臺北醫學大學 泌尿腎臟研究中心 會議紀錄

時間：**114 年 8 月 21 日(星期四) 9:00-10:00**

地點：視訊會議- (請以正式全名登入會議室，以利進行會議簽到)

使用 Google Meet (會議前 10 分鐘即開啟會議室)

會議室連結： https://meet.google.com/ihn-wugo-jfv

會議主席：吳美儀

與會人員：

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吳麥斯校長、許志成教授、陳瑞明所長、盧星華副院長、許永和副院長

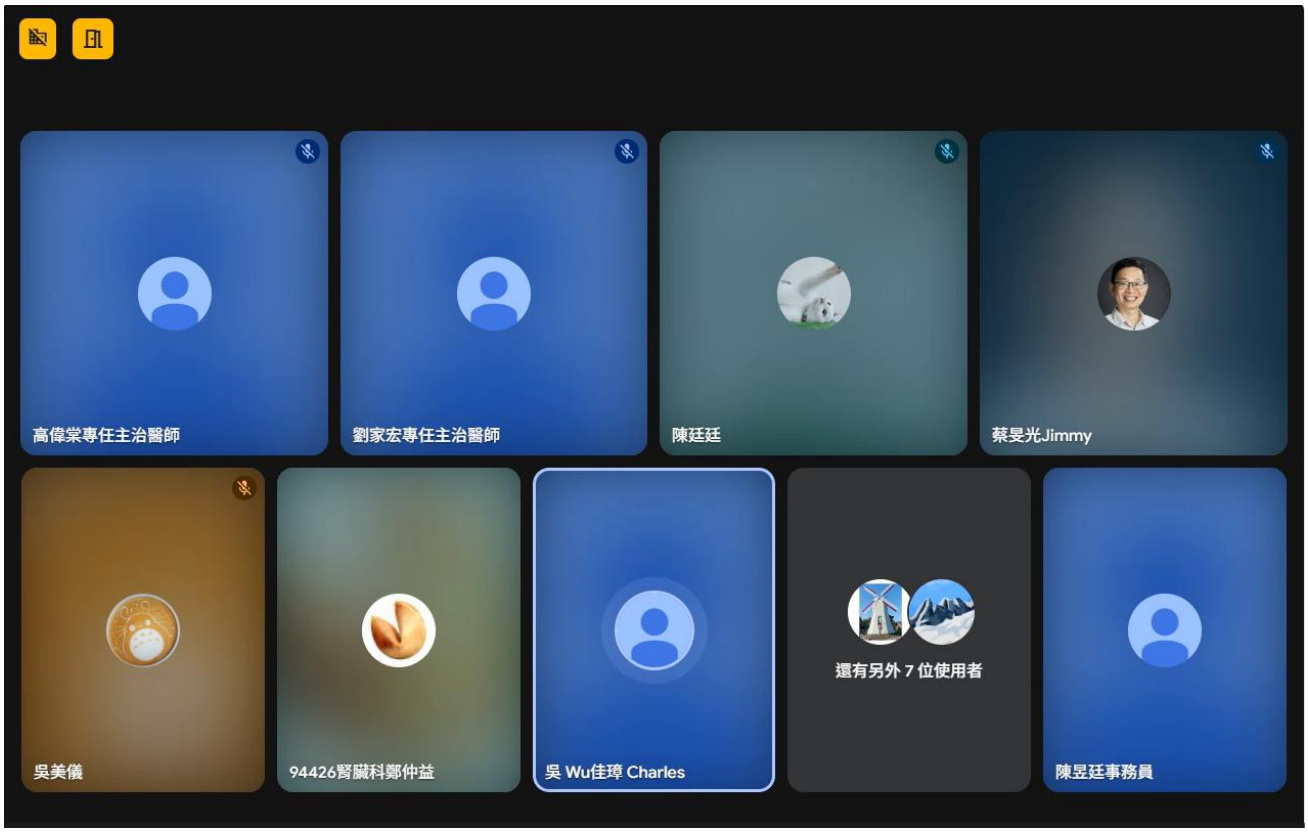
議程：

一、 校級研究中心績效成果報告(吳佳璋主任)

二、 團隊報告

1. 腎移植團隊(蔡閔光博士)

2. 重症腎病團隊(高治圻醫師)



績效指標	目標值	Q1 (8-10)			Q2 (11-1)			Q3 (2-4)			Q4 (5-7)			當責者
		目標值	實際值	達成率	目標值	實際值	達成率	目標值	實際值	達成率	目標值	實際值	達成率	
三院AKD收案量年增率10%(現況累計330例)	380	350	351 T:0 W:59 S:292	100.3%	360	374 T:0 W:66 S:308	103.9%	370	413 T:6 W:81 S:326	111.6%	380	446 T:16 W:91 S:339	117.3%	(T)高治圻 (W)鄭仲益 (S)高芷華
三院攝護腺癌局部精準治療(海福刀)	60例	15	14 T:4 W:0 S:10	93.3%	15	12 T:2 W:0 S:10	80%	15	24 T:12 W:2 S:10	160%	15	22 T:7 W:1 S:14	146.6%	(T)劉明哲 (W)林雍偉 (S)吳佳璋

腎臟移植者的癌症風險

報告者: 蔡旻光 Jimmy
單位: 雙和醫院 腎臟內科

研究背景

- 腎移植是末期腎病的重要治療選項
- 腎移植後需長期使用免疫抑制藥物
- 免疫抑制降低了免疫系統對異常細胞的監控

癌症風險增加的原因

- **免疫抑制劑影響：**
- 降低免疫系統辨識與清除癌細胞的能力
- **病毒感染因素：**
- 與移植後淋巴增生性疾病關聯
- 研究指出腎移植病人總體癌症風險約為一般人群的2～4倍
- EB病毒、HPV等在低免疫狀態下易活化

Immunosuppressive therapy
- Antibody induction therapy
- High exposure levels
- Type of immunosuppressive drug
- Duration of immunosuppressive therapy
- Number of drugs employed
- Use pre-transplant

Oncogenic viruses
Chronic renal failure
Chronic renal disease
Conventional risk factors
- Smoking
- Sun exposure
- Analgesic abuse
- History of previous malignancy

Demographic factors
- Age
- Male gender
- White ethnicity
- Geographical location
- Absence of diabetes

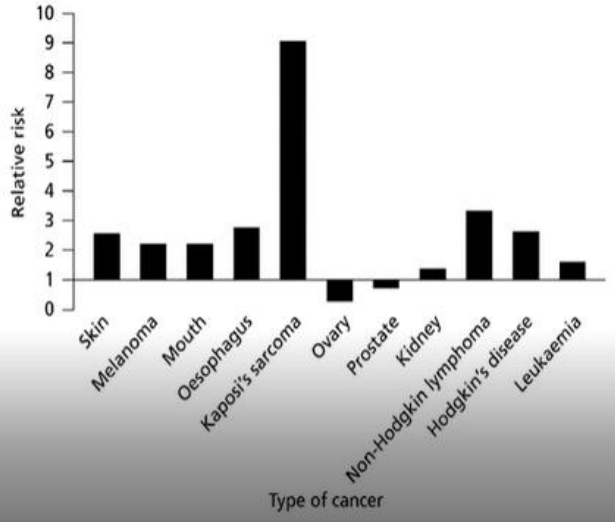
Genetic disposition

Virus	Cancer type
Epstein–Barr virus	Lymphoma
Human herpes virus 8	Kaposi's sarcoma
	Lymphoma
Human papillomaviruses (HPV)	Cervical cancer
	Penile cancer
	Vulvar cancer
HPV 58	Bowen's disease
HPV 8, 19	Non-melanoma skin cancer
HPV 16, 20	Skin cancer
	Tonsillar cancer
Hepatitis B and C viruses	Hepatocellular carcinoma

Dantal J, Pohanka E. Malignancies in renal transplantation: an unmet medical need. *Nephrol Dial Transplant* 2007; **22 Suppl 1**: i4-10.

常見癌症類型

- **皮膚癌**：非黑色素瘤皮膚癌（例如鱗狀細胞癌）
- **淋巴瘤**
- **其他實體腫瘤**：腎癌、尿路系統癌症等



Dantal J, Pohanka E. Malignancies in renal transplantation: an ...l need. *Nephrol Dial Transplant* 2007; **22 Suppl 1**: i4-

ONCONEPHROLOGY

Cancer in kidney transplant recipients

*Eric Au[1], Germaine Wong[1,2] and Jeremy R. Chapman[1]**

Abstract | Cancer is the second most common cause of mortality and morbidity in kidney transplant recipients after cardiovascular disease. Kidney transplant recipients have at least a twofold higher risk of developing or dying from cancer than the general population. The increased risk of de novo and recurrent cancer in transplant recipients is multifactorial and attributed to oncogenic viruses, immunosuppression and altered T cell immunity. Transplant candidates and potential donors should be screened for cancer as part of the assessment process. For potential recipients with a prior history of cancer, waiting periods of 2–5 years after remission — largely depending on the cancer type and stage of initial cancer diagnosis — are recommended. Post-transplantation cancer screening needs to be tailored to the individual patient, considering the cancer risk of the individual, comorbidities, overall prognosis and the screening preferences of the patient. In kidney transplant recipients diagnosed with cancer, treatment includes conventional approaches, such as radiotherapy and chemotherapy, together with consideration of altering immunosuppression. As the benefits of transplantation compared with dialysis in potential transplant candidates with a history of cancer have not been assessed, current clinical practice relies on evidence from observational studies and registry analyses.

Au E, Wong ...ney transplant recipients. Nat Rev Nephrol. 2018;14(8):508-20.

Table 1 | **Standardized incidence ratios from registry and multicentre studies for various cancers**

Region (years; number of patients)	Standardized incidence ratios (95% CI)											Refs
	All cancers	Breast cancer	Cervical cancer	Colorectal cancer	Kidney cancer	Lip cancer	Lung cancer	Malignant melanoma	NHL	NMSC	Prostate cancer	
Canada[a] (1981–1998; 11,391)	2.5 (2.3–2.7)	1.3 (1.0–1.7)[b]	1.6 (0.6–3.4)	1.4 (1.0–1.8)	7.3 (5.7–9.2)	31.3 (23.5–40.8)	2.1 (1.7–2.5)	1.9 (1.2–3.0)	8.8 (7.4–10.5)	NA	0.9 (0.6–1.3)	11
USA[c] (NS; 113,038)	NA	0.95 (0.86–1.0)	1.1 (0.8–1.5)	1.2 (1.1–1.3)	6.4 (5.9–6.8)	18 (15–22)	1.6 (1.1–1.3)	2.8 (2.5–3.2)	5.9 (5.5–6.3)	NA	0.92 (0.85–0.98)	11
Italy[d] (1997–2007; 7,217)	1.7 (1.6–1.9)[e]	0.8 (0.5–1.2)[b]	NA	0.8 (0.5–1.2)	4.9 (3.4–6.8)	9.4 (3.1–22.0)	1.1 (0.8–1.6)	1.8 (0.9–3.3)	4.5 (3.2–6.1)	NA	1.7 (1.2–2.3)	9
Italy[f] (1980–2011; 3,537)	1.5 (1.3–1.8)[g]	1.2 (0.8–1.8)	8.9 (4.4–17.7)	1.2 (0.7–1.9)[h]	7.0 (5.0–9.8)	NA	1.1 (0.1–1.7)	1.0 (0.4–3.0)	7.9 (6.0–10.5)	29.3 (26.0–33.1)	1.3 (0.8–2.1)	11
Sweden[i] (1970–2008; 7,952)	6.5 (6.3–6.8)	1.2 (0.9–1.8)	2.4 (1.2–4.4)	2.3 (1.8–2.9)[h]	6.2 (4.8–7.9)	46 (35–59)	1.7 (1.3–2.2)	2.3 (1.7–3.1)	4.8 (3.8–5.9)	121 (116–127)[j]	1.1 (0.9–1.3)	8
UK[k] (1980–2007; 25,104)	2.4 (2.3–2.5)[e]	1.0 (0.8–1.2)	2.3 (1.4–3.5)	1.8 (1.6–2.1)	7.9 (6.7–9.3)	65.5 (49.9–84.6)	1.4 (1.2–1.6)	2.6 (2.0–3.3)	12.5 (11.2–13.8)	16.6 (15.9–17.3)	1.1 (0.9–1.4)	4
Australia and New Zealand[l] (1982–2003; 10,180)	3.3 (3.1–3.5)	1.0 (0.8–1.3)	2.5 (1.3–4.3)	2.4 (1.9–2.9)[h]	5.0 (3.4–7.1)	47.1 (41.8–52.9)	2.5 (2.0–3.0)	2.5 (2.1–3.1)	9.9 (8.4–11.5)	NA	1.0 (0.7–1.3)	MAF
Hong Kong[m] (1972–2011; 4,674)	2.9 (2.6–3.3)	1.7 (1.0–2.8)[b]	7.2 (3.9–13.4)	1.8 (1.2–2.5)	12.5 (8.5–18.4)	NA	1.7 (1.2–2.4)	9.1 (2.3–36.3)	15.8 (11.9–21.0)	7.4 (4.9–11.2)	0.8 (0.4–2.0)	5
Taiwan[n] (1997–2008; 4,716)	3.8 (3.4–4.2)	1.1 (0.6–1.9)[b]	0.88 (0.22–3.0)	2.0 (1.1–3.5)[h]	44.3 (36.2–54.1)	NA	4.8 (2.7–8.5)	5.4 (0.8–38.2)	4.8 (2.6–8.9)[o]	2.3 (0.9–6.1)	1.8 (0.7–4.8)	6

NA, not available; NHL, non-Hodgkin lymphoma; NMSC, nc breast cancer only. [b]US Scientific Registry of Transplant Rec Northern Italy. [g]Excluding skin cancers. [h]Colon cancer only. [k]UK Transplant Registry. [l]Australia and New Zealand Dialysis and Transplant Registry. [m]Hong Kong Renal Registry. [n]Taiwan National Health Insurance Database. [o]All lymphomas.

Replacement Registry. [e]Female [f]Four transplant centres in . [j]Squamous cell carcinoma only.

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Malignancies After Kidney Transplantation: Hong Kong Renal Registry

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Manystudies have shown that kidney transplant recipients have a higher incidence of cancers when compared with general population. However, most data on the posttransplant malignancies (PTM) are derived from Western literature and large population-based studies are rare. There is also lack of information about the posttransplant cancer-specific mortality rate. We conducted a population-based study of 4895 kidney transplants between 1972 and 2011, with data from the Hong Kong Renal Registry. Patterns of cancer incidence and mortality in our kidney transplant recipients were

Abbreviations: ALG, antilympho antithymocyte globulin; EBER encoded RNA; EBV, Epstein- mammalian target of rapamycin lymphoma; NMSC, nonmelanon posttransplant malignancies; SD SIR, standardized incidence ratio mortality ratio; WHO ICD, World International Classification of Dis

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Introduction

Kidney transplantation has been sho treatment for patients with end-sta ever, the development of malignanc is a major factor limiting its success. cipients have a higher cancer incide with the general population. In dif eas; the incidence and type of posttr (PTM) show considerable difference tive risks compared with the genera by countries (1–9). In Western cou skin can the oth common PTM in Japan (2) while in and lymphoma are the most commor are different patterns of PTM devel

Table 3: Standardized incidence ratio of different types of malignancy in renal transplant recipients

Site of cancer	Male O/E	Male SIR (95% CI)	Female O/E	Female SIR (95% CI)	All O/E	All SIR (95% CI)
NHL	31/2.02	15.35 (10.79–21.82)	17/1.02	16.67 (10.36–26.81)	48/3.04	15.79 (11.9–20.95)
NMSC	15/1.97	7.61 (4.59–12.63)	7/1.01	6.93 (3.3–14.54)	22/2.98	7.38 (4.86–11.21)
Liver	15/6.65	2.26 (1.36–3.74)	5/1.27	3.94 (1.64–9.46)	20/7.92	2.53 (1.63–3.91)
Colorectal	16/11.26	1.42 (0.87–2.32)	13/5.29	2.46 (1.43–4.23)	29/16.55	1.75 (1.22–2.52)
Lung	22/13.14	1.67 (1.1–2.54)	7/4.12	1.7 (0.81–3.56)	29/17.26	1.68 (1.17–2.42)
Breast			15/9.04	1.66 (1–2.75)		
Cervix			10/1.39	7.19 (3.87–13.37)		
Kidney	22/1.5	14.67 (9.66–22.27)	4/0.58	6.9 (2.59–18.37)	26/2.08	12.5 (8.51–18.36)
Bladder	4/1.21	3.31 (1.24–8.81)	8/0.25	32 (16.01–63.98)	12/1.46	8.22 (4.67–14.47)
Thyroid	5/0.81	6.17 (2.57–14.83)	6/1.72	3.49 (1.57–7.76)	11/2.53	4.35 (2.41–7.85)
Stomach	4/3.14	1.27 (0.48–3.39)	8/1.07	7.48 (3.74–14.95)	12/4.21	2.85 (1.62–5.02)
Prostate	6/6.84	0.88 (0.39–1.95)				
Ovary			5/1.52	3.29 (1.37–7.9)		
Uterus			3/2.08	1.44 (0.47–4.47)		
Pancreas	2/1.33	1.5 (0.39–6.01)	1/0.58	1.72 (0.24–12.24)	3/1.91	1.57 (0.51–4.87)
Nasopharynx	2/3.47	0.58 (0.14–2.3)	0/0.74	0	2/4.21	0.48 (0.12–1.9)
Esophagus	2/1.62	1.23 (0.31–4.94)	0/0.16	0	2/1.78	1.12 (0.28–4.49)
Melanoma	1/0.12	8.33 (1.17–59.14)	1/0.10	10 (1.41–70.96)	2/0.22	9.09 (2.27–36.34)
Oral cavity	0/1.64	0	5/0.58	8.62 (3.59–20.71)	5/2.22	2.25 (0.94–5.41)
Leukemia	4/1.57	2.55 (0.96–6.79)	1/0.76	1.32 (0.19–9.34)	5/2.33	2.15 (0.89–5.15)
Kaposi sarcoma	3/0	NA	2/0	NA	5/0	NA
All cancer	169/65.49	2.58 (2.22–3)	130/36.31	3.58 (3.01–4.25)	299/101.8	2.94 (2.62–3.29)

Table 5: Standardized mortality ratio of different types of malignancy in renal transplant recipients

Site of cancer	Observed rates of cancer death M	F	All	Expected rates of cancer death M	F	All	SMR (95% CI) M	F	All
NHL	58.9	48.5	54.7	3.7	2.4	3	15.9 (12.3–20.5)	20.2 (15.3–26.8)	18.2 (14–23.8)
NMSC	0	0	0	0.3	0.2	0.3	0	0	0
Liver	25.3	12.1	19.9	21.3	6.7	13.8	1.2 (0.9–1.8)	1.8 (1–3.2)	1.4 (0.9–2.2)
Colorectal	25.3	42.5	32.3	19.1	11.5	15	1.3 (0.9–2)	3.7 (2.7–5)	2.2 (1.5–3)
Lung	58.9	30.3	47.2	47.3	18.9	32.2	1.2 (0.9–1.6)	1.6 (1.1–2.3)	1.5 (1.1–1.9)
Breast		19.2			9.8			1.9 (1.2–2.9)	
Cervix		6.1			2.2			2.8 (1.3–6.1)	
Kidney	6.4	6.1	7.5	2.4	1.1	1.7	3.5 (1.8–6.9)	5.5 (2.5–12.3)	4.4 (2.3–9)
Bladder	6.4	6.1	7.5	2.7	0.8	1.6	3.1 (1.6–6.1)	7.6 (3.4–16.9)	4.7 (2.3–9.6)
Thyroid	0	0	0	0.3	0.4	0.4	0	0	0
Stomach	0.4	36.4	19.9	7.9	3.8	5.7	1.1 (0.5–2.1)	9.6 (6.9–13.3)	3.5 (2.3–5.4)
Prostate	4.2			5.6			0.8 (0.3–2)		
		1.2			2.5			7.3 (4.6–11.5)	
		1.1			1.1			5.5 (2.5–12.2)	
		1	5	4.9	3.2	4	0.5 (0.3–2.2)	1.9 (0.9–4.2)	1.3 (0.5–3)
			2.5	5.8	1.4	3.3	0.7 (0.3–1.9)	0	0.7 (0.2–2.5)
			5	5.2	0.8	3	1.6 (0.8–3.2)	0	1.7 (0.7–4)
Melanoma	4.2	0	2.5	0.4	0.4	0.4	10.5 (4–27.3)	0	8.25 (1.8–21.4)
Oral cavity	0	6.1	2.5	2.6	1	1.7	0	6.1 (2.8–13.5)	1.5 (0.6–3.1)
Leukemia	12.6	0	7.5	3.1	2.4	2.7	4.1 (2.3–7.1)	0	2.8 (1.4–5.7)
Kaposi sarcoma	4.2	0	2.5	0	0	0	NA	NA	NA

Malignancies after renal transplantation in Taiwan: a nationwic population-based study

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Abstract

Background. Renal transplantation has been regarded as the treatment of choice for end-stage renal disease. Renal transplantation increases the risk of cancers due to long-term immunosuppression. The types of post-transplantation malignancies may vary among different geographic regions and ethnic populations. To date, large population-based studies of post-transplantation malignancies in Asian renal transplant recipients (RTRs) have rarely been reported.

Methods. To investigate the patterns of post-transplantation malignancies in Chinese RTRs, we performed a nation-wide population-based cohort study between 1997 and 2008 based on data from the National Health Insurance Data base in Taiwan. Patterns of cancer incidence in RTRs were compared with those of the general population using stand-ardized incidence ratios (SIRs).

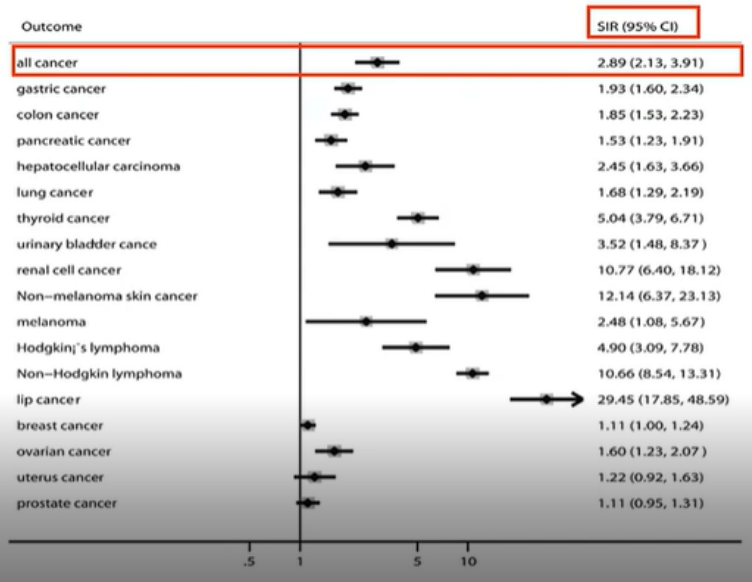
Results. Among the 4716 RTRs (2475 males and 2241 females; mean age 44.1 ± 12.4 years) and 22 556 per-

Introduction

Renal transplantation is considered the tre choice in end-stage renal disease and renal recipients (RTRs) are known to have a higl incidence compared with the general populat Post-transplantation malignancies, which ha increased frequency during the past decades [one of the major causes of mortality among RT anticipated to be the leading cause of death next 20 years [5]. The types of post-transplan lignancies may vary among different geograph and ethnic populations. Non-melanoma sk (NM… nal … ng re- …, 6, 7]. Gas… and kidney cancers are the most common post-transplantation malignancies in Japan [8]. Recently, sev-

Site of cancers	O/E	SIR (95% CI)
Oral cavity[b]	9/11.39	0.79 (0.41–1.52)
Digestive		
Esophagus	1/2.63	0.38 (0.05–2.70)
Stomach	6/3.26	1.84 (0.83–4.09)
Colon	12/5.89	**2.04 (1.13–3.54)**
Rectum[c]	3/4.63	0.65 (0.17–2.42)
Liver	60/11.84	**5.07 (3.89–6.42)**
GB	2/0.66	3.02 (0.76–11.99)
Pancreas	1/1.25	0.80 (0.11–5.61)
Respiratory		
Larynx	1/0.71	1.41 (0.20–10.05)
Lung[d]	12/2.49	**4.81 (2.73–8.48)**
Urinary		
Bladder	72/1.68	**42.89 (34.08–53.98)**
Kidney	94/2.12	**44.29 (36.24–54.06)**
Skin		
NMSC	4/1.74	2.30 (0.86–6.13)
Melanoma	1/0.19	5.40 (0.76–38.18)
Endocrine		
Thyroid	6/2.49	**2.41 (1.08–5.34)**
Hematological		
Lymphoma	10/2.09	**4.78 (2.57–8.88)**
Leukemia	3/2.09	1.43 (0.46–4.40)
Male cancers		
Prostate	N/A	N/A
Female cancers		
Breast	N/A	N/A
Cervix	N/A	N/A
Body of uterus	N/A	N/A
Ovary[e]	N/A	N/A
Unspecified	2/0.9	2.21 (0.56-8.80)
All sites	320/85.35	**3.75 (3.36–4.18)**

Li WH, Chen YJ, Tseng WC, Lin MW, Chen TJ, Chu SY, et al. Malignancies after renal transplantation in Taiwan: a nationwide population-based study. Nephrol Dial Transplant. 2012;27(2):833-9.



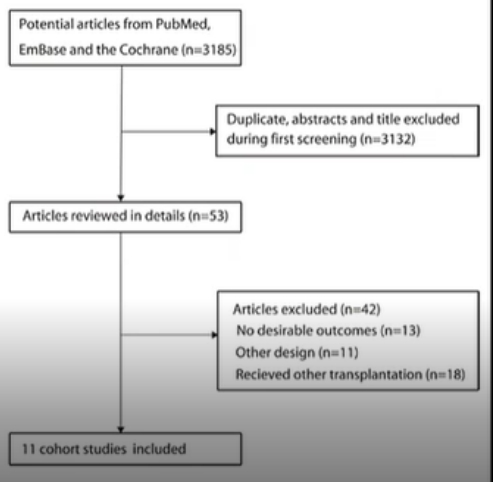


Figure 2: The summary results for cancer risk in recipients of renal transplants.

ncer risks in recipients of renal transplants: a meta-analysis of cohort studies. *Oncotarget* 2018; **9**: 15375-85.

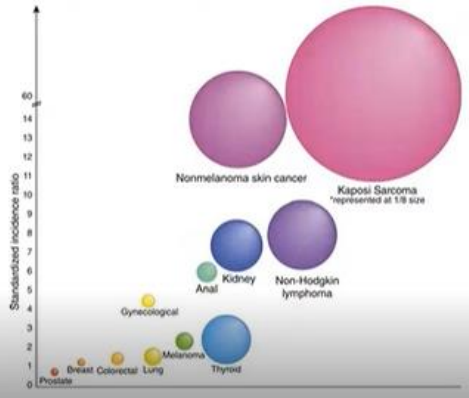


Figure 1. | **The standardized incidence ratios of different cancer types in recipients of kidney transplants indicate that the overall risk of cancer is higher for certain cancer types compared to the age- and sex-matched general population.** The size of the circle

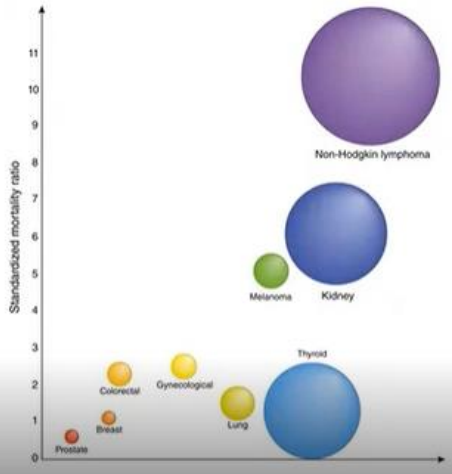


Figure 2. | **The standardized mortality ratios of different cancer types in recipients of kidney transplants indicate that the overall risk of cancer-related death is higher for certain cancer types compared to the age- and sex-matched general population.** The

Al-Adra D, Al-Qaoud T, Fowler K, Wong G. De Novo Malignancies after Kidney Transplantation. Clin J Am Soc Nephrol. 2022;17(3):434-43.

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DOI: 10.1002/ijc.34787

RESEARCH ARTICLE
Cancer Epidemiology

IJC INTERNATIONAL JOURNAL of CANCER
IF: 5.7
Oncology, 54/322, Q1

Cancer mortality after kidney transplantation: A multicenter cohort study in Italy

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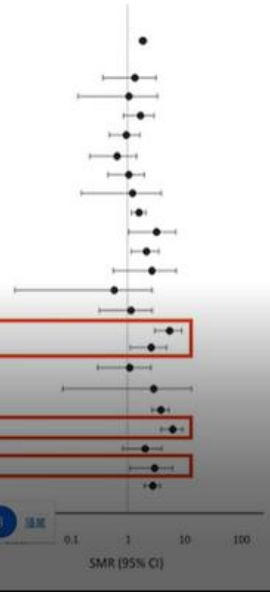
Funding information

Abstract

Kidney transplant (KT) recipients are known to be at risk of developing several cancer [illegible] population is underinvestigated. Our study among Italian KT recipients compared to the corresponding general population. A cohort study was conducted among 7373 individ-

Cancer site (ICD-10 codes)	Deaths of KT recipients (N = 664) Observed deaths (%)	Expected deaths	SMR (95% CI)
All malignant neoplasms (C00-C97)	215 (32.4)	117.4	1.83 (1.59-2.09)
Lip, oral cavity, pharynx (C00-C14)	4 (0.6)	3.0	1.32 (0.36-3.14)
Oesophagus (C15)	2 (0.3)	1.9	1.04 (0.13-3.34)
Stomach (C16)	11 (1.7)	6.6	1.66 (0.83-2.88)
Colon, rectum and anus (C18-C21)	11 (1.7)	11.8	0.93 (0.47-1.62)
Liver (C22)	5 (0.8)	7.8	0.64 (0.21-1.41)
Pancreas (C25)	8 (1.2)	7.8	1.03 (0.44-1.94)
Larynx (C32)	2 (0.3)	1.7	1.20 (0.15-3.88)
Trachea, bronchus, lung (C33-C34)	47 (7.1)	29.9	1.57 (1.15-2.07)
Skin melanoma (C43)	5 (0.8)	1.6	3.19 (1.03-6.98)
Breast (C50)	13 (2.0)	6.1	2.12 (1.13-3.52)
Other and unspecified parts of uterus (C54-C55)	3 (0.5)	1.1	2.65 (0.55-7.09)
Ovary (C56)	1 (0.2)	1.8	0.57 (0.01-2.66)
Prostate (C61)	4 (0.6)	3.5	1.13 (0.31-2.69)
Kidney (C64)	14 (2.1)	2.6	5.44 (2.97-8.88)
Bladder (C67)	8 (1.2)	3.1	2.56 (1.10-4.82)
Brain and central nervous system (C70-C72)	4 (0.6)	3.7	1.07 (0.29-2.55)
Thyroid (C73)	1 (0.2)	0.4	2.84 (0.07-13.27)
PTLD (C81- C96)	34 (5.1)	8.9	3.81 (2.64-5.26)
Hodgkin disease and Lymphomas (C81-C86)	21 (3.2)	3.4	6.17 (3.81-9.25)
Leukaemia (C91-C95)	7 (1.1)	3.5	2.00 (0.81-3.93)
Other of lymph./haematopoietic tissue (C88,C90,C96)	6 (0.9)	2.0	2.95 (1.08-6.09)
Other malignant neoplasms*	38 (5.7)	13.8	2.75 (1.95-3.73)



Taborelli M, Serraino D, Cimaglia C, Furian L, Biancone L, Busnach G, et al. Cancer mortality after kidney transplantation: A multicenter cohort study in Italy. *Int J Cancer* 2024; **154**: 842-51.

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Increased risk of cancer in chronic dialysis patients: a population-based cohort study in Taiwan

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Abstract

Background. An increased incidence of cancer in chronic dialysis patients has not been confirm[illegible] population. The aim of this population-based study was [illegible]

genic compounds and chronic infections and inflammation are related to cancer development [1]. Therefore, patients on [illegible]otentially have a higher incidence of cancer, particularly those of the genitourinary tract [1]. Several stud-[illegible]

Table 3. Site-specific cancer risk in chronic dialysis patients[a]

Site (ICD-9 code)	*N*	SIR	95% CI
Head and neck			
All (140–149)	207	1.0	0.9–1.3
Tongue (141)	45	1.2	0.8–1.8
Digestive			
All (150–159)	1434	1.1	1.0–1.1
Stomach (151)	176	0.9	0.7–1.1
Colorectal (153–154)	467	1.0	0.9–1.1
Liver (155)	664	1.4	1.2–1.5
Respiratory			
All (160–165)	276	0.6	0.5–0.7
Lung (162)	236	0.5	0.5–0.6
Bone, skin and breast			
All (170–175)	342	1.1	0.9–1.2
Breast (174)	249	1.2	1.0–1.5
Genitourinary			
All (179–180)	1804	3.3	3.0–3.7
Cervix of uterus (180)	98	0.9	0.7–1.1
Body of uterus (182)	28	0.9	0.5–1.5
Other female genital (184)	8	1.1	0.4–3.1
Prostate (185)	75	0.5	0.4–0.7
Penis scrotum (187)	5	1.2	0.3–4.3
Bladder (188)	919	8.2	6.7–9.9
Kidney (189)	642	7.2	5.7–8.9
Other and unspecific			
All (190–199)	155	1.2	1.0–1.6
Thyroid (193)	91	2.2	1.5–3.1
Hematopoietic			
All (200–208)	110	0.9	0.7–1.2
Non-Hodgkin lymphoma, including multiple myeloma (200, 20	89	1.3	0.9–1.7
Hodgkin lymphoma (201)	2	0.9	0.1–6.3
Leukemia (204–208)	19	0.4	0.2–0.7

Table 4. The top three cancers ranked by number in chronic dialysis patients[a]

	Bladder			Liver			Kidney		
	N	SIR*	95% CI**	*N*	SIR	95% CI	*N*	SIR	95% CI
All	919	8.2	6.7–9.9	664	1.4	1.2–1.5	642	7.2	5.7–8.9
Sex									
Male	350	4.5	3.5–5.8	452	1.4	1.2–1.6	232	5.6	4.1–7.9
Female	569	16.2	11.5–22.8	212	1.2	1.0–1.5	410	8.5	6.3–11.4
Age at first dialysis									
0–34 years	26	203.0	0.8–49 201.8	26	20.0	3.4–115.9	35	219.3	1.6–29 956.7
35–54 years	334	46.2	22.1–96.6	231	4.1	3.1–5.5	270	37.6	17.9–78.9
55–65 years	252	12.0	7.7–18.8	202	1.5	1.2–1.9	168	8.9	5.5–14.3
≥65 years	307	3.6	2.9–4.6	205	0.7	0.6–0.8	169	2.7	2.0–3.6
Time after first dialysis									
Year 1	78	25.0	18.6–33.5	135	10.0	8.3–12.2	112	50.8	38.2–67.5
Year 2	123	18.7	14.4–24.2	130	4.5	3.7–5.4	111	23.7	17.9–31.4
Year 3	145	18.1	14.1–23.2	95	2.6	2.1–3.3	94	15.4	11.5–20.7
Year 4	133	13.5	10.5–17.4	99	2.2	1.8–2.8	74	9.6	7.1–13.1
Year 5	110	10.8	8.3–14.0	65	1.4	1.1–1.9	68	8.5	6.2–11.6
Years 6–8	245	8.0	6.4–10.0	96	0.8	0.6–0.9	129	5.3	4.0–6.9
>Year 8	85	1.9	1.4–2.5	44	0.2	0.2–0.3	54	1.5	1.0–2.1

[a]*N* = number.

PLOS ONE

RESEARCH ARTICLE

Association of Dialysis with the Risks of Cancers

Ming Yen Lin[1,2,3], Mei Chuan Kuo[1,2], Chi Chih Hung[1,2], Wen Jeng Wu[4,5,6,7], Li Tzong Chen[8,9], Ming Lung Yu[5,10], Chih Cheng Hsu[11], Chien Hung Lee[12], Hung Chun Chen[1,2], Shang Jyh Hwang[1,2,11]*

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Citation: Lin MY, Kuo MC, Hung CC, Wu WJ, Chen

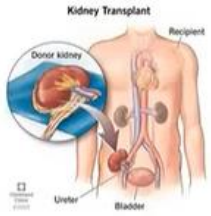
Table 2. Incident density of various sites of cancers.

Sites (ICD-9-CM codes) Groups	Case	I*	Crude HR (95% CI)	p-value	aSHR[b] (95% CI)	p-value
Oral cancer (140–149)						
Control	35	0.17	1 [Reference]	<0.001	1 [Reference]	0.001
Dialysis	100	0.55	3.84 (2.61–5.65)		2.50 (1.43–4.39)	
Esophageal cancer (150)						
Control	14	0.07	1 [Reference]	0.1376	1 [Reference]	.42
Dialysis	17	0.09	1.72 (0.84–3.50)		0.64 (0.22–1.87)#	
Gastric cancer (151)						
Control	57	0.28	1 [Reference]	0.0124	1 [Reference]	.44
Dialysis	66	0.36	1.58 (1.10–2.25)		1.25 (0.71–2.2)	
Colorectal Cancer (153–154)						
Control	93	0.46	1 [Reference]	0.0124	1 [Reference]	<0.001
Dialysis	190	1.04	2.80 (2.18–3.59)		2.34 (1.62–3.39)	
Liver cancer (155)						
Control	84	0.41	1 [Reference]	<0.001	1 [Reference]	.0002
Dialysis	271	1.48	4.38 (3.42–5.60)		1.88 (1.35–2.61)	
Pancreatic cancer (157)						
Control	22	0.11	1 [Reference]	0.0724	1 [Reference]	.14
Dialysis	8	0.04	0.48 (0.21–1.07)		0.36 (0.09–1.41)	
Lung cancer (162)						
Control	85	0.42	1 [Reference]	0.2659	1 [Reference]	.90
Dialysis	75	0.41	1.19 (0.87–1.63)		0.97 (0.59–1.6)	
Blood cancer (200–208)						
Control	29	0.14	1 [Reference]	0.0003	1 [Reference]	.01
Dialysis	55	0.30	2.31 (1.47–3.62)		2.3 (1.2–4.42)	
Breast cancer (174)						
Control	40	0.20	1 [Reference]	<0.001	1 [Reference]	<0.001
Dialysis	110	0.60	3.79 (2.63–5.45)		4.21 (2.51–7.06)#	
Cervical cancer (180)						
Control	36	0.18	1 [Reference]	0.0007	1 [Reference]	.29
Dialysis	56	0.31	2.08 (1.37–3.17)		1.42 (0.74–2.72)#	
Prostate cancer (185)						
Control	23				1 [Reference]	.36
Dialysis	28	0.15	1.58 (0.91–2.75)		0.67 (0.28–1.59)#	

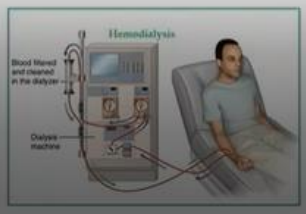
Kidney cancer (189.0)[a]						
Control	4	0.02	1 [Reference]	<0.001	1 [Reference]	<0.001
Dialysis	87	0.48	29.08 (10.67–79.24)		40.31 (13.35–121.75)	
Upper urinary tract cancer (189.1 and 189.2)						
Control	4	0.02	1 [Reference]	<0.001	1 [Reference]	<0.001
Dialysis	107	0.58	47.52 (15.41–146.55)		61.33 (18.58–202.45)	
Bladder cancer (188)						
Control	18	0.09	1 [Reference]	<0.001	1 [Reference]	<0.001
Dialysis	388	2.12	32.26 (20.10–51.76)		41.95 (25.1–70.11)	

Time to follow up is 183,184 and 202,528 person-years in dialysis and control group.
Abbreviation: SHR, subdistribution hazard ratio; CI, confident interval; aSHR, adjusted subdistribution hazard ratio.
[a]Incident rate (per 1,000 person-year).
[b]Model was adjusted age, sex, index year, urbanization, diabetes, hypertension, cerebrovascular disease, ischemic heart disease, congestive heart failure, and Charlson score by competing risk model.
[c]Kidney cancer was identified by ICD-9 code with surgical procedures including radical nephrectomy, laparoscopic nephrectomy, and partial nephrectomy.
means that sex for the specific event was not included in the model.

The real cancer risk of kidney transplant patients



VS.



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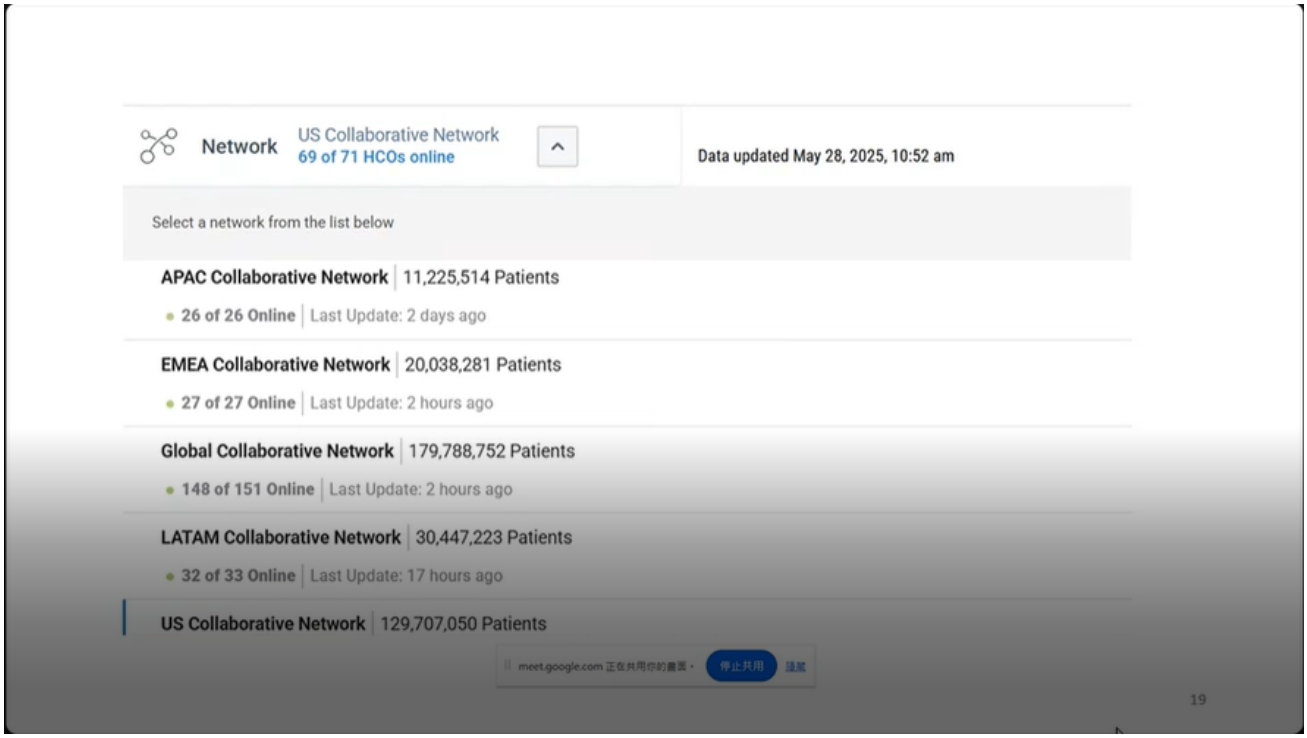
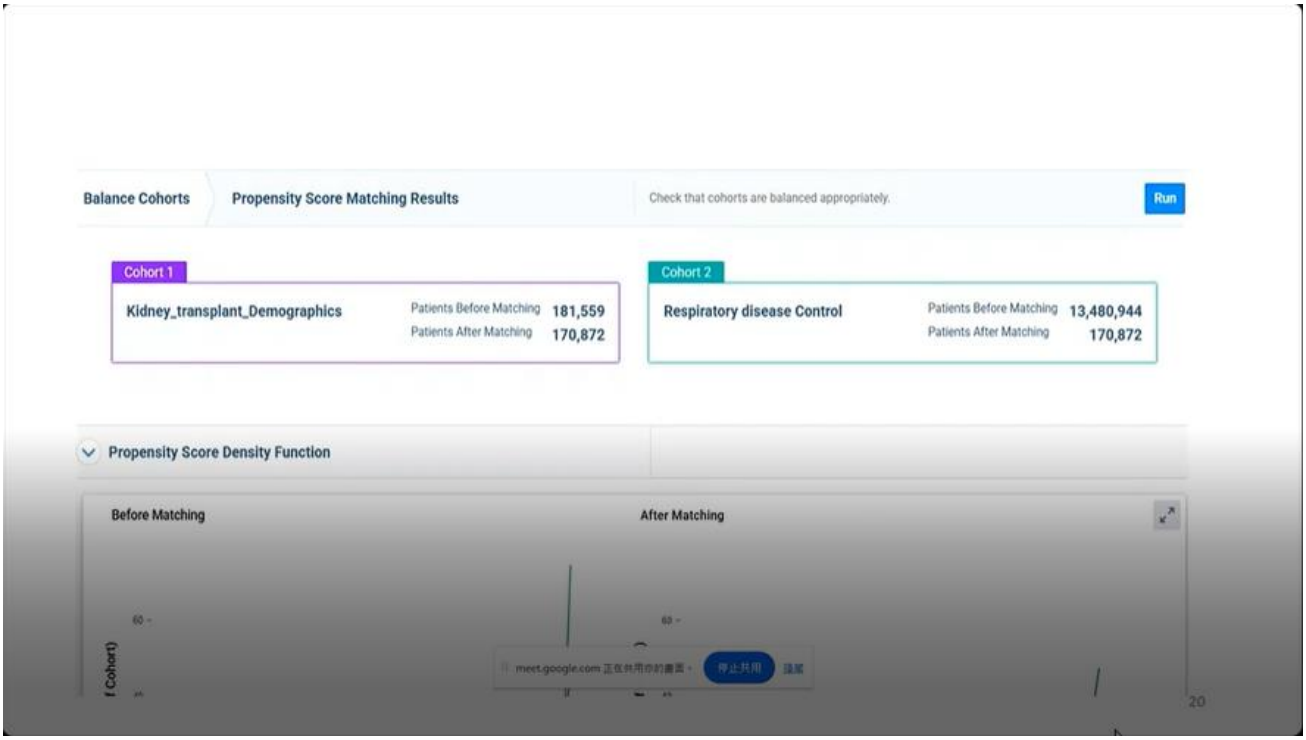
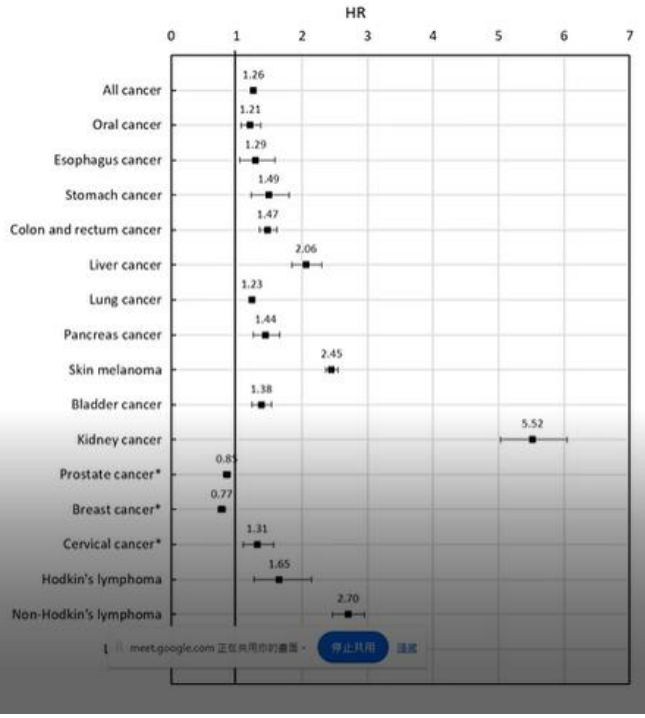

Network
US Collaborative Network
69 of 71 HCOs online
Data updated May 28, 2025, 10:52 am
Select a network from the list below
APAC Collaborative Network | 11,225,514 Patients
26 of 26 Online | Last Update: 2 days ago
EMEA Collaborative Network | 20,038,281 Patients
27 of 27 Online | Last Update: 2 hours ago
Global Collaborative Network | 179,788,752 Patients
148 of 151 Online | Last Update: 2 hours ago
LATAM Collaborative Network | 30,447,223 Patients
32 of 33 Online | Last Update: 17 hours ago
US Collaborative Network | 129,707,050 Patients
meet.google.com 正在共用你的畫面
停止共用
隱藏
19


Balance Cohorts
Propensity Score Matching Results
Check that cohorts are balanced appropriately.
Run
Cohort 1
Kidney_transplant_Demographics
Patients Before Matching 181,559
Patients After Matching 170,872
Cohort 2
Respiratory disease Control
Patients Before Matching 13,480,944
Patients After Matching 170,872
Propensity Score Density Function
Before Matching
After Matching
f Cohort)
meet.google.com 正在共用你的畫面
停止共用
隱藏
20

		After match							
		General population		Tranaplant		HR			Proportionality
All cancer before matching						1.876	1.856	1.897	<0.0001
All cancer		134707	29143	135586	33450	**1.255**	**1.236**	**1.275**	<0.0001
	Oral cancer	170335	472	170584	533	**1.208**	**1.067**	**1.368**	<0.0001
	Esophagus cancer	170731	167	170769	198	**1.289**	**1.049**	**1.585**	0.041
	Stomach cancer	170762	178	170756	245	**1.488**	**1.226**	**1.805**	0.1026
	Colon and rectum cancer	170034	828	169998	1114	**1.474**	**1.347**	**1.613**	0.4899
	Liver cancer	170611	492	168252	930	**2.058**	**1.845**	**2.296**	<0.0001
	Lung cancer	169984	1281	170306	1456	**1.233**	**1.143**	**1.329**	0.0004
	Pancreas cancer	170714	362	170663	476	**1.443**	**1.258**	**1.654**	0.3857
	Skin melanoma	167593	3940	166929	8571	**2.449**	**2.359**	**2.544**	0.6649
	Bladder cancer	170367	560	170276	708	**1.375**	**1.231**	**1.537**	0.0288
	Kidney cancer	170340	552	167973	2767	**5.517**	**5.035**	**6.045**	0.0575
	Prostate cancer*	168161	2435	168961	1910	**0.851**	**0.802**	**0.904**	<0.0001
	Breast cancer*	168863	1490	169749	1065	**0.772**	**0.714**	**0.835**	0.9269
	Cervical cancer*	170607	222	170607	268	**1.314**	**1.099**	**1.57**	0.0505
	Hodkin's lymphoma	170701	92	170702	143	**1.651**	**1.27**	**2.146**	0.007
	Non-Hodkin's lymphoma				562	2.7	2.468	2.954	0.5629
	Leukemia				996	**1.911**	**1.731**	**2.11**	0.2321



TriNetX分析結果

10,034 patients in Cohort 1 and 1,605 patients in Cohort 2 were excluded because they met the index event more than 20 years ago.

		Follow-up Metrics			
Cohort	Patients in Cohort	Mean Follow-up (Days)	Standard Deviation	Median Follow-up (Days)	Interquartile Range
Kidney_transplant_Demographics	173,399	1,735.56	1,515.01	1,361	2,245
ESKD	676,444	1,168.74	1,305.27	701	1,665

	Before Matching				After Matching			
Demographics	Mean ± SD	Patients	% of Cohort	P-Value	Mean ± SD	Patients	% of Cohort	P-Value
Age	60.2 ± 14.8	173,399	100%	< 0.0001	60.2 ± 14.8	173,225	100%	0.964
Current Age	65.4 ± 14.3	676,444	100%		60.2 ± 14.7	173,225	100%	
AI	52.8 ± 14.5	173,399	100%	< 0.0001	52.8 ± 14.5	173,225	100%	0.9352
Age at Index	58.7 ± 14.4	676,444	100%		52.8 ± 14.5	173,225	100%	
May-86		113,611	65.52%	< 0.0001		113,461	65.50%	0.1893
Not Hispanic or Latino		433,402	64.07%			113,828	65.71%	
M		98,804	56.98%	0.0065		98,707	56.98%	0.0754
Male		382,986	56.62%			99,225	57.28%	
Mar-06		91,583	52.82%	< 0.0001		91,426	52.78%	0.2657
White		311,248	46.01%			91,753	52.97%	
F		69,913	40.32%	< 0.0001		69,855	40.33%	0.4077
Female		278,651	41.19%			69,616	40.19%	
May-54		43,876	25.30%	< 0.0001		43,876	25.33%	0.9067
Black or African American		208,362	30.80%			43,846	25.31%	
UN		39,595	22.84%	< 0.0001		39,571	22.84%	0.2288
Unknown Ethnicity		159,548	23.59%			39,274	22.67%	
Feb-35		20,193	11.65%	< 0.0001		20,193	11.66%	0.7107
Hispanic or Latino		83,494	12.34%			20,123	11.62%	
UNK		18,694	10.78%	0.0141		18,679	10.78%	0.4964
Unknown Race		74,322	10.99%			18,555	10.71%	
Sep-28		8,877	5.12%	0.2483		8,876	5.12%	0.5284
Asian		34,169	5.05%			8,958	5.17%	
Jan-31		7,776	4.48%	< 0.0001		7,775	4.49%	0.4152
Other Race		33,764	4.99%			7,676	4.43%	
UN		4,682	2.70%	< 0.0001		4,663	2.69%	0.003
Unknown Gender		14,807	2.19%			4,384	2.53%	
Aug-76		1,736	1.00%	< 0.0001		1,736	1.00%	0.6439
Native Hawaiian or Other Pacific Islander		11,077	1.64%			1,709	0.99%	
1002-5		857				857	0.50%	0.0012
American Indian or Alaska Native		3,502				728	0.42%	

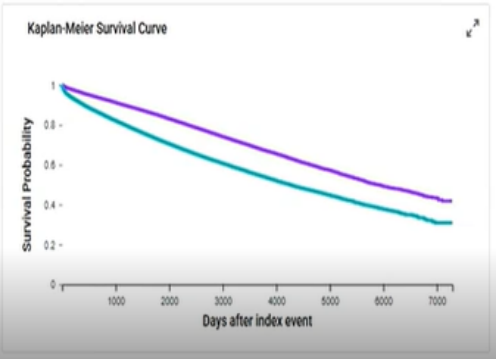
1b : Kaplan-Meier Analysis

	Cohort	Patients in Cohort	Patients with Outcome	Median Survival (Days)	Survival Probability at End of Time Window
1	Kidney_transplant_Demographics	173,225	29,827	5,893	41.807%
2	ESKD	173,225	41,582	4,255	30.934%

Cohort Statistics

Log-Rank Test

χ^2	df	p
5,651.538	1	< 0.0001



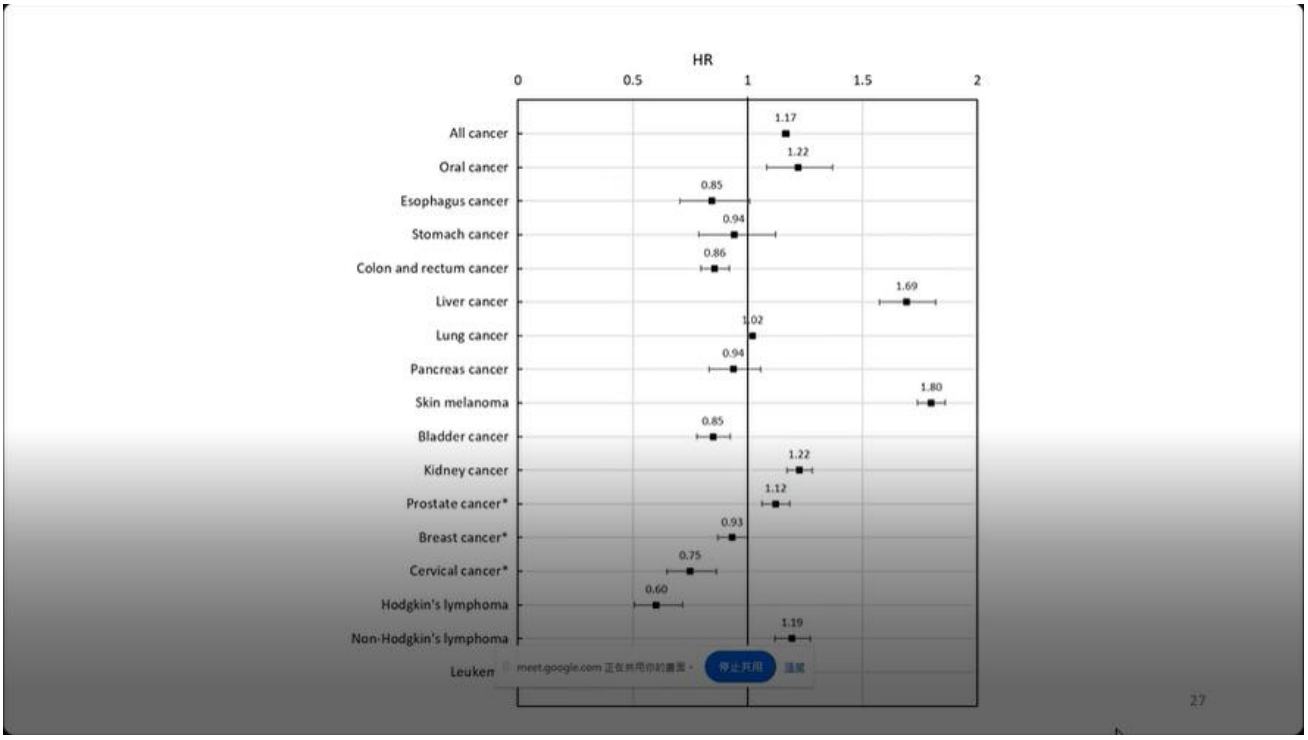
Learn More

Hazard Ratio

Proportionality

Hazard Ratio	95 % CI	χ^2	df	p
0.569	(0.561,0.578)	976.667	1	< 0.0001

		After match							
		ESKD		Tranaplant		HR			Proportionality
All cancer		162991	40421	162991	53329	1.165	1.15	1.18	0.012
	Oral cancer	166783	476	166783	693	1.219	1.084	1.37	0.8402
	Esophagus cancer	160058	241	160058	241	0.845	0.706	1.01	0.0903
	Stomach cancer	152469	234	152469	264	0.94	0.788	1.121	0.2749
	Colon and rectum cancer	165166	1496	165166	1515	0.857	0.797	0.92	<0.0001
	Liver cancer	165166	1130	165166	2144	**1.692**	**1.574**	**1.818**	<0.0001
	Lung cancer	166956	1433	166956	1756	1.021	0.952	1.094	<0.0001
	Pancreas cancer	167147	510	167147	570	0.938	0.833	1.058	<0.0001
	Skin melanoma	164402	5072	164402	10838	1.799	1.74	1.861	<0.0001
	Bladder cancer	161490	1049	161490	1038	0.849	0.779	0.925	<0.0001
	Kidney cancer	164954	3206	164954	4577	1.224	1.171	1.28	<0.0001
	Prostate cancer*	167178	2427	167178	3184	**1.122**	**1.064**	**1.183**	0.1657
	Breast cancer*	166828	1553	166828	1707	0.933	0.871	1	0.0005
	Cervical cancer*	160130	396	160130	350	0.75	0.649	0.866	0.0175
	Hodgkin's lymphoma	163750	309	163750	216	0.603	0.507	0.718	0.0009
	Non-Hodgkin's lymphoma	166948	1600	166948	2246	1.193	1.119	1.273	0.006
	Leukemia	1671			98	0.867	0.807	0.932	<0.0001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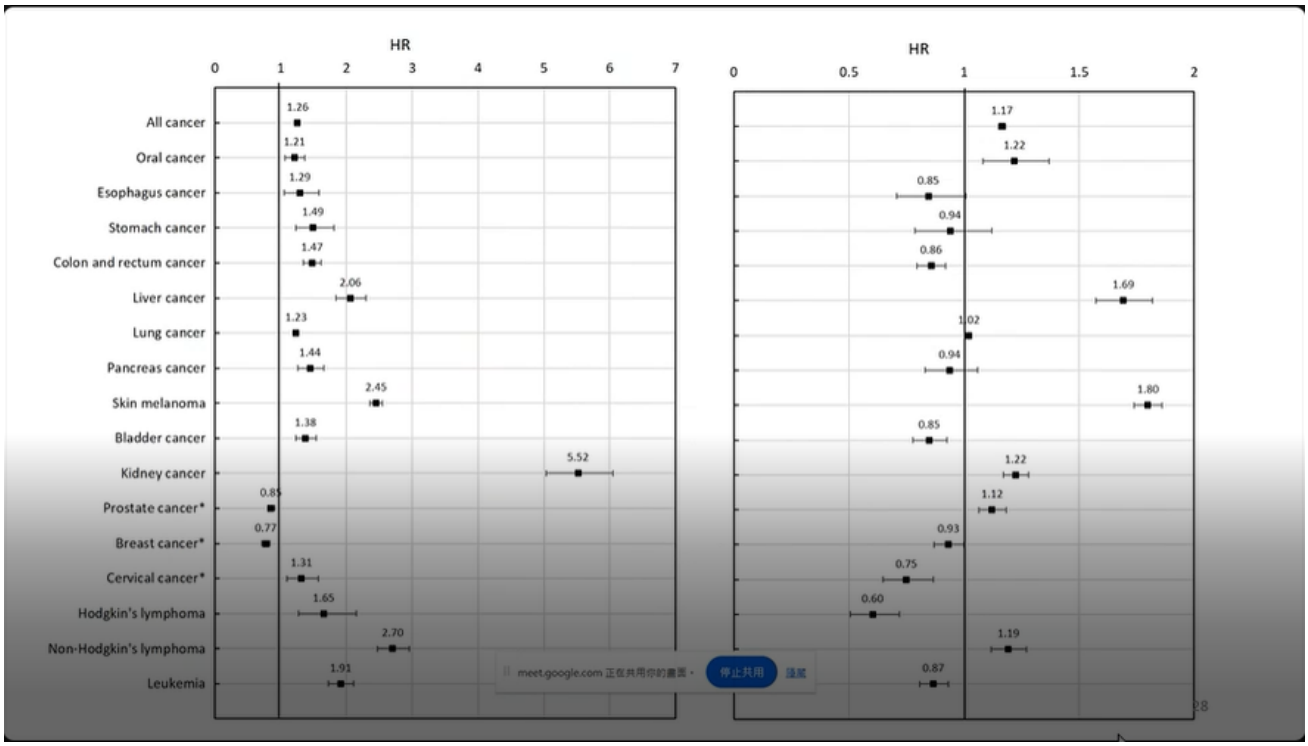
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Summary

- 腎移植者的癌症風險, 相較於一般人口的確較高 但是相較於洗腎人口, 其癌症風險約增加 17%
- 傳統認為腎移植者的腎臟癌風險約為 6~7倍以上, 亞洲人口更高 但是相較於洗腎人口, 腎臟癌症風險約增加 22%
- 洗腎者本身也有癌症風險, 因此要瞭解腎移植者的癌症風險, 仍需考量洗腎者本身的風險

重症腎病團隊

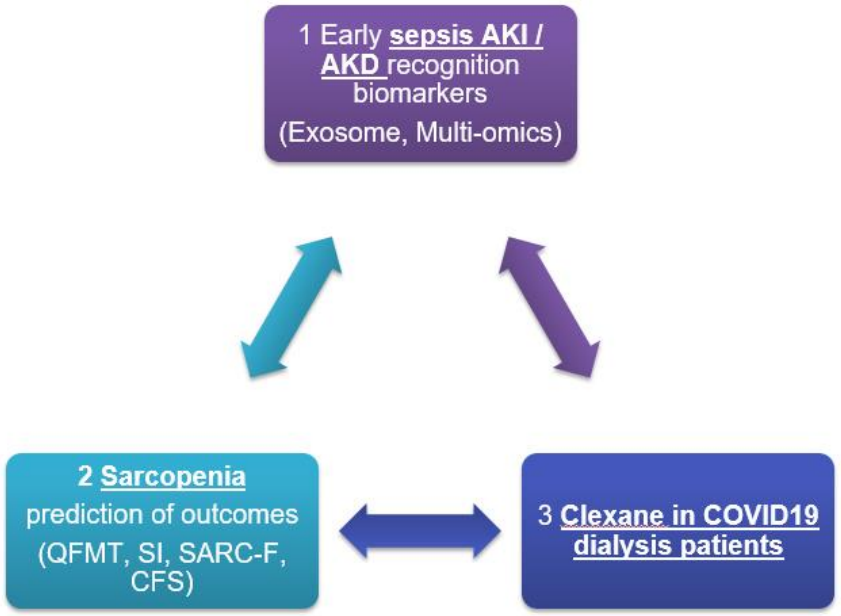
報告人：高治圻

114.8.21

組織架構

醫院	姓名	個人經歷	專長
北醫	高治圻 	腎臟內科主治醫師 急重症透析	Clinical nephrology、Critical care
	陳靜怡 	腎臟內科主治醫師 一般醫學、醫學教育	Clinical nephrology、Critical care、Medical education
	邵月珠 	腎臟內科主治醫師 高齡醫學	Clinical nephrology、Geriatric medicine
萬芳	劉崇德 	腎臟內科主治醫師	Clinical nephrology、Vascular access
	楊韻紅 	腎臟內科主治醫師 急重症透析	Critical-care nephrology
雙和	洪麗玉 	腎臟內科主治醫師 急重症透析	Clinical nephrology、Critical care
	林冠宏 	腎臟內科主治醫師	Clinical nephrology、Critical-care dialysis

Critical-ill patients



Project 2

Kidney dysfunction and sarcopenia

Sarcopenia and AKI are linked through various mechanisms, including mitochondrial dysfunction, oxidative stress, inflammation.

- **Mitochondrial Dysfunction:** In AKI, stressors like sepsis, ischemia, and toxins, as well as chronic conditions like diabetes, can damage mitochondria. In sarcopenia, mitochondrial damage impairs muscle protein synthesis and promotes muscle breakdown.
- **Oxidative Stress and Inflammation:** Uremic toxins in AKI can induce oxidative stress and inflammation in muscle cells, disrupting protein synthesis and promoting muscle atrophy. These toxins also contribute to renal fibrosis, further damaging kidney function.

Lancet 2019; 393: 2636-46
Clin Interv Aging. 2025 Apr 8;20:449-458

Project 2

AKI and sarcopenia

- **Jung et. al**: Retrospective multicenter cohort, 2200 patient, AKI patients requiring CRRT
  - Using CT to quantify muscle mass and quality at the L3 level (skeletal muscle index)
  - Outcomes: 1-, 3-, and 30-day mortality
  - Result : Muscle mass and quality independently predict mortality

Sci Rep. 2023 May 5;13(1):7311

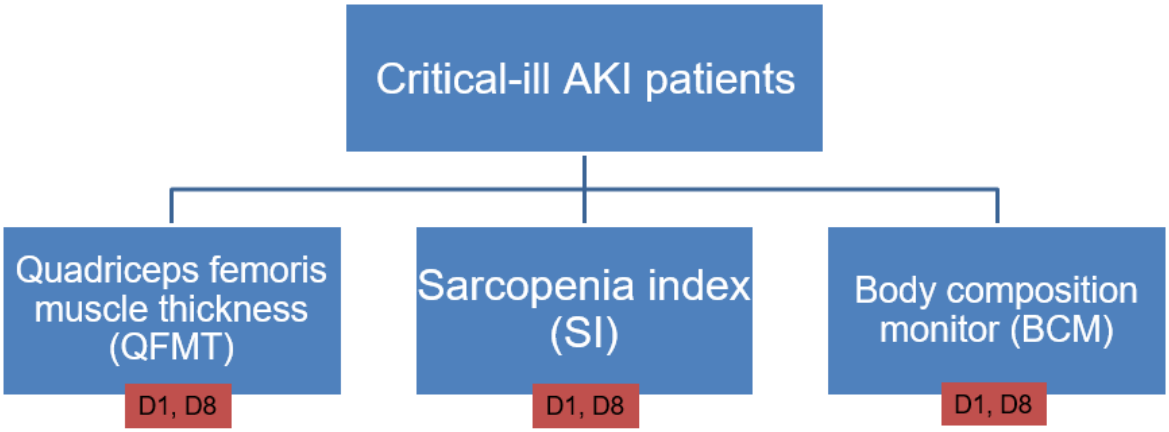
- **Kim et. al**: retrospective cohort included 618 sepsis-AKI patients with CRRT
  - CT scan within 3 days before ICU admission (L3 cross section area of skeletal muscle)
  - Result: Among 618 patients, 301 died within 28 days; Cox regression showed sarcopenia independently predicted 28-day mortality ($p<0.05$).
  - Sarcopenia independently predicted lower odds of dialysis recovery within 28 days ($p<0.05$).

Kidney Res Clin Pract. 2025 Mar;44(2):324-337

Project 2

Sarcopenia change in Critical-ill AKI patients

IRB 112/12/13已通過，到114/8/20為止、已收案71個病人

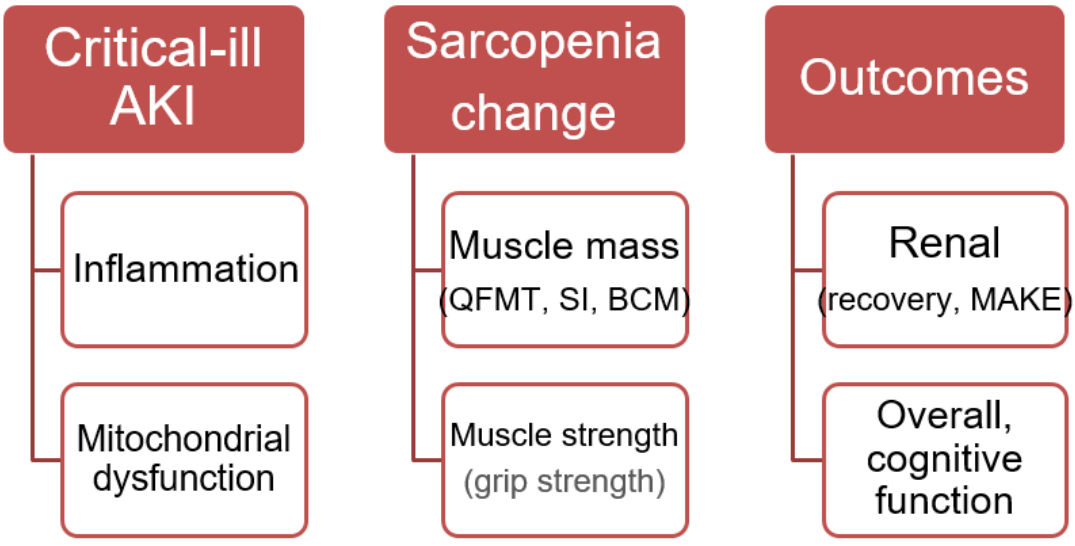


* Gold standard for muscle mass: paraspinal muscle surface area at L4 (CTMSA)

Evaluate sarcopenia in critical-ill to predict outcomes

Project 2

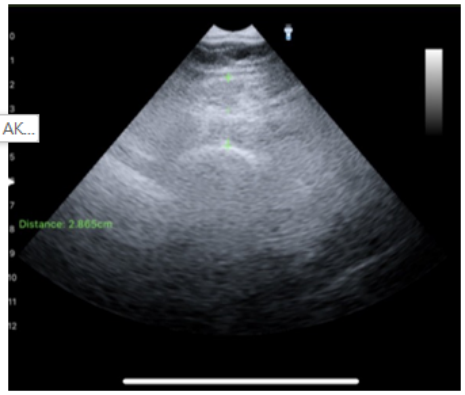
Sarcopenia change in Critical-ill AKI patients



-MAKE (major adverse kidney events)
-QFMT (quadriceps femoris muscle thickness)
-SI (sarcopenia index)
-BCM (body composition monitor)

Project 2

Quadriceps thickness (QFMT)



- Location : midpoint of ASIS to patella
- Quadriceps femoris muscle thickness, QFMT = sum of the anterior thickness of the **rectus femoris (RF) and the vastus intermedius (VI)** muscles
- QFMT = Cutaneous to femoral bone thickness – subcutaneous tissue (fat)

Clin Nutr. 2021; 40(8): 4871-4877
Sarcopenia in critically ill children: A bedside assessment using point-of-care ultrasound and anthropometry

Project 2

Sarcopenia change in Critical-ill AKI patients

- P: critical-ill AKI patients
- I: sarcopenia (+), frailty (+)
- C: sarcopenia (-), frailty (-)
- O: in-hospital mortality, MAKE-30 (all-cause mortality, RRT, or ≥ 2 times of baseline Cr at 30 days)

- Sarcopenia defined as SARC-F score >= 4 points
- Frailty defined as a CFS score >= 5 points

- Quadriceps femoris muscle thickness (QFMT)
- Sarcopenia index (serum Cr / cystatin C)

Project 2

SARC-F and CFS (clinical frailty scale)

Table 1
SARC-F Score

Component	Question	Scoring
Strength	How much difficulty do you have in lifting and carrying 10 lb?	None = 0 Some = 1 A lot or unable = 2
Assistance in walking	How much difficulty do you have walking across a room?	None = 0 Some = 1 A lot, use aids, or unable = 2
Rise from a chair	How much difficulty do you have transferring from a chair or bed?	None = 0 Some = 1 A lot or unable without help = 2
Climb stairs	How much difficulty do you have climbing a flight of 10 stairs?	None = 0 Some = 1 A lot or unable = 2
Falls	How many times have you fallen in the past year?	None = 0 1–3 falls = 1 ≥4 falls = 2

臨床衰弱量表 (Clinical Frailty Scale)*

1 **Very Fit** - People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

1 非常健康 - 強健，活躍並充滿活力，有良好的動機，會規律運動，體能為同年齡中最佳的一群。

2 **Well** - People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

2 良好 - 沒有活動性疾病造成的症狀，但沒有第一級那麼健康，通常他們偶爾積極參與活動或運動（例如每季一次）。

3 **Managing Well** - People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.

3 尚可 - 慢性疾病控制良好，除日常行走外，少有其他積極活動。

4 **Vulnerable** - While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up", and/or being tired during the day.

4 脆弱易積傷 - 生活不需依賴他人，但常因身體症狀限制活動。常見的主訴為「行動變慢」或白天感到疲累。

5 **Mildly Frail** - These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

5 輕度衰弱 - 行動明顯遲緩，工具性日常生活活動（理財、交通、較重家事及服藥）需他人協助。輕度衰弱一般會逐漸影響病人單獨外出行走或購物、製備餐食及做家事的能力。

6 **Moderately Frail** - People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

6 中度衰弱 - 所有戶外活動及家事皆需協助。在室內，通常無法上下樓梯，洗澡需他人協助，穿衣時也可能需要輕度協助（提示、待命）。

7 **Severely Frail - Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

7 嚴重衰弱 - 因任何原因（身體或認知），**自我照顧處於完全依賴**，但整體狀況穩定，六個月內死亡的風險並不高。

8 **Very Severely Frail** - Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

8 極嚴重衰弱 - 完全依賴，逼漸靠近生命的終點，即使輕微疾病也無法恢復。

9 **Terminally Ill** - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail.**

9 末期病況 - 靠近生命終點，預期存活期小於 6 個月，這級的病人不見得有明顯的衰弱。

Scoring frailty in people with dementia
The degree of frailty corresponds to the degree of dementia.
Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.
In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.
In **severe dementia**, they cannot do personal care without help.

評估失智症病人的衰弱程度：
衰弱程度相對應於失智程度。
輕度失智的常見症狀包括：忘記近期事件的細節（雖然仍可記得事件本身），重複相同的問題/故事和社交退縮。
中度失智者：近期記憶嚴重受損（即使他們似乎可清楚記得過去的生活事件），可透過提示進行自我照顧。
嚴重失智者：若無協助則無法自我照顧。

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173: 489-495.

Project 2

Demographics

	Total (N = 58)	Frailty (N = 31)	Non-frail (N = 27)	P value	Sarcopenia (N = 27)	Non-sarcopenia (N = 31)	P value
Age, years (median, IQR)	78 (66-86)	86 (81-89)	66 (61-74)	<0.01	86 (81-90)	71 (62-77)	<0.01
Male (n, %)	36 (62%)	16 (52%)	20 (74%)	0.07	14 (51%)	22 (71%)	0.13
BMI (mean ± SD)	23.7 ± 5.0	22.5 ± 4.4	24.9 ± 5.3	0.06	22.2 ± 4.4	24.8 ± 5.2	0.04
APACHE II score	25 ± 10	28 ± 9	21 ± 9	<0.01	27.7 ± 9.5	22.2 ± 9.9	0.03
SOFA score	7.6 ± 4.7	7.5 ± 2.8	7.6 ± 6.3	0.90	7.5 ± 2.9	7.5 ± 5.8	0.95
CFS score	5 ± 3	7.5 ± 0.7	2.3 ± 1.0	<0.01	7.3 ± 1.2	3.1 ± 2.1	<0.01
QFMT (mean ± SD)							
D1	2.5 ± 0.9	2.4 ± 0.9	2.6 ± 1.0	0.67	2.5 ± 1.0	2.6 ± 1.0	0.82
D8	2.4 ± 1.0	2.4 ± 0.9	2.4 ± 1.0	0.91	2.4 ± 1.0	2.5 ± 1.1	0.89
Albumin	3.0 ± 0.5	3.0 ± 0.4	3.1 ± 0.5	0.64	3.0 ± 0.5	3.1 ± 0.6	0.71
Creatinine	3.1 ± 2.1	2.8 ± 1.9	3.3 ± 2.2	0.40	2.9 ± 2.0	3.2 ± 2.1	0.58
eGFR	29 ± 17	26 ± 12	30 ± 21	0.42	27 ± 16	30 ± 18	0.57
Lactate (median, IQR)	14 (11-46)	16 (11-55)	13 (10-29)	0.48	17 (13-67)	13 (9-25)	0.04
Outcomes							
In-hospital mortality	17 (29%)	12 (38%)	5 (18%)	0.09	11 (41%)	6 (19%)	0.07
MAKE	26 (45%)	16 (51%)	10 (37%)	0.26	15 (55%)	11 (35%)	0.12

Project 2

Association of frailty and sarcopenia with in-hospital mortality and MAKE

	In hospital mortality		MAKE	
	Univariate model	Adjusted model[&]	Univariate model	Adjusted model[&]
Age	1.048 (1.027-1.070)**	1.025 (1.001-1.050)*	1.009 (0.994-1.024)	0.990 (0.972-1.009)
Sex	1.700 (1.036-2.791)*	2.329 (1.328-4.085)**	3.333 (2.088-5.321)**	5.281 (3.045-9.157)**
APACHE II score	1.018 (0.995-1.043)	1.012 (0.984-1.041)	0.980 (0.959-1.002)	0.971 (0.947-0.996)*
QFMT at enrollment	0.729 (0.570-0.933)*	1.308 (0.833-2.054)	0.795 (0.639-0.989)*	0.739 (0.485-1.127)
QFMT at 1 week	0.651 (0.502-0.845)**	0.515 (0.328-0.809)**	0.846 (0.682-1.051)	0.994 (0.659-1.499)
Frailty[#]	2.779 (1.695-4.555)**	1.345 (0.594-3.045)	1.813 (1.180-2.786)**	1.660 (0.761-3.620)
Sarcopenia[##]	2.865 (1.772-4.630)**	1.994 (0.945-4.209)	2.273 (1.476-3.499)**	3.203 (1.518-6.760)**

&: Adjusted model included age, sex, APACHE II score, QFMT at enrollment and 1 week, frailty and sarcopenia
*: P < 0.05; **: P < 0.01
#: Frailty defined as a CFS score >= 5 points
##: Sarcopenia defined as SARC-F score >= 4 points

Project 2

Cont. (work to be done)

- Cystatin C measurement via ELISA kits
- We have analyzed 119 plasma samples for cystatine C concentration

Project 2

Strength and Weaknesses

Previous studies	Our study
Retrospective cohort study	Prospective cohort study
Large cohorts	Small sample size (<100 patients enrolled to date)
CT • High precision, standardized • Single time-point only • Costly, requires patient transport, radiation exposure	Sonography • Portable, bedside, radiation-free, low cost • Repeatable measurements (e.g., ICU days 1, 8, etc.) • Potential inter-operator variability
Static, single-timepoint assessment	Dynamic assessment of ΔQFMT between ICU day 1 and day 8

Project 2

Limitations

- Unmeasured confounders (e.g. comorbidities) may still bias our findings.
- Inter-operator variability could affect ultrasound measurement reliability.
- Single-center design and small sample size limit the generalizability of the results.
- CFS and SARC-F assessments may be subject to proxy-report bias if completed by family members.

Project 3

洗腎病人感染 COVID-19 後使用 Clexane 的安全性與療效分析

研究背景

- COVID-19 is associated with high risk of micro- and macrovascular thrombosis and raised incidence of anticoagulation failure
- Unlike conventional sepsis, anticoagulation plays a key role in management of COVID-19 with a positive impact on survival
- 洗腎病人感染 COVID-19後有較高的血栓與死亡風險, 使用 Clexane預防血管通路阻塞及可能增加出血風險

Blood Rev. 2021: 47: 100761

研究背景

Table 1. Difference in coagulation parameters between COVID-19 and conventional sepsis.

Variable	COVID-19 sepsis	Conventional sepsis
aPTT	N/↑	↑↑/↑↑↑
PT	N/↑	↑↑/↑↑↑
Fibrinogen	↑↑↑/↑↑/↓	↑↑↑/↑↑/↓
Thrombocytopenia	N/↓	↓↓/↓↓↓
FSP	↑/↑↑	↑↑/↑↑↑
D-Dimer	↑↑/↑↑↑	↑/↑↑
Schistocytes on peripheral blood smear	Not present	Frequent

Blood Rev. 2021: 47: 100761

研究目的

- 探討洗腎病人感染 COVID-19使用Clexane對：
  - 血色素變化的影響
  - 血管通路阻塞風險
  - 出血事件風險
- 比較使用與未使用Clexane病人的臨床outcome差異

研究設計與方法

- **研究設計：** retrospective study
- **研究期間：** 2020年05月～2024年12月
- **對象：** 確診COVID-19洗腎病人有/無使用 Clexane
- **資料來源：** 三院臨床資料庫/大同透析資料系統

- P: COVID19(+) hemodialysis patients
- I: IV Clexane
- C: Non-heparin or heparin (during dialysis)
- O: Hb, vascular access failure, bleeding risk

資料收集項目

基本資料	年齡、性別、共病、透析方式
COVID-19資料	住院天數、有無ICU、疾病嚴重程度 (SOFA score)
抗凝血藥物	Clexane使用劑量與天數
抽血數值	連續血色素、血小板、D-dimer、INR
Outcome	出血事件、通路阻塞、死亡率

預期貢獻

- 提供COVID-19疫情下，洗腎病人抗凝策略之安全性資料
- 建立使用Clexane在洗腎病人的臨床參考依據
- 有助於未來面臨高凝血疾病的延伸應用

謝謝聆聽 敬請指導！