驗科[2]、感染科[3]、神經外科[4]

09:07～09:14　32. BA.2 流行時期新冠病毒感染兒童的臨床表現與真實世界使用 NRICM101 的預後
李宜霈[1,2,3]、潘蕙嫻[1,2,3]、陳伯彥[1,2,3]
台中榮民總醫院[1]; 台中榮民總醫院兒童醫學中心[2]; 兒童感染科[3]

09:14～09:21　33. 新冠疫情下之呼吸道融合病毒流行病學改變
白善尹、紀鑫、邱南昌、黃璁寧、黃競瑩、張佳容
台北馬偕兒童醫院兒童感染科

09:21～09:28　34. COVID-19 疫情前後黴漿菌發生率及抗藥性在兒童族群之分析
周昱廷[1,2]、何昇原[1]、顏廷聿[1]、黃冠穎[1]、呂俊毅[1]、李秉穎[1]、黃立民[1]、張鑾英[1]
國立台灣大學醫學院附設醫院小兒部、小兒感染科[1]; 衛生福利部桃園醫院小兒部[2]

09:28～09:35　35. Omicron 變異株在台灣首波及第二波疫情於孩童之臨床特徵比較
林庭維、潘蕙嫻、陳伯彥、黃芳亮
台中榮民總醫院兒童醫學中心兒童感染科

09:35～09:42　36. 兒童加護病房 Klebsiella pneumoniae 群突發：ST792 及新型 ST7120 菌株的傳播
蔡幸予[1]、陳威毓[1]、陳志忠[2]、湯宏仁[3]、蔡瑋峻[1]、黃筱倫[1]、陳昱瑾[4]、張圖軒[1]
奇美醫院兒科部[1]; 奇美醫院醫研部[2]; 奇美醫院內科部[3]; 佳里奇美醫院[4]

09:42～09:49　37. 中台灣單一醫學中心感染曲狀桿菌兒童之臨床分析
劉衍怡[1]、陳智皓[2]、邱玉婷[1]、許玉龍[1]、陳俊安[1]、賴奐丞[1]、衛琇玫[1]、
林曉娟[1]、黃高彬[1]
中國醫藥大學兒童醫院兒童感染科[1]; 中國醫藥大學附設醫院內科部感染科[2]

09:49～09:56　38. 孕婦與嬰兒流感疫苗接種的影響: 出生預後與抗體效價
陳志和[1]、賴韻如[2]、歐陽美珍[1]、鄞辰庭[1]、龔俞安[3]、施信如[3,4,5]、鄭欣欣[2]、
邱政洵[6,7]
高雄長庚紀念醫院兒童內科部[1]; 高雄長庚紀念醫院婦產部[2]; 長庚大學醫學院新興病毒感染研究中心[3]; 林口長庚紀念醫院檢驗醫學部[4]; 長庚大學醫學生物技術暨檢驗學系[5]; 林口長庚紀念醫院兒童感染科[6]; 林口長庚紀念醫院分子感染症研究中心[7]

09:56～10:20　討論

10:20～10:30　休息

# 第五單元：肺臟、急診及重症學

**日期：民國113年11月16日(星期六)**
**時間：10:30～11:30**
**地點：(1F)第二會場**

## 主持人：林建亨、徐仲豪

10:30～10:37　39. 以脈衝震盪法比較六歲以下患有慢性咳嗽的兒童
陳冠齊[1]、林建亨[2]、楊樹文[3]、陳傑賀[2]、宋文舉[2]
中國醫藥大學附設醫院 醫教會[1];中國醫藥大學兒童醫院 胸腔暨重症科[2]、過敏免疫風濕科[3]

10:37～10:44　40. COVID-19 疫情期間氣喘控制與兒童焦慮與憂鬱水平之間的關係:病例對照研究
林侃璇、張惠欣、張通銘、陳家玉、蔡易晉
彰化基督教兒童醫院兒科部

10:44～10:51　41. 病毒性或細菌性肺炎住院兒童的臨床特徵和結果，台灣 2009-2018 年單中心回顧性研究
吳政宏[1,2]、林湘容[3]、張登紘[3]、劉允中[1]、王景甲[1]、吳恩婷[1]、呂立[1]、周佳靚[3]、張鑾英[1]
國立臺灣大學醫學院附設醫院兒童醫院小兒部[1];國立台灣大學醫學院附設醫院金山分院醫療部[2];國立臺灣大學應用力學研究所[3]

10:51～10:58　42. 軟式氣管鏡置放自張式有膜金屬支架於兒科嚴重氣管軟化症
宋文舉、陳杰賀、林建亨
台中 中國醫藥大學, 兒童醫院

10:58～11:05　43. 典型和不完全性川崎病臨床表現和靜脈注射免疫球蛋白反應的比較分析：717 名患者的世代研究
蔡欣芫、郭和昌、黃瀛賢
高雄長庚醫院川崎症中心

11:05～11:12　44. 兒科患者 ECMO 運送的臨床結果：來自三級轉診中心的報告
林益帆[1]、吳恩婷[1]、王景甲[1]、周恆文[2]、黃書健[2]、王植賢[2]
國立台灣大學醫學院附設醫院小兒部[1]、外科部[2]

11:12～11:30　討論

# 附加研討會
# 疫苗的演進與創新：如何提升兒童疫苗接種與疾病預防？

**日期：民國113年11月16日(星期六)**
**時間：12:00～13:30**
**地點：(1F)第二會場**

主持人： 李秉穎教授

12:00～12:05　1. 開幕致詞
李秉穎醫師
台大兒童醫院兒童感染科

12:05～12:25　2. 台灣的後 PCV 時代：PCV 最新病例分享及血清型流行病學匯報
邱政洵醫師
林口長庚紀念醫院兒童感染科

12:25～12:45　3. Latest Strategies & recommendation to improve pneumococcal prevention & Unique feature of ST3 capsule and immune escape mechanism
Professor Emeritus Lulu C. Bravo
MD - College of Medicine, University of the Philippines Manila

12:45～13:00　4. 討論

13:00～13:25　5. How to eliminate HPV related cancer and disease & QA
何宇苓醫師
大心診所

13:25～13:00　6. 討論與結語
李秉穎醫師
台大兒童醫院兒童感染科

# 第六單元：神經精神醫學

**日期：民國113年11月16日(星期六)**
**時間：13:40～15:00**
**地點：(1F)第二會場**

## 主持人：李秀芬、周宜卿

13:40～13:47　45. KCNQ2 突變導致極其不同的表型：功能差異及潛在的 Kv7.2 調節藥物
李英齊[1,2]、楊世斌[3]、張雪愷[3]、黃瑞喜[1,2]
中山醫學大學附設醫院 兒童部 兒童神經科[1]; 中山醫學大學 醫學系[2]; 中央研究院生物醫學科學研究所[3]

13:47～13:54　46. 脊髓鞘內注射 Nusinersen 治療對脊髓肌肉萎縮症病人造成的副作用
蕭宛綾[1]、梁文貞[1,3]、鐘育志[1,2,3]
高雄醫學大學附設醫院小兒部[1], 檢驗醫學部[2], 高雄醫學大學醫學院醫學系小兒學科[3]

13:54～14:01　47. 以像素相減及機器學習分析門診影像客觀診斷注意力不集中併過動兒童
邱益鴻[1]、李盈翰[2]、王三元[1]、歐陽振森[3]、楊瑞成[4]、吳榮慶[5]、林龍昌[4]
義守大學 資訊工程系[1];高雄醫學大學 後醫系[2];高雄科技大學 資訊管理系[3];高雄醫學大學附設醫院 兒科部[4];義守大學 電機系[5]

14:01～14:08　48. 頂葉體積在早產嬰兒呼吸與運動發展間的中介效果
余文豪[1,2]、朱基祥[3]、陳俐文[2]、林永傑[2]、古佳苓[4]、黃朝慶[2,5]
國立成功大學臨床醫學研究所[1]; 成功大學醫學院附設醫院小兒部[2]; 國立高雄大學統計所[3]; 成功大學職能治療學系[4]; 臺北醫學大學附設醫院兒科部[5]

14:08～14:15　49. 兒童虐待與腦部損傷：法律判決中的多重解讀及臨床與法醫專家的觀點
唐青敏[1,2]、陸振芳[3]、夏紹軒[2]、梁光宗[4]、張文[3]、林建志[1,2]、陳愛華[2]、林光麟[1]、李恩沛[2]
林口長庚紀念醫院兒童神經科[1]; 林口長庚紀念醫院兒童重症加護科[2]; 長庚大學護理部[3]; 台灣法務部國際及兩岸法律事務司[4]

14:15～14:22　50. 穴位按壓對於改善兒童因靜脈穿刺的疼痛感成效：一系統性回顧與統合分析隨機分派試驗
杜小昕[1]、黃家榆[2]
澄清綜合醫院中港分院兒科部[1];佛教慈濟醫療財團法人台中慈濟醫院家庭醫學科[2]

14:22～14:29　51. 受虐性腦傷的視力及神經預後在單一家醫學中心經驗
徐美欣[1]、龔嘉德[2]、林盈瑞[1]、郭玄章[1]、劉熙韻[1]
高雄長庚紀念醫院兒科[1];高雄長庚紀念醫院急診科[2];

14:29～15:00　討論

15:00～15:10　休息

# 第七單元：血液學、腫瘤學

**日期：民國113年11月16日(星期六)**
**時間：15:10～16:50**
**地點：(1F)第二會場**

## 主持人：巫康熙、劉彥麟

15:10～15:17　52. PROC 基因變異對靜脈血栓形成的影響：台灣族群的回顧性病例對照研究
陳其延[1]、陳怡潔[2]、蕭自宏[2]、王建得[1]
臺中榮民總醫院兒童醫學中心[1];臺中榮民總醫院醫學研究部[2]

15:17～15:24　53. 開顱手術後硬腦膜下積水對小兒腦腫瘤的影響
王奕倫[1,2]、粘茹恩[3]、吳杰才[3]、蕭羿雯[4]、溫玉娟[4]、張從彥[1,2]、陳世翔[1,2]、江東和[1,2]
林口長庚紀念醫院兒童內科部[1]; 血液腫瘤科[2]; 林口長庚紀念醫院腦神經外科[3]; 林口長庚紀念醫院護理部[4]

15:24～15:31　54. 化療合併 Vemurafenib 於治療嬰幼兒的多系統之蘭格罕氏細胞組織球增生症：個案報告
楊媛甯[1]、葉芸瑄[2]、鄭兆能[1]、陳建旭[1]
國立成功大學醫學院附設醫院小兒部[1];戴德森醫療財團法人嘉義基督教醫院小兒科[2]

15:31～15:38　55. 在某單一機構兒童蘭格罕細胞組織球增生症的 20 年臨床結果分析
顏伯樺、劉希哲、葉庭吉、黃鼎煥、劉充智、鄭佳祐、侯人尹
馬偕兒童醫院兒童血液腫瘤科

15:38～15:45　56. 於 Epirubicine 耐藥的 T 細胞淋巴性白血病細胞株, Niclosamide 可透過調節自噬途徑增強 Epirubicine 的敏感性
李佳玲、黃芳亮
臺中榮民總醫院兒童醫學中心血液腫瘤科

15:45～16:00　討論

16:00～16:10　休息

主持人：王士忠、王建得

16:10～16:17　57. 兒科患者中免疫檢查點抑制劑引起的免疫相關不良事件：來自單一機構的病例系列報告
張從彥、王奕倫、陳世翔、江東和
林口長庚紀念醫院兒童血液腫瘤科

16:17～16:24　58. 台灣 β 地中海貧血患者遺傳變異的相關性
張可歆[1]、陳怡潔[2]、蕭自宏[2]、王建得[1]
臺中榮總兒童醫學中心[1]; 臺中榮總醫學研究部[2]

16:24～16:31　59. 治療同盟在提升兒童及青年腫瘤住院病人與主要照護者整體生活品質之效用
林靜縈[1,8]、洪歆[1,8]、劉彥麟[2,5,8]、朱欣蘭[3,8]、James S. Miser[1,7,8]、黃棣棟[4,6,8]、何宛玲[2,5,8]
臺北醫學大學附設醫院癌症中心[1]、小兒部[2]、7A 病房[3]、神經外科[4]；臺北醫學大學醫學院醫學系小兒學科[5]、醫學院臨床醫學研究所[6]；美國加州希望之城醫學中心小兒部[7]；臺北醫學大學兒童腦瘤照護團隊[8]

16:31～16:38　60. Eltrombopag 治療慢性原發性免疫性血小板減少症兒童的療效和安全性：單一中心 3 年觀察研究
王建得、張可昕、陳其延
臺中榮總兒童醫學中心

16:38～16:50　討論

# 第八單元：過敏免疫風濕病學

**日期：民國113年11月16日(星期六)**
**時間：09:00～10:40**
**地點：(2F)第三會場**

主持人：王壯銘、傅令嫻

09:00～09:07　61. 氫氣吸入治療川崎病小鼠模型冠狀動脈病變
施玟玲[1]、葉宗明[1]、郭明慧[2,3]、黃瀛賢[2,3]、郭和昌[2,3]
國立屏東科技大學[1]; 長庚大學醫學院[2]; 高雄長庚醫院川崎症中心[3]

09:07～09:14　62. 兒童腎病症候群之過敏疾病發生率：TriNetX 資料庫研究
黃永杰、吳文瑜、李庭筑、蔡明瑾、傅令嫻
臺中榮民總醫院兒童醫學中心

09:14～09:21　63. 臍帶間質幹細胞在常氧培養條件下的生長及幹性受到臍帶間質幹細胞低氧培養衍生的細胞外泌體透過糖解和自噬拯救
林佳學[1]、陳治平[2]、楊崑德[1,2]
馬偕兒童醫院[1];馬偕紀念醫院婦產科、醫研部[2]

09:21～09:28　64. Semaphorin 7a 與異位性皮膚炎疾病嚴重程度與 IL-4 和 IL-33 的表達的關聯性
何冠群 [1]、郭明慧 [1,2]、陳定濰 [3]、郭和昌 [1,2]
高雄長庚 兒童內科部 [1]; 高雄長庚 兒童免疫風濕科 [2]; 高雄長庚 生物醫學轉譯研究所 [3]

09:28～09:35　65. 尿液胞外體降低嗜中性白血球氧化壓力及 NETosis
曾芝文 [1,2]、林佳學 [1,2,3]、朱威奇 [3]、楊崑德 [1,2,3]
馬偕兒童醫院 [1];馬偕紀念醫院醫學研究部 [2];國立陽明交通大學臨床醫學研究所 [3]

09:35～09:50　討論

09:50～10:00　休息

## 主持人：葉國偉、魏長菁

10:00～10:07　66. 口服益生菌與鼻內噴霧益生菌對塵蟎誘發氣喘小鼠模型的治療效果比較
顏宜萱 [1]、李育慈 [2]、柯俊良 [2]、廖培汾 [1]、顧明修 [1,2]、孫海倫 [1,2]、呂克桓 [1,2]
中山醫學大學附設醫院 兒童部 過敏免疫風濕科 [1]; 中山醫學大學 醫學院 醫學系 醫研所 [2]

10:07～10:14　67. 論質計酬對兒童氣喘照護成效評估及相關因素探討
賴永清 [1,2]、蔡文正 [1]
中國醫藥大學醫務管理學系 [1];烏日林新醫院過敏氣喘科 [2]

10:14～10:21　68. 臍帶間質幹細胞胞外體不同於類固醇對訓練免疫力的免疫調節作用
楊崑德 [1,2,3]、林佳學 [1,2]、曾芝文 [3]、林以琳 [3]
馬偕兒童醫院 [1], 陽明交通大學臨醫所 [2], 馬偕紀念醫院醫研部 [3]

10:21～10:28　69 . 微角塵蟎是台灣主要的過敏原之一
林致誠 [1]、李育慈 [2]、柯俊良 [2]、廖培汾 [1]、顧明修 [1,2]、孫海倫 [1,2]、呂克桓 [1,2]
中山醫學大學附設醫院 兒童部 過敏免疫風濕科 [1]; 中山醫學大學 醫學院 醫學系 醫研所 [2]

10:28～10:40　討論

10:40～10:50　休息

# 第九單元：醫學人文及教育

**日期：民國113年11月16日(星期六)**
**時間：10:50～11:10**
**地點：(2F)第三會場**

## 主持人：楊令瑀、錢建文

10:50～10:57　70. 應用 I-AIM 框架與 EPA 評估於兒科加護病房焦點式超音波教育: 前導研究
田智瑋[1,2,3]、陳慧玲[3]、彭純芝[4]
馬偕紀念醫院重症醫學科[1]; 馬偕兒童醫院 小兒心臟科[2]; 台灣大學醫學教育暨生醫倫理研究所[3]; 馬偕兒童醫院 兒童重症加護科[4]

10:57～11:04　71. 生成式預訓練模型於臨床病歷書寫之評估
張簡毓倫[1]、吳珮琪[1]、張瑀倢[1]、呂安淇[1]、林俊嘉[2]、謝凱生[3]
中國醫藥大學附設醫院教學部[1]、中國醫藥大學兒童醫院兒童心臟科[2]、結構/先天性心臟病及超音波中心[3]

11:04～11:10　討論

11:10～11:20　休息

# 第十單元：腎臟學

**日期：民國113年11月16日(星期六)**
**時間：11:20～12:00**
**地點：(2F)第三會場**

## 主持人：楊令瑀、錢建文

11:20～11:27　72. 台灣先天腎源性尿崩症之表現型、基因型及長期預後研究
曾敏華[1]、蔡政道[2]、林石化[3]
林口長庚紀念醫院兒童內科部腎臟科[1]; 馬偕兒童醫院腎臟科[2]; 三軍總醫院內科部腎臟科[3]

11:27～11:34　73. 兒童腎臟高回音：十病例回顧
李庭筑、傅令嫻
臺中榮民總醫院兒童醫學中心兒童腎臟科

11:34～11:41　74. 硫酸軟骨素改善餵食腺嘌呤飲食的母親所生雄性子代大鼠的高血壓
田祐霖[1]、陳緯玲[1]、廖偉婷[1]、許茜甯[2]、侯智耀[3]
高雄長庚紀念醫院兒童腎臟科[1], 藥劑部[2], 高雄科技大學水產食品科學所[3]

11:41～11:48　75. 以 3D 超音波估計台灣兒童之腎臟體積
黃永杰、李庭筑、吳文瑜、蔡明瑾、傅令嫻
臺中榮民總醫院兒童醫學中心

11:48～12:00　討論

# 第十一單元：遺傳學、新陳代謝學

**日期：民國113年11月16日(星期六)**
**時間：13:40～15:00**
**地點：(2F)第三會場**

## 主持人：許嘉琪、蔡輔仁

13:40～13:47　76. 運用 WeeFIM 量表評估台灣軟骨發育不全症兒童及青年之功能獨立性:一橫斷面分析

李忠霖[1,2,3,4,5]、莊志光[6,7]、邱慧菁[1]、塗元榕[6]、羅允廷[3]、張雅惠[1,3]、林翔宇[1,3,4,5,6,8]、林炫沛[1,3,4,6,9]

台北馬偕醫院小兒科[1]; 陽明交通大學臨床醫學研究所[2]; 台北馬偕醫院罕見疾病中心[3]; 馬偕醫學院[4]; 馬偕醫護管理專科學校[5]; 馬偕醫院醫學研究部生化遺傳研究組[6]; 輔仁大學醫學院[7]; 中國醫藥大學附設醫院醫學研究部[8]; 臺北護理健康大學嬰幼兒保育系所[9]

13:47～13:54　77. 三庚酸甘油酯與中鏈三酸甘油脂於丙二酸酸血症之應用

蔡俊慧

美國伊利諾伊大學芝加哥醫學系 小兒部遺傳科

13:54～14:01　78. 西弗-羅素氏症候群患者之生長激素治療：台灣一家醫學中心之經驗

林翔宇[1,2,3,4,5]、林炫沛[1,2,3,4,6]、李忠霖[1,3,4,5]、莊志光[2]、張雅惠[1,3]、塗元榕[2]、牛道明[7]

馬偕兒童醫院兒童遺傳暨新陳代謝學科[1]; 馬偕紀念醫院醫學研究部[2]; 馬偕紀念醫院罕見疾病中心[3]; 馬偕醫學院醫學系[4]; 馬偕醫護管理專科學校[5]; 國立台北護理健康大學嬰幼兒保育系[6]; 台北榮民總醫院兒童醫學部[7]

14:01～14:08　79. 應用多食問卷評估台灣小胖威利症候群患者之多食狀況

賴郁欣[1]、蔡立平[1,2]、謝秀盈[1]、劉靜[3]、林炫沛[4]、張碧真[5]、賴文崧[3]、蔡佩姍[5]

佛教慈濟醫療財團法人台北慈濟醫院小兒科[1];臺北市立聯合醫院和平婦幼院區小兒科[2];國立臺灣大學心理系[3];台灣基督長老教會馬偕醫療財團法人馬偕兒童醫院兒童遺傳科與醫學研究室[4];臺北醫學大學護理學院護理學系[5]

14:08～14:15　80. 透過一家三口全外顯子定序資料進行家族分離分析是一個簡單且準確偵測單親二體的方法

黃怡寧[1,2]、梁益誌[1,2]、黃映樺[1,2]、林宜君[1,3]、歐陽美珍[1,3]、洪碧蓮[1,3]、李振豪[1,2]、藍國忠[3,4,5]

高雄長庚紀念醫院兒童內科部[1];高雄長庚紀念醫院遺傳諮詢中心[2];長庚大學醫學院[3];高雄長庚紀念醫院婦產部[4];高雄長庚紀念醫院更年期暨生殖醫學研究中心[5]

14:15～14:22　81. 挑戰傳統治療啟始模式:法布瑞氏症心臟切片中 Gb3 包涵體形成前即可偵測到不可逆的細胞損傷

李忠霖[1,2,3,4,5]、林翔宇[1,3,4,5,6,7]、林炫沛[1,3,5,6,8]、牛道明[2,9,10]
台北馬偕醫院兒科部[1]；陽明交通大學臨床醫學研究所[2]；馬偕醫學院醫學系[3]；馬偕醫護管理專科學校[4]；台北馬偕醫院罕見疾病中心[5]；馬偕醫院醫學研究部生化遺傳研究組[6]；中國醫藥大學附設醫院醫學研究部[7]；臺北護理健康大學嬰幼兒保育系所[8]；台灣法布瑞氏症臨床試驗聯盟[9]；台北榮民總醫院兒科部[10]

14:22～14:29　82. 台灣黏多醣症第一型新生兒篩檢計畫與篩檢陽性個案之長期追蹤

林翔宇[1,2,3,4,5]、林炫沛[1,2,3,4,6]、李忠霖[1,3,4,5]、莊志光[2]、張雅惠[1,3]、塗元榕[2]、羅允廷[3]、牛道明[7]、高淑敏[8]、何慧珍[9]
馬偕兒童醫院兒童遺傳暨新陳代謝學科[1]; 馬偕紀念醫院醫學研究部[2]; 馬偕紀念醫院罕見疾病中心[3]; 馬偕醫學院醫學系[4]; 馬偕醫護管理專科學校[5]; 國立台北護理健康大學嬰幼兒保育系[6]; 台北榮民總醫院兒童醫學部[7]; 中華民國衛生保健基金會新生兒篩檢中心[8]; 台北病理中心新生兒篩檢中心[9]

14:29～14:36　83. 超常鏈加長酶缺乏症

蔡俊慧
美國伊利諾伊大學芝加哥醫學系 小兒部遺傳科

14:36～15:00　討論

15:00～15:10　休息

# 第十二單元：內分泌學

**日期：民國113年11月16日(星期六)**
**時間：15:10～15:50**
**地點：(2F)第三會場**

## 主持人：朱德明、吳怡磊

15:10～15:17　84. 第一型糖尿病兒童及青少年之糖化血色素的年代趨勢
周融[1]、李燕晉[1]、黃琪鈺[1]、林昭旭[2]、高宇恩[1]、余佳倩[1]、蔡政勳[1]、丁瑋信[1]
馬偕兒童醫院兒童內分泌科[1]; 新竹馬偕兒童醫院兒童內分泌科[2]

15:17～15:24　85. 第一型糖尿病兒童和青少年之糖化血色素軌跡及預測因子
余佳倩[1]、李燕晉[1]、黃琪鈺[1]、林昭旭[2]、高宇恩[1]、周融[1]、蔡政勳[1]、丁瑋信[1]
馬偕兒童醫院兒童內分泌科[1]; 新竹市立馬偕兒童醫院兒童內分泌科[2]

15:24～15:31　86. 缺鐵性貧血和身材矮小:一項全國人口回顧性研究
周琬庭[1,2]、朱君浩[2,3]、丁宜瑄[2]、林建銘[2*]
童綜合醫療社團法人童綜合醫院[1];國防醫學院三軍總醫院小兒部[2];國軍左營總醫院小兒科[3]

15:31～15:38　87. 產前與產後塑化劑的曝露對幼兒日後行為發展之影響
黃奕翔、洪碧蓮、蔡長谷、蔡智閔、牛震廣、于鴻仁
高雄長庚紀念醫院兒科

15:38～15:50　討論

15:50～16:00　休息

# 第十三單元：青少年醫學

**日期：民國113年11月16日(星期六)**
**時間：16:00～16:30**
**地點：(2F)第三會場**

## 主持人：王麗潔、蔡孟哲

16:00～16:07　88. 肥胖青少年在心理與飲食行為差異的探索：臨床族群的橫斷面研究
邱煒勝[1]、陳映筑[2]、蔡孟哲[1]
國立成功大學醫學院附設醫院小兒部[1]; 國立成功大學醫學院附設醫院護理部[2]

16:07～16:14　89. 2009 至 2020 年台灣地區兒童青少年高血壓盛行率之趨勢
徐萬夫[1,2]、謝凱生[3]
國防醫學院三軍總醫院小兒部[1];國立陽明交通大學急重症醫學研究所[2];中國醫藥大學兒童醫院小兒心臟科、結構/先天性心臟病及超音波中心[3]

16:14～16:21　90. 新冠疫情前後青少年及年輕成人自殺與自殘行為趨勢及相關前驅因子變化
宋品蒨[1]、謝如浩[2]、陳炳元[2]、蔡瑋峻[1]、陳昱瑾[3]、周琪[1]、張圖軒[1]
奇美醫院兒科部[1]; 奇美醫院急診醫學部[2]; 佳里奇美醫院[3]

16:21～16:30　討論

# 教育演講：
# 兒童發展篩檢服務

**日期：民國113年11月17日(星期日)**
**時間：09:00～12:00**
**地點： (2F)第一會場**

主持人：陳慧如醫師、麥建方醫師

09:00～09:50　1. 彰化縣兒童健康照護網與兒童發展篩檢
葉彥伯局長
彰化縣衛生局

09:50～10:00　2. 討論

10:00～10:50　3. 彰化縣兒童健康照護網醫院端共照模式
張通銘副主任
彰化基督教兒童醫院

10:50～11:00　4. 討論

11:00～11:50　5. 彰化縣兒童健康照護網診所端共照模式
賴昇層院長
長頸鹿小兒科診所

11:50～12:00　6. 討論

# 附加研討會
# 兒科COVID-19：
# 後疫情時代的健康管理與疫苗策略

**日期：民國113年11月17日(星期日)**
**時間：12:00～13:30**
**地點： (2F)第一會場**

主持人：黃立民教授、邱政洵教授

12:00～12:05　1. 開幕致詞
黃立民教授
台大兒童醫院

12:05～12:40　2. COVID-19 大流行後的兒科健康：瞭解和減輕免疫債務
黃瑽寧醫師
馬偕兒童醫院

12:40～13:25　3. 兒科 COVID-19：探討長期影響與疫苗的重要性
張鑾英教授
台大兒童醫院

13:25～13:30　4. 問討論與結語
邱政洵教授
林口長庚紀念醫院

# 頒獎

**日期：民國113年11月17日(星期日)**
**時間：13:40～14:10**
**地點： (2F)第一會場**

13:40～14:10　頒獎

1. 魏火曜兒科優秀論文獎
   得獎者：王培瑋醫師(臺北市立聯合醫院和平婦幼院區)

2. 輝瑞優秀論文獎
   得獎者：顏辰瑋醫師(林口長庚紀念醫院)
   張弘洋醫師(馬偕兒童醫院)

3. 高度引用優秀論文獎
   得獎者：羅福松醫師(林口長庚紀念醫院)
   賴申豪醫師(林口長庚紀念醫院)
   吳子聰醫師(臺北榮民總醫院)

4. 年輕研究者獎

14:10～14:20　休息

# 醫學的科學、倫理與法律講座：
# 數位世代的哀愁與解方

**日期：民國113年11月17日(星期日)**
**時間：14:20～16:20**
**地點： (2F)第一會場**

主持人：倪衍玄理事長

14:20～15:10　1. 數位憂鬱症-千禧世代的文明病
林煜軒副研究員級主治醫師
國家衛生研究院群體健康科學研究所

15:10～15:20　2. 討論

15:20～16:10　3. 兒少自殺防治之挑戰與跨域合作
吳佳儀教授
臺灣大學護理學系

16:10～16:20　4. 討論

# 專題演講：
# 青少年健康促進

**日期：民國113年11月17日(星期日)**
**時間：10:00～12:00**
**地點： (1F)第二會場**

主持人：王麗潔醫師

10:00～10:05　1. 開場致詞

10:05～10:55　2. 如何正確的動？談青少年體適能及運動傷害
林杏青醫師
杏仁復健科診所

10:55～11:05　3. 討論

11:05～11:55　4. 如何正確的吃？談青少年過胖與飲食迷思
廖瑞華營養師
臺中榮民總醫院

11:55～12:00　5. 綜合討論及結語

# 附加研討會
# RSV全嬰防護現況與展望

**日期：民國113年11月17日(星期日)**
**時間：12:00～13:30**
**地點：(1F)第二會場**

主持人：倪衍玄醫師、紀鑫醫師、黃高彬醫師

12:00～12:05　1. 開幕致詞
倪衍玄理事長
臺灣兒科醫學會

12:05～12:25　2. 解碼 RSV：嬰幼兒 RSV 疾病及經濟負擔
穆淑琪醫師
新光醫院

12:25～12:45　3. 創新解方: Nirsevimab 全嬰兒免疫接種
林千裕醫師
新竹市立馬偕兒童醫院

12:45～13:05　4. RSV 真實世界數據: 各國全嬰兒免疫接種成效
陳伯彥醫師
台中榮民總醫院

13:05～13:25　5. 綜合討論

13:25～13:30　6. 閉幕致詞
黃高彬醫師
中國醫學大學附設醫院

# 特別演講：
# 兒童醫療的現況與展望

**日期：民國113年11月17日(星期日)**
**時間：09:00～11:40**
**地點：第二醫療大樓(2F)第八會議室**

## 主持人：陳銘仁副理事長、陳家玉院長

09:00～09:30　1. 開幕致詞
陳亮妤副署長(衛生福利部中央健康保險署)
劉玉菁副司長(衛生福利部醫事司)
黃秀芳立法委員(社會福利及衛生環境委員會召委)

09:30～09:50　2. 兒童醫院篇
李旺祚院長
台大醫院兒童醫院

09:50～10:10　3. 醫學中心篇
邱元佑主任
成大醫院

## 主持人：王志堯院長、楊俊仁院長

10:10～10:30　4. 區域醫院篇
黃崇濱副院長
光田綜合醫院

10:30～10:50　5. 偏鄉醫院篇
游昌憲主任
台東馬偕醫院

10:50～11:40　6. 綜合討論
與談人：陳亮妤副署長(衛生福利部中央健康保險署)
劉玉菁副司長(衛生福利部醫事司)
黃秀芳立法委員(社會福利及衛生環境委員會召委)
各兒童醫院院長

協辦單位：瑞信兒童醫療基金會

# 一般演講：書面報告

1. 青春期女孩的肝膽管癌

刁茂盟[1]、陳肇隆[2]、黃昭誠[3]、邱泰然[4]
高雄長庚紀念醫院及長庚大學 兒科[1]、外科[2]、病理學[3]、內科[4]

# 一般演講：口頭報告

1 **Febrile Young Infants less than 120 Days Old in post-COVID-19 Pandemic Era: Sterile Pyuria or Urinary Tract Infection?**
後 COVID-19 時代，小於 120 天的發燒嬰幼兒：無菌膿尿還是泌尿道感染？

Yin-Ting Chen, Chih-Sung Lan, Ming-Luen Tsai, Hsiang-Yu Lin, Hao-Wen Cheng, Hsiao-Han Yang, Hsiao-Yu Chou, Hung-Chih Lin, Shang-Po Shen
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陳映廷、藍智嵩、蔡明倫、林湘瑜、鄭皓文、楊曉涵、邱曉郁、林鴻志、沈上博
中國醫藥大學兒童醫院新生兒科

**Background:** Increasing number of COVID-19 infected young infants after COVID-19 outbreak. Urinary tract infection (UTI) yield the severe bacterial infection in febrile young infants. The accurate incidence of pyuria and UTI for young infants with or whithout COVID-19 infection in post-pandemic period is remained unclear.
**Methods:** We retrospectively collected the clinical and laboratory data of febrile young infants (< 120 days old) who admitted to sick baby room of a tertiary referral hospital in Taiwan with a temperature of at least 38 °C who underwent COVID-19 testing in the emergency department or hospital between March 1, 2023 and Feburary 29, 2024.
**Results:** Among 265 febrile young infants with COVID-19 testing, 124 (46.8) tested positive. Compared with infants who tested negative, a lower proportion of infants who tested positive for COVID-19 had UTI [10/124 (8.0%) vs 47/141 (33.3%), $p < 0.001$). The incidence of sterile pyuria is relatively high in COVID-19 infected group, but further analysis reached no statistical significance [45/124 (36.3%) vs 37/144 (25.7%), p=0.077].
**Conclusions:** Among COVID-19 infected young infants, the incidence of pyuria is high but definite UTI is low while comparing to non-COVID-19 infected group. Routinely administrate empirical antibiotics to febrile COVID-19 infected young infants may not be necessary.

2 **Inflammatory Cytokines in Gastric Fluid at Birth and the Association with Clinical Outcomes in Infants with Respiratory Distress After Birth**
探討於出生後有呼吸窘迫的新生兒，剛出生後的胃液內發炎物質與其臨床預後相關性

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Department of Pediatrics, National Cheng Kung University Hospital, College of Medicine, National Cheng-Kung University, Tainan, Taiwan[1]; Institute of Clinical Medicine, College of Medicine, National Cheng Kung University , Tainan, Taiwan[2]
林威廷[1]、許育祥[2]、林毓志[1]
國立成功大學醫學院附設醫院小兒部[1];國立成功大學臨床醫學研究所[2]

**Background:** Respiratory distress in newborns, a frequent cause of Neonatal Intensive Care Unit (NICU) admissions for full-term and late preterm infants, is often attributed to transient tachypnea arising from inadequate fluid clearance in fetal lungs. Despite its typically self-resolving nature, clinicians often administer antibiotics as a precaution against potential neonatal sepsis linked to intrauterine infections. While previous studies have affirmed the predictive capabilities of inflammatory agents in amniotic and gastric fluid for intrauterine inflammation and sepsis risk in preterm infants, parallel research in term and late preterm infants is lacking. Furthermore, prior investigations focused on pathological aspects of maternal chorioamnionitis but failed to elucidate associated clinical outcomes in this population.
**Methods:** Infants with a gestational age of more than 34 weeks with respiratory distress were enrolled. Their gastric fluid was collected within the first hour following birth. The cytometric bead array (CBA) panel with IL1β, IFN-α2, IFN-γ, TNF-α, MCP-1, IL-6, IL-8, IL-10, IL-12, IL-17A, IL-18, IL-23, IL-33 was used to evaluate the cytokines in the gastric fluid. We then compared the cytokines based on their clinical conditions.
**Results:** From December 12, 2022, to April 1, 2024, 142 infants were enrolled. Sixty-four infants had more than 1 mL of gastric fluid collected were included in our study. The levels of cytokines in the gastric fluid were compared based on the presence of prolonged ventilator use (more than 48 hours), prolonged antibiotic use (more than 72 hours), and prolonged ICU length of stay (more than 5 days). All cytokines showed no statistically significant difference. We then compared the inflammatory mediators among term infants. The levels of IL-8 were significantly higher (p=0.042) in the higher CRP group.
**Conclusions:** IL-8 in the gastric fluid obtained after birth may be a predictor in term infants with elevated CRP. It might spare infants from undergoing blood draws and unnecessary exposure to antibiotics. This approach may offer a more streamlined and cautious strategy for managing neonatal health.

3 **Assessing the Renal Benefits of Caffeine in Preterm Neonates: Findings from a Retrospective Study**
評估咖啡因對早產兒腎臟健康的研究回溯性病例研究結果

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**Background:** Current literature suggests that caffeine may offer protective benefits on kidney function; however, ongoing monitoring and further experiments should be conducted to understand the impact of caffeine use in the clinical care of preterm infants. We investigate the impact of caffeine use on renal health in preterm infants through a retrospective observational cohort study.
**Methods:** Retrospective review of medical records of Very low birth weight infants(VLBWIs) admitted to China Medical University Children's Hospital during 2020-2023 were used for case-control study. Case group(caffeine-exposed) and control group(Non-caffeine exposed) taken in 1:1 ration would be conducted. Information regarding birth characteristics, clinical outcomes, biochemistry data and urine output in the first 7 days were used to measure the effects of caffeine on renal health.
**Results:** Medical records of 198 ELBWIs were reviewed and 188 infants were enrolled while another 10 infants who expired in the first week were excluded. On average, caffeine treatment began at 3.6 days old(range: 0-45 days), with 64% initiated within the first two days of life. The average duration of caffeine exposure was 28.9 days (range: 1-73 days). Compared to the non-exposed group, caffeine exposure resulted in higher urine output at second (exposed: 5.1 ± 1.8 ml/kg/day; non-exposed: 4.4 ± 1.7 ml/kg/day, p=0.04) and seventh (exposed: 4.7 ± 1.4 ml/kg/day; non-exposed: 3.9 ± 1.2 ml/kg/day, p＜0.01) days of life. By the seventh day, the caffeine-exposed group had a significantly lower proportion of patients with urine output below 3 ml/kg/day (6.3% vs 19.3%, odds ratio: 0.268, 95% CI [1.369-10.143], p=0.01) compared to the non-exposed group. No significant differences were observed in serum creatinine or electrolyte levels between groups.
**Conclusions:** Our study highlights the potential positive renal benefits of caffeine administration in preterm infants, including higher urine output and lower potassium levels in the first 7 days. Furthermore, there is a trend towards early use(＜48hour-old) of caffeine. Further prospective studies are warranted to confirm these findings and to optimize caffeine dosing strategies for this vulnerable population.

4 **The Risk of Long-term Ophthalmological Complications in Taiwanese Preterm Infants: A Nationwide Case-control Study**

台灣早產兒發生長期眼科併發症的危險因子:一全國性病例對照研究

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**Background:** The aim of this study is to determine whether different maturity levels and birth weights could affect the risk of long-term ophthalmological complications in preterm infants.
**Methods:** We conducted a nationwide case-control study. Newborns born between 2009 and 2012 were identified. Those who with congenital deformities, missing data on urban area, sex, gestational week at birth or birth weight, or died before the age of 8 years were excluded. Then infants were divided into full-term, preterm, and preterm with retinopathy of prematurity (ROP) cohorts based on their basic characteristics at birth.The primary outcomes were ophthalmological complications, such as strabismus, refractive error, amblyopia, cataracts, and glaucoma, in preterm infants with or without an adjusted odds ratio compared with full-term infants.
**Results:** In the final, 735,702 infants were included in the analysis. There were 727,403, 7,165, and 1,134 newborns in the full-term, preterm without ROP, and preterm with ROP cohorts, respectively. Premature infants, whether without ROP or with ROP, had an elevated risk of various ophthalmic complications, with adjusted odds ratios (aORs) ranging from 1.48 to 2.74 and 1.90 to 10.34, respectively. Extremely low birth weight contributes to an increased risk of various ophthalmic complications, with aORs ranging from 2.21 to 6.55. Moreover, a higher number of negative variables, such as preterm birth or low body weight, increased the risk of various ophthalmological complications, with the aOR falling within the range of 1.03 to 23.86.
**Conclusions:** Immaturity and low body weight were the risk factors for ophthalmological complications in preterm infants. Coexistence of these two risk factors increased the risk of ophthalmological complications. Our results are important for healthcare providers and researchers to design comprehensive follow-up plans for preterm infants.

5 **Factors Influencing Weight Percentile at Discharge in Very Low Birth Weight Infants from the Taiwan Neonatal Network (TNN) Database**

以台灣新生兒醫療網絡（TNN）資料庫分析影響極低出生體重嬰兒出院時之體重百分位數的因素

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**Background:** Extrauterine growth retardation (EUGR), defined as a weight percentile below the 10th percentile at

discharge, is a significant concern for very low birth weight (VLBW) premature infants. This study aims to analyze the factors influencing weight percentile at discharge using the Fenton growth chart based on data from the Taiwan Neonatal Network (TNN) database.

**Methods:** Data on maternal, neonatal characteristics, and nutritional factors of VLBW preterm infants were collected from the TNN database from 2019 to 2023. Univariate and multivariate multiple regressions were used to determine significant factors influencing weight percentile at discharge.

**Results:** The study included 790 VLBW preterm infants (396 males, 394 females) with a mean gestational age of 28.7 weeks and a mean birth weight (BBW) of 1115.2 grams. At discharge, 49.9% of the infants were classified as EUGR. Univariate analysis revealed significant maternal, neonatal, and nutritional factors influencing weight percentile at discharge, including cesarean section, multiple births, pregnancy-induced hypertension, chorioamnionitis, prenatal MgSO4 exposure, BBW percentile, 5th Apgar score, length of stay, retinopathy of prematurity, highest weight loss percentage after birth, amount of trophic feeding, growth rates after regaining BBW to 36 weeks of postmenstrual age (PMA), and weight percentile at 36 weeks of PMA. Multivariate analysis identified BBW percentile, highest weight loss percentage after birth, length of stay, growth rates after regaining BBW to 36 weeks of PMA, and weight percentile at 36 weeks of PMA as significant factors affecting weight percentile at discharge. Additionally, the rate of regaining BBW from the lowest weight by day was found to be the most crucial factor influencing weight percentile at 36 weeks of PMA.

**Conclusions:** This study highlights the importance of the rate of regaining birth weight from the lowest weight by day on the weight percentile at 36 weeks of PMA in VLBW preterm infants during their stay in the neonatal intensive care unit. Identifying and addressing these factors can help improve growth outcomes for VLBW infants.

6

**Maternal Diesel Exhaust Particles Exposure Exacerbates Neonatal Hyperoxia-Induced Lung Injury in Offspring Rats**

母鼠懷孕時暴露柴油機廢氣微粒會加重新生兒時期高氧對於子代大鼠的肺部傷害

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張毓珊[1]、周綉珠[2]、陳中明[3,4]
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**Background:** Air pollution poses a significant global health threat. Prenatal exposure to air pollution is associated with increased lung disease risk in offspring, but animal studies supporting this are limited. We hypothesized that maternal diesel exhaust particle (DEP) exposure during pregnancy would exacerbate neonatal hyperoxia-induced lung injury and disrupt lung development in rats.

**Methods:** Pregnant Sprague-Dawley rats received daily intranasal instillations of either 500 μg DEP in PBS (DEP group) or PBS alone (control group) from gestational day 16 to 21 (canalicular and early saccular stage). After birth, pups were exposed to room air (RA) or hyperoxia (85% oxygen, O2). Offspring were grouped as PBS + RA, PBS + O2, DEP + RA, and DEP + O2. Lungs were analyzed at postnatal day 14 (P14).

**Results:** Offspring from DEP-exposed dams had lower birth weights compared to controls (6.54 ± 0.23 g vs 7.03 ± 0.20 g, $p < 0.001$). Pups exposed to hyperoxia had lower body weights at P14 (DEP+O2 vs DEP+RA, 24.40 ± 1.47 g vs 28.61 ± 1.08 g, $p < 0.001$; PBS+O2 vs PBS+RA, 23.23 ± 0.75 vs 26.46 ± 1.53 g, $p < 0.001$). Lungs of offspring reared in hyperoxic condition showed large and simple distal airspace, indicating disrupted alveolarization (increased mean linear intercept lengths, Lm, in PBS+O2 vs PBS+RA, $p < 0.01$). Hyperoxia amplified these effects in DEP-exposed offspring (Lm DEP+O2 vs PBS+O2, $p < 0.05$). Maternal DEP exposure alone did not significantly affect vessel numbers, but hyperoxia decreased vWF-positive blood vessels ($p < 0.0001$). Lung tissues of offspring from DEP-exposed dams showed elevated NF-κB p65 and 8-OHdG levels (DEP+RA vs PBS+RA, $p < 0.05$), with further increases after hyperoxia (DEP+O2 vs DEP+RA, $p < 0.0001$). Inflammatory cytokines including IL-1 and TNF-α were elevated in DEP-exposed offspring (DEP+RA vs PBS+RA) and further increased by hyperoxia (DEP+O2 vs DEP+RA).

**Conclusions:** Maternal DEP exposure disrupted lung development, increased oxidative stress, and lung inflammation in P14 rat offspring. Postnatal hyperoxia exacerbated these effects synergistically.

7

**Mesenchymal Stem Cell Therapy Protects Against Encephalopathy of Prematurity Through Restoring Neuroserpin Expression in the Neonatal Rat**

間質幹細胞治療藉由恢復 neuroserpin 表現來保護新生鼠早產兒腦病變

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Department of Pediatrics, Chi Mei Medical Center, Tainan[1]; Department of Biotechnology and Food Technology, Southern Taiwan University of Science and Technology, Tainan[2]; Department of Medical Research, Chi Mei Medical Center, Tainan[3]; Department of Pediatrics, School of Medicine, National Defense Medical Center, Taipei[4]
王藍浣[1,2]、熊建瑋[3]、張菁萍[3]、林茂村[3]、陳錫洲[4]
奇美醫院兒科部[1];南台科技大學生物與食品科技系[2];奇美醫院醫學研究部[3];國防醫學院小兒學科[4]

**Background:** Hypoxic-ischemia (HI), infection/inflammation and reperfusion injury are pathogenic factors of encephalopathy of prematurity, which involves maturational disturbances of oligodendrocyte progenitor cells (OPC) and neurons/axons. Mesenchymal stem cells (MSCs) may promote neuroserpin production, which is neurotrophic for the development of OPC and neurons in the premature brain. This study investigated the therapeutic effects of MSCs on developmental disturbances caused by lipopolysaccharide (LPS)-sensitized HI/reperfusion (LHIR) injury, a model that simulates encephalopathy of prematurity in the neonatal rat, and focused on the roles of neuroserpin expression.

**Methods:** On postnatal day 2 (P2), rat pups received an intraperitoneal injection of LPS (5 μg/kg) followed by HI/reperfusion insult through temporary ligation of unilateral common carotid artery and exposure to 6.5% oxygen for 90 minutes. At 24 hours post-LHIR, MSCs (5×104 cells/5 μl) were intracerebrally administered into the left lateral ventricle. Neurological function assessments as well as brain tissue examinations were conducted between P5 and P56.
**Results:** After LHIR injury, MSC therapy significantly reduced cell death in subplate neurons, attenuated axonal damage, and facilitated synaptophysin synthesis in the cortex. It also alleviated OPC maturation arrest and preserved the complexity of myelinated axons in the white matter. The structural repair correlated with improved performance in cognitive, motor, and behavioral tests. These beneficial effects were associated with restored neuroserpin expression in subplate neurons.
**Conclusions:** MSC therapy ameliorated developmental disturbances after LHIR injury through protection of neuroserpin expression, offering a new perspective on potential treatment for encephalopathy of prematurity.

8 **Weight Trajectory during the First Year and Later Overweight in Small for Gestational Age Infants**
胎兒小於妊娠年齡之兒童出生第一年之體重軌跡和日後體重過重之關聯性

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張毓珊[1]、余聰[2]
奇美醫院急診醫學部[1]; 國立成功大學醫學院公共衛生研究所[2]

**Background:** Growing evidence suggests that babies with intrauterine growth restriction followed by rapid weight gain in infancy have higher risk of later obesity. We aimed to investigate the association of postnatal growth trajectory with the development of overweight/obesity in later childhood.
**Methods:** We obtained data from a prospective national cohort study in Taiwan. We analyzed data of late preterm and term SGA infants born between April, 2016 and June, 2017 who completed evaluation at 3m, 6m, 12m, 18m, 24m and 36m. A group-based trajectory modelling (GBTM) was applied to classify children with similar weight-for-age z-score trajectory patterns in the first year of life. Multiple logistic regression was performed to examine the association between weight gain trajectory patterns and the risk of overweight/obesity at 3 years of age.
**Results:** A total of 690 SGA infants were included. Four weight gain trajectories were identified, including rapid weight gain in the first three months with catch-up (group 1, 17.6%), steady weight gain with catch-up (group 2, 55.3%), regression in the first three months without catch-up (group 3, 19.5%) and steady weight gain without catch-up (group 4, 7.0%). SGA infants in group 1 had the highest BMI and BMI-for-age z-scores at 3 years of age. In addition, 25.5% of infants in group 1 were found to be overweight/obese, compared with 13.8% in group 2, 5.2% in group 3 and 10.5% in group 4. That said, rapid weight in the first three months (group 1) increased the risk of overweight/obesity by 2.13 times at 3 years of age (OR=2.13, 95% CI: 1.23–3.68; $p < 0.05$), as compared with group 2 (steady weight gain with catch-up).
**Conclusions:** Rapid weight gain of late preterm and term SGA infants in the first 3 months of life increased the risk of overweight/obesity at 3 years of age.

9 **Low-Grade Intraventricular Hemorrhage Is Related to Brain Microstructure Alteration and Neurodevelopmental Abnormalities in Extremely Premature Infants: A Quantitative MRI Study**
輕度腦室內出血對極度早產兒腦微結構改變與神經發展異常的影響：定量 MRI 研究

Mei-Yin Lai, Kai-Hsiang Hsu, Chih-Chen Chang[1], Ming-Chou Chiang, Chien-Chung Lee, Shih-Ming Chu, Reyin Lien, Ren-Huei Fu, Jen-Fu Hsu
Division of Neonatology, Department of Pediatrics, Chang Gung Memorial Hospital; Department of Diagnostic Radiology[1], Chang Gung Memorial Hospital, Taoyuan
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**Background:** Emerging evidence indicates that low-grade intraventricular hemorrhage (IVH grades 1-2) may adversely affect the neurodevelopment of extremely preterm infants. This prospective study aimed to elucidate the relationship between low-grade IVH, MRI abnormalities at term-equivalent age (TEA), and subsequent neurodevelopment.
**Methods:** Infants with birth weight of < 1000 grams or gestational age (GA) of < 29 weeks, admitted between Jan 2021 and July 2023, were included. Exclusions were perinatal asphyxia, severe IVH, and congenital anomalies. Infants with low-grade IVH were compared to those without IVH regarding perinatal factors, neuroimaging abnormalities, and early neurodevelopmental outcomes. Cranial MRI abnormalities in cerebral white matter, cerebral grey matter, cerebellum, and brain growth were assessed using the Kidokoro scoring system at TEA. Neurodevelopmental outcomes were assessed at 6 and 12 months of corrected age using the Bayley Scales of Infant and Toddler Development, third edition.
**Results:** The study included 47 extremely preterm infants (mean GA 26.8 ±1.8 weeks, birth weight: 822 ±186 grams), with MRI and follow-up neurodevelopmental assessments completed in 44 infants. Perinatal demographic factors were similar between groups. TEA-MRI findings showed a significantly higher incidence of deep grey matter signal abnormalities in infants with low-grade IVH compared to those without IVH (46.7% vs. 0%, $p < 0.001$). Although not statistically significant, the IVH group displayed a greater degree of impaired cerebral white matter growth (median score: 2 [1-2] vs. 0 [0-1.5], $p = 0.07$) and a higher global brain abnormality score (3 [1-3] vs. 1 [0-3], $p = 0.06$). Infants with low-grade IVH exhibited a higher incidence of early cognitive delay (60% vs 25.9%, $p = 0.029$) at 6 months of corrected age.
**Conclusions:** Extremely preterm infants with low-grade IVH had higher risks of deep grey matter abnormalities, potential global brain abnormalities, and impaired cerebral white matter development on TEA-MRI. Early neurodevelopmental assessments suggested cognitive impairments. The brain microstructure alterations emphasized the importance of targeted early intervention for these at-risk infants.

10 **The Association between Perinatal Pharmacologic Treatments and Spontaneous Intestinal Perforation in Extremely Preterm Infants: A Propensity Score Matching Study**

周產期藥物使用與極度早產兒自發性腸穿孔之關聯性：以傾向分數匹配之病例對照研究

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**Background:** Spontaneous intestinal perforation (SIP) is an emergency in extremely low birthweight (ELBW, ＜1000g) preterm infants. Beyond immaturity, the potential adverse effects of antenatal or postnatal pharmacologic treatment have been considered, but previous retrospective cohort or case-control studies yielded inconclusive results. This study aimed to evaluate the impact of pharmacologic agents on SIP by employing propensity score (PS) matching to minimize population bias.
**Methods:** We retrospectively reviewed ELBW infants between 2014–2023 to identify SIP cases. Each SIP case was confirmed through medical notes, surgical consultation and authors' review, and was matched at 1:3 ratio using PS including gestational age (GA), birthweight (BW), gender and year of birth. Demographics and pharmacologic agents used antenatally (antenatal steroid, MgSO4, indomethacin) and postnatally (surfactant, hydrocortisone, dexamethasone, indomethacin, ibuprofen, caffeine, milrinone, and inotropes (dopamine, dobutamine, epinephrine)) were analyzed. Only the medications that started 24 hours before the onset of SIP or the corresponding age (control) were adopted.
**Results:** A total of 858 ELBW were admitted to our unit and 28 SIP cases (GA 25.3±2.1 weeks, BW 735±167 g) were identified. The incidence of SIP is 3.3% among ELBW infants. Comparing to PS-matched controls (n=84), SIP cases demonstrated a significantly increase in usage of hydrocortisone (25% (7/28) vs. 9.5% (8/84), p=0.037) and three-combined inotropic agents (17.9% (5/28) vs. 2.4% (2/84), p=0.010). No difference was seen among other medications. In logistic regression, use of hydrocortisone and combined three inotropic agents remained independent risk factors for SIP, and the OR (95% CI) were 3.4 (1.1–10.9) and (2.1 (1.2–3.8)), respectively.
**Conclusions:** This is the first study using PS-matching to analyze the association between pharmacologic treatment and SIP in ELBW infants, and we found postnatal hydrocortisone and inotropes were independent risk factors. Clinicians should be aware of these risk factors and remain vigilant for signs of SIP when administering hydrocortisone and inotropes.

11 **Maternal aspartame exposure alters lung Th1/Th2 cytokine balance in offspring through nuclear factor-κB activation**

母體阿斯巴甜暴露透過 NF-κB 活化影響後代肺部 Th1/Th2 細胞激素平衡

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**Background:** Epidemiological evidence suggests that maternal intake of nonnutritive sweeteners are positively associated with early childhood asthma incidence. We investigated the effects of maternal aspartame exposure during pregnancy and lactation on lung Th1/Th2 cytokine balance and intestinal microbiota in offspring and explored the mechanisms that mediate these effects.
**Methods:** Pregnant BALB/c mice were randomly divided on gestational day 7 into two dietary intervention groups: control (drinking water only) and aspartame (drinking water + 0.25 g/L aspartame) groups. The dams nursed their offspring for 3 weeks. On postnatal day 21, heart blood samples were collected, and immunoglobulin E levels were measured. Microorganisms from the lower gastrointestinal tract were sampled using a culture-independent approach. Lung tissues were harvested for biochemical analyses, including metabolomic profiling.
**Results:** Maternal aspartame exposure increased the body weight of the dams from gestational day 7 to postnatal day 21 and the body weight of the offspring from birth to postnatal day 21. Maternal aspartame exposure significantly increased the levels of Th2 cytokines (interleukin [IL]-4, IL-5, and IL-13) and immunoglobulin E but reduced that of a Th1 cytokine (interferon-γ) in the offspring's lung tissues. The altered Th1/Th2 balance was accompanied by increased lung nuclear factor-κB activation. The gut microbiota of the offspring did not differ significantly between the control and aspartame groups. Metabolomic profiling of lung tissues revealed distinct metabolic alterations associated with maternal aspartame exposure.
**Conclusions:** Our findings suggest maternal aspartame exposure influences lung Th1/Th2 cytokine balance in offspring through nuclear factor-κB activation.

12 **Maternal Antibiotic/Steroid Use and Infections Increase the Risk of Early-Onset Sepsis in Preterm Neonates: A Nationwide Population-Based Study**

母親抗生素/類固醇使用及感染增加早產新生兒早發性敗血症風險：全國性人口研究

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**Background:** Early-onset sepsis (EOS) is a critical condition in preterm infants, especially very preterm ones. The global evolution of EOS pathogens necessitates re-evaluating risk factors to develop new prevention and treatment strategies.
**Methods:** This nationwide case-control study in Taiwan analyzed data from the National Health Insurance Research Database, Birth Reporting Database, and Maternal and Child Health Database from 2010 to 2019. The study included 176,681 mother-child pairs with preterm births. We identified 2,942 clinical EOS cases from 5,535 diagnosed sepsis cases, excluding unlikely cases. A control group of 14,710 preterm neonates without EOS was selected at a 1:5 ratio. Conditional logistic regression analysis adjusted for covariates.
**Results:** Clinical EOS did not decrease from 2010 to 2019 and increased since 2017. No significant differences were observed between the sepsis and control groups in terms of sex, birth year, or birth month. Significant risk factors for EOS included maternal antibiotic or steroid usage, fever, chorioamnionitis, maternal pneumonia, diabetes mellitus, premature or prolonged rupture of membranes, low birth weight, gestational age, and Cesarean section delivery.
**Conclusions:** Effective treatment of maternal conditions like diabetes, fever, and infections is essential to prevent EOS in preterm infants. Key measures include reducing unnecessary antibiotics or steroids, minimizing unnecessary Cesarean sections, avoiding premature or prolonged rupture of membranes (PPROM), and increasing gestational age and neonatal birth weight. High-risk preterm neonates should be closely monitored for EOS and considered for antibiotics when warranted.

13 **Longitudinal Surveillance of Serratia Marcescens Post-Outbreak in Neonatal Intensive Care Units: Unveiling Transmission Pathways and Effective Strategies**
新生兒加護病房粘質沙雷氏菌爆發後的縱向監測：揭示傳播途徑和有效策略

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**Background:** Serratia marcescens is often associated with nosocomial outbreaks within NICUs. Without appropriate management, these outbreaks can persist for months or even years. In early 2021, we encountered an outbreak of S. marcescens in NICUs and NUs. During the outbreak, we implemented stringent infection control measures. We wanted to explore whether the S. marcescens strain responsible for the outbreak was successfully eradicated or if it continues to lurk within the NICUs, potentially causing sporadic infections.
**Methods:** Following the outbreak, we continued surveillance of nosocomial infections caused by S. marcescens in NICUs, NUs, and the PICU. This monitoring period spanned over two years, concluding in June 2023. Isolates collected within the initial three days of hospitalization were classified as non-nosocomial and subsequently excluded from the analysis. Whole-genome sequencing (WGS) was performed on all isolates, and phylogenetic analysis was conducted using average nucleotide identity and single-nucleotide variants.
**Results:** We conducted an analysis on a total of 44 infections, included two pre-outbreak infections, 14 infections during the outbreak, and 28 infections that occurred post-outbreak. We noted that all eight instances of S. marcescens-CR resulted in invasive infections. The phylogenetic analysis of the 35 isolates revealed five distinct clusters. Cluster 1 was linked to the two pre-outbreak infections. All S. marcescens isolates in Cluster 2 were obtained during the outbreak, with the exception of one isolate from the PICU, which was obtained 18 months later. After outbreak, there were three additional clusters between May 2021 and June 2023. Cluster 3 comprised 4 isolates, all of which were obtained from the PICU. Cluster 4 included 5 isolates, with the first four obtained from the NICUs and the last one from the PICU. Cluster 5 consisted of 3 isolates, all obtained from the NICUs.
**Conclusions:** Over the two years following the outbreak, only a single infection was traced back to the strain responsible for the outbreak. This suggests that our stringent infection control measures were highly effective in preventing the transmission of S. marcescens.

14 **Five-Year Trends in Preterm Infant Nutrition Care and Evaluation of Nutrition Guideline application : Insights from the Taiwan Neonatal Network (TNN)**
從台灣新生兒網絡(TNN)數據看早產兒營養照護五年趨勢與營養指南應用情況

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**Background:** Nutrition care is crucial in preterm infant treatment, serving as a key quality indicator. The European Society of Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) updated guidelines for Parenteral and Enteral Nutrition in 2018 and 2022. Evaluating their implementation is vital for improving clinical care, but data from Taiwan is lacking. This study analyzes the implementation of these guidelines using data from the Taiwan Neonatal Network (TNN).
**Methods:** In this retrospective study, we analyzed adherence to ESPGHAN guidelines and assessed growth outcomes in preterm infants in the TNN EUGR subgroup from 2019 to 2023 across six NICUs in Taiwan. We stratified analyses by hospitals and years, documenting PN and EN provisions during the first week, key weight data (lowest weight, days to regain birth weight, and weight at 36 weeks corrected age). We also evaluated combined Enteral nutrition(EN) and Parenteral nutrition(PN) adherence to ESPGHAN guidelines.
**Results:** From 2019 to 2023, 1039 patients were enrolled in the TNN EUGR subgroup. Amino acid initiation within the first 24 hours was consistent, but lipid initiation varied significantly (1.76 to 6.26 days). While all hospitals met the minimum amino acid intake (1.5g/kg/day), only 33% reached the recommended dose (2.5g/kg/day). Trophic feeding strategies varied widely (4.33 to 11.36 ml/kg/day), and no hospital met the recommended trophic volume (12-24 ml/kg/day). Over five years, there was no change in protein, fluid, and calorie provision during the first week. No hospital met the recommended caloric intake (90-120 Kcal/day), with values ranging from 71.83 to 85.57 Kcal/kg/day. EUGR incidence was higher (59.48%) in hospitals taking longer (31.05 days) to achieve full feeding.
**Conclusions:** Previous reports on guideline implementation primarily used questionnaires. By utilizing the TNN EUGR subgroup report, we can identify areas for quality improvement in nutrition practices. Targeted interventions could focus on providing sufficient calories, optimizing lipid use strategies, and standardizing trophic feeding protocols.

15 **Evaluation of Healthcare Expenditure in Premature Infants with Complications during Hospitalization: A Medical Center in Northern Taiwan**
評估台灣早產兒和住院期間併發症的醫療支出：北台灣某醫學中心

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**Background:** The growth of healthcare expenditure is an important issue in many countries. Premature infants, especially extremely and very low birth weight infants, are the infant group with the highest healthcare spending. Aims of the study: To evaluate healthcare expenditure in premature infants during hospitalization under the National Health Insurance System (NHIS) in Taiwan.
**Methods:** This retrospective cohort study analyzed the medical records and healthcare spending of all premature infants (gestational age 22 to 36+6 weeks) admitted to the neonatal intensive and intermediate care units of Mackay Children's Memorial Hospital from January 1, 2018, to December 31, 2023. The study was approved by the Institutional Review Board of Mackay Memorial Hospital. Healthcare expenditures for premature infants of different gestational ages and their complications during hospitalization were analyzed under the NHIS.
**Results:** A total of 2,171 preterm infants (＜37 weeks) were enrolled in this study. Infants born at ≤26 weeks of gestation (n = 153) with complications, including apnea of prematurity (AOP), patent ductus arteriosus (PDA), retinopathy of prematurity (ROP) with anti-VEGF intravitreal injection, necrotizing enterocolitis (NEC) or spontaneous intestinal perforation (SIP), or bronchopulmonary dysplasia (BPD), had the highest per infant average expenditures of TWD 2,186,134.25. The average length of hospital stay for these infants was 114.8 days.
**Conclusions:** This study provides relevant and accurate healthcare expenditure data for premature infants and their complications during hospitalization. The findings may serve as a reference for improving the allocation of medical expenditures by the National Health Insurance Department and enhancing the quality of medical care for premature infants in the future.

16 **Maternal Influenza Infection and Risk of Seizures in Childhood: A Population-based Cohort Study**
母親懷孕過程中得流感與孩童癲癇的相關性

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**Background:** Seizure is a common neurologic problem among infants and young children. Periconceptual, prenatal, and early extrauterine environmental stress have a profound impact on lifetime health in offspring. Prenatal exposure to maternal influenza infection has been reported to be associated with childhood seizures. The aim of this study was to explore maternal influenza infection and childhood seizures from a population-based perspective.
**Methods:** We identified 1,316,107 mother-infant pairs from 2004 to 2013 from Taiwan's Maternal and Child Health Database (TMCHD). A total of 75,835 mothers who had influenza infection during pregnancy and their first child were identified and assigned to the influenza group. The

mothers in the control group were 1:4 matched with those in the influenza group by maternal age, neonatal gender, and date of delivery. The children were followed up until the end of 2020. The primary outcome was seizure, febrile convulsion, and epilepsy. Pregnancy-related complications were collected as cofactors.
**Results:** The cumulative risk of seizures in the influenza group was higher than that in the control group. After controlling for potential confounders by Cox regression models, the hazard ratio was 1.09 (95% confidence interval 1.04~1.14) for seizures, 1.11 (95% confidence interval 1.05~1.16) for febrile convulsions, and 1.05 (95% confidence interval 0.97~1.13) for epilepsy. There was no trimester effect when doing subgroup analysis.
**Conclusions:** Maternal influenza infection during pregnancy might increase the risk of childhood seizures, especially febrile seizures. Further studies are needed to elucidate the underlying mechanisms influencing childhood neurological development.

17 **The Comparison of Echo-guided Core and Surgical Wedge Liver Biopsy in Cholestatic Infants**
超音波引導穿刺切片與手術楔狀肝臟切片在黃疸嬰幼兒之診斷與比較

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**Background:** Liver biopsy remains an important diagnostic modality in cholestatic infants. We aim to compare the diagnostic accuracy of biliary atresia (BA), the consistency between biopsy diagnosis and clinical diagnosis, and the complication rate between echo-guided core and surgical wedge biopsies in cholestatic infants.
**Methods:** We retrospectively reviewed the medical records of cholestatic infants who had received liver biopsies at the National Taiwan University Children's Hospital between 2013 and 2024. A major bleeding event was defined as the need for blood transfusion after a biopsy. The diagnosis of BA was confirmed by intraoperative cholangiogram.
**Results:** A total of 143 patients were included in the analysis, of which 56.6% were male. 46 patients received echo-guided core biopsy, 87 patients received surgical wedge biopsy, and another 10 patients received both core and wedge biopsies at different time points. The mean age at the onset of cholestasis was 32.5 ± 41.1 days of age. The most common clinical diagnoses were BA (n=60), neonatal hepatitis or transient neonatal cholestasis (n=38), genetic/metabolic liver diseases (n=8), and nonsyndromic bile duct paucity (n=8). The etiology remained uncertain after liver biopsy in 14 cases, accounting for 9.8% of the cholestatic infants. No significant difference was found in comparing the diagnostic accuracy for BA between echo-guided core biopsy versus surgical wedge biopsy..The risks of biopsy-related major bleeding events were not significantly different between these 2 groups (14.4% vs. 3.6%, p=0.05). Duration of hospitalization was significantly shorter for those who received echo-guided core biopsies (mean=22.8 ± 41.4 vs. 37.3 ± 27.3 days, p=0.01).
**Conclusions:** The diagnostic ability of echo-guided core biopsy is comparable to the surgical wedge biopsy. The risk of major bleeding is not statistically different between echo-guided and surgical liver biopsy for cholestatic infants in our cohort. The duration of hospitalization was significantly increased in the group of surgical liver biopsy regardless of whether Kasai operation was performed.

18 **IL-10 Receptor Variant is Associated with Childhood Inflammatory Bowel disease**
介白素-10 受體變體和孩童發炎性腸道疾病是有關聯

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**Background:** Homozygous loss of function in IL-10 or IL-10 receptors(R), IL-10Ra and IL-10Rb were the first genes to be identified as a causative for very early onset-inflammatory bowel disease (VEO-IBD). Compound heterozygous mutation in IL-10RA have been reported with very early onset Crohn's disease. IL-10 binding to IL-10R activates the JAK1/STAT3 cascade, which subsequently limits pro-inflammatory gene expression. Here, we presented three cases of IBD with IL-10 RA variant (exon7 c.1051A＞G p.R351G).
**Methods:** This is a retrospective study, three case of childhood got IBD and received colonic mucosal cell PCR study. We performed exon sequencing of whole IL-10RA genes and Sanger gene sequence analysis. Used IL-10RA (NM_001558.4) gene pool of NCBI (http://www.necbi.nlm.nih.gov/) as reference to do gene sequence analysis.
**Results:** Frist case: This is a 1year 8 month old female patient with chief complaint bloody stool for two months. The patient received fiberoptic colonoscope and diagnostic of crohn's disease at 5 years 2 months old. SLE was diagnostic on 6 months later. Second case: This is an 11 years 10 months old female patient with chief complaint of bloody stool for one year. The patient received fiberoptic colonoscope and diagnostic of ulcerative colitis. Third case: This is an 8 year 9 month old female patient with chief complaint of bloody stool for two years. The patient received fiberoptic colonoscope colonic fibroscopic and diagnostic of crohn's disease. Exome sequencing identifies IL-RA mutation (exon7,1051A ＞ G p.R351G) in children with IBD and intractable ulcerative colitis.
**Conclusions:** Although IL-10 and IL-10R mutation occur in childhood IBD, the exact prevalence is not known. Most cases have been scattered reported. The prevalence of IL-10R mutations was a strikingly high in VED-IBD cases from China. Multi-center studies are needed to determine the frequency and role of IL-10 and / or IL-10R mutations in childhood IBD and to accurately identify the clinical phenotype of IL-10 and / or IL-10R mutated childhood IBD.

19 **Investigating the Incidence and Risk Factors of Vascular Thrombosis After Liver Transplantation in Pediatric Patients**

調查兒科病人肝移植後血管血栓之發生率及風險因素

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**Background:** Liver transplantation is a life-saving modality for children with end-stage liver disease. Vascular thrombosis, although seldom occurs, is one of the most feared complications following transplantation, and has a great impact on graft integrity. This study aims to explore the incidence of vascular thrombosis and identify the risk factors which may predict the occurrence of thrombotic events after pediatric liver transplantation.
**Methods:** We conducted a retrospective study that enrolled 152 pediatric patients who underwent liver transplantation between 2001 and 2022 at the National Taiwan University Hospital. Clinical features and laboratory data, including hemogram, biochemistry, coagulation profiles, and calculated Model for End-stage Liver Disease scores were collected from the Integrative Medical Database. Abdominal sonography and CT or MRI imaging were also assessed to detect the presence of thrombosis.
**Results:** One hundred and fifty-two patients who underwent liver transplantation with a mean age of 3.9 years were enrolled. Among these, 133 cases (87.5%) that received transplantation were due to biliary atresia, 4 cases (2.6%) were due to methylmalonic acidemia, and 4 cases (2.6%) were due to progressive family intrahepatic cholestasis. Sixteen cases (10.5%) developed thrombosis after the transplantation surgery, the mean interval time was 1.21 years (range: 0.00-6.00years, standard deviation 1.95 years). Of those with thrombosis, 10 cases (6.6%) had thrombosis in the portal vein, 4 cases (2.6%) in the hepatic vein, and 2 cases (1.3%) in the hepatic artery. Lower serum albumin levels one month before transplantation (P = 0.036), and delayed skin closure at the time of surgery (P = 0.024) were significantly associated with the occurrence of thrombosis after transplantation, respectively.
**Conclusions:** Vascular thrombosis is an important issue following liver transplantation, affecting around 10% of pediatric patients in our cohort. Patients with low albumin level may indicate suboptimal nutrition status before surgery, or advanced liver fibrosis. Delayed skin closure of the operation may have a higher potential to encounter thrombosis events.

20 **Novel Proteomic Analysis of 11,000 Serum Proteins Distinguishes Between Pediatric Crohn's Disease and Ulcerative Colitis**

11,000 血清蛋白的蛋白質組學分析以區分兒童克隆氏症和潰瘍性結腸炎

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**Background:** While the two main IBD, CD and UC, share various clinical features, they differ in clinical, endoscopic and histological features, and may have different underlying etiopathological mechanisms, resulting in different treatment options. Consequently, development of reliable, highly accurate, non-invasive biomarkers that differentiate CD and UC in pediatric IBD is of paramount importance for medical care, surgical intervention, and prognosis. The proteomics technology, SomaScan v5.0, was tested to discover serum protein biomarkers capable of differentiating CD from UC.
**Methods:** SomaScan quantitative serum protein profiles were generated from subjects diagnosed with CD (n=56) and UC (n=25) using standard diagnostic criteria. The disease location for patients with CD was 18 L1 (ileal), 9 L2 (colonic), 27 L3 (ileo-colonic) and 2 L4 (small bowel); Inflammatory phenotype (B1) occurred in 40, stricturing (B2) in 8, penetrating (B3) in 6, and B2B3 in 2. The 10,778 proteins detected with SomaScan were assessed for discriminating CD from UC using t test. We used Support Vector Machines to develop high accuracy predictors with the lowest number of proteins for discriminating CD from UC. Area under the curve was calculated to determine the performance of the multi-protein model in discriminating CD cases from UC cases. Ingenuity pathway analysis was conducted to identify pathophysiological pathway differences between CD and UC.
**Results:** 255 proteins (41 proteins were increased and 214 proteins were decreased in CD vs UC) discriminated between CD and UC with fold change ＞1.3 and unadjusted p-value ＜0.05. Compared to UC, CD cases had decreased neutrophil movement and degranulation, inflammatory response, and metabolism of reactive oxygen species but enhanced apoptosis. A 10-protein model to discriminate CD cases from UC cases performed with an AUC=0.98.
**Conclusions:** Using the proteomics platform, we identified serum proteins and developed a high accuracy multi-protein model discriminating between pediatric CD and UC. The utility of SomaScan demonstrates not only the value of these diagnostic biomarkers, but also the potential to discover immune and metabolic pathways that distinguish CD from UC.

21 **The Impact of Appendectomy on the Risk of Non-Typhoidal Salmonella Infection in Children: A Nationwide Population-Based Cohort Study in Taiwan**

闌尾切除對兒童非傷寒沙門氏菌感染風險的影響

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**Background:** The potential association between appendectomy and non-typhoidal Salmonella (NTS) infection remains unclear. We hypothesized that undergoing an appendectomy might increase the vulnerability of the gut to NTS infections. This study aimed to investigate the relationship between appendectomy and the risk of future NTS infections in children.
**Methods:** We utilized a nationwide population-based cohort to assess whether children who underwent appendectomy were at an increased risk of subsequent NTS infection. The study identified 18,935 subjects under the age of 18 who underwent appendectomy (the appendectomy group) and 75,740 matched controls who did not undergo appendectomy (the non-appendectomy group) from the National Health Insurance Research Database in Taiwan. Propensity score matching was used to match age, sex, urbanization level, and family income and comorbidity in a 1:4 ratio. Multiple Cox regression and stratified analyses were conducted to determine the adjusted hazard ratio (aHR) for developing NTS in these children.
**Results:** Children who underwent appendectomy had a 1.96 times higher risk (aHR: 1.96; 95% confidence interval [CI]: 1.42, 2.66) of developing NTS compared to those who did not. The risk was particularly elevated in children under 5 years of age (aHR: 2.49; 95% CI: 1.64, 3.78). Patients with less than 1 year of follow-up exhibited a 1.56-fold increased risk of NTS in the appendectomy cohort (aHR: 1.56; 95% CI: 0.75, 3.26). Patients with 1-4 years and 5 or more years of follow-up showed a 1.85-fold and 1.36-fold increased risk of NTS, respectively (aHR: 1.85; 95% CI: 1.20, 2.85 and aHR: 1.36; 95% CI: 0.66, 2.82).
**Conclusions:** Appendectomy was associated with a 1.95-fold increased risk of future NTS infection in children, with the risk being particularly high in those under 5 years of age. Further studies are needed to elucidate the biological mechanisms underlying the association between appendectomy and NTS infection in children.

22 **Prenatal Exposure to Air Pollution and Biliary Atresia: A Nationwide Longitudinal Cohort Study**
產前空氣污染暴露與膽道閉鎖的關係

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**Background:** Biliary atresia (BA) is a severe pediatric liver disease and the leading cause of liver transplantation in children. Its etiology remains unclear, though previous studies have suggested that air pollution may contribute to early childhood diseases through oxidative stress and genotoxic effects. This study aims to investigate the link between prenatal air pollution exposure and BA incidence.
**Methods:** This nationwide, longitudinal, matched case-control study utilized data from the National Health Insurance Research Database (NHIRD) and the Taiwan Maternal and Child Health Database from January 2004 to December 2016. BA cases were identified using ICD-9-CM code 751.61/ICD-10-CM code Q44.2, confirmed by the Kasai procedure or liver transplantation. Controls were matched by age, index month, and gender at a 1:10 ratio. Multivariable logistic regression models adjusted for confounders assessed the association between Pollutant Standards Index (PSI) and individual air pollutants ($SO_2$, CO, $O_3$, $PM_{2.5}$, $PM_{10}$, NO, $NO_2$, and NOx) and BA development. Quartile analysis of cumulative air pollutant exposure was also performed.
**Results:** From 1,662,727 first-time pregnancies, 1,654,200 individuals were analyzed after excluding congenital defects. Among these, 253 BA cases were identified. No significant associations were found between prenatal air pollutant exposure and BA risk. However, infants weighing less than 2500g at birth had a higher risk of BA (aOR: 1.92, 95% CI: 1.25-3.01, p=0.003). No significant differences were noted in gender, maternal age, delivery mode, gestational age, or maternal comorbidities. Quartile analysis also showed no dose-response relationship for air pollutants. ($SO_2$, CO, $O_3$, $PM_{2.5}$, $PM_{10}$, NO, $NO_2$, or NOx).
**Conclusions:** This study found no statistically significant correlation between prenatal air pollution exposure and the risk of BA in Taiwan.

23 **Novel Multiple Z-Score Models for Detection of Coronary Artery Dilation in Kawasaki Disease**
多重 Z-Score 模型在川崎病冠狀動脈擴張檢測中的應用

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**Background:** This study aims to develop Z-Score models to normalize measurements of three coronary arteries and enhance the diagnosis of Kawasaki disease (KD) in children from newborns to 11 years old. Developing a reliable Z-Score model is challenging, as some existing models fail the normality test. Overcoming these challenges is crucial for improving KD diagnosis.
**Methods:** Detailed measurements of the left main coronary artery (LCA), left anterior descending coronary artery (LAD), and right coronary artery (RCA) were collected, along with patient demographics such as age, height, weight, and body surface area (BSA). Several Z-Score models, named the Kuo Z-Score models, were proposed, with separate designs for different coronary arteries and different age groups, resulting in multiple Z-Score models. The Z-Score model for the RCA employs the Box-Cox method for data transformation. Finally, we tested various age group combinations, selecting models that passed the Anderson-Darling normality test and had higher R-square values for

robustness and best data fit.
**Results:** The study included 1180 participants free from coronary or heart diseases. The Kuo Z-Score models were optimized for LCA, LAD, and RCA across the five age groups 0-6 years, 6-7 years, 7-8 years, 8-9 years, and 9-10 years. Only the normality test for the RCA in the 7-8 year age group failed. The proposed model achieved an 88.4% sensitivity rate, outperforming the other models, and a 97.7% specificity rate.
**Conclusions:** The Kuo Z-Score models, applicable across a broad age range, provides robust identification of coronary artery dilatation and aneurysm in KD. The models' capability to normalize diverse data sets marks a significant advancement in KD diagnostic sensitivity, aiding in better clinical decision-making and potentially improving patient outcomes.

24 **Risk of KD and MIS-C in Pediatric Patients with COVID-19 Infection: A TriNetX Based Cohort Study**
新冠肺炎感染的兒科病人併發川崎症和多系統發炎徵候群的風險: 使用 TriNetX 資料庫的世代研究

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**Background:** The correlation of the coronavirus 2019 (COVID-19) infection with Kawasaki disease (KD) and multisystem inflammatory syndrome in children (MIS-C) has been a major issue in the pediatric population. Limited data have been presented in large scale to examine the cumulative incidence of MIS-C and KD after COVID-19 infections.
**Methods:** We identified the study population using TriNex. After propensity score matching, the final 258,645 patients with COVID-19 infection and 258,645 patients without COVID-19 were analyzed with Cox regression model, hazard ratio (HR), 95% confidence interval (CI), and cumulative incidence of MIS-C and KD in both cohorts. Stratified analysis was done to validate results.
**Results:** After matching with age at index and sex, COVID-19 group exhibited significantly higher risks of MIS-C (HR: 3.023, 95% CI: 2.323 – 3.933), and KD (HR:1.736, 95% CI: 1.273 – 2.369) than non-COVID-19 group. After matching with age at index, sex, race, ethnicity, and comorbidities, COVID-19 group exhibited significantly higher risks of MIS-C (HR: 2.899, 95% CI 2.173 – 3.868), and KD (HR: 1.435, 95% CI 1.030 – 2.000) than non-COVID-19 group. Compared to non-COVID-19 group, COVID19 group had a higher risk of MIS-C in both patients aged $>$ 5 years and aged $\leq$ 5 years (HR: 2.399, 95% CI: 1.683 – 3.418; HR: 2.673, 95% CI: 1.737 – 4.112, respectively), but only a higher risk of KD in patients aged $\leq$ 5 years (HR: 1.808, 95% CI: 1.203 – 2.716). Furthermore, COVID-19 group without COVID-19 vaccination had higher risks of MIS-C and KD (HR: 2.406; HR: 1.835, respectively) than non-COVID-19 group.
**Conclusions:** Pediatric patients with COVID-19 infection aged less than 18 years and $\leq$ 5 years have an increased incidence of MIS-C and KD respectively. More studies are needed to establish the role of COVID-19 infection in the pathogenesis of MIS-C and KD.

25 **Transcatheter closure of ventricular septal defect with the new Konar multifunctional occluder**
經心導管使用新型多功能封堵器治療心室中膈缺損

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**Background:** Ventricular septal defect (VSD) is the most common congenital heart disease. Traditional treatment is open chest surgery but it is suffering, risky, time-consuming, and will leaves scar. Since 2022 a new Konar multifunctional occluder (KONAR-MFO) was approved by Taiwan National Insurance to close VSD. This study aimed to investigate the outcome and complication of the new occluder to close the VSD.
**Methods:** In a single-center study, 79 patients with hemodynamically significant, restrictive ventricular septal defects underwent closure with the KONAR-MFO device from Jan, 2022 to Dec, 2023. Clinical, echocardiographic, and angiographic data were collected and reviewed. Patients were followed up at 1, 3, 6, and 12 months.
**Results:** The median age and weight were 7.3 (0.5-68.8) years and 23.4 (15.9-91.1) kg. The pulmonary to systemic flow ratio was 1.0-2.9 (median 1.33). The fluoroscopy time was 6.2-95.1 mins (median 20.9 mins) and the procedure time was 11.3-161 mins (median 59 mins). The procedure success rate was 100%. The complete closure rate at 1-day follow-up was 41.8% and 1 month was 63.3%. There is no significant residual shunt, device embolization, complete heart block or significant valvular influence.
**Conclusions:** The older CERA occluders had a higher risk of atrioventricular block. The new multifunctional occluder had a 100% success rate. Our study reveals that device closure of VSD with Multifunctional occluder is safe and effective.

26 **Endothelial dysfunction by targeting AGO1, 2, 4 in Kawasaki disease via mRNA expression profiles**
透過 mRNA 表現晶片分析川崎病 AGO1、2、4 與內皮功能障礙

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**Background:** Argonautes (AGOs) are known for post-transcriptional gene silencing. These proteins are programmed with small single-stranded RNA or DNA and may provide a route for detecting and silencing complementary mobile genetic elements. In this research, we attempted to investigate which AGO(s) were involved in inducing endothelial dysfunction in Kawasaki disease (KD).
**Methods:** We obtained mRNA expression profiles from leukocyte samples that were collected during an earlier published experiment and uploaded to the NCBI GEO database. A total of 50 KD children before IVIG, 18 KD children three weeks post IVIG, 18 non-febrile, and 18 febrile controls were included in the Human Transcriptome Array analysis and were arranged in the quoted publications for all methods and materials in order to garner data. We performed one-way analysis of variance using the default setting of the commercial microarray tool Partek to determine any significant fold changes (KD1, KD3, HC, and FC divided by healthy controls).
**Results:** Data revealed that AGO1, 2, and 4 genes displayed significant within-group differences with p=0.047, 0.030, and ＜0.001, respectively. In AGO1, significant differences were observed between KD1 vs. FC and KD1 vs. HC+FC with p=0.048 and 0.047, respectively. In AGO2, we found significant differences between KD1 vs. FC, KD1 vs. KD3, and KD1 vs. HC+FC with p=0.014, 0.020, and 0.030, respectively. KD1 is apparently higher than the other specimens (one-way ANOVA) in AGO4, with significant differences between KD1 vs. HC, KD1 vs. FC, KD1 vs. KD3 and KD1 vs. HC+FC, with p=0.001, 0.004, 0.001, and ＜0.001, respectively.
**Conclusions:** Two basic pathological mechanisms, endothelial cell injury and inflammation, are considered to be involved in coronary endothelial damage in KD, and AGO1, AGO2, and AGO4 likely participate in the endothelial dysfunction of children with KD, with AGO4 probably playing a key role; AGO3 appears not to participate.

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**Nonfluoroscopic Versus Fluoroscopic Radiofrequency Ablation in Pediatric AVNRT: A Retrospective Multicenter Study**
無輻射與輻射引導下的兒童房室結迴旋頻脈射頻消融術：一項多中心回顧性研究

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**Background:** Nonfluoroscopic cryoablation is considered safe for pediatric atrioventricular nodal reentrant tachycardia (AVNRT), yet concerns about prolonged procedures and recurrence persist, prompting continued use of radiofrequency ablation (RFA). Nonfluoroscopic RFA, guided by three-dimensional mapping, offers enhanced precision. This study compares its safety and effectiveness with fluoroscopic RFA in pediatric AVNRT.
**Methods:** We retrospectively analyzed children undergoing RFA without (X− group) or with (X+ group) fluoroscopy at multiple centers (2011-2022). Patients who received both fluoroscopic and three-dimensional mapping guidance, were excluded. Acute success rates, complications, recurrence, procedure time, and ablation time were compared.
**Results:** Among 119 patients (X+: 57, X−: 62), more multiple slow pathway and concurrent arrhythmias were found in X− group and more successful ablation location in the middle Koch in X+ group. However, procedure time, acute access rate, AVNRT recurrent-free survival and conduction system injury were similar between groups. X− group had significantly lower fluoroscopy time (0 vs. 23 minutes). No major complication including permanent complete atrioventricular block was noted in both groups. Longer procedure time independently correlated only with ablation location outside of low Koch (OR: 2.56, CI: 1.01-6.48). Dual AV nodes only had a trend of higher recurrence than typical and atypical AVNRT (18.2% vs. 3% vs. 0%). Younger age children can be achieved successful ablation with less ablation pulses and smaller ablation catheter profile, with similar recurrence and conduction system injury.
**Conclusions:** Nonfluoroscopic RFA, guided by 3D mapping, achieves comparable outcomes to fluoroscopic RFA in pediatric AVNRT. This approach is safe and effective in the medium term, promising a viable alternative in pediatric cardiac ablation procedures.

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**Epidemiological study of Kawasaki disease in children under five years old in Taiwan from 2009 to 2020**
2009 至 2020 年台灣五歲以下兒童川崎病流行病學研究

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**Background:** Kawasaki disease (KD) is the most common acquired heart disease during childhood in developed countries, including Taiwan. However, data on the incidence

of KD in Taiwan are mostly available only to the early 2010s, and no new data are available thereafter. We want to use the latest data from the Taiwan National Health Insurance Research Database to analyze epidemiological data related to KD over the past decade.
**Methods:** The study subjects were retrieved from the Taiwan National Insurance Research Database for the period between 2009 and 2020. A total of 10,089 patients diagnosed with KD who were younger than 5 years old were identified. Among these patients, 6,010 (59.57%) were boys and 4,079 (40.43%) were girls. Age stratification revealed that the highest age distribution was between 1 and 2 years.
**Results:** The annual incidence rates of KD for patients under 5 years ranged from 65.75 to 100.96 per 100,000 children. A higher incidence was observed from late spring to early fall. Among the patients, 8,031 (79.60%) received intravenous immunoglobulin therapy. Additionally, the coding for coronary artery aneurysm formation was noted in 989 patients (9.89%).
**Conclusions:** Over the 12-year period ending in 2020, the most recent year of data, there is an upward trend in the incidence of KD among patients under 5 years old in Taiwan. Continuous monitoring and further research are needed to understand the factors driving these trends.

29 **The Impact of Occluded Fenestration on Long-Term Outcomes in Patients Undergoing the Fenestrated Fontan Operation**
開窗關閉對 Fontan 手術病患長期預後的影響

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**Background:** The modified Fontan operation, a palliative approach for single ventricular circulation patients, often incorporates a fenestration to facilitate postoperative management. Postoperative fenestration closure is sometimes performed to mitigate potential risks such as low oxygen saturation. However, the benefits and potential risks of this procedure remain under investigation.
**Methods:** A retrospective study was conducted at the National Taiwan University Children's Hospital. It included all patients who underwent their first-ever fenestrated modified Fontan procedure between February 1998 and July 2020. The primary objective was to assess the incidence of death, Fontan takedown, and heart transplantation. Major adverse cardiovascular events (MACEs) were considered as a secondary outcome.
**Results:** The study comprised 173 patients (male/female 100/73), median operation age of 4.6 years, and a median follow-up of 10.4 years (interquartile range 6.2, 14.0 years) post-operation. At the latest follow-up, fenestration was occluded in 74 (42.8%) patients, with 29 undergoing transcatheter closure and 45 experiencing spontaneous occlusion. Patients with occluded fenestration demonstrated significantly better event-free survival (15-year survival 94.5% vs. 82.4%, P = 0.047), although the intended fenestration closure group showed similar outcomes compared to the natural course group. The only significant factor associated with worse event-free survival in multivariable Cox regression was high log10NT-proBNP (hazard ratio 16.520 [6.022-45.322], P < 0.001). The cut-off points of NT-proBNP and Fontan pressure for worse outcomes were 467.7 pg/mL and 18 mmHg, respectively.
**Conclusions:** For patients undergoing a fenestrated modified Fontan operation, fenestration closure, either through transcatheter closure or spontaneous occlusion, is associated with better event-free survival.

30 **Initial and Mid-term Outcome after Transcatheter Closure of Ventricular Septal Defect : A Single Center's Experience**
經心導管關閉心室中膈缺損的初期和中期結果:單一醫學中心的經驗

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**Background:** Transcatheter closure of VSD is a popular method. The purpose of this study is to present our center's initial and mid-term results of transcatheter closure of subpulmonary and membranous VSD.
**Methods:** We retrospectively enrolled a total of 132 patients (age 1.6 – 62.7 years, M/F 75/57 with VSD (subpulmonary (n = 26), membranous (n = 106)) who underwent transcatheter closure. Immediate post-cath Troponin-I was checked and recorded. Follow-up data including residual VSD, AV block, QRS duration and complications were also recorded for analysis
**Results:** The success rate of transcatheter closure is 54% in the patients with subpulmonary VSD sized from 2.5-5 mm (ADO-II (n=12), MFO (n=2)). The etiologies of failure include malposition or dropping of device (n = 7) and difficulty in passing through VSD (n = 5). One patient had a complication with ADO-II more over right side. One patient had immediate transient AV dissociation after MFO implantation. The success rate of transcatheter closure is 94% in the patients with membranous VSD sized from 2.5-12 mm (ADO-I (n = 5), ADO-II (n = 39), Heart R occluder (n = 10), Cera VSD occluder (n = 29), MFO (n=16)). The etiologies of failure include malposition or dropping of device (n = 5), too large VSD (n = 1), and too small VSD (n = 1). After transcatheter closure, the follow-up results are as follows: TV injury with moderate TR (n =1), worsening DCRV (n =1), transient AV block (n = 1), and ICRBB 6 months later (n =1). The immediate post-cath Troponin-I level ( range 2.3 – 2326.8 pg/ml, median 263.4 pg/ml) was significantly correlated with the procedure time (p < 0.01).
**Conclusions:** Our results suggest transcatheter closure is a feasible method in both subpulmonary and membranous VSD. Post-cath troponin-I can be used as a maker to detect cardiovascular complication during the procedure. The potential arrhythmia related to the device should be followed up regularly. The long-term data are still needed to assess the safety of the transcatheter closure of VSD.

31 **Epidemiology and Clinical Presentations of Children Infected with Laboratory-Confirmed SARS-CoV-2 and Influenza in Taiwan from 2015 to 2024**

2015 年至 2024 年台灣實驗室確診 SARS-CoV-2 和流感感染兒童的流行病學和臨床表現

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**Background:** The COVID-19 pandemic and the strict prevention policies in Taiwan from May 2020 to April 2023 significantly altered the epidemiology and potentially the clinical presentations of viral infections, necessitating a revised approach.
**Methods:** The epidemiology and clinical presentations of children infected with COVID-19 and influenza at Wei Gong Memorial Hospital from January 2015 to March 2024 were collected and analyzed. We compared the clinical presentations of admitted children during the Omicron BA.2.3.7 pandemic between April and July 2022 (the first pandemic era), the Omicron BA.5 pandemic between August and December 2022 (the second pandemic era), the Omicron BA.2.86 pandemic in 2024, and influenza infections in 2024.
**Results:** From 2015 to 2024, there were 2,729 cases of influenza A, 974 cases of influenza B, and 3,752 cases of COVID-19. Notably, 84.7% of COVID-19 cases occurred between May and December 2022. Admitted children with influenza A were more likely to experience high fever (＞40°C) at a rate of 32.9% compared to those with COVID-19 and influenza B (both $P < 0.004$). Children with COVID-19 had a higher rate of leukocytosis (＞12,000/μl) at 33.3% compared to those with influenza A or B (both $P < 0.001$). Admitted children with COVID-19 in 2024 had a higher rate of pneumonia (27.3%) compared to those with the first and second pandemic COVID-19 (both $P < 0.05$). Among children with a history of influenza vaccination in 2024, those who had not received the influenza vaccine in the previous year had a higher incidence of influenza A compared to those who were vaccinated ($P < 0.001$). Similar results were found in children with influenza B and COVID-19 infections in 2024.
**Conclusions:** Children with influenza A had a higher incidence of high fever (＞40°C), and those with COVID-19 in 2024 had higher rates of pneumonia and leukocytosis. Annual vaccination for COVID-19 and influenza is crucial for preventing these infections.

32 **Clinical Manifestations of COVID-19 in Children During the BA.2 Period and Real-World Outcomes of NRICM101 Use**

BA.2 流行時期新冠病毒感染兒童的臨床表現與真實世界使用 NRICM101 的預後

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**Background:** This study aims to evaluate the impact of NRICM101 treatment on clinical outcomes among hospitalized children with COVID-19 during predominant omicron BA.2 period in Taiwan, and to describe the clinical symptoms of BA.2 infection.
**Methods:** We analyzed retrospective data from pediatric patients in central Taiwan diagnosed with COVID-19 between May 1 and September 30, 2022. Primary outcomes included all-cause in-hospital 30-day mortality, transfers to intensive care unit during admission, and initiation of invasive mechanical ventilation. Secondary outcomes were hospital length of stay, duration of oxygen therapy, and fever duration.
**Results:** Among 219 patients with COVID-19 hospitalized between May 1 and September 30, 2022, 158 met the inclusion criteria. We included 79 pediatric patients in the NRICM101 group, and 79 in the untreated group. There were no significant differences in the demographic data between the groups. Only one patient in the untreated group died, whereas there were no deaths in the NRICM101 group. Fewer patients in the NRICM101 group required transfers to intensive care unit during admission. One patient in the NRICM101 group necessitated invasive mechanical ventilation, while three patients in the untreated group. Patients who received NRICM101 treatment showed significantly lower requirements for oxygen therapy compared to the untreated group ($p=0.032$). There were no significant differences in the duration of hospital stay, duration of oxygen therapy, or fever duration between the NRICM101 and untreated groups. Among multiple clinical symptoms of COVID-19 during BA.2 period, fever was still the predominant symptom (22.6%), followed by fatigue (15.4%) and cough (14.2%). Rhinorrhea, nasal congestion, and vomiting accounted for 8.7%, 7.0%, and 8.1%, respectively. There were sporadic cases of croup (13/158) and seizures (24/158) observed, but their proportion was low.
**Conclusions:** Our study revealed a significant effect only on the requirement for oxygen therapy with NRICM101 treatment in pediatric patients. Main symptoms of COVID-19 in BA.2 period were fever, fatigue, and cough.

33 **Changing in Epidemiology of RSV Infection During COVID-19 Pandemic**

新冠疫情下之呼吸道融合病毒流行病學改變

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**Background:** Respiratory syncytial virus (RSV) causes respiratory illness especially in children under 2 years old. The seasonal distribution of RSV infection in Taiwan shows peak in spring and fall. People's lifestyles are changed during COVID-19 pandemic. This study aims to investigate the pattern of RSV epidemics and try to learn the risk factors for RSV-associated hospitalization during the COVID-19 pandemic.

**Methods:** This is a retrospective cohort study. We enrolled patients if tested RSV positive by either Filmarray test or antigen rapid test during 2020 to 2023. Codetection of filmarray test is viewed as coinfection and will be presented in chart. The demographic data were collected by charts review and analyzed.
**Results:** The overall numbers of RSV positive test during 2020 to 2023 are 626, 36, 855 and 1199, respectively. The highest monthly positive rates of the tests done in ER, OPD and ward were 67.4%, 50.6% and 50.4% in 2020, 22.2%, 10.8% and 16.8% in 2021, 48.3%, 45.4% and 28.0% in 2022 and 33.8%, 34.4% and 23.1% in 2023. The proportion of RSV patients older than 2 years of age was increased from 44.3% in 2020-21 to 54.6% in 2022 and 55.6% in 2023 ($P < 0.01$). As for seasonal distribution, there were still a peak found at fall in 2022 and 2023.
**Conclusions:** In this study, we found the peak of RSV infection was during fall during COVID-19 pandemic era except in 2021. The age distribution of RSV positive patients was increased in 2022-2023.

34 **The Secular Trend and Macrolide Resistant Rates of Mycoplasma Pneumoniae in Children Before and After the COVID-19 Epidemic**
COVID-19 疫情前後黴漿菌發生率及抗藥性在兒童族群之分析

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**Background:** Mycoplasma pneumoniae is a common pathogen in community-acquired pneumonia in children. However, macrolide-resistant strains have been reported recently. This study aimed to investigate epidemiology and macrolide-resistant rates of Mycoplasma pneumoniae before and after the COVID-19 pandemic.
**Methods:** We retrospectively included pediatric outpatients or inpatients or patients with emergency department (ED) visits with positive Mycoplasma pneumoniae PCR at National Taiwan University Hospital from January 1, 2010, to April 30, 2024. We analyzed demographics, macrolide resistance rates, and 23S rRNA mutation sites.
**Results:** A total of 1134 children were included in this study. The median age was 5 years old, with no significant difference in gender distribution and the patients' age was older in the post-COVID-19 period compared to the pre-COVID-19 period (P=0.007). A total of 602 children (53%) had macrolide-resistant Mycoplasma pneumoniae. The macrolide resistance rates ranged from approximately 18.5% to 30% from 2010 to 2017 and markedly increased after 2018 ($P < 0.001$). However, the impact of the COVID-19 pandemic caused a significant decline in the incidence of mycoplasma infections. In the post-COVID-19 pandemic, the number of Mycoplasma pneumoniae cases have gradually increased. We observed that the proportion of drug resistance has continued to rise, reaching 83% in 2024. In the analysis of the 23S rRNA mutation site, A2063G was found in 542 cases (90%), followed by A2063T in 53 cases (8.8%). In the seasonal analysis, we found that Mycoplasma pneumoniae exhibits significant seasonal variation, with the highest incidence occurring in the summer ($P < 0.001$).
**Conclusions:** This study highlighted that secular trend and resistance rate of Mycoplasma pneumoniae infection in children. During the 14 years study period, approximately 53% of patients had macrolide-resistant Mycoplasma pneumoniae, and the drug resistance rate showed a gradually increasing trend. In addition, the seasonal analysis showed the highest incidence in the summer.

35 **Comparison of COVID-19 Clinical features in Children During the First and Second Omicron Waves in Taiwan**
Omicron 變異株在台灣首波及第二波疫情於孩童之臨床特徵比較

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**Background:** In mid-2022, we experienced a notable surge in COVID-19 in Taiwan. During this period, the Omicron variants led two distinct waves of outbreaks among the pediatric population. Our study aimed to investigate the differences in clinical features among children contracted COVID-19 during the initial wave (BA.2 predominance) and the subsequent wave (BA.5 predominance) of the Omicron variant in Taiwan, from mid-April 2022 to late January 2023.
**Methods:** This retrospective chart review was conducted on hospitalized children (aged 1 month to 18 years) with confirmed COVID-19 at Taichung Veterans General Hospital (TCVGH), a tertiary medical center in central Taiwan. The study period was divided into two phases: BA.2 predominance in the first wave, covering April 15 to August 15, 2022, and BA.5 predominance in the second wave, spanning from August 16, 2022, to January 31, 2023. Demographic data, clinical signs and symptoms, disease outcome data, and laboratory findings were collected.
**Results:** This study encompassed 329 pediatric patients as confirmed COVID-19, including 168 (51.1%) from the first wave and 161 (48.9%) from the second wave, with a median age of 2.15 years (IQR: 0.8-5.0). Among them, 265 patients (80.5%) had a history of COVID-19 family clusters. Fever (94.6% vs. 98.9%, p = 0.062), cough (58.3% vs. 67.7%, p = 0.26), and rhinitis (38.1% vs. 47.8%, p = 0.094) emerged as the most prevalent symptoms, with no statistically significant differences noted between the two groups. However, patients in the second wave exhibited a higher proportion with sore throat (9.5% vs. 18.6%, p = 0.025), respiratory distress (9.5% vs. 20.5%, p = 0.005), croup (4.2% vs. 15.5%, p = 0.001), and a requirement for respiratory support (4.2% vs. 13.7%, p = 0.003) or systemic steroid use (7.1% vs. 13.7%, p = 0.048).
**Conclusions:** This study suggested a higher incidence of respiratory distress and croup during the second wave with BA.5 predominance, while discernible differences were observed in the outcomes, such as hospitalization length, severe bacterial infection requiring antibiotic use, and the Remdesivir usage.

36 **Outbreak of Klebsiella pneumoniae in a pediatric intensive care unit: dissemination of ST792 and a novel strain ST7120**

兒童加護病房 Klebsiella pneumoniae 群突發：ST792 及新型 ST7120 菌株的傳播

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**Background:** Klebsiella pneumoniae has the potential to exhibit multiple drug resistance, posing a significant threat by causing invasive disease in neonates or immunocompromised children. This study reports an outbreak of multidrug-resistant (MDR) K. pneumoniae in a pediatric intensive care unit (PICU) and investigates the genetic relatedness, antimicrobial resistance, and resistance mechanisms among the isolates.
**Methods:** MDR K. pneumoniae isolates were collected from September 1, 2021, to August 31, 2022. Pulsed-field gel electrophoresis (PFGE), multilocus sequence typing (MLST), molecular identification of carbapenemase, extended-spectrum beta-lactamase (ESBL), outer membrane proteins (OmpK35 and OmpK36), gene sequencing, and functional analyses were performed.
**Results:** A total of 20 K. pneumoniae isolates from 12 patients were included in the study. The isolates were categorized into six distinct clusters, with two major groups (A and D). Group A was associated with ST 792, while Group D represented a novel sequence type, ST 7120. The outbreak exhibited two peaks. The first peak included ST 6968 and ST 1810, while the second peak involved four different sequence types: ST 792, ST 7120, ST 2150, and ST 2151. In strains nonsusceptible to carbapenem, mutations in OmpK36 were identified, with different insertion or truncated patterns observed in various strains.
**Conclusions:** An outbreak in a pediatric ICU can be complex, involving multiple strains. This study identified two major clones, including a novel ST 7120 strain. Various mechanisms of antimicrobial resistance were observed, highlighting the complexity of resistance in this outbreak.

37 **Clinical Characteristics of Children with Campylobacter Infection in a Tertiary Hospital in Central Taiwan**

中台灣單一醫學中心感染曲狀桿菌兒童之臨床分析

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**Background:** Campylobacter infection is a significant cause of acute gastroenteritis worldwide. Our study aims to comprehensively describe the clinical presentations and outcomes of children infected with Campylobacter.
**Methods:** The study is a retrospective observational analysis conducted at China Medical University Children's Hospital in central Taiwan. It includes pediatric patients under 18 years old between January 1, 2021, and December 31, 2021. Diagnosis of Campylobacter infection was confirmed using a commercial gastrointestinal panel with real-time polymerase chain reaction (PCR). Demographics, clinical manifestations, and outcomes were collected. For comparative analysis, patients were further categorized into two groups: those with only Campylobacter detected and those with Campylobacter co-detected with other pathogens.
**Results:** We enrolled 30 pediatric patients in our study, 19 (63.3%) of whom had a single Campylobacter detection, while 11 (36.7%) had Campylobacter co-detected with other pathogens. All but one patient were admitted and treated in our pediatric ward. No significant differences were observed between the two groups in terms of peak fever, fever duration, or the occurrence of abdominal pain, vomiting, or blood-tinged diarrhea. The duration of hospital stay was similar for both groups (median 4.0 vs. 4.0 days, p=0.909). Additionally, there were no statistical differences in white blood cell count (median 9,100 vs 11,400 per uL, p=0.377) and high-sensitivity C-reactive protein levels (median 7.1 vs 6.6 mg/dL, p=0.372). WBC count in stool routine was more frequently found in the single Campylobacter detection group compared to the co-detection group (13 (68.4%) vs 3 (27.3 %), p=0.029). There were no patients with bacteremia or reported complications during the study period.
**Conclusions:** The clinical characteristics and outcomes of children with single Campylobacter detection were similar to those with co-detection of other pathogens. Further studies involving larger populations are needed to validate these findings.

38 **Maternal-Infant Influenza Vaccination Impact: Birth Outcomes and Antibody Titers**

孕婦與嬰兒流感疫苗接種的影響: 出生預後與抗體效價

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**Background:** Limited research has explored the association between influenza antibody titers and maternal and infant influenza vaccination.
**Methods:** This study was conducted at Kaohsiung Chang-Gung Memorial Hospital from 2020 to 2023, involving 210 enrolled pregnant women. Maternal and infant vaccination histories were recorded, and cord blood samples at delivery and blood samples from infants at one year of age were collected. Hemagglutination inhibition (HAI) assays were performed on the blood samples using reference viruses A/Taiwan/00344/19 (H1N1) and A/Taiwan/01608/19 (H3N2).
**Results:** A total of 210 infants were born to 201 mothers between September 2020 and March 2022. Infants born to mothers who received influenza vaccination exhibited a lower prematurity rate compared to those born to unvaccinated mothers (5.1% vs. 13.5%, P = 0.0375). Furthermore, infants born to vaccinated mothers had a higher birth weight than those born to unvaccinated mothers (3120 g vs. 3020 g, P = 0.0448). Both cord serum anti-H1N1 and anti-H3N2 titers were elevated in vaccinated mothers compared to unvaccinated mothers. Moreover, infants without influenza vaccination born to vaccinated mothers demonstrated higher anti-H1N1 titers at one year of age compared to infants without influenza vaccination born to unvaccinated mothers.
**Conclusions:** Maternal influenza vaccination was associated with a reduced prematurity rate, increased birth weight, and elevated anti-H1N1 and anti-H3N2 titers in cord blood. Notably, positive maternal and negative infant influenza vaccination status correlated with a higher proportion of elevated anti-H1N1 titers compared to other groups.

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**Comparison of Impulse Oscillometry in Children Under Six Years Old with Chronic Cough**
以脈衝震盪法比較六歲以下患有慢性咳嗽的兒童

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**Background:** Chronic cough in children under six years old poses a diagnostic challenge due to the limited ability of young children to perform conventional pulmonary function tests. Impulse Oscillometry (IOS) is a non-invasive, effort-independent technique that measures respiratory mechanics, making it a potentially valuable tool for this age group. This study compares the use of IOS in diagnosing underlying respiratory conditions in children under 6-year-old presenting with chronic cough.
**Methods:** This cross-sectional study included 75 children aged 4 to 6 years who presented with chronic cough. All participants underwent IOS testing, measuring respiratory parameters such as resistance at 5 Hz (R5), resistance at 20 Hz (R20), reactance at 5 Hz (X5), Resonance frequency, X5 and AX5. IOS results were analyzed and compared with clinical diagnoses obtained through comprehensive medical evaluation, including asthma, protracted bacterial bronchitis, and other respiratory disorders. Comparison the parameters of IOS between patients with asthma (Group A) and those with other respiratory diseases (Group B).
**Results:** A total of 58 children in Group A and 17 children in Group B. Specifically, those diagnosed with asthma had statistical significantly higher Pre-R5 and R5-R20 values (p value both $< 0.01$), indicating increased resistance in the proximal and peripheral airway. Children with asthma also had significantly high response rate than those with other respiratory diseases (60.72% vs 31.23%, p=0.032). Other parameters of IOS such as Pre-R20, Resonance frequency, X5 and AX5 are not significantly different between Group A and Group B.
**Conclusions:** Our study demonstrates that specific IOS parameters, particularly Pre-R5 and R5-R20, are significantly elevated in children diagnosed with asthma. Besides, the higher bronchodilator response rate observed in asthmatic children. Consequently, IOS may serve as a valuable tool for differentiating various causes of chronic cough, particularly in distinguishing asthma from other respiratory disease in children under six years of age.

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**Anxiety stress and depression levels associated with asthma control among children during the COVID-19 pandemic: A Case-Control Study**
COVID-19 疫情期間氣喘控制與兒童焦慮與憂鬱水平之間的關係:病例對照研究

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**Background:** Poor asthma control could cause negative effects of anxiety and depression, few studies have attempted to investigate the impact of coronavirus disease 2019 (COVID-19) on mental health among asthmatic children.
**Methods:** This prospective cross-sectional cohort study enrolled 520 asthmatic children (8-15 years old) , including 336 asthmatic patients with a positive rapid test for the COVID-19 antigen and 184 asthmatic controls without COVID-19 infection. The Scores for anxiety-related disorders in children (SCARED) and depression screen derived from Patient Health Questionnaire-9 (PHQ-9) to assess their mental health state after COVID-19. Childhood asthma control test (CACT), fraction exhaled nitric oxide level (FENO) and spirometry were correlated with the SCARED and PHQ-9 questionnaires after one month of follow-up.
**Results:** Asthmatic children with COVID-19 infection had abnormal C-ACT, FENO, and FEV1/FVC (%) compared to controlled subjects ($P < 0.001$). SCARED subscales, including generalized anxiety disorder, separation anxiety disorder, and social anxiety disorder, school avoidance subscale scores and PHQ-9 depression scores, were significantly higher in asthmatic patients with COVID-19 (all $P < 0.05$). Multiple linear regression analysis demonstrated that decreased C-ACT scores were significantly risk factors

for SCARED scores and PHQ-9 scores ($P < 0.001$). Lower C-ACT scales were correlated with high SCARED scores ($r = -0.471$) and PHQ-9 ($r = -0.329$) in asthmatic children ($P < 0.001$).
**Conclusions:** Using SCARED and PHQ-9 scales to assess mental health is clinically applicable among asthmatic patients.

41 **Clinical Characteristics and Outcomes of Hospitalized Children with Viral or Bacterial Pneumonia, Single Center Retrospective Cohort Study, Taiwan 2009-2018**
病毒性或細菌性肺炎住院兒童的臨床特徵和結果，台灣 2009-2018 年單中心回顧性研究

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**Background:** Pneumonia caused by virus or bacteria is one of the important causes of morbidity and mortality in children. After the introduction of full national immunization program (NIP) with PCV13 in 2015, case-fatality of pediatric pneumonia significantly reduced in Taiwan. This study aims to compare the clinical features and outcomes in hospitalized children diagnosed of pneumonia with viral or bacterial pathogens before and after NIP with PCV-13.
**Methods:** We retrospectively collected demographic data, underlying diseases, and laboratory data of hospitalized children with diagnosis of pneumonia who admitted to our hospital from 2009 to 2018. The diagnosis of pneumonia was based on diagnostic codes related to pneumonia at discharge and pathogens were identified via rapid antigen tests, FilmArray and cultures of respiratory tracts. The outcomes included mortality, intubation during hospitalization, and intensive care units (ICU) admission.
**Results:** From 2009 to 2018, 9318 admissions with diagnosis of pediatric pneumonia were recruited with ICU admission of 21%, intubation of 14% and mortality of 2%. Pathogens were identified in 3890 (42%) cases including 31% viral, 56% bacterial, and 13% combined pathogens. Compared to children with viral pneumonia, children with bacterial pneumonia had older age, more proportion with underlying diseases, higher white cells counts, and higher segment percentage. The multivariable analysis showed the diagnosis of bacterial pneumonia were independent risk factors for mortality, intubation and ICU admission with adjusted odds ratio of 3.7 (95% CI: 1.2-8.2), 4.8 (3.5-6.6), and 3.0 (2.4-3.9) respectively. Compared to children who admitted before 2015, children who admitted after 2015 had significant lower mortality (1% vs 3%), intubation (12% vs 15%) and ICU admission (17% vs 24%), especially in children with bacterial pathogen (3% vs 5%, 26% vs 32% and 31% vs 44% respectively) rather viral pathogen.
**Conclusions:** Bacterial pneumonia causes higher morbidity and mortality than viral pneumonia and NIP with PCV13 could significantly reduce the morbidity and mortality in hospitalized children with pneumonia, especially for those with bacterial pathogens.

42 **Flexible Bronchoscopy Placement of Self-Expand-Cover-Metal Stent in Pediatric Tracheobronchial Malacia**
軟式氣管鏡置放自張式有膜金屬支架於兒科嚴重氣管軟化症

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**Background:** Self-expanding-cover-metal stent (SECMS) is developed for clinical application to support the severe tracheal or bronchial collapse. In pediatric field, there are few reports about the flexible bronchoscopy (FB) assists deployment and performance of the SECMS. Here, this report aims to analyze and show our experience of the FB placement of the SECMS in management of pediatric patients with severe tracheobronchial disorders.
**Methods:** We retrospectively reviewed and analyzed medical and FB records of pediatric patients who had received SECMS placement in our hospital in the past 4 year-period, from 2020 to 2023.
**Results:** Total 10 patients with 27 SECMS were enrolled. They were all successfully deployed in the severe malacia lumens. Both deployment and reretrieval were with FB aid and Soong's ventilation support, without artificial airway or ventilator. Among patients, there was 8 female and 2 male. Their mean (SD) age was 12.07 (3.12) years old and mean (SD) body weight was 32.24 (11.66) kg. Locations and indications of deployed stent were the subglottis (n = 2) for tracheostomy closure; trachea (n = 19), the right main bronchi (n = 7) and the left main bronchus (n = 1) for lumen malacia. Dimensions of SECMS were 10mm to 14mm in diameter and 30mm to 40mm in length. In all fresh 10 patients, there showed immediate and significant improvement of respiratory symptoms after stent placement. Chest radiographic improvement also demonstrated in all patients. The deployed SECMS were regularly assessed and replaced with new one by FB every 3-6 months. The mean (SD) evaluation duration was 20.2 (13.6) months (range 6–48 months). Stent associated complications were mucus retention (23, 85.2%), granulation formation (8, 29.6%) and migration (3, 11.1%). One patient had sudden episode of a life-threaten dyspnea and expired 6 months after concurrent two tracheal SEMSs placement.
**Conclusions:** The SECMS is effective, safe and simple to deployed and retrieved with FB and Soong's ventilation support. We suggest it is clinically useful and need close assessment in cases of tracheal or bronchial malacia with lumen-caliber equal or more than 10 mm.

43 **Comparative Analysis of Clinical Presentations and Intravenous Immunoglobulin Response in Typical and Incomplete Kawasaki Disease: A Cohort Study of 717 Patients**
典型和不完全性川崎病臨床表現和靜脈注射免疫球蛋白反應的比較分析：717 名患者的世代研究

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**Background:** Kawasaki Disease (KD) is a pediatric coronary vascular inflammatory condition. Incomplete KD lacks one or more of the principal clinical features but still involves coronary artery inflammation, making early diagnosis and treatment crucial. This research focuses on its clinical manifestations, laboratory findings, coronary arterial lesions, and intravenous immunoglobulin (IVIG) treatment responses.
**Methods:** We studied patients with Kawasaki disease (KD) who visited Chang Gung Memorial Hospital (CGMH) between January 1, 2003, and August 16, 2022. The cohort consisted of 717 patients, 577 of whom were diagnosed with typical KD and 140 with incomplete KD.
**Results:** The study indicated that incomplete KD is characterized by higher platelet counts and lower hemoglobin levels ($p < 0.001$). There were also notable differences in CRP levels between typical and incomplete KD, particularly a higher prevalence of lower CRP levels in patients over one year old with incomplete KD. Moreover, incomplete KD exhibited a higher incidence of coronary arterial lesions and significantly lower resistance to IVIG treatment. Additionally, the biomarkers assessed facilitated the development of AI-driven predictive models with similar accuracy for both forms of KD.
**Conclusions:** This detailed study highlights the complex characteristics of KD, underscoring the need for increased awareness and accurate diagnostics, especially for the incomplete form. The use of AI-assisted methods is crucial for enhancing treatment outcomes and reducing long-term cardiovascular risks.

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**Outcomes of ECMO Transport in Pediatric Patients: A Report from a Tertiary Referral Center**
兒科患者 ECMO 運送的臨床結果：來自三級轉診中心的報告

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**Background:** Patients with refractory cardiopulmonary failure may benefit from ECMO, but ECMO is not available in all medical facilities. We report our 15-year experience with inter-hospital ECMO transport and discuss factors associated with survival at hospital discharge.
**Methods:** All patients undergoing inter-hospital ECMO transport by the National Taiwan University Children's Hospital ECMO team were enrolled from our registry. Data included age, weight, diagnosis, clinical course, and outcome. Descriptive statistics summarized patient characteristics. Student T-test, chi-square test, or Fisher's exact test evaluated potential survival determinants. Cox regression models determined hazard ratios.
**Results:** From 2008-2024, 79 ECMO patients (31 males, 48 females) with a mean age of 6.78 ± 6.54 years were transported to our institute. The mean travel distance was 77.86 ± 99.28 km. All but 6 patients were on VA-ECMO support. 53 patients (67.1%) were separated from ECMO, but 9 died later in the ICU. 44 patients (55.7%) survived. No life-threatening complications occurred during transportation. Patients with cardiac indications had worse survival rates than those with pulmonary indications (46.7% vs. 69.6%). Patients with septic shock had the worst survival rate (0%), whereas those with neonatal pulmonary disease had the best (83.3%). 23 patients ever experienced pre-ECMO CPR, or ECPR (n=19), had poorer survival rates (34.8% vs. 64.7%). Travel distance or primary/secondary transport did not affect survival. Cox regression models showed similar results. Adding an interaction term between travel distance and primary/secondary transport showed primary transport was associated with poorer survival and had a statistically significant positive interaction term coefficient.
**Conclusions:** Interfacility transport on ECMO is feasible and safe for critically ill infants and children. However, ECMO transport remains extremely risk-laden and should not replace early referral to an ECMO center for potential candidates not responding to conventional therapy, especially in non-ECMO hospitals.

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**KCNQ2 mutations cause extremely different phenotypes: functional differences and potential Kv7.2 modulating drugs**
KCNQ2 突變導致極其不同的表型：功能差異及潛在的 Kv7.2 調節藥物

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**Background:** Pediatric epilepsy caused by KCNQ2 gene mutations can manifest as self-limited familial neonatal epilepsy (SLFNE) or neonatal-onset developmental epileptic encephalopathy (DEE). Patients may exhibit mild to profound neurodevelopmental disabilities, however, there is no effective treatment for cognitive function.
**Methods:** Two patients with KCNQ2 c.635A > G (p.Asp212Gly) and c.902G > A (p.Gly301Asp) mutations presented with SLFNE and DEE, respectively. We investigated the phenotypes correlated with changes in HEK293 cell functional currents and KCNQ2 protein expression. The drugs to open the damaged Kv7.2 were investigated.
**Results:** The neurodevelopmental outcomes were more severe in patients with the D212E mutation than in those with the D212G mutation. The heteromeric KCNQ2 + KCNQ3 + variants channel Kv7.2 currents in D212G were superior to those in D212E. The heteromeric KCNQ2 + KCNQ3 + D212G exhibited a left shift of 7.6 mV compared to the heteromeric KCNQ2 + KCNQ3 + D212E. There was a significant loss of function in the homomeric mutation channel in both variants. The protein expressions of the two variants and the KCNQ2 wild type were not significantly different. Retigabine and "compound A", which can open the damaged Kv7.2, highlighted that both can enhance the Kv7.2 currents of the wild type and the mutation variants.
**Conclusions:** Current changes were more significant in cells

with homomeric transfection of D212E and D212G than in the KCNQ2 wild type. The phenotypic differences are correlated with the V1/2 in the heteromeric channels, indicating that D212G can open the channel faster than D212E. Our findings support that homomeric current changes are common in KCNQ2 DEE and KCNQ2 SLFNE; however, the heteromeric characteristics of conduction are correlated with long-term neurodevelopmental outcomes. Retigabine and "compound A" can modulate Kv7.2 in D212E and wild type. "Compound A" can enhance Kv7.2, indicating potential therapeutic effects beyond retigabine.

46 **Adverse Effects of Intrathecal Nusinersen Injection in Spinal Muscular Atrophy Patients**

脊髓鞘內注射 Nusinersen 治療對脊髓肌肉萎縮症病人造成的副作用

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**Background:** Spinal muscular atrophy (SMA) is a rare autosomal recessive neurodegenerative disease caused by mutations in the SMN1 gene, leading to spinal motor neuron degeneration. This degeneration results in progressive muscle atrophy and weakness. Nusinersen, the first approved disease-modifying therapy for SMA, has shown significant efficacy in improving motor functions. Although the intrathecal injection procedure is not difficult and is generally well-tolerated by most patients, post-puncture discomfort can cause distress.
**Methods:** We collected data on intrathecal nusinersen treatment from a total of 53 patients, ranging in age from 1 month to 64 years old at the start of treatment. This group included 21 children, 4 adolescents, and 28 adults.
**Results:** All patients underwent smooth and successful procedures, but some experienced side effects associated with lumbar puncture, such as back or injection site pain (32%), post-puncture headache (26.4%), dizziness (24.5%), and nausea/decreased appetite (15%). Almost no child patients experienced these adverse effects, except for one child who had CSF (cerebrospinal fluid) leakage, which improved with longer compression. Post-puncture discomforts were mostly observed in adolescent and adult patients. One adult patient required an epidural blood patch to alleviate severe post-puncture headaches. Considering that this treatment requires lifelong administration, some strategies were implemented to prevent these side effects. Encouragingly, all patients reported improvements in their symptoms, and no further complaints of headaches were noted after the implementation of these preventive measures.
**Conclusions:** Nusinersen treatment has gained acceptance due to its successful application and mild adverse effects in SMA patients. Our report shows that by using preventive strategies, we successfully minimized post-procedural discomforts. This resulted in a reduction of both physical discomfort and mental stress. Consequently, we are more confident in encouraging SMA patients to be more willing to receive this treatment.

47 **Objective Approach to Diagnosing Attention Deficit Hyperactivity Disorder by Using Pixel Subtraction and Machine Learning Classification of Outpatient Consultation Videos**

以像素相減及機器學習分析門診影像客觀診斷注意力不集中併過動兒童

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**Background:** Attention deficit hyperactivity disorder (ADHD) is a common childhood neurobehavioral disorder, affecting between 5% and 7% of school-age children. ADHD is typically characterized by persistent patterns of inattention or hyperactivity–impulsivity, and it is diagnosed on the basis of the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, through subjective observations and information provided by parents and teachers. Diagnosing ADHD in children is challenging, despite several assessment tools, such as the Swanson, Nolan, and Pelham questionnaire, being widely available. Such scales provide only a subjective understanding of the disorder. In this study, we employed video pixel subtraction and machine learning classification to objectively categorize 85 participants (43 with a diagnosis of ADHD and 42 without) into an ADHD group or a non-ADHD group by quantifying their movements.
**Methods:** We employed pixel subtraction movement quantization by analyzing movement features in videos of patients in outpatient consultation rooms. Pixel subtraction is a technique in which the number of pixels in one frame is subtracted from that in another frame to detect changes between the two frames. In the current study, the patients' subtracted image sequences were characterized using three movement feature values: mean, variance, and Shannon entropy value. A classification analysis based on six machine learning models was performed to compare the performance indices and the discriminatory power of various features.
**Results:** The results revealed that compared with the non-ADHD group, the ADHD group had significantly larger values for all movement features. Notably, the Shannon entropy values were $2.38 \pm 0.59$ and $1.0 \pm 0.38$ in the ADHD and non-ADHD groups, respectively ($P < 0.0001$). The support vector machines classification model achieved the most favorable results, with a sensitivity of 96.80%, specificity of 92.10%, accuracy of 91.40%, and area under the curve of 95.22%.
**Conclusions:** Our pixel subtraction and machine learning classification approach is an objective and practical method that can aid to clinical decisions regarding ADHD diagnosis.

48 **Parietal Lobe Volume Mediates the Link between Respiration and Motor Development in Preterm Infants**
頂葉體積在早產嬰兒呼吸與運動發展間的中介效果

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**Background:** Few studies have untangled the relationship between adverse respiratory exposures in the neonatal intensive care unit (NICU), altered brain development by term-equivalent age (TEA), and neurodevelopment outcome in preterm infants.
**Methods:** 89 infants born less than 29 weeks' gestation received neuroimaging by MRI at TEA. Patterns of daily assisted ventilation in the first 8 postnatal weeks were analyzed using k-means clustering analyses, and neurodevelopment evaluated at age 6 and 12 months. The mediation effects of brain structural volume for the link between early-life respiratory exposures and neurodevelopmental outcome were explored.
**Results:** Two distinct respiratory patterns with differential severity were found: improving (n=35, 39%) and delayed improvement (n=54, 61%). Using improving pattern as reference, delayed improvement pattern was associated with a significant mean reduction in the parietal lobe volume residuals (−4.9 cm3, 95% confidence interval −9.4 to −0.3) and motor composite scores (−8.7, −14.2 to −3.1) at age 12 months. Mediation analysis revealed that association between delayed respiratory improvement and inferior motor performance (total effect −8.7, −14.8 to −3.3) was partially mediated by reduction in the parietal lobe volume (natural indirect effect −1.8, −4.9 to −0.01, proportion mediated = 20%).
**Conclusions:** Dysmaturation of parietal lobe mediated the link between adverse respiratory exposure and inferior motor development in preterm infants. Optimizing respiratory critical care may mitigate the consequences of brain dysmaturation and neurodevelopmental delay.

49 **Child Abuse and Brain Injury: Divergent Interpretations in Legal Judgments from Clinical and Forensic Perspectives**
兒童虐待與腦部損傷：法律判決中的多重解讀及臨床與法醫專家的觀點

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**Background:** Child abuse in Taiwan presents a critical societal issue and stresses profound adverse effects on children's welfare. Despite the complexity in detecting abuse, reports of child abuse are increasing, evidenced by a rise in cases and heightened awareness. This study utilizes judicial judgments as a lens to understand the varied interpretations of child abuse by clinical and forensic experts and explores the broader epidemiological trends of such abuse within the declining youth population of Taiwan.
**Methods:** We conducted a retrospective study by analyzing official court judgments on child abuse allegations judged from 2008 to 2022 from the online database of Judicial Yuan. Furthermore, the study analyzed demographic factors, injury patterns, and opinions from various experts.
**Results:** The results reveal that severe criminal cases of child abuse predominantly involve biological fathers as the primary offenders and physical abuse as the most common form of maltreatment. Victims are typically aged less than 5 years, which frequently leads to an unfavorable prognosis. Analysis also highlights the TEN-4-FACESp acronym as a highly predictive indicator of child abuse and underscores the prevalence of AHT. Moreover, the findings emphasize ongoing disparities in opinions between forensic medical examiners and clinical physicians, especially in AHT cases, which potentially influences judicial decisions.
**Conclusions:** In summary, the study reveals ongoing disagreements between forensic medical examiners and clinical physicians, especially in cases of AHT, which may impact judicial decisions. Clinicians appear to have a more evidence-based understanding of the clinical manifestations of AHT compared to forensic medical examiners. Promoting consensus through interdisciplinary collaboration and improved communication can aid in revealing the truth in child abuse cases.

50 **The Effect of Acupressure to Improve Pain from Venipuncture in Children: A Systematic Review and Meta-analysis of Randomized Controlled Trials**
穴位按壓對於改善兒童因靜脈穿刺的疼痛感成效：一系統性回顧與統合分析隨機分派試驗

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**Background:** The aim of this study is using systematic review and meta-analysis to investigate the effect of pain controlling by acupressure in children when they receive venipuncture.

**Methods:** We searched randomized controlled trials in the database as PubMed, Cochrane Library, EMBASE, Web of Science, CINAHL, and MEDLINE until June, 2024. The inclusion criteria were: (1) study performed as randomized controlled trial; (2) acupressure is one of intervention arms; (3) the age of participants ＜18-year-old; (4) the pain score is one of the outcomes. The exclusion criteria were (1) participant is nonhuman. The main outcome was the difference of pain score between acupressure and other cohorts.
**Results:** Three randomized controlled trials included 321 cancer patients met the criteria: 160 and 161 participants in the acupressure and control cohorts, respectively. The acupressure has been practiced before venipuncture and the pain score change during venipuncture were extracted. The results of meta-analysis revealed significant improvements pain score (SMD: -2.18, 95% CI -3.90 to -0.46, P= 0.01, I2 =97%) by acupressure compared to control group.
**Conclusions:** Our results revealed the possible role of acupressure in minimizing pain from venipuncture in children. The role of acupressure in pain controlling from venipuncture still need more studies to explore its effect more comprehensively.

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**The visual and neurologic outcome in abusive head trauma in one medical center experience**
受虐性腦傷的視力及神經預後在單一家醫學中心經驗

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**Background:** Abusive head trauma (AHT), used to be named “shaken baby syndrome”, cause worldwide major fetal head injury in children less then 2-year-old. Subdural and retinal hemorrhage are the most common findings in AHT. Axonal injury cause major neurologic deficit. Besides, for some socio-environmental issue, AHT is difficult to have regular medical follow-up and received rehabilitation for early childhood intervention during recovery stage. Hence ,the longitudinal outcome was poor with two-third of the children had moderate to severe disabled in the literature reviews.
**Methods:** Total 28 children underwent major traumatic brain injury admitted to our KCGH pediatric intensive care unit and diagnosed with AHT. We tried cooperated with social worker through government support and arrange long-term follow up after discharge (follow up duration range from 3 month to 5 years) since 2014 Jan to 2023 April. Visual and neurological follow-up were documented through clinical and chart reviews.
**Results:** The mean age was 6.92± 4.86 months (range 1-21 months).26 (92.8%) children had seizure from 1-3 days at home (delay treatment). All of the children had subdural hemorrhage but varies in formation time (acute 6 (21.4 %), early subacute 19 (67.8%), late subacute 1(3.5%) and chronic 4(14.2%)). 2 children died in the acute stage, 2 children had loss follow-up due to moving home and the social workers changed. 24 (87.7%) children had regular followed in our medical system. 12 (42.8%) children were found to have moderate to severe motor handicap through long term follow-up. 24 (85.7 %) children had retinal hemorrhage, 2 (7.14%) had retinal detachment then visual impairment.
**Conclusions:** Around 40% of children had moderate to severe motor handicap and around 10% had visual impairment in our follow-up experience. The most striking findings was we have 10-20% decrease in motor handicap rate compared to the literature reviews data (65%). In addition to the medical team, it is important to work with social workers to provide health care need for these vulnerable groups. However, it should be stressed of prevention and early recognition of fragile children in all encounters within the family, the society and all the medical practitioners.

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**Effect of PROC Gene Variants on Venous Thrombosis: A Retrospective Case-Control Study in Taiwan population**
PROC 基因變異對靜脈血栓形成的影響：台灣族群的回顧性病例對照研究

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**Background:** Hereditary Protein C deficiency is an autosomal dominant disorder which caused by mutation in the PROC gene. The clinical presentation of Protein C deficiency varies, ranging from asymptomatic individuals to complications such as venous thrombotic events. One such variant (PROC rs146922325) has been found to account for up to 50% of protein C deficiency cases in Asia population. The study aimed to identify the effects of specific PROC rs146922325 variant on thrombotic events in the Taiwanese population. A secondary objective was to examine the impact of this variant on different genders and its association with the onset age of venous thrombosis
**Methods:** This study employed a hospital-based case-control design. We utilized the Taiwan Biobank version 2 array to identify the PROC rs146922325 variant. In total, 805 patients were included in the case group, and they were compared to a control group of 8,050 patients who lacked protein C deficiency alleles. The association between PROC rs146922325 and clinical features was analyzed by multivariable logistic regression analysis.
**Results:** The rate of all the thrombotic events was not significantly different between the gene variant and non-variant groups (15.03% vs. 13.12%, p= 0.142). However, a statistically significant difference was observed in venous thrombosis (4.1% vs. 2.48%, p= 0.009). In addition, the risk of venous thrombosis was significantly associated with advanced age, female gender, smoking history, hypertension, heart failure, chronic renal failure, antiphospholipid syndrome, and history of cancer. Besides, there is no statistically significant difference in the onset age of venous thrombosis between carrier and non-carrier of the PROC rs146922325 variant (p= 0.33).
**Conclusions:** The study indicates that PROC rs146922325 variant has an increased risk of venous thrombosis. However, it does not affect the onset age of venous thrombosis

53 **The Impact of Post-Craniotomy Subdural Effusion in Pediatric Brain Tumors**
開顱手術後硬腦膜下積水對小兒腦腫瘤的影響

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**Background:** Over recent decades, survival rates in pediatric brain tumors (PBT) have been significantly improved due to technological advancements in surgical approaches and intensified chemotherapy. Although disease relapse rates have been reduced, these treatments still come with unavoidable complications. SDE is a significant complication that can occur after craniotomy, with its incidence depending on the surgical approach and potentially affecting the prognosis of the disease. The objective of this study is to examine the impact of post-craniotomy subdural effusion on survival outcomes in patients with primary brain tumors.
**Methods:** Our study utilized a retrospective chart review to examine children diagnosed with PBT between January 2013 and December 2023. Survival benefits were assessed using Kaplan-Meier analysis, while differences in numerical variables were examined using Student's t-tests.
**Results:** The study included 178 children diagnosed with PBT, and their progress was tracked for a median duration of 3.8 years (IQR 1.6 - 7.0). The diagnoses consisted of a variety of brain tumors, including low-grade gliomas, high-grade gliomas, germinomas, non-germinomatous germ cell tumors, H3K27M-mutated diffuse midline gliomas (previously diffuse intrinsic pontine gliomas), medulloblastomas, craniopharyngiomas, embryonal tumors, atypical teratoid/rhabdoid tumors, and others. The incidence of post-craniotomy SDE was 21.3%. The majority of cases (66%) were managed through observation, while surgical intervention was necessary for 34% of cases due to the larger size of the SDE. The development of SDE was found to be more likely with frontal and occipital craniotomy approaches. The study found that the presence of SDE was associated with slightly lower survival rates (18.4% vs. 15.0%) and slightly higher disease relapse rates (44.7% vs. 35.7%), although these differences did not reach statistical significance.
**Conclusions:** SDE is still a frequent complication that occurs after craniotomy in PBT patients. The risk of SDE is higher with frontal and occipital craniotomy approaches. The presence of SDE can have a negative impact on both survival rates and the likelihood of disease relapse in PBT.

54 **Chemotherapy Combined with Vemurafenib Use in an Infant with Multi-System Langerhans Cell Histiocytosis: A Case Report**
化療合併 Vemurafenib 於治療嬰幼兒的多系統之蘭格罕氏細胞組織球增生症：個案報告

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**Background:** Langerhans cell histiocytosis (LCH) is a rare childhood histiocyte disorder, with various manifestations and prognosis. It is a clonal disorder of myeloid cells, and BRAF V600E mutation is found in half of pediatric LCH, associating with more severe presentations. Younger age of onset may be a risk factor of poor outcome and Letterer–Siwe disease was used to describe those patients with fulminant manifestations in young infants. Involvement of the gastrointestinal (GI) tract is relatively rare in LCH, causing bloody diarrhea and even GI obstruction. We report a case of MS-LCH (Multi systems-LCH) including GI involvement in a neonate, stabilized after using vemurafenib and chemotherapy.
**Methods:** A female term newborn, G1P1, was found with multiple skin rashes over bilateral lower limbs and abdomen wall immediately after birth as well as mild respiratory distress. Frequent bloody diarrhea, abdominal distention, and bilious vomiting were found in the following days. Antibiotics and IVIg were given without pathogen identified. Progressive thrombocytopenia and anemia were noted. Endoscopy revealed hemorrhagic lesions in the stomach and colon. The skin rash became generalized with crusting. She was referred to our hospital at 27-day-old. Bone marrow and skin biopsy proved LCH. Molecular test for BRAF V600E was positive.
**Results:** MS-LCH with risk organ involvement was confirmed. We started TPOG-LCH-2023 initial therapy and moved on to second line therapy due to minimal improvement. The skin rash, GI bleeding and vomiting was off and on until we added vemurafenib. GI manifestation was controlled; however, skin rash would flare up before next cycle of chemotherapy. Therefore, third line chemotherapy with Cladribine and Ara-C were used. Patient's condition became more stable and she entered into maintenance therapy smoothly.
**Conclusions:** Infants with MS-LCH (Letterer–Siwe disease) with GI manifestation is rare and might be a challenge to diagnosis. The clinical course is rapid and fatal in the previous case reports. BRAF inhibitor might play an useful role in our case. Early application of BRAF inhibitor to chemotherapy may improve the outcome of these critical cases.

55 **Clinical Outcomes of Childhood Langerhans Cell Histiocytosis in a Single Institution with 20 Years Experience**
在某單一機構兒童蘭格罕細胞組織球增生症的 20 年臨床結果分析

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**Background:** Langerhans cell histiocytosis (LCH) is a histiocytic disorder. Incidence of LCH is 4.6 per million children. LCH can arise in any organ systems, and children with liver, spleen, lung, hematopoietic systems are at high risk for death. Here we report the experience including survival rates of LCH in MacKay Children's Hospital.
**Methods:** Children ＜18 years old with LCH from 2003 to 2022 in MacKay Children's Hospital were enrolled in the retrospective study. Patients were classified into single system disease and multisystem disease according to lesions involvement. Organs at risk included the hematopoietic system, spleen, lung and liver. 5 years events free survival (EFS) and overall survival (OS) were analyzed by the Kaplan-Meier method.
**Results:** There are 22 children with LCH were treated at MacKay Children's hospital from 2003 to 2022 (M/F: 10:12). Median diagnosis age was 3 years old (0~10). Nineteen patients received chemotherapy, two with topical steroids only, one received tumor lesion excision only, and one had radiotherapy. Seven patients had relapse disease, and 2 had disease progression. Seven patients had received second line therapy due to relapse or progression of disease. Nine patients were classified as multisystem disease, and risk organ involvement was found in 8 patients. Five patients had liver involvement, four had spleen involvement, three had hematopoietic involvement, four had bone marrow involvement, and four had lung involvement. Thirteen patients had CNS risk bone involvement. Five years EFS among all was 68.2%±9.9% (SE), and 5 years OS was 95.5%±4.4% (SE). Significant increase in 5 years EFS was found in patient with single system disease (84.6% vs 55.6%, p=0.034), and significant decrease in 5 years OS was found in patients with liver involvement (100% vs 75%, p=0.034), hematopoietic involvement (100% vs 66.7%, p=0.012) and bone marrow involvement (100% vs 75%, p=0.034). Three patients had aplastic anemia after treatment, and 1 died during treatment due to pneumonia.
**Conclusions:** Children with LCH had good clinical outcomes. Risk organ involvement and multisystem disease may influence clinical outcome. Toxicity was more common in patients receiving second line therapy.

56 **Niclosamide Enhances Epirubicine Sensitivity in Epirubicine-Resistant T-ALL Cell Lines by Modulating Autophagy Pathways**
於 Epirubicine 耐藥的 T 細胞淋巴性白血病細胞株，Niclosamide 可透過調節自噬途徑增強 Epirubicine 的敏感性

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**Background:** The treatment of T-cell acute lymphoblastic leukemia (T-ALL) is often hindered by the emergence of resistance to chemotherapeutic agents such as epirubicine. Niclosamide, a known anthelmintic, has demonstrated potential in reversing drug resistance in cancer cells. This study explores the efficacy of niclosamide in sensitizing epirubicine-resistant T-ALL cell lines, Jurkat and CCRF-CEM, and its role in autophagy regulation.
**Methods:** Jurkat and CCRF-CEM cells were exposed to different concentrations of epirubicine hydrochloride (Epi-HCl) and niclosamide. Cell viability was measured using the CCK-8 assay to determine the half-maximal lethal concentration (LC50) of Epi-HCl. The impact on autophagy was assessed by Western blot analysis of LC3B and p62 protein levels.
**Results:** Epi-HCl treatment led to a dose-dependent reduction in cell viability, with LC50 values identified as 0.5 μM for Jurkat and 0.6 μM for CCRF-CEM. Epirubicine-resistant cells exhibited significantly higher viability compared to wild-type cells. The combination of niclosamide and epirubicine markedly decreased the viability of epirubicine-resistant Jurkat and CCRF-CEM cells. Western blot results showed that niclosamide treatment increased LC3B expression and decreased p62 levels, indicating enhanced autophagy.
**Conclusions:** Niclosamide effectively sensitizes epirubicine-resistant T-ALL cell lines to epirubicine by promoting autophagy. This combination therapy holds promise for overcoming chemoresistance in T-ALL, warranting further investigation into its underlying mechanisms and clinical potential.

57 **Immune-Related Adverse Events from Immune Checkpoint Inhibitors in Pediatric Patients: A Case Series from a Single-Institution**
兒科患者中免疫檢查點抑制劑引起的免疫相關不良事件：來自單一機構的病例系列報告

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**Background:** Immune checkpoint inhibitors (ICIs) have gained significant popularity due to their proven effectiveness in treating a range of adult cancers. Nevertheless, there is still limited experience with ICIs in children. Additional research is needed to determine if immune-related adverse events (irAEs) have comparable effects in children as they do in adults, both in the short-term and long-term.
**Methods:** We identified 6 children with irAEs from 2023 to 2024 through a retrospective analysis. An analysis was conducted on the clinical characteristics and outcomes.
**Results:** After completing chemotherapy, 12 patients were given ICI as immunotherapy. The disease characteristics included medulloblastoma (4), lymphoma (2), hepatoblastoma (2), and others (4). In 6 patients with irAEs, the median age was 12 years (range 6.5-19.9 years). Two patients were administered nivolumab, while four patients were given pembrolizumab. The number of ICI cycles received before irAE development was 10, with a range of 3 to 22. Two patients experienced pneumonitis and needed oxygen supplementation. Two patients experienced duodenitis and colitis, respectively. Long-term thyroxine supplementation was suggested for a patient who developed autoimmune thyroiditis. A patient experienced encephalitis, thyroiditis, and adrenal insufficiency, necessitating pulse methylprednisolone therapy. Half of the patients showed positive responses to steroids. Three patients stopped using ICI treatment. Two of them switched to a different ICI, while one patient continued with the original ICI and did not experience any recurrence of irAEs. There were no instances of severe (grade 4 or 5) toxicity observed in any of these patients.

**Conclusions:** Based on our limited experience, it is important to note that ICIs can pose a significant risk of developing irAEs in children. Thankfully, the toxicities can typically be managed without impacting patient survival.

58 **Association of Genetic Variants in Taiwanese patients with Beta thalassemia**
台灣β地中海貧血患者遺傳變異的相關性

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**Background:** Beta thalassemia is a hereditary blood disorder characterized by abnormal synthesis of globin chains in hemoglobin. This genetic condition results in reduced production or complete absence of specific globin chains.
**Methods:** This study aimed to investigate the association between Hemoglobin Subunit Beta (HBB) gene rs34451549, rs281864900, rs80356821 and rs63750783 variants and their association with incident beta thalassemia in the Taiwanese population to better understand the genetic loci regulating beta-globin chain production and their contribution to disease development.
**Results:** The research conducted in our study was centered on investigating four single nucleotide polymorphisms (SNPs) situated within the HBB gene on chromosome 11, as outlined in Table 1. Our analysis was based on a cohort of 499 individuals identified as carriers of beta Thalassemia susceptibility alleles from the TPMIdatabase.Among the 499 subjects, 210 individuals (42.1%) were found to be heterozygous, possessing one risk allele, while 289 individuals (57.9%) were either homozygous or compound heterozygous, harboring two risk alleles. The prevalence of specific variants within the study population was as follows: rs34451549 was detected in 188 subjects (37.7%), rs281864900 in 309 subjects (61.9%), rs80356821 in 290 subjects (58.1%), and rs63750783 in 1 subject (0.2%) (Table 2). Moreover, we examined the clinical diagnoses of the 499 subjects using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Subjects with the ICD-9-CM code 282.4X, corresponding to beta thalassemia, were identified. Among the study population, 64 individuals (12.8%) were clinically diagnosed with beta thalassemia according to this criterion.
**Conclusions:** Our analysis revealed that the variant rs281864900 was the most commonly observed in the study cohort, closely followed by rs80356821. Conversely, rs63750783 was infrequently encountered, being present in only one individual.

59 **The Utility of Therapeutic Alliances in Enhancing the Overall Quality of Life for Childhood, Adolescent and Young Adult Inpatients with Cancer and Primary Caregivers**
治療同盟在提升兒童及青年腫瘤住院病人與主要照護者整體生活品質之效用

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**Background:** Therapeutic alliance (TA) in psychotherapy refers to the quality of the relationship between the psychologist and the patient and their therapeutic agreement on the goals and tasks. This study aims at determining how psychologists apply TA to explore the complex relationship among psychosocial dimensions, cancer and treatment to enhance the quality of life in children and adolescent and young adults (AYA) with cancer and their caregivers.
**Methods:** From Aug 2023 to May 2024, a cross-sectional analysis was performed on the ward visit records of 17 children (0–11 yr) and 8 adolescents and young adults (AYA; 12–27 yr) with cancer and 34 adult caregivers by a counseling psychologist under natural settings.
**Results:** Among 147 ward visits, caregiver-related issues include: 1) Fatigue among caregivers: a) predominance of mothers bearing caregiving responsibilities, with 91.4% dedicating over 12 hours daily; b) caregivers' lack of medical system knowledge, resulting in "informational support deficit"; and c) insufficient respite plans exacerbating burden. 2) Needs for discussions on treatment decision and physical health information among caregivers. 3) Common fears including disease-related consequences, recurrence, and economic stress. 4) Notably, only 4.1% expressed intent for medical assistance, indicating high level of trust to the team. 5) Family dynamics (e.g. marital relationships) significantly impact care quality and treatment decisions. Patient-related issues include: 1) Emotional distress, 2) life adaptation, 3) self-image, and 4) relationships. Many encountered depression and anger, particularly females (42%), with fears of incomplete recovery and body image concerns. Preadolescent patients' major needs are physical and social care whereas AYA patients' major needs are associated with social, educational, and hospital issues such as dietary preferences, transport costs, and uncomfortable caregiver facilities. Strengthened TA promotes patient empowerment in self-care. The clinical impact of TA includes 1) fostering a warm, vital interpersonal interaction 2) advocate for the best interest of the patient and family; 3) reshaping emotional connections within families.
**Conclusions:** This study illustrated that TA not only identifies the potential needs and disruptive factors during cancer treatment in both family-centered and patient-centered models but also creates protective mechanisms and develops appropriate follow-up care plans.

60 **Efficacy and Safety of Eltrombopag use in Children with Chronic Primary Immune Thrombocytopenia: A Single Center 3-year Observational Study**
Eltrombopag 治療慢性原發性免疫性血小板減少症兒童的療效和安全性：單一中心 3 年觀察研究

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**Background:** About 20% to 30% of pediatric patients with primary immune thrombocytopenia (ITP) develop chronic form lasting 12 months or more that can be challenging to treat. Eltrombopag is being used in patients after failure of previous lines of therapy or intolerance of corticosteroid therapies
**Methods:** This retrospective study was conducted in a single medical center. All enrolled patients were chronic ITP with a platelet count less than 20 × 109/L and mucocutaneous bleeding signs.
**Results:** A total of 15 patients (9 girls) were enrolled, with a median age at eltrombopag initiation of 8.2 (range 3.6, 14.6) years and a follow-up of 36 (range 6, 39) months, with 27 (range 3, 39) months of eltromobage therapy at the time of data analysis. All the patients experienced had failure or intolerance of the first-line therapy with corticosteroids. Seven patients (46.6 %) discontinued eltrombopag permanently during the study period. The reasons of discontinuation were durable response without additional treatments after eltrombopag discontinuation (n = 3), loss of sustain response (n = 2), no response after 3 months of treatment (n = 2). In addition, 2 patients did not achieve a stable platelet count (≥ 50 × 109/L) in the first 6 months of treatment and underwent concomitant therapies with corticosteroid and/or mycophenolic acid. No adverse effect, including liver function elevation was observed.
**Conclusions:** The study found that chronic ITP patients benefited from eltrombopag treatment, in terms of platelet count improvement and use of additional therapies. In addition, no new safety concern was observed.

61 **Hydrogen Gas Inhalation Treatment for Coronary Artery Lesions in Kawasaki Disease Mice Model**
氫氣吸入治療川崎病小鼠模型冠狀動脈病變

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**Background:** Kawasaki Disease (KD) is a syndrome primarily affecting young children, typically under the age of five and is characterized by the development of acute vasculitis. Through extensive research conducted on both murine and human subjects, it has been demonstrated that the heightened levels of reactive oxygen species (ROS) play a pivotal role in the development of KD especial the coronary artery lesions (CAL). Hydrogen gas exhibits potent antioxidant properties that effectively regulate ROS production and the inflammatory response.
**Methods:** We used lactobacillus casei cell wall extract (LCWE)-induced vasculitis in mice as an animal model of KD and treated by hydrogen gas inhalation.
**Results:** We observed significant dilatation and higher Z score of left coronary arterial (LCA) in D21 and D28 in mice after LCWE treatment compared to the control group ($p < 0.05$) and significant resolution of LCA diameter ($p < 0.005$) and Z score ($p < 0.005$) after treatment with inhaled hydrogen gas. We further demonstrated that higher serum IL-6 expression in mice after LCWE treatment ($p < 0.005$) and IL-6 significantly decreased after inhaled hydrogen gas therapy ($p < 0.0005$).
**Conclusions:** From literature review this is the first report that hydrogen gas inhalation demonstrated effective for the treatment of coronary artery dilatation in the KD murin model.

62 **The incidence of Allergic Diseases in Pediatric Nephrotic syndrome patients: TriNetX Analysis**
兒童腎病症候群之過敏疾病發生率：TriNetX 資料庫研究

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**Background:** Pediatric nephrotic syndrome (NS) is considered a disease related to immune dysregulation. Previous reports suggested that pediatric NS is associated with allergic diseases.
**Methods:** We retrospectively conducted collaborative network analysis using TriNetX data. We collected the data of 4,005 patients with diagnosis of nephrotic syndrome; we used propensity score matching to create the control groups (1:1). Odds ratios (OR) with 95% confidence intervals (95% CI) were calculated for outcomes of effectiveness, and Kaplan-Meier method assessed survival probability. Allergic diseases including asthma, allergic rhinitis and atopic dermatitis were analyzed.
**Results:** In our analysis, we found that patients in the NS group were more likely to have allergic diseases (odds ratio = 1.491, 95% CI= 1.263- 1.759), including asthma (odds ratio = 1.453, 95% CI= 1.158- 1.781), allergic rhinitis (odds ratio = 1.432, 95% CI = 1.146- 1.767), but not atopic dermatitis (odds ratio = 1.473, 95% CI = 0.997- 2.175). NS patients between 2-6 years of age had a OR = 4.298, 95% CI = 2.135- 8.652.
**Conclusions:** Our findings reveal that patients with NS were more likely to have allergic diseases, such as asthma and allergic rhinitis. The results suggest that in clinical practice, physicians should pay attention to allergic diseases in caring patients with NS.

63 **Proliferationand stemness of umbilical cord mesenchymal stromal cells (ucMSC) in normoxic culture are rescued by extracellular vesicles derived from hypoxia-cultured ucMSC via glycolysis and autophagy**
臍帶間質幹細胞在常氧培養條件下的生長及幹性受到臍帶間質幹細胞低氧培養衍生的細胞外泌體透過糖解和自噬拯救

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**Background:** Extracellular vehicles (EVs) play a pivotal role in intercellular communication.Variations in culture conditions may influence the functions of umbilical cord mesenchymal stem cells (ucMSCs) and the composition of EVs derived from MSCs. In pursuit of a more effective therapeutic approach to rescue senescent MSCs, this study delves into the impact of diverse culture conditions on the contents and functions of EVs derived from ucMSCs.
**Methods:** ucMSCs underwent cultivation under normoxia or hypoxia conditions for cell passages and EV collection. Flow cytometry assessed the surface markers of ucMSCs and EVs. Contents in hypoxia-derived EVs (hEVs) and normoxia-derived EVs (nEVs) were quantified via multiplex beads assay. SA-β-gal staining gauged cell senescence. The size and concentration of EVs were scrutinized using a Nanoparticle Tracking Analyzer. Western blots and qPCR were deployed to analyze the cellular senescence pathway.
**Results:** ucMSCs cultured under hypoxic conditions exhibited superior growth compared to those under normoxic conditions. Normoxic culture also reduced the expression of MSC markers CD90 and CD105 (83.9%, 37.3%; $p < 0.05$, $p < 0.0001$) and decreased expression of stemness factors Sox2 and Nanog, while increasing p16 expression. In contrast, hypoxic culture increased LDHA expression but decreased PDH expression, indicating a shift towards glycolysis over oxidative phosphorylation. hEVs exhibited a higher quantity but smaller size compared to nEVs, and contained significantly elevated levels of growth factors such as HGF ($p < 0.05$), VEGF ($p < 0.05$), and G-CSF ($p < 0.05$). Importantly, hEVs, but not nEVs, significantly reduced SA-β-gal expression and induced AKT phosphorylation in normoxia-cultured ucMSCs. Inhibition studies using Tepotinib and Ficlatumab significantly inhibited pAKT.
**Conclusions:** ucMSCs displayed enhanced proliferation, prolonged propagation (passages), and reduced cell senescence on hypoxia. hEVs are rich in growth factors, effectively mitigated cell senescence in MSCs cultured in normoxia through glycolysis and AKT activation. Inhibition of HGF or LDHA significantly downregulated AKT expression.

64 **Semaphorin 7a is associated with atopic dermatitis disease severity and regulates the expression of IL-4 and IL-33**

Semaphorin 7a 與異位性皮膚炎疾病嚴重程度與 IL-4 和 IL-33 的表達的關聯性

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**Background:** Neuroimmune interaction is crucial to inducing pruritic sensations in atopic dermatitis. In this study, we used mRNA and epigenetic microarray data from Taiwanese children with atopic dermatitis to identify neural development genes that may be associated with disease severity. We found that semaphorin 7a, a potent immune modulator which also guides neural axon development, was associated with disease severity in children, and also regulates the expression of IL-4 and IL-33 in a cell model of atopic dermatitis.
**Methods:** HumanMethylation450 BeadChip and GeneChip Human Transcriptome Array 2.0 from 24 children with atopic dermatitis and 24 healthy controls in Taiwan, were cross-referenced with gene expression data of atopic dermatitis from a publically available database GSE116486. The expression of IL-4 and IL1RL1/ST2 was examined in Jurkat T-cells after transfection with sema7a. Expression levels of IL-33, IL1RL1/ST2 and TJP1/Zo-1 were examined in HaCaT keratinocytes stimulated with recombinant sema7a.
**Results:** Network pathway analysis of all three datasets identified a total of 5 pathways and 24 overexpressed genes, of which three genes SEMA7A, PMP22, VLDLR were associated with neurodevelopment. Two sema7a CpG sites cg13557411 and cg17917837 were hypomethylated, and mRNA expression of sema7a was higher in children with atopic dermatitis Expression of exogenous Sema7a significantly increased IL-4 and IL1RL1 expression in stimulated Jurkat T cells. HaCaT keratinocytes stimulated with recombinant sema7a expressed higher levels of both IL-33 and its receptor IL1RL1/ST2, but lower levels of the tight junction protein TJP1/Zo-1.
**Conclusions:** Our study suggests that overexpression of sema7a in patients with atopic dermatitis may lead to increased expression of both IL-4 and IL-33, both cytokines that have been linked increased neuronal sensitivity. Blockade of sema7a may suppress IL-4 production and IL-33 responses in T cells and keratinocytes, and pose as a novel therapeutic target which may attenuate the neuroimmune response in children with atopic dermatitis.

65 **Urinary Extracellular Vesicles Ameliorate Oxidative Stress and NETosis**

尿液胞外體降低嗜中性白血球氧化壓力及 NETosis

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**Background:** Urinary extracellular vesicles (UEVs) are reported as a signal transport carrier, and used as disease prediction tools. Not only a messenger, UEV also has lots of proteins, nucleotides and chemicals package together. The function and application of UEVs became interested research goals. The neutrophil extracellular traps (NETs) are a defense mechanism of innate immune system, the NET of neutrophil is followed by decondensation of DNA and rupture of the plasma membrane, which might be a negative effect toward host and associated with inflammation and thrombosis. Using EVs to ameliorate oxidative stress and NETosis of neutrophils were investigated here.
**Methods:** The urine samples were centrifuged at 3,000g for 15 minutes to remove the cells and cell debris. A series of connection with 1-μm, 0.22 μm and 100kDa filters cut-off

were introduced to samples for isolation of EVs. The particle numbers of UEV were detected using NanoSight Nanoparticle Tracking Analysis (NTA). The polymorphonuclear cells (PMNs) from total blood were collected by ficoll separation. EVs were pretreated to PMNs for 30 minutes before 4 hours of 50 ng/mL PMA stimulation, and the samples were analyzed by flow cytometry to evaluate reactive oxygen species (ROS) and NET fluoresce intensity.
**Results:** Neutrophils in response to PMA stimulation released ROS. The UEV pretreatment (pUEV) led to reduce DCFH-DA fluorescence intensity of PMA treated neutrophils (PMA: pUEV&PMA=1.07*106 ± 2.17*104: 1.44*105 ± 3.95*104, $p < 0.05$) and HE fluorescence (PMA: pUEV&PMA= 2.51*105±1.51*104: 7.49*104 ± 7.65*103, $p < 0.05$). The pUEV neutrophils formed NETs stained by SYTOX Green DNA-binding dye and MPO fluoresce antibody after PMA treatment and suppressed NETs significantly (PMA: pUEV&PMA=24.19 ± 0.32 : 15.19 ± 0.79, $p < 0.05$).
**Conclusions:** PMA induced neutrophil ROS formation and NETosis could be ameliorated by the treatment of UEV, suggesting the pretreatment of UEV to neutrophil could have anti-oxidation and anti-inflammation functions. Further studies will identify the mediators of UEV responsible for the anti-oxidative stress and NETs mechanisms.

66 **Comparing the Therapeutic Efficacy of Oral Probiotics and Intranasal Spraying of Probiotics on Mouse Models of Dust Mite-Induced Asthma**
口服益生菌與鼻內噴霧益生菌對塵蟎誘發氣喘小鼠模型的治療效果比較

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**Background:** Der m is one of most import allergens in central Taiwan. Our prior research indicated that oral administration of LGG could improve airway inflammation and remodeling. The route of probiotic administration significantly affects its efficacy.
**Methods:** We used a Der m or Der m2 sensitized asthma model in female BALB/c mice, sensitized with Der m or Der m2 on days 1-3, and challenged on days 14, 17, 21, 24, and 27. The mice were treated with LGG either by nasal spray or oral administration in the pre-sensitization group (days 1-14) or post-sensitization group (days 14-27). We assessed AHR, serum specific IgE/IgG2a, infiltrating inflammatory cells in the lungs, and cytokines BALF.
**Results:** It was observed that the inflammatory markers in the Der m-sensitized group were more severe compared to the Der m2-sensitized group (AHR: p-value=0.04; Airway inflammation score: p-value=0.017). Both pre- and post-sensitization groups treated with LGG via nasal spray or oral administration showed suppressed asthma symptoms in Der M group, including reduced AHR (pre-N-LGG, p-value=0.03; post-N-LGG, p-value=0.028; pre-O-LGG, p-value=0.047; post-O-LGG p-value=0.037), decreased allergen specific IgE, lowered Th2 cytokines, and airway inflammation improved. Airway inflammation score: pre-N-LGG, p-value=0.042; post-N-LGG, p-value=0.037; pre-O-LGG, p-value=0.029; post-O-LGG, p-value=0.03. In Der m2 sensitization group had also the same effects. And the nasal spray administration of LGG was more effective than oral administration.
**Conclusions:** Conclusion, LGG appears to be beneficial in treating asthma in Der m sensitized mice, with nasal spray administration showing superior efficacy compared to oral administration.

67 **Effectiveness of Pay-for-Performance Program on Children's Asthma Care and Related Factors**
論質計酬對兒童氣喘照護成效評估及相關因素探討

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**Background:** The prevalence rate of asthma among children in Taiwan is about 15.7%. In 2001, Taiwan began to promote the asthma Pay for Performance (P4P) program. This study was to explore the evaluation of the effectiveness of the asthma P4P program on children's asthma care and the impact of the asthma P4P program on asthma-related emergency and inpatient medical utilization in children.
**Methods:** This study is a retrospective generational study, using the National Health Insurance Research Database. The research subjects are children under 18 years old who newly suffered from asthma from 2010 to 2017, followed up to the end of 2018, using the 1:1 propensity score matching method, and using broad Logis regression model of the equation explores the impact of whether or not P4P is added to asthma-related children on the risk of asthma-related emergency department visits or hospitalizations.
**Results:** From 2010 to 2017, there were 277,379 new asthmatic children under the age of 18, of which 94,777 (34.17%) participated in the P4P program. After matching with 1:1 propensity score, 64,305 children participated in P4P and 64,305 did not participate in P4P. The odds ratio (OR) of emergency room visits due to asthma attacks for those who joined P4P was 0.29 times that of those who did not join P4P. Further stratified analysis found that compared with those who did not join, emergency room utilization was significantly lower in the mild persistent group (OR: 0.2) and the < 3 years old group (OR: 0.19). The odds of hospitalization due to asthma attacks for those who joined P4P were 0.08 times that of those who did not join P4P. Further stratified analysis found that compared with those who did not join, the risk of hospitalization in the moderate persistent group (OR: 0.04) and the 13-17 year old group (OR: 0.03) was significantly reduced among those who joined.
**Conclusions:** The asthma P4P program can effectively reduce emergency department utilization and hospitalization utilization in children's asthma care. We can control and improve the condition of asthmatic children by P4P program, which can save medical expenses and improve asthma condition in the long run.

68 **Extracellular vesicles derived from umbilical cord mesenchymal stem cells modulate trained immunity different from Dexamethasone**
臍帶間質幹細胞胞外體不同於類固醇對訓練免疫力的免疫調節作用

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**Background:** We have previously demonstrated that extracellular vesicles (EVs) derived from ucMSCs (EV-ucMSC) could eliminate traumatic neuropathic pain associated with decrease of cytokine induction and increase of neurotropic factors, and rescued cisplatin-induced hearing loss via microRNA expression in animal models. We investigated that different effects of EV-ucMSC on trained immunity different from those of Dexamethasone (DXMS).
**Methods:** This study isolated EVs from mesenchymal stem cells (EV-ucMSC), and investigated their impact on trained immunity programming. The trained immunity is processed by peripheral blood mononuclear cells (PBMCs) stimulated with BCG. The trained immunity of T cell differentiation and metabolic mechanisms on glycolysis, mitochondrial oxidative phosphorylation (OXPHOS) and glutaminolysis presented by LDHA, PDH and GLS expression, respectively.
**Results:** We found BCG-induced trained immunity was associated with significantly ($p < 0.01$) glucose consumption from day one through day 7. EV-ucMSC significantly augmented BCG-induced glucose consumption ($p < 0.05$), but DXMS significantly inhibited BCG-induced glucose consumption ($p < 0.01$). EV-ucMSC significantly ($p < 0.05$) suppressed TLR2 expression of the BCG-induced trained immunity and augmented Siglec-7 expression. However, DXMS significantly augmented TLR2 expression and suppressed Siglec-7 ($P < 0.01$). EV-ucMSC significantly ($p < 0.05$) augmented the expression of Th1 (IFNr and IL-2) and Treg (IL-10) cytokines, and DXMS significantly ($p < 0.05$) suppressed most of the cytokines (IL-6, IL-10, IFNr and TNFa) expression. Given Western blot analyses of metabolic mechanisms, we found that EV-ucMSC significantly ($p < 0.05$) enhanced glycolysis (LDHA) but suppressed PDH and GLS expression; in contrast, DXMS enhanced PDH expression significantly but inhibited LDHA and GLS expression.
**Conclusions:** We demonstrated that EV-ucMSC preferentially provide enhanced Th1 and Treg immunity, different from those of DXMS which suppressed Th1 and Treg immunity and augmented TLR2 expression, presumably through the switch of glycolysis and glutaminolysis to mitochondrial oxidative phosphorylation (OXPHOS).

69 **Dermatophagoides microceras is one of the major allergens in Taiwan**
微角塵蟎是台灣主要的過敏原之一

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**Background:** Asthma poses a significant health concern for children, as it is widely recognized that house dust mites (HDM) can instigate airway inflammation and contribute to the development of asthma. In Taiwan, the prevalent HDM allergens studied in relation to asthma include Der p (Dermatophagoides pteronyssinus), Der f (Dermatophagoides farinae), Der m (Dermatophagoides microceras) and Blo t (Blomia tropicalis).
**Methods:** To assess the distribution of allergens among allergic patients, we analyzed the Immuno CAP allergen test results from 2018 to 2022. Additionally, we developed a specific Der m2 antibody to detect dust samples in the environment and identify the presence of Der m. Furthermore, we established sensitization animal models using Der p2 and Der m2, comparing them with an OVA (ovalbumin) animal model.
**Results:** The findings revealed that Der m, Der p, and Der f were the most frequently detected dust mite allergens in the Immuno CAP analysis. Der m accounted for 72.69% in 874 patients, Der p accounted for 70.33%, and Der f accounted for 64.58%. Notably, there have been noteworthy shifts in allergen distribution compared to previous years. Moreover, Der m appeared to exhibit a more severe trend in the medical history of allergic diseases. In our mouse models, we induced sensitization in female Balb/c mice using Der p2 or Der m2 and compared them with OVA-sensitized mice. The research findings suggest that immune-inflammatory responses induced by dust mite allergens may differ from those induced by OVA; however, further investigation is necessary. Additionally, utilizing Der m in allergic animal experiments can provide a closer resemblance to human asthma.
**Conclusions:** Given the substantial correlation between dust mite allergens and the onset of allergic diseases in children, it is imperative to gain a comprehensive understanding of the impact of dust mite allergens on the condition. This understanding will help refine the precision of treatment and prevention strategies for allergic diseases, ultimately enhancing the quality of life for individuals with allergies.

70 **Integrating I-AIM Framework and EPA Assessment in POCUS Education for Pediatric Intensive Care: A Pilot study**
應用 I-AIM 框架與 EPA 評估於兒科加護病房焦點式超音波教育: 前導研究

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**Background:** 重點式超音波（POCUS, Point-of-Care Ultrasound）是臨床上重要工具。在問診和進行理學檢查的同時或之後，評估有需要進行超音波檢查來得到重點式的資訊，以便做出臨床判斷和處置。以 POCUS 甚至可以安全且有效地執行侵入性治療，現今 POCUS 已被列入急診及加護病房照護的重要訓練課程。兒科因常有特殊疾病導致之構造異常以及兒童體型差異大，超音波訓練較常被歸類在次專科之訓練。然而在日常加護病房照護中，仍有許多生命徵象不穩定或是肺部疾病的患者，是可以經由 POCUS 完整評估及治療。因此此研究希望以 Bahner 等人提出之 I-AIM((Indication, Acquisition, Interpretation, management)作為教學及測驗架構，以小班教學、實作、討論。搭配知識測驗以及勝任能力導向教育中之可信賴專業活動 (Entrustable Professional Activities,EPAs)來進行評估。

**Methods:** 教師的次專科為小兒心臟科，並在加護病房有五年的臨床教學經驗。以每個月輪訓至兒童加護病房之住院醫師作為授課對象，於剛來到加護病房的前幾天開始 POCUS 教學計劃，上課前會完成基本資料、經驗調查以及前測。上課總時數約 1.5 小時。並於上完課立即實作，實作時請學員說出所看到之發現（Think aloud），並於實作後針對此個案進行討論。之後針對學員選定之病人進行考核：請學員執行 POCUS 後存檔並將影像上傳至院內網路系統，由教師檢核其正確性，並詢問其患者診斷、評估及處置。若發現影像正確性不足，則由教師直接觀察監督其執行 POCUS 及取得影像之過程。完成評估後由教師填寫 EPA，EPA 評分設定源自於 Daniel J. 於 2018 年提出之評估架構。在完成加護病房的輪訓時將會進行課後問卷及後測。

**Results:** Pilot study 期間(2024/4-2024/6)，一共有 15 名兒科住院醫師完成此訓練課程。2 名學員沒有完成前測，13 人完整進行前測、問卷、後測及 EPA 評分。因此就此 13 人進行分析。 基本數據：13 人中 4 人為男性 9 人為女性。過去接受過 ICU POCUS 系統教學的經驗皆為 0 次。過去使用超音波經驗：過去一個月超音波執行經驗僅有一人為 5-10 次，有七人為 1-4 次，其他五人為 0 次。根據所設定的 13 項 POCUS 評估項目中，正確診斷經驗平均為為 3.46 項(標準差 1.94)，而沒經驗或錯誤則平均為 9.46 項(標準差 1.90)。前測及後測以成對樣本分析發現有顯著差異(P=0.08)，前測總分平均值為 3.69, 標準差 1.7。後測總分平均值為 5.15, 標準差為 0.69。EPA 所設定之 8 個項目中，以 EPA4 依照超音波結果調整水分及強心藥物及 EPA8 肺部: 超音波導引引流(或放置導管)之分數較低，分別為 2.77(標準差 0.73)及 2.08(標準差 0.76)。其餘 EPA 項目則介於 3.3-3.53 之間, 且 SD 介於 0.37-0.52 之間。以線性迴歸分析，課前經驗、前側、後測及問卷項目對 EPA4 與 8 皆無預測性。而 EPA4 與 EPA2 心臟腔室大小評估最為相關（皮爾森相關係數，顯著性 0.001）。在問卷方面，以李克特五分量表評估專注度、工作相關性、信心成長、滿足感皆有相當高之得分，平均值為 4.69, 5, 5, 4.92。統計過去六個月(2024/1-6)的加護病房 POCUS 存檔數，趨勢有顯著上升(各是 33,29,20,57,56,60)。於課程後進行之質性訪談，學員執行意願、次數、與同仁報告超音波發現及影響照護之程度皆有自我報告上的改變。 從統計資料分析，過去兒科 ICU 並沒有教授完整之 ICU POCUS 課程。以此模式進行教學，在認知面可見前後測成績有顯著進步。情意面上課後問卷之專注度、工作相關性、信心成長、滿足感得分高，訪談也發現學員執行意願、次數、與同仁報告超音波發現及影響照護之程度皆有自我報告上的改變。然而以 EPA 作為評估時發現 EPA4（依照超音波結果調整水分及強心藥物）與 EPA8（肺部:超音波導引引流(或放置導管）分數略低，標準差也較其他大。EPA 中僅有此兩項屬於 IAIM 之 Management 範疇，其餘皆為 Acquisition 及 interpretation。分析其可能成因，可能因休克需要評估水分及強心藥物，或是需要放置胸腔引流管之兒童重症患者中數量較少，因此僅有部分學員能反覆操作達到更高之 EPA3-4，而其餘學員在結束後仍缺乏實際照護經驗（如強心藥物），只能達到 EPA1 或 2。這在現今台灣少子化下的兒童重症是一大難題，未來期待能以模具或是擬真教學的方式對此進行補強。

**Conclusions:** POCUS 以 IAIM 為架構進行教學設計，輔以小組教學及實際上手，對情意、認知及技能面都有顯著的進步。以細分之 EPA 進行評估也是可行之方法，可針對教學不足的地方進行改進。然而兒童重症受到少子化的衝擊，兒科住院醫師訓練會在 POCUS 相關之操作及處置面向上缺乏經驗，未來課程發展希望以模具或是擬真的方式對此進行補強。

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**Evaluation of the performance of Generative Pretrained Transformer (GPT) model in clinical medical record writing**

生成式預訓練模型於臨床病歷書寫之評估

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**Background:** 最近公開的生成式預訓練轉化器模型（GPT）在醫療專業領域引起了廣泛關注。目前已在各醫學領域廣泛應用。然而，迄今為止，專門針對 GPT 在病歷書寫中的臨床適用性的研究還很少。

**Methods:** 在過去的兩個月裡，有四名醫學生進入本研究詳細評估使用 gHi 來書寫入院病歷，並特別注意評估其應用。透過病史詢問過程中所取得的零散紀錄進而啟動 gHi 系統。然後 gHi 系統將產生完整的住院醫療記錄，並由指導醫師查核。

**Results:** 共完成 36 份病歷。分析了以下特徵： 優點： 1. 資料整合方便，結構化格式（N= 32/36）：本平台可以將輸入的零散的問診紀錄整合成完整的病歷 。 2.快速總結長期病史（N= 1/1） ：當遇到當脊髓性肌肉萎縮症（SMA）等慢性疾病時，GHI 有助於整合廣泛而漫長且複雜的病史而形成總結性的重點病歷。 3. 增強臨床推理和決策（N= 33/36）：本平台自動整理出所輸入資料根據其強大的背景資料庫而能形成合理的臨床推理並識別任何缺失的訊息，改善臨床診斷。 缺點： 1.醫療建議的差異（N= 1/36）：有時，本平台的治療建議與我國臨床實踐不盡相同。 2.產生未提供的資訊（N= 5/36）：有時，本平台會產生未提供的新資訊。 3.所提茲建議不夠深入(N=36/36) ：雖然給了這些資訊之後本平台所提建議（譬

如說是進一步的檢查）有時不夠深入難以完整的形成診斷思路。
**Conclusions:** 我們發現 gHi 在撰寫病歷、快速整理病患資訊、輔助臨床人員進行診斷方面有很大幫助。提高了病歷書寫的效率和一致性，有助於臨床推理和判斷。然而，它們也存在某些局限性，例如格式差異、治療建議差異以及可能生成未提供的訊息，以目前的狀況本平台仍然必須需要仔細查核以確保生成資料的準確性以及對於新進醫師教育的周延性。

72 **Genotype, Phenotype and Follow-up in Taiwanese Patients with Congenital Nephrogenic Diabetes Insipidus**
台灣先天腎源性尿崩症之表現型、基因型及長期預後研究

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**Background:** Genotype, phenotype, and follow-up outcome in Taiwanese patients with congenital nephrogenic diabetes insipidus (CNDI) due to arginine vasopressin V2 receptor (AVPR2) and the aquaporin 2 (AQP2) genetic mutations are not well evaluated.The purpose of this study is to investigate the phenotypic, genetic characteristics, and outcomes in the Taiwanese families with CNDI.
**Methods:** Twenty-seven patients (M:F=21:6, age 22 ± 17) with CNDI belonging to eighteen unrelated Taiwanese families were enrolled. Genomic DNA from blood leukocytes was analyzed for AVPR2 and AQP2 genes mutations. deamino D-arginine vasopressin (dDAVP) stimulation was administered to separate these two gene mutations. Clinical symptoms and biochemical studies at the first presentation as well as follow-up were examined.
**Results:** Of the 27 patients with CNDI, 17 have AVPR2 mutations and 10 have AQP2 mutations. Eleven mutations, including 6 missense, 3 novel small deletion, and 2 large deletion mutation, and four mutations were identified in AVPR2 and AQP2 gene, respectively. Q57P and G100V of AQP2 were recurrent, and Q57P exerted a founder effect. All patients developed phenotypic polyuria and polydipsia. All patients with AVPR2 mutations lack of normal hypotensive and coagulation responses to dDAVP. One symptomatic female patient with heterozygous V115X mutation in AVPR2 gene had inactivated X chromosome in another allele. Three patients who carried same mutation (F178Q) from one family have different phenotypic severity. Seven patients have non-obstructive hydroureteronephrosis. Seven patients, 4 AVPR2 and 3 AQP2 mutations, reached chronic kidney disease (CKD, stage III-V) during the follow-up.
**Conclusions:** Q57P in AQP2 is the Taiwanese founder mutation. Non-obstructive hydroureteronephrosis is not uncommon complication. Chronic kidney disease should be aware in congenital NDI cases caused by either AVPR2 or AQP2 mutations.

73 **Pediatric Renal Hyperechogenicity: Variations and Follow-up in 10 Cases**
兒童腎臟高回音：十病例回顧

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**Background:** Renal echogenicity in pediatric patients varies with age. Normally, children's kidneys appear hypoechoic compared to the liver, while neonatal kidneys start off isoechoic and mature to a hypoechoic appearance by six months. Preterm neonates often exhibit transient hyperechogenicity, which typically resolves within a year and is considered a normal variant. Increased renal echogenicity can suggest kidney abnormalities such as dysplastic kidney or chromosomal anomalies. Conversely, cases of renal hyperechogenicity in children without underlying renal pathology have been rarely reported. This review aims to explore the resolution of renal hyperechogenicity in such cases.
**Methods:** We reviewed cases from Taichung Veterans General Hospital involving 23 patients initially presenting with increased renal echogenicity. Cases of prematurity (3), newly discovered (6), and those lost to follow-up (4) were excluded, leaving 10 cases for analysis.
**Results:** Among the 10 patients included, 6 presented with renal hyperechogenicity during infancy, while 4 were diagnosed during childhood. Of the 6 infants, 3 cases resolved during follow-up periods ranging from 7 months to 3 years. The remaining 3 infants showed persistent hyperechogenicity at 4 months, 3 years, and 10 years of follow-up, respectively. Among the 4 children diagnosed, 1 case resolved after 3 months of follow-up, while the other 3 continued to exhibit renal hyperechogenicity after 8 months, 1.5 years, and 4 years, respectively. Overall, resolution was observed in 4 cases (40%).
**Conclusions:** Our findings indicate that renal hyperechogenicity persisted in the majority of cases studied. Resolutions predominantly occurred within months of follow-up. Renal hyperechogenicity does not necessarily signify renal disease, but persistent cases warrant ongoing follow-up due to the potential for future renal abnormalities. Increased renal echogenicity without underlying renal pathology represents a minority of abnormal ultrasound findings in children, highlighting the need for further research to establish its clinical significance.

74 **Chondroitin Sulfate Ameliorates Hypertension in Male Offspring Rat Born to Mothers Fed an Adenine Diet**
硫酸軟骨素改善餵食腺嘌呤飲食的母親所生雄性子代大鼠的高血壓

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**Background:** Pregnant women with chronic kidney disease (CKD) face increased risks of adverse outcomes in their adult offspring. Offspring rats born to dams fed an adenine diet develop hypertension, coinciding with dysregulated hydrogen sulfide (H2S) and nitric oxide (NO) pathways, as well as alterations in gut microbiota. Chondroitin sulfate (CS) is a multifunctional food known for its diverse bioactivities. As a sulfate prebiotic, CS has shown therapeutic potential in various dis-eases. Here, we investigated the protective effects of maternal CS supplementation against hypertension in offspring induced by an adenine diet.
**Methods:** CKD was induced via feeding with chow containing 0.5% adenine protein to the dam for three weeks before gestation. Dams in the model of CKD were divided into four groups (n=3 per group), with different feeding patterns, as follows: the CN group were given an AIN-93G diet; the AD group were given an AIN-93G diet containing 0.5% adenine; the CNCS group were given an AIN-93G diet containing 3% chondroitin sulfate; and the ADCS group were given an AIN-93G diet containing 0.5% adenine plus 3% CS. Blood pressure (BP) was measured using the CODA rat tail-cuff system in offspring over time, from 3 to 12 weeks of age. At 12 weeks of age, a total of 32 rats were sacrificed.
**Results:** Maternal CS supplementation effectively protected offspring from hypertension induced by the adenine diet. These beneficial effects of CS were associated with increased renal mRNA and protein levels of 3-mercaptopyruvate sulfurtransferase, an enzyme involved in H2S production. Furthermore, maternal CS treatment significantly enhanced alpha diversity and altered beta diversity of gut microbiota in adult offspring. Specifically, perinatal CS treatment promoted the abundance of beneficial microbes such as Roseburia hominis and Ruminococcus gauvreauii.
**Conclusions:** In conclusion, perinatal CS treatment mitigates offspring hypertension associated with maternal adenine diet, suggesting that early administration of sulfate prebiotics may hold preventive potential. These findings warrant further translational research to explore their clinical implications.

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**Estimating Renal Volume with Three-dimensional Ultrasonography in Taiwanese Children**
以 3D 超音波估計台灣兒童之腎臟體積

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**Background:** There were several studies about the correlation between renal volume and renal function via ultrasound or other images. However, there were no relevant data in Taiwanese children. The purpose of this study is to establish the reference value of renal volume in Taiwanese children without renal diseases.
**Methods:** This study includes Taiwanese children under 18 years old with no history of renal diseases. Their renal volumes were calculated via QLAB software (Philips Medical Systems, Holland). We further analyzed the correlation between renal volume and the children's biological variables.
**Results:** A total of 198 children were recruited for analysis. The left renal volume was significantly larger than the right renal volume (p value $<$ 0.0001). Age, height, and weight were all significantly correlated with renal volume (all p values $<$ 0.0001), but age was no more significant (p value = 0.324) in multivariate analysis. Our regression equations to estimate renal volume are as follows: left renal volume (cm3) = 0.806 × age (year) + 0.347 × height (cm) + 1.27 × weight (kg) – 9.52, correlation coefficient R2 = 0.8648; right renal volume = -0.441 × age + 0.386 × height + 1.36 × weight – 14.06, correlation coefficient R2 = 0.9005.
**Conclusions:** In our study, we provide the reference value of renal volume in Taiwanese children for clinical practices. A child's height and weight, instead of age, correlate more to his/her renal volume.

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**Assessing Functional Independence in Taiwanese Children and Young Adults with Achondroplasia Using the WeeFIM Scale: A Cross-Sectional Analysis**
運用 WeeFIM 量表評估台灣軟骨發育不全症兒童及青年之功能獨立性:一橫斷面分析

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**Background:** Achondroplasia, a rare genetic disorder, is characterized by disproportionate short stature and skeletal dysplasia, potentially impacting daily functioning. This study aimed to evaluate the functional independence of Taiwanese children and adolescents with achondroplasia using the Functional Independence Measure for Children (WeeFIM) scale.
**Methods:** A cross-sectional study was conducted on 33 participants with achondroplasia aged 3 to 21 years. The WeeFIM scale was used to assess functional capabilities and limitations in daily activities across three domains: self-care, mobility, and cognition. Statistical analyses were performed to determine mean scores, quotients, and correlations with age and height.
**Results:** The mean scores for the self-care, mobility, and cognition domains were 48.8 (mean quotient 91.1%), 30.4 (mean quotient 87.1%), and 34.4 (mean quotient 99.1%), respectively. The mobility domain exhibited the weakest

performance, particularly in tasks such as walking and stair climbing. Significant correlations were observed between WeeFIM scores and factors such as age and height, highlighting their influence on functional independence.
**Conclusions:** This study provides insights into the functional independence of Taiwanese children with achondroplasia. The findings underscore the need for targeted interventions to enhance mobility and self-care skills, promoting better integration into daily life and improved quality of life. Healthcare professionals and caregivers should consider these results when developing individualized support plans for children with achondroplasia.

77 **Dojolvi and MCT as treatment for Malonic acidemia with cardiomyopathy**
三庚酸甘油酯與中鏈三酸甘油脂於丙二酸酸血症之應用

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**Background:** Malonic aciduria, also known as malonyl-CoA decarboxylase deficiency (MCD), is an autosomal-recessive metabolic disorder caused by a genetic mutation that disrupts the activity of Malonyl-CoA decarboxylase. This enzyme normally breaks down Malonyl-CoA, which is a fatty acid precursor and a fatty acid oxidation blocker, into acetyl-CoA and carbon dioxide. The biochemical net effect is more comparable to CPT1 deficiency. Dojolvi (also known as triheptanoin) is a medication used in the treatment of long-chain fatty acid oxidation disorders (LC-FAODs), including malonyl-CoA decarboxylase deficiency (MCD). It provides an alternative energy source by supplying odd-chain triglycerides that can be metabolized to produce glycogen and glucose. By bypassing the blocked fatty acid oxidation pathway, Dojolvi helps manage energy production in patients with LC-FAODs particular those with cardiomyopathy. Dojolvi has not been used in MA patient before.
**Methods:** 30 year old patient with known MA, presented to ER with severe heart failure, AF with responsive VT, heart rate 110-140, EF of 10 percent. MCT has been reported to be helpful in MA, therefore a daily dose was recommended. However, due to all day procedure in catheter room with VAD instalment (Impella heart pump) , pt did not receive three divided doses, instead off daily dose was provided
**Results:** Magically, the EF went from 10 percent to 40 percent in 4 hours. The Imeplla was removed the next day. Patient was switch to Dojolvi and did well. Cardiac function continued to improve now was removed from the transplant list.
**Conclusions:** The incidental loading dose of MCT helped the patient dramatically. Dojolvi as an innovate usage based on the biochemical deficit profile also proved to be effective. While most of the cardiac meds either work on relieve the pre-after load or whipping the heart by digitalis, our approach demonstrated providing cardiac muscle with proper fuel and energy is a more effective approach.

78 **Growth Hormone Treatment for Patients with Silver-Russell Syndrome: A Single Medical Center Experience in Taiwan**
西弗-羅素氏症候群患者之生長激素治療：台灣一家醫學中心之經驗

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**Background:** Silver-Russell syndrome (SRS; OMIM #180860) is a clinically and genetically heterogeneous disorder characterized by severe intrauterine growth retardation, poor postnatal growth, characteristic facial features, and body asymmetry. Hypomethylation of the imprinted genes of chromosome 11p15.5 imprinting gene cluster and maternal uniparental disomy (mUPD) of chromosome 7 are the major epigenetic disturbances. Information regarding the efficacy of growth hormone (GH) therapy in Taiwanese SRS patients is lacking.
**Methods:** Fourteen patients with SRS (10 females, 4 males; age range, 0.7 to 8.5 years old) who received and/or who are currently receiving GH treatment (0.1 IU/kg/day subcutaneously) from November 2001 through June 2024 in MacKay Memorial Hospital were enrolled in this study. We evaluated standard deviation score (SDS) of height, weight, and body mass index (BMI) before and after GH treatment.
**Results:** Among these 14 patients, nine patients were identified with IC1 hypomethylation, three patients with mUPD, one patient with 13q31.3 microdeletion, and one patient was not identified with molecular defects. The mean diagnostic age was 4.7 ± 3.6 years old. The mean SRS score was 10.4 ± 2.5 (maximal score = 15). After these 14 patients had received GH for 4.0 to 12.2 years, the mean height SDS was noted from -3.36 (±1.16) at baseline to -2.53 (±1.33) after GH treatment. Twelve out of 14 patients (86%) showed improvement in height SDS. The mean weight SDS was noted from -3.27 (±0.94) at baseline to -1.83 (±0.66) after GH treatment. All patients showed improvement in weight SDS. The mean BMI SDS was noted from -2.30 (±0.82) at baseline to -1.35 (±0.49) after GH treatment. Thirteen out of 14 patients (93%) showed improvement in BMI SDS. No significant gender or genotype pattern differences were noted among the three parameters examined.
**Conclusions:** This long-term retrospective study indicates that most SRS patients benefit from GH therapy in the improvement of height, weight, and BMI. More long-term efficacy and safety data will be needed to determine whether GH treatment actually improves their quality of life.

79 **The Use of Hyperphagia Questionnaire To Assess the Hyperphagia Status of Prader-Willi Syndrome Patients in Taiwan**

應用多食問卷評估台灣小胖威利症候群患者之多食狀況

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**Background:** Hyperphagia is one of the core symptoms of Prader-Willi syndrome(PWS) patients. In order to understand the hyperphagia status of Taiwan PWS patients and prepare for the coming of satiety treatment, we started the hyperphagia questionnaire (HQ) assessment in Taiwan.

**Methods:** Basing on the HQ designed by Elisabeth M. Dykens et al. at 2007, we translated it into Chinese in the way of back-translation which was approved by a translation committee. Then we enrolled 84 PWS main caregivers with patient age above 4 years for HQ assessment and compared our result with Dykens et al. report to evaluate the difference between these 2 groups. Thirty three caregivers received second assessment 1.5 to 2 month later for reliability evaluation of this questionnaire.

**Results:** The Chinese version of HQ showed acceptable test–retest reliability over a 1.5- to 2-month interval with a coefficient of 0.827 for all subjects. In the three dimensions of HQ, behavior, drive and severity, the average scores are 11.85, 10.32 and 4.19, respectively. Compared to the Dykens et al. report with 13.57, 12.29 and 4.61 on the corresponding dimension, our scores were significantly lower with $P < 0.05$. For the subgroup analysis, the score for behavior dimension was higher with age in the trend of $9.96 > 11.88 > 13.95 > 15.4$. The score for hyperphagia drive was also increasing with age in the way of $9.70 > 9.90 > 11.27 > 13.2$, which was consistent with clinical observation. However, on the severity dimension $3.57 > 4.04 > 5.42 > 5.2$, the score became lower for patients above 30 years of age. Since only 5 patients more than 30 years were enrolled in our study, it is hard to get concrete conclusion according to this small study number.

**Conclusions:** Our data suggested that this back-translation Chinese version HQ had a good consistency reliability and was available for the clinical evaluation of PWS hyperphagia status. And, the hyperphagia condition in Taiwan PWS patients seemed less severe than Dykens report 10 years ago. Further enrolling the older patients more than 30 years of age is necessary to make sure the idea of presence of declining satiety for older PWS patients.

80 **Using Segregation Analysis in Trio-based Whole Exome Sequencing is a Simple and Accurate Method for Detecting Uniparental Disomy (UPD)**

透過一家三口全外顯子定序資料進行家族分離分析是一個簡單且準確偵測單親二體的方法

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**Background:** Uniparental disomy (UPD) is an abnormal condition where both chromosomes of a homologous pair are inherited from only one parent. UPD can manifest as isodisomy or heterodisomy, distinguishable by SNP array or short tandem repeat (STR) analysis. Whole exome sequencing (WES) is a next-generation sequencing method that captures and sequences all coding regions in an individual's genome. Trio-based WES involves sequencing the proband along with both parents to elucidate inheritance patterns of genetic variants. This study introduces a straightforward and accurate method for UPD detection through segregation analysis using trio-based WES data.

**Methods:** This study enrolled patients who underwent trio-based WES at Kaohsiung Chang Gung Memorial Hospital from August 2022 to March 2023. WES was conducted using the Twist Exome 2.0 kit on the Illumina NovaSeq6000 platform, with bioinformatics analysis performed using DRAGEN and Geneyx. Variants with low quality (coverage $<10$x or GQ $<15$) were excluded. The genotype calling focused on identifying runs of homozygosity (ROH) on single chromosomes, defined as homozygous when maternal genotype was heterozygous and paternal was blank, or vice versa. All identified UPD cases underwent confirmation by STR analysis.

**Results:** A total of 140 patients, comprising 88 males and 52 females, with a mean age of $9.16 \pm 7.36$ years (ranging from 6 days to 38 years), were included in the study. We detected four UPD cases: three isodisomy (maternal UPD 7 [Silver-Russel syndrome], paternal UPD 15 [Angelman syndrome], maternal UPD 2) and one heterodisomy (maternal UPD 15 [Prader-Willi syndrome]). Each UPD case was confirmed by STR analysis, resulting in a detection rate of 2.85%. Segmental UPD and sex-chromosome related UPD were not analyzed in this study.

**Conclusions:** Segregation analysis using trio-based WES data offers a simple and accurate method for detecting UPD, eliminating the need for specific bioinformatics pipelines. Integrating UPD analysis into routine trio-based WES protocols should be considered for clinical practice.

81 **Challenging the Conventional Treatment Initiation Paradigm: Early Detection of Irreversible Cellular Damage in Cardiac Biopsies of Fabry Disease Before the Formation of Gb3 Inclusion Bodies**

挑戰傳統治療啟始模式:法布瑞氏症心臟切片中 Gb3 包涵體形成前即可偵測到不可逆的細胞損傷

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**Background:** Fabry disease (FD) is a lysosomal storage disorder impacting multiple organs, including the heart. We investigated whether early-stage globotriaosylceramide (Gb3) accumulation, before occurrence of inclusion bodies, could cause significant stress and irreversible damages of the cardiomyocytes in FD patients.To assess the cellular stress and irreversible damage of cardiomyocytes in FD during early-stage Gb3 accumulation before the occurrence of typical pathology.

**Methods:** Immunofluorescent (IF) staining or Western blotting were performed on fibroblasts from FD patients and myocardial biopsies from G3Stg/GLAko mice and FD patients. Notably, all biopsies exhibited detectable Gb3 accumulation under IF but lacked typical FD (Gb3 inclusion body) pathology. Staining targeted interleukin-18 (IL-18), phospho-p42/44 mitogen-activated protein kinase (MAPK), and inducible nitric oxide synthase (iNOS) as inflammatory and oxidative stress markers. Alpha-smooth muscle actin (α-SMA) IF staining was conducted to detect myofibroblasts.

**Results:** Fibroblasts from FD patients, in conjunction with cardiomyocytes from both G3Stg/GLAko mice and FD patients, exhibited significant accumulation of inflammatory markers such as IL-18 and phospho-p42/44 MAPK, as well as the oxidative stress marker iNOS. Despite the absence of typical FD pathology, the presence of fibrosis was confirmed in myocardial biopsies from these patients through strong positive staining of α-SMA.

**Conclusions:** Significant cellular stress and even irreversible damage may occur before the onset of typical pathological changes in cardiomyocytes of FD. Based on our findings, treatment should be initiated much earlier than we currently thought to prevent irreversible damage and improve the prognosis of FD patients.

82 **Newborn Screening Program for Mucopolysaccharidosis Type I and Long-Term Follow-Up of Screen-Positive Individuals in Taiwan**

台灣黏多醣症第一型新生兒篩檢計畫與篩檢陽性個案之長期追蹤

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**Background:** Mucopolysaccharidosis type I (MPS I) is an autosomal recessive lysosomal storage disorder resulting from a deficiency in the lysosomal enzyme a-L-iduronidase (IDUA), leading to the accumulation of the glycosaminoglycans (GAGs), dermatan sulfate (DS) and heparan sulfate (HS), in cells throughout the body. An MPS I newborn screening program has been available in Taiwan since August 2015.

**Methods:** From August 2015 to March 2024, 778,341 newborns were screened for MPS I by dried blood spots using tandem mass spectrometry, of whom 15 suspected infants were referred to our hospital for confirmation. The diagnosis of MPS I was confirmed by IDUA enzyme activity assay in leukocytes, quantitative determination of urinary GAGs by mass spectrometry, and identification of the IDUA gene variant.

**Results:** Among the 15 referred infants, seven (47%) were diagnosed with confirmed MPS I (Group 1), four (27%) were classified as highly suspected MPS I (Group 2), two (13%) were classified as MPS I carrier (Group 3), and two (13%) were classified as not having MPS I (Group 4). Twenty IDUA gene variants were identified in our MPS I newborn screening program. The variant of [c.300-3C > G] (n=3) (12%) was the most prevalent hot spot, followed by [c.1037T > G, p.L346R] (n=2) (8%), [c.1091C > T, p.T364M] (n=2) (8%), [c.1395del, p.G466Afs*59] (n=2) (8%), and [c.1874A > C, p.Y625S] (n=2) (8%). Long-term follow-up every 6 months was arranged for the infants in Groups 1, 2 and 3.

Intravenous enzyme replacement therapy (ERT) was started in three patients at 2.1, 0.4 and 0.5 years of age, respectively. One patient also received hematopoietic stem cell transplantation (HSCT) at 3.4 years of age. After ERT and/or HSCT, IDUA enzyme activity and the quantity of urinary GAGs, DS, and HS significantly improved in all of these patients compared with the baseline data. The incidence of MPS I was estimated to be 0.77 per 100,000 live births.
**Conclusions:** Because of the progressive nature of MPS I, early diagnosis via a newborn screening program and timely initiation of ERT and/or HSCT before the occurrence of irreversible organ damage may lead to better clinical outcomes.

83 **ELOVL1-related elongase deficiency**
超常鏈加長酶缺乏症

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**Background:** ELOVL1, an enzyme crucial for the elongation of fatty acids into very-long-chain fatty acids (VLCFAs), plays a vital role in various biological processes. Defects in ELOVL1 can lead to a spectrum of related disorders. Previous cases reported resulted from de novo, autosomal dominant (AD) variants with white matter changes, spasticity, hearing loss and ichthyosis. We herein present an AR case presenting with severe liver disease.
**Methods:** Patient is a 6-month-old female, born full-term to a consanguineous couple, flagged by newborn screening due to undetectable C26:0. At birth, she presented with hyperbilirubinemia (Total/Direct 16/5); supplemented with fat soluble vitamins, DHA, and Ursodiol. Liver biopsy revealed cholestasis and mild fibrosis of portal tracts. Ursodiol was discontinued after 2 months due to worsening cholestasis and hyperbilirubinemia of 35/30. After addition of Chobham supplementation, bilirubin decreased to 25/20. Cholangiogram at 3 months of age was reassuring against biliary atresia and a second liver biopsy showed marked hepatocellular and canalicular cholestasis without fibrosis.
**Results:** Chromosomal microarray identified multiple regions of homozygosity. Karyotype was normal. A neonatal crisis panel showed a VUS in SOS2. Whole exome sequencing identified a homozygous likely pathogenic variant in COL9A2 associated with Stickler syndrome, compound heterozygous VUS in SPTB associated with hereditary spherocytosis and a homozygous VUS in ELOVL1 (ELOVL1 (c. 458G＞A), homozygous.) Given the C26:0 level of 0 and the clinical constellations, we consider the variant pathogenic. Family history is significant for an older brother who died at 2 months due to liver failure.
**Conclusions:** Our patient has mildly dilated ascending aorta, peripheral pulmonary stenosis, and patent foramen ovals, ichthyosis, severe hyperbilirubinemia and hearing deficits. She also has three episodes of salmonellosis. Her severe liver disease associated with ELOVL1 that is not previously reported, and potentially exacerbated by hereditary spherocytosis and other unidentified AR traits by WES. Our patient also demonstrated inappropriate cholic acid can worsen liver disease.

84 **Secular Trends of HbA1c in Children and Adolescents with Type 1 diabetes**
第一型糖尿病兒童及青少年之糖化血色素的年代趨勢

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**Background:** The caring of type 1 diabetes improved a lot during the past twenty years, including the application of medical nutrition therapy, long acting and rapid acting insulin analogue, the reimbursement of blood strips for T1D in Taiwan and the widespread use continuous glucose monitoring (CGM). The aim of this study was to examine whether glycemic control had improved in children and adolescents with type 1 diabetes at MacKay Children's Hospital between 1st, Jan, 2000 and 31th, Dec, 2023, and to determine if any trends differed by sociodemographic factors.
**Methods:** We analyzed electronic medical records from 786 patients with type 1 diabetes, registered between 1st, Jan, 2000 and 31th, Dec, 2023 from MacKay Children's Hospital and Hsinchu MacKay Memorial Hospital, which contained repeated measures of HbA1c. HbA1c levels and HbA1c compliance rates, defined as HbA1c ＜7.5%, were treated as outcome variables for analysis. Repeated measures ANOVA and trend tests were applied to estimate time effects on HbA1c and HbA1c compliance rates. Paired boxplots were constructed for trend visualization. An additive stratified plot and a linear mixed effect model were used to estimate the effects of baseline factors, including gender, age group at diagnosis, diabetic ketoacidosis (DKA), and hospital branch, on HbA1c and HbA1c compliance rate trends. All analyses were conducted using R software.
**Results:** Hemoglobin A1c (HbA1c) significantly decreased over the 23-year period between 2000 and 2023, with the annual mean HbA1c decreasing from 9.1% to 8.06%. Females generally had higher HbA1c levels compared to males. HbA1c compliance rates continuously improved from 2007 to 2010 and has remained above 40% for an extended period. In 2020, it further increased to more than 45%.
**Conclusions:** The glycemic control of the pediatric type 1 diabetes significantly improved over the 23-year observational period. This improvement was associated with the treatment modalities employed

85 **Trajectory and Factors Predicting Hemoglobin A1c in Children and Adolescents with Type 1 Diabetes**
第一型糖尿病兒童和青少年之糖化血色素軌跡及預測因子

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**Background:** Poor glycemic control in patients with type 1 diabetes (T1D) increases the risk of microvascular complications. We aimed to describe specific HbA1c trajectories in children and adolescents with T1D in Taiwan, and analyze associations with various demographic factors.
**Methods:** We included patients who were diagnosed with T1D between January 1st, 2000 and December 31th, 2023, were under the age of 18 at diagnosis, and were regularly followed up at MacKay Children's Hospital and Hsinchu MacKay Memorial Hospital. We collected HbA1c values from electronic medical records. HbA1c trajectories were analyzed using linear mixed-effects model and presented by boxplots across follow-up stages. The following cofactors were included stepwise: gender, age at diagnosis, era at diagnosis, presence of diabetic ketoacidosis (DKA) at diagnosis, HbA1c at diagnosis, HbA1c at nadir, and HbA1c at 1 year after diagnosis. The factors were further regarded as predictors in random forest model for HbA1c trajectory prediction. Analyses were performed by R statistical software.
**Results:** We identified 786 individuals during the study period; Among them, 46% were boys and 54% were girls. Two hundred and thirty-eight patients (30%) were diagnosed between 0-6 years old, 355(45%) were diagnosed between 0.5-6 years old, while 193(25%) were diagnosed between 12-18 years old. Two hundred and thirty-six patients (30%) were diagnosed during 2000-2007, 268(34%) patients were diagnosed during 2008-2015, while 281(36%) patients were diagnosed during 2016-2023. We also divided patients into 3 groups according to HbA1c values at baseline, at nadir, and at 1 year post diagnosis. The trajectory of HbA1c significantly differed by age group at diagnosis, calendar year at diagnosis, and HbA1c group at nadir. We found the trajectory did not significantly differ by gender or presence of DKA at diagnosis.
**Conclusions:** We can predict HbA1c trajectories by age at diagnosis, era at diagnosis, and HbA1c at nadir. Interventions to those groups predicting poorer HbA1c trajectories can help improve diabetes care.

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**Iron Deficiency Anemia and Short Stature: A Nationwide Population-based Retrospective Study**
缺鐵性貧血和身材矮小:一項全國人口回顧性研究

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**Background:** Anemia has been proposed as a risk factor in retarded growth. However, the relationship between iron deficiency anemia (IDA) and short stature has not yet been investigated in a population-based study.
**Methods:** This case-control population-based study utilized the National Health Insurance Research Database in Taiwan. We included the patients with a diagnosis of short stature between January 1, 2009, and December 31, 2020. They were then matched by age, sex, and date of short stature diagnosis with individuals without short stature. The primary outcome was to identify the risk factors associated with short stature. The secondary outcome focused on examining the association between the risk of short stature and IDA variables including IDA exposure time interval and IDA treatment.
**Results:** A total of 145,945 patients with short stature (mean [SD] age, 8.92 [SD 5.20] years) and 583,780 matched control subjects (mean [SD] age, 9.06 [SD 5.57] years) were included. Short stature group had higher rates of comorbidities such as small for gestational age (SGA), prematurity, low birth weight (LBW), perinatal asphyxia, and hypoglycemia. Compared to the control group, IDA was more prevalent (0.56% vs. 2.00%; $p < 0.001$) and an independent risk factor for short stature (adjusted odds ratio [aOR], 3.68; 95% CI, 3.50-3.88; $P < 0.001$). The effect of IDA on short stature remained significant in patients without SGA (aOR, 3.69), prematurity (aOR, 3.95), LBW (aOR, 3.95), hypoglycemia (aOR, 3.74), or diabetes mellitus (aOR 3.97) (all $P < 0.001$). Early IDA treatment reduced the risk of short stature by 69% (aOR, 0.31; 95% CI, 0.22-0.44; $p < 0.001$), and the patients with prolonged medication treatment ($> 5$ years) still had an increased risk of short stature (aOR, 1.40; 95% CI, 1.06-1.86; p = 0.0135).
**Conclusions:** Results of this study support the hypothesis that IDA increases the risk of short stature. Early management of IDA can attenuate this risk, while prolonged treatment can accentuate it. This highlights the importance of awareness and proper management of IDA in growing children.

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**The Influence of Prenatal and Postnatal Exposure to Plasticizers on the Subsequent Behavioral Development of Young Children.**
產前與產後塑化劑的曝露對幼兒日後行為發展之影響

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**Background:** The developmental origins of health and disease theory emphasize that nutrition and exposure to various factors (e.g., chemicals, pollutants) during the embryonic and early childhood stages have profound impacts on the development of organs and systems. The mechanisms of damage caused by phthalate pollution include inflammation, oxidative stress, and tissue damage, may lead neurodevelopmental complications.
**Methods:** we collected data from pregnant women, including prenatal exposure data through second trimester urinary samples collected, focusing on common environmental hormones, such as MEP, MnBP, MBzP, MEHP, and BPA. Additionally, we collected urinary samples from babies aged 18 months to 2 years to assess the impact of exposure during infancy. We also used the Child Behavior Checklist (CBCL) questionnaire to evaluate behavioral development, serving as an assessment of emotional and behavioral problems in preschool-aged children.
**Results:** We collected data from 491 mother-child pairs, including 246 boys and 245 girls. There were no significant

differences in parental age, education level, or smoking status between the groups of boys and girls. In CBCL scores, only the ADHD problem scores were higher in boys. Prenatal maternal exposure to phthalates showed no difference between the infant male and female groups, but we found higher MBzP levels in boys during infancy. Prenatal maternal exposure to phthalates, such as MEP and MnBP, was higher than infant exposure, while postnatal infant exposure to MEHP was higher than prenatal maternal exposure. Prenatal maternal exposure to MnBP was associated with anxiety (OR = 33.58, p = 0.01), sleep (OR = 41.34, p = 0.04), and overall problems (OR = 19.32, p = 0.04) in children. Postnatal infant exposure to MnBP was associated with internalizing problems (OR = 3644.15, p = 0.01).
**Conclusions:** This study provides evidence of the adverse effects of prenatal and post natal phthalate exposure on children's behavior and cognition. These results underscore the importance of protecting pregnant women and children from environmental pollution, providing critical references for relevant policies and measures.

88 **Exploring The Psychological and Eating Behavioral Differences in Obese Youth: A Cross-Sectional Study of Clinical Populations**
肥胖青少年在心理與飲食行為差異的探索：臨床族群的橫斷面研究

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**Background:** Obesity affects nearly 20% of young people in Taiwan, placing them at higher risk for adverse physical and psychological outcomes. Weight stigma exacerbates these issues by contributing to negative body image and victimization through bullying and teasing, increasing the risk of depression, anxiety, low quality of life and disordered eating behaviors. Young people with obesity who seek clinical care often experience weight bias and fear negative judgment from healthcare providers.
**Methods:** A cross-sectional study was conducted involving 103 youth with obesity, aged 10-24 years, who sought clinical care. Participants were surveyed regarding body mass index (BMI), weight-related stigma, disordered eating behaviors. The quality of life, anxiety, and depression were assessed through self-reported questionnaires. Pearson correlation was used to assess the bivariate correlations among variables, including age, BMI, gender, weight-related stigma, disordered eating behaviors, quality of life, anxiety, and depression.
**Results:** Female adolescents experienced more weight stigma than their male counterparts. BMI was associated with weight stigma ($r = 0.25$, $p < 0.05$). Additionally, weight stigma was significantly associated with disordered eating behaviors ($r = 0.48$, $p < 0.01$) and anxiety ($r = -0.36$, $p < 0.01$) among the young people with obesity. Weight stigma also significantly correlated with the low quality of life of the participants ($r = 0.58$, $p < 0.01$).
**Conclusions:** Weight stigma is associated with detrimental physical and psychological health impacts. Further studies are needed to determine if prospective weight gain promotes the anxiety, low quality of life and disordered eating behaviors, especially in obese youth who seek clinical care. Healthcare providers should be aware of the harmful effects of weight stigma and support patients in addressing and mitigating weight bias and its consequences.

89 **Trends in Pediatric and Adolescent Hypertension Prevalence in Taiwan (2009-2020)**
2009 至 2020 年台灣地區兒童青少年高血壓盛行率之趨勢

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**Background:** Hypertension is a significant risk factor for long-term cardiovascular morbidity and mortality. In 2017, new international guidelines were introduced to address hypertension in children and adolescents, emphasizing the importance of early detection and management. Our previous research indicated that the prevalence of pediatric hypertension ranged from 0.19 to 0.38 per 1,000 children and adolescents between 2000 and 2013 in Taiwan. This follow-up study aims to examine the changes in the prevalence of hypertension in Taiwanese children and adolescents to provide updated insights that can help inform and refine local healthcare strategies.
**Methods:** The study subjects were retrieved from the Taiwan National Insurance Research Database between 2009 and 2020. Patients coded with hypertension who were younger than 18 years old were identified.
**Results:** During the study period, the prevalence of pediatric hypertension ranged between 0.31 and 0.45 per 1,000 children and children and adolescents in Taiwan. The overall prevalence of hypertension in children and adolescents showed a gradual decrease since 2013. The data consistently showed higher prevalence rates in the older age group (13-18 years) compared to the younger groups (0-5 years and 6-12 years). Boys had a higher prevalence of hypertension compared to girls across all years and age groups.
**Conclusions:** The updated data from 2009 to 2020 shows that the overall prevalence has gradually decreased since 2013. However, compared to our previous research, the proportion of patients in adolescence has increased. Further investigation is needed to understand the underlying factors contributing to these trends and to continue improving hypertension evaluation and management in this population.

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**Trend and predisposing factors changes in suicidal and self-harm behaviors among adolescents and young adults before and after the COVID-19 pandemic**

新冠疫情前後青少年及年輕成人自殺與自殘行為趨勢及相關前驅因子變化

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**Background:** After the COVID-19 pandemic, an increase in suicidal and self-harm behaviors across all age groups has been observed. This study aimed to investigate the changes of suicidal behaviors among adolescents and young adults at a single medical center.

**Methods:** This study included adolescents and young adults presenting to the emergency department (ED) due to suicidal and self-harm behaviors from 2016 to 2023. All patients included in the study had been reported to health authorities for suicide attempts. Only the first ED visit was included. Thorough histories and outcomes were retrospectively reviewed.

**Results:** A total of 648 adolescents and young adults were included, with 270 before the pandemic (2016-2019) and 378 after the pandemic (2020-2023). Among personal factors, the history of leave of absence increased from 11.9% to 35.7% ($p < 0.001$), bullying from 13.7% to 22.5% ($p = 0.005$), and domestic violence from 9.6% to 15.6% ($p = 0.026$). Victimization by domestic violence rose significantly from 4.1% to 11.6% ($p = 0.001$), while domestic violence offenders increased from 3% to 6.9% ($p = 0.028$). The proportion of low-income families increased from 6.7% to 13.8% ($p = 0.004$). Most incidents occurred at the residence, with a significant rise in rented accommodations (21.1% vs. 36.0%, $p < 0.001$) and individuals living alone (34.4% vs. 44.4%, $p = 0.031$) after the pandemic.

**Conclusions:** After the pandemic, there have been significant changes in the social circumstances of young individuals. Different approaches must be implemented to address these changes.