國立臺灣大學醫學院附設醫院

醫學研究部

National Taiwan University Hospital
Department of Medical Research

台大醫院 醫療整合資料庫
研究經驗分享

NTUH *i*MD

陳建煒

2019/1/19

可能的利益衝突 disclosure

- I conduct public domain observational studies funded by medical product companies
- 我為一些醫療產品公司提供專業諮詢, free for some Taiwan companies
- I give private company-sponsored presentations, but not for specific products

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Big Data – a problem or a solution?

- “We call this the problem of big data.” – Cox & Ellsworth (National Aeronautics and Space Administration, USA) 1997
  - Datasets too big for existing hardware and software to handle
- Gaining “insight” from “data” is different from simply collecting and having access to “big data”
  - Epidemiologists have been doing it for years …

台大醫院 NTUH

臺大醫療體系醫療整合資料庫

- 2013年8月本院企劃管理部著手規劃整合資料庫建置事宜
- 設立目的
  - 彌補政府單位提供健康資料庫之不足。
  - 受限於院內各種臨床數據及記錄分散於各資料庫與各單位中，期望整合院內臨床資料，以促進本院臨床研究。

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臺大醫療體系醫療整合資料庫

- 2013年8月 ~ 2015年6月
  - 院內規劃(軟硬體架構、人力規劃)
  - 和他院交流
  - 盤點院內資料
- 2015年6月: 開始轉置資料
- 2016年起: 接受申請

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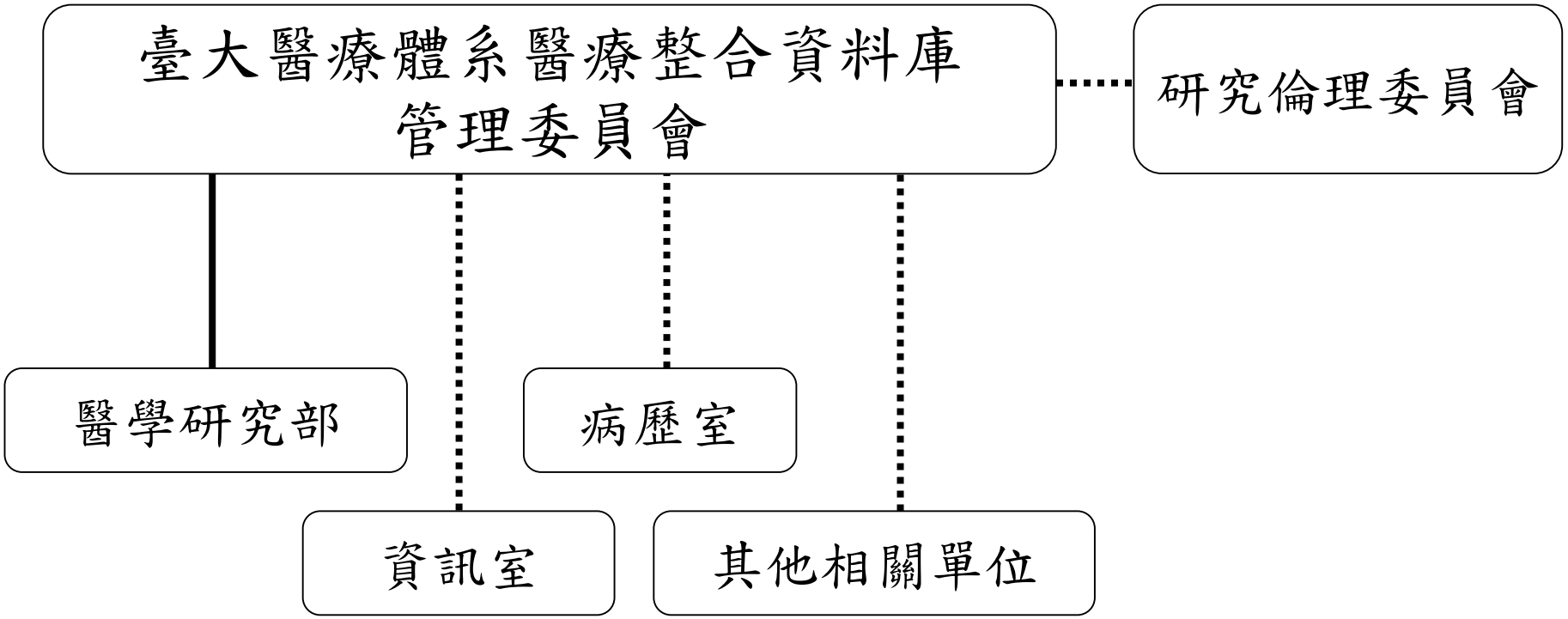
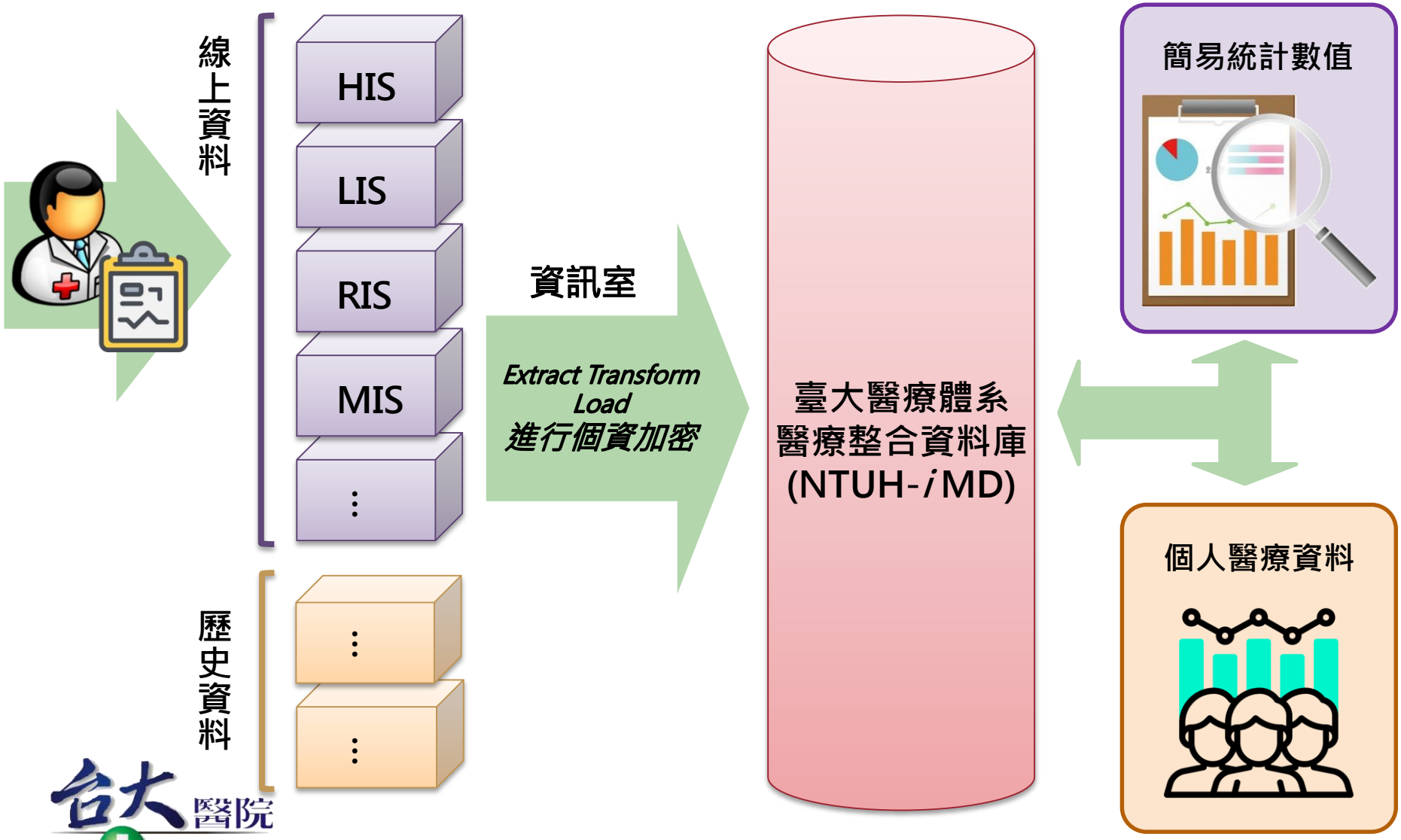

臺大醫療體系醫療整合資料庫
管理委員會
研究倫理委員會
醫學研究部
病歷室
資訊室
其他相關單位

「臺大醫療體系醫療整合資料庫辦公室」

NTUH *i*MD 揭牌儀式 2017年1月23日

臺大醫療體系醫療整合資料庫



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資料範圍

- **病患基本資料**
  - 性別
  - 生日
  - 身高體重
  - 菸酒檳史...等
- **病患就診資訊**
  - 診斷
  - 醫令、醫囑
  - 處方、處置...等
- **檢驗/檢查資料**
  - 血液
  - 尿液...等
- **其他**
  - 文件報告類...等
  - 癌症登記

臺大醫療體系醫療整合資料庫

- 臨床研究
  - 臨床科部
  - 護理部
  - 藥劑部
  - 其他科部

- 和公共衛生學院老師合作
- 和台灣大學其他學院老師合作

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研究型態

- 回溯性研究
- 前瞻性研究/建構 Registry
  - Disease based
  - Drug based
  - Device based
- 串連衛生福利部-衛生福利資料科學中心中之資料(如癌症登記、死亡檔、全民健保資料等)
- 協助臨床試驗

台大醫院 NTUH

Journal of the Formosan Medical Association (2018) 117, 711–719

Original Article

A large retrospective review of persistent proteinuria in children

Chingying Chang-Chien [a,c], Gwo-Tsann Chuang [a,c], I-Jung Tsai [a], Bor-Luen Chiang [b], Yao-Hsu Yang [a,*]

[a] *Department of Pediatrics, National Taiwan University Children's Hospital, College of Medicine, National Taiwan University, No. 8 Chung-Shan South Rd., Taipei, 10061, Taiwan*
[b] *Department of Medical Research, National Taiwan University Hospital, Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University, No. 7 Chung-Shan South Rd., Taipei, 10061, Taiwan*

- 病人條件：<18歲於本院尿液檢查，其結果為尿蛋白陽性者
- 資料期間： 2011年1月至2016年12月

N=37,645

Journal of the Formosan Medical Association (2018) 117, 711–719

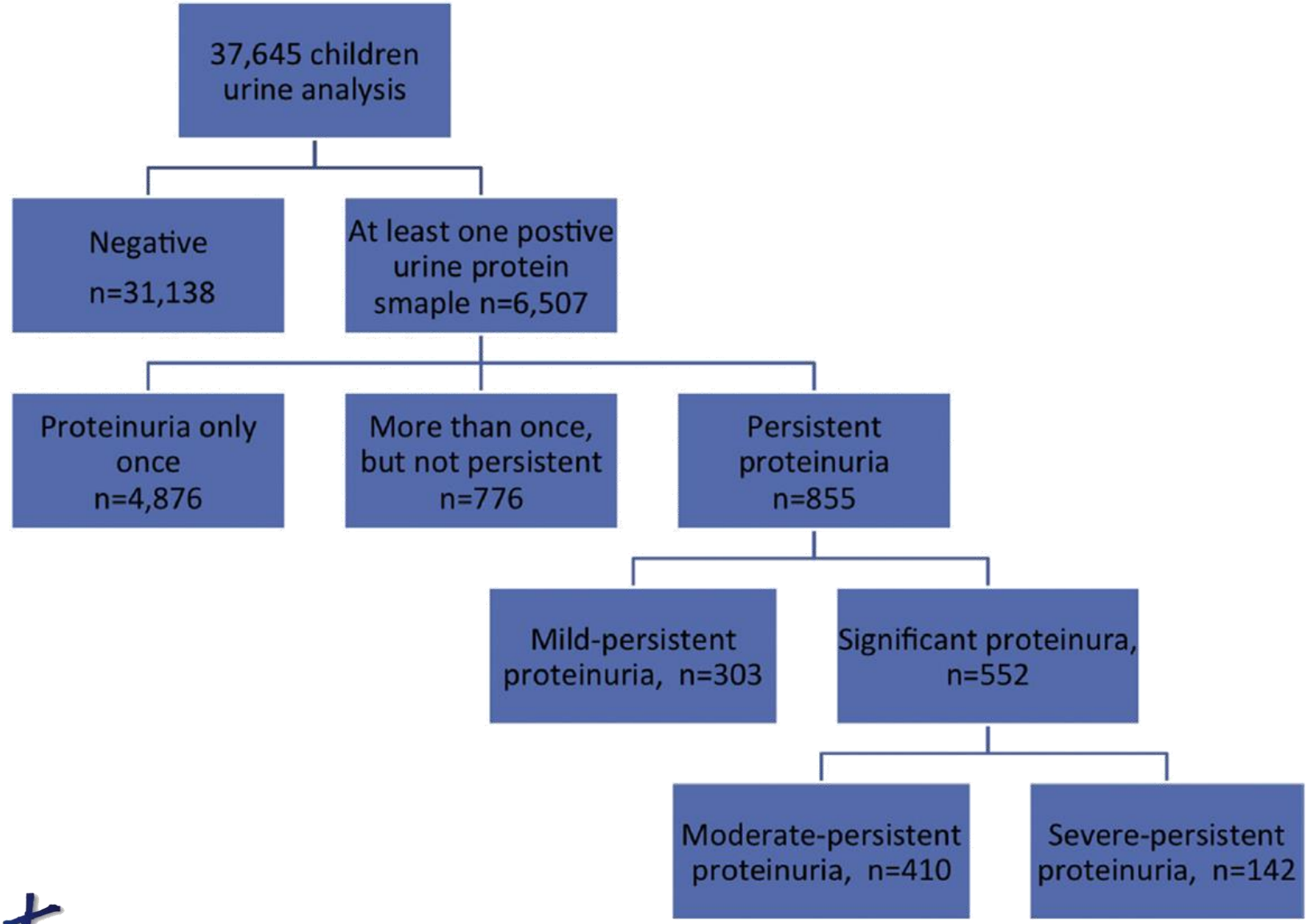

Figure 1 Diagram of grouping based on urine protein finding in all children.

Journal of the Formosan Medical Association (2018) 117, 711–719

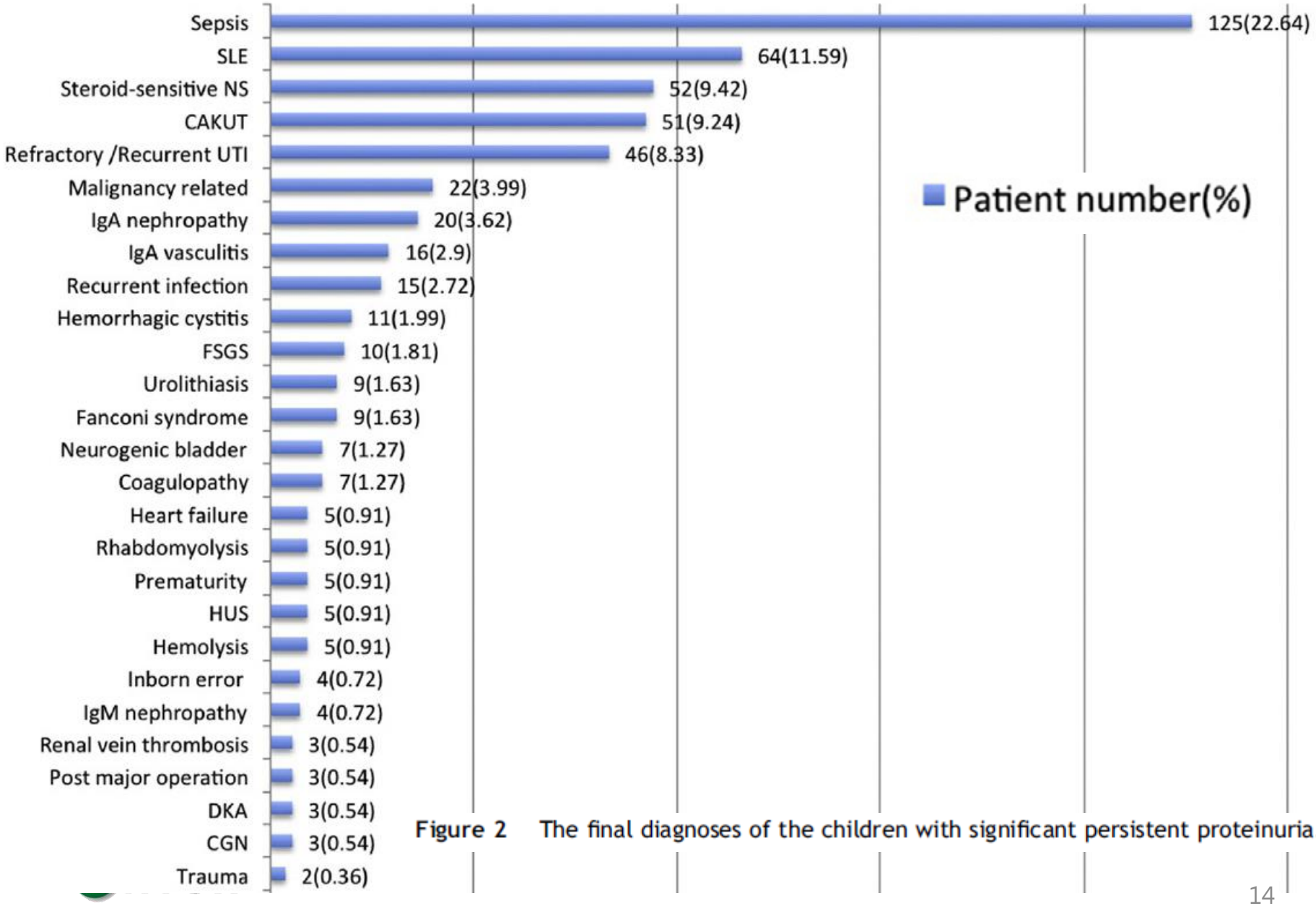

Figure 2 The final diagnoses of the children with significant persistent proteinuria.

Circ J 2018; **82:** 1186–1194
doi:10.1253/circj.CJ-17-1172

ORIGINAL ARTICLE
Valvular Heart Disease

Do Patients With High CHA_2DS_2-VASc Scores Need High Intensity of Anticoagulants After Valve Surgery?

Hsi-Yu Yu, MD, PhD; Ming-Hsien Lin, MD; Lian-Yu Lin, MD, PhD;
Chih-Hsien Wang, MD, PhD; Nai-Hsin Chi, MD, PhD; Yih-Sharng Chen, MD, PhD

Background: Asian patients on warfarin therapy usually have lower international normalized ratio (INR) intensities than those recommended by Western clinical practice guidelines. This study evaluated whether a high INR reduces the incidence of thromboembolism (TE) or bleeding events in Asian patients with high CHA_2DS_2-VASc scores after valve surgery.

Methods and Results: Data of adult patients after valve surgery were retrieved from an integrated healthcare information system of a single hospital between 2014 and 2016. The INR was derived from the closest laboratory data before the index outpatient-clinic visit date. The endpoint of every record was determined as emergency room visit or hospitalization because of TE or bleeding event.

- 病人條件：>20歲於本院接受心臟瓣膜手術
  規律於本院追蹤且開立warfarin之病患
- 資料期間： 2014年1月至2016年12月

Key Words: Anticoagulation; Chinese; Follow-up study; Valve surgery; Warfarin

N= 808

Circ J 2018; **82:** 1186–1194
doi:10.1253/circj.CJ-17-1172

Table 3. Univariate and Multivariate Analyses of TE or Bleeding Events

	Univariate analysis		Multivariate analysis	
	HR (95% CI)	P value	HR (95% CI)	P value
TE or bleeding				
CHA_2DS_2-VASc	1.29 (1.09–1.53)	<0.01	1.24 (1.03–1.48)	0.02
Female sex	2.49 (1.23–5.06)	<0.01		NS
Mechanical valve	1.16 (0.41–3.27)	0.785		
Atrial fibrillation	0.63 (0.29–1.39)	0.254		
Warfarin fluctuation (10%)	1.83 (1.50–2.29)	<0.01	1.68 (1.35–2.09)	<0.01
INR fluctuation (10%)	1.50 (1.20–1.89)	<0.01	1.25 (0.98–1.61)	0.07
Warfarin dose (1 mg)	0.69 (0.52–0.93)	<0.01		NS
INR 1.5–2.0	0.45 (0.21–0.99)	0.030		NS
Atrial fibrillation	0.82 (0.30–2.28)	0.705		NS
Warfarin fluctuation (10%)	1.74 (1.30–2.30)	<0.01	1.64 (1.23–2.18)	<0.01
INR fluctuation (10%)	1.35 (0.96–1.91)	0.086		NS
Warfarin dose (1 mg)	0.82 (0.57–1.18)	0.289		NS
INR 1.5–2.0	0.44 (0.14–1.32)	0.143		NS
Bleeding				
CHA_2DS_2-VASc	1.20 (0.94–1.54)	0.15		NS
Female sex	3.69 (1.21–11.2)	0.02	2.99 (0.97–9.17)	0.056*
Mechanical valve	2.38 (0.32–17.9)	0.40		NS
Atrial fibrillation	0.46 (0.13–1.59)	0.22		NS
Warfarin fluctuation (10%)	1.92 (1.45–2.54)	<0.01	1.72 (1.27–2.34)	<0.01
INR fluctuation (10%)	1.65 (1.22–2.22)	<0.01	1.35 (0.96–1.90)	0.081*
Warfarin dose (1 mg)	0.80 (0.55–1.17)	0.25		NS
INR 1.5–2.0	0.47 (0.15–1.43)	0.18		NS

*With a trend. CI, confidence interval; HR, hazard ratio; INR, international normalized ratio; TE, thromboembolism.

Conclusions: The optimal INR is 1.5–2.5 for low- or high-score Asian patients after valve surgery. INR >3.0 was associated with increased TE or bleeding incidence in the high-score group.

Journal of the Formosan Medical Association (2018) xx, 1–8

Original Article

Comparison of warfarin dosage fluctuation with time in therapeutic range for bleeding or thromboembolism rate in Chinese patients

Hsi-Yu Yu [a], Hsiao-En Tsai [b], Yih-Sharng Chen [a], Kuan-Yu Hung [c,d,*]

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[b] *Department of Surgery, National Taiwan University Hospital, Hsin-Chu Branch, Hsin-Chu City, Taiwan*
[c] *Department of Internal Medicine, National Taiwan University Hospital and National Taiwan University, College of Medicine, Taipei, Taiwan*
[d] *Department of Internal Medicine, National Taiwan University Hospital, Hsin-Chu Branch,*

- 病人條件：>18歲以上於本院門診開立warfarin之病患
- 資料期間： 2014年1月至2016年12月

N= 3108

Table 3 Logistic regression analysis for the HR of bleeding or TE.

	Univariate	P	Multivariate	P
	Hazard ratio		Hazard ratio	
CHA_2DS_2-VASc	1.29 (1.17–1.42)	<0.001	1.27 (1.15–1.41)	<0.001
Atrial fibrillation	1.03 (0.69–1.54)	0.891	–	–
Valve replacement	0.88 (0.58–1.32)	0.527	–	–
Previous stroke[a]	1.94 (1.26–2.97)	0.002	–	–
CAD[a]	2.49 (1.25–4.97)	0.009		
Female	1.35 (0.88–2.08)	1.000	–	–
BSA	1.05 (0.38–2.89)	0.502	–	–
INR test/year	0.87 (0.69–1.10)	0.255	–	–
INR 1.5–3.0	0.74 (0.49–1.10)	0.140	–	N.S.
TTR	0.83 (0.42–1.62)	0.582	–	–
WDF (+10%)	1.58 (1.40–1.79)	<0.001	1.55 (1.37–1.75)	<0.001

TTR: Time in therapeutic range. CAD: coronary artery disease. WDF: warfarin dosage fluctuation.

[a] Previous stroke and CAD, even with statistical significance by univariate logistical regression analysis, were not put into multivariate

Conclusion: High WDF rather than low TTR was associated with increased bleeding and TE incidence rates.

The Journal of Infectious Diseases® 2018;217:1193–201

The Journal of Infectious Diseases

MAJOR ARTICLE

Distinct Relapse Rates and Risk Predictors After Discontinuing Tenofovir and Entecavir Therapy

Tung-Hung Su,[1,2] Hung-Chih Yang,[1] Tai-Chung Tseng,[5] Jyh-Ming Liou,[1] Chen-Hua Liu,[1,2] Chi-Ling Chen,[4] Pei-Jer Chen,[1,2,3,4] Ding-Shinn Chen,[1,2,4] Chun-Jen Liu,[1,2,4,a] and Jia-Horng Kao[1,2,3,4,a]

[1]Division of Gastroenterology and Hepatology, Department of Internal Medicine, [2]Hepatitis Research Center, and [3]Department of Medical Research, National Taiwan University Hospital, and [4]Graduate Institute of Clinical Medicine, National Taiwan University College of Medicine, Taipei, and [5]Department of Internal Medicine, National Taiwan University Hospital, Jin-shan Branch, New Taipei City, Taiwan

Background. We investigated the patterns and predictors for virological relapse (VR), clinical relapse (CR), and sustained clinical response (SCR) and the outcomes of retreatment after nucleos(t)ide analogue (NUC) therapy discontinuation.

Methods. Patients with chronic hepatitis B who were discontinuing NUC therapy were prospectively enrolled. Viral and host

- 病人條件：（研究者自行蒐集病人清單串聯整合資料庫)

  1.慢性B型肝炎未合併肝硬化的患者、

  2.中斷使用tenofovir or entecavir

- 資料期間： 2012/10-2017/08

the HLA-DPA1 (rs3077) AA genotype predicted SCR (OR, 10.84; 95% CI, 1.12–105). The HBV DNA 1 month after NUC treatment cessation was an early predictor of subsequent relapse.

Conclusions. Discontinuation of tenofovir disoproxil fumarate treatment rather than entecavir treatment is associated with earlier relapse, and NUC-specific posttherapy monitoring is necessary.

Table 3. Baseline and Host Predictors for Virological Relapse (VR), Clinical Relapse (CR), and Sustained Clinical Response (SCR)

	VR		CR		SCR	
Variable	HR[a] (95% CI)	*P*	HR[a] (95% CI)	*P*	OR[a] (95% CI)	*P*
HBeAg positive (vs negative)	0.47 (.23–.95)	.048	0.65 (.27–1.58)	.340	6.42 (1.54–26.8)	.011
TDF therapy (vs ETV therapy)	2.58 (1.41–4.73)	.002	1.75 (.84–3.67)	.138	0.81 (.25–2.58)	.721
EOT HBsAg level[b]	1.62 (1.19–2.21)	.002	1.78 (1.13–2.81)	.013	0.57 (.35–.94)	.028
EOT anti-HBc level[b]	0.92 (.55–1.56)	.768	0.83 (.45–1.54)	.551	1.06 (.42–2.70)	.900
SNP, genotype[c]						
rs2296651 non-GG (vs GG)	1.10 (.51–2.36)	.808	0.66 (.26–1.70)	.391	0.68 (.14–3.32)	.635
rs231775 non-GG (vs GG)	1.74 (1.01–3.00)	.048	2.06 (1.04–4.11)	.039	0.58 (.21–1.65)	.309
rs3077 non-GG (vs GG)	0.76 (.33–1.76)	.516	0.58 (.22–1.52)	.270	2.69 (.68–10.6)	.157
rs9277535 non-GG (vs GG)	1.17 (.54–2.56)	.689	0.94 (.38–2.32)	.893	0.76 (.19–3.03)	.703

VR was defined as a hepatitis B virus (HBV) DNA level of >2000 IU/mL [18]. CR was defined as VR with a 2-fold elevation of the alanine aminotransferase (ALT) level from the upper limit of normal (ie, <41 IU/mL). SCR was defined as an HBV DNA level of <2000 IU/mL with a normal ALT level 12 months after cessation of therapy.

Abbreviations: anti-HBc, anti–hepatitis B virus core antigen; CI, confidence interval; EOT, end of therapy; ETV, entecavir; HBeAg, hepatitis B virus e antigen; HBsAg, hepatitis B virus surface antigen; HR, hazard ratio; OR, odds ratio; TDF, tenofovir disoproxil fumarate.

[a]Adjusted by age and sex.

[b]Per 1 log IU/mL increase.

[c]Single-nucleotide polymorphisms (SNPs) in genes encoding the receptors NTCP (rs2296651) and CTLA4 (rs231775) and in the 3′ untranslated regions of the genes encoding HLA-DPA1 (rs3077) and HLA-DPB1 (rs9277535).

Conclusions. Discontinuation of tenofovir disoproxil fumarate treatment rather than entecavir treatment is associated with earlier relapse, and NUC-specific posttherapy monitoring is necessary.

台大醫院 NTUH

相關議題

- Ethics review - 個人資料保護法
- 資訊安全及資料處理
- 不同 data 的連結
  - Images, genomic data, patient reported outcomes
- 大量 data
- AI/Deep Learning
- 商業運用

physionet.org

- Circulation 2000; 101: e215-e220
- **PhysioBank, PhysioToolkit, and PhysioNet**
  Components of a New Research Resource for Complex Physiologic Signals

  Ary L. Goldberger, MD; Luis A.N. Amaral, PhD; Leon Glass, PhD; Jeffrey M. Hausdorff, PhD; Plamen Ch. Ivanov, PhD; Roger G. Mark, MD, PhD; Joseph E. Mietus, BS; George B. Moody, BS; Chung-Kang Peng, PhD; H. Eugene Stanley, PhD
- Scientific Data 3:160035 DOI: 10.1038/sdata.2016.35

Data Descriptor: MIMIC-III, a freely accessible critical care database

Alistair E.W. Johnson[1,*], Tom J. Pollard[1,*], Lu Shen[2], Li-wei H. Lehman[1], Mengling Feng[1,3], Mohammad Ghassemi[1], Benjamin Moody[1], Peter Szolovits[4], Leo Anthony Celi[1,2] & Roger G. Mark[1,2]

www.reuters.com/article/us-flatiron-health-m-a-roche-hldg/roche-to-buy-flatiron-health-for-1-9-billion-to-expand-cancer-care-portfolio-idUSKCN1FZ2R0

BUSINESS NEWS FEBRUARY 16, 2018 / 4:40 AM / A YEAR AGO

Roche to buy Flatiron Health for $1.9 billion to expand cancer care portfolio

At 臺灣大學　hdrc.ntu.edu.tw