115年度TRG徵求重點及內容說明

Exploring the clinical approach and mechanisms of Cardiovascular-Kidney-Metabolic (CKM) Health

國家衛生研究院

許惠恒 副院長

2025.01.15

簡報大綱

一. TRG計畫緣起與簡介

二. 近年政府推動重點

三. 115年TRG計畫

國衛院院外整合性醫藥衛生科技研究計畫

- **創新研究計畫**
  (Innovative Research Grant, IRG)
- **研究發展獎助計畫**
  (Career Development Grant, CDG)

由研究人員自行發起提出，較屬自由型之計畫型態

- 自109年度計畫徵求開始，導入**由 NHRI 主導選題**的「**臺灣醫衛重要主題研究計畫**」(**T**hematic **R**esearch **G**rant for Important Health Issues of Taiwan, **TRG**)

臺灣醫衛重要主題研究計畫(TRG)

- **計畫目標**：因應國人健康需求及未來挑戰，聚焦特定主題，以研究成果能實際應用於臨床或轉譯為政策並解決問題，帶來具體的社會與經濟效益為目標
- **型態**：統合型(3～5個子計畫)，每2年徵求1次
- **經費**：每件計畫每年經費上限為750萬元，**若有NHRI研究人員參與，並擔任子計畫負責人，經費可提高至1000萬元**
- **期程**：3年。第一次 3 年計畫結束時可提出一次 Renew 計畫申請 (不論當年度是否有徵求該研究主題)

TRG 徵求重點考量的方向

1. 國人面臨之**重大公衛議題與疾病威脅**
2. 與**本院發展主軸**相互配合(延伸、互補、加乘)，藉由院內外的合作，促進本院整體的發展
3. 因應**新的科技發展**所帶來的新契機
4. 應考量成果實際應用於臨床或政策之可能性，及對社會、經濟產生之影響力，並列出**明確的目標或欲達成的 milestone**

過去TRG計畫徵求重點的擬定(1/3)

➢ 109年度徵求重點

以目前對健保支出負擔沈重之**腎病變及糖尿病**為主軸，共訂兩項重點

1. Mechanism and Prevention for Chronic Kidney Disease
   – 聚焦於急性腎損傷、未知原因慢性腎臟病
2. Mechanism and Prevention for Diabetic Complications
   – 聚焦於目前仍無法解決的糖尿病所引起之慢性併發症 (如：心血管疾病、腎臟疾病)

過去TRG計畫徵求重點的擬定(2/3)

➢ 111年度徵求重點

經投票後以**神經退化性疾病及免疫療法的不良反應**為主軸，共訂兩項重點

1. **Mechanisms and Intervention for Neurodegenerative Diseases**
   - 以神經退化性疾病為主題，強調機制探討與對病人有幫助的技術研發、臨床介入(需搭配效益分析)，鼓勵與國外合作
2. **Immunotherapy: Impact on Immune System and New Challenges of Infectious Complications**
   - 以免疫療法對病人免疫系統的影響及所引起的不良反應為主題，建立registry平台，同時收集檢體，藉由比較精準的記錄收集與分析，協助臨床上更好的判斷與處理

過去TRG計畫徵求重點的擬定(3/3)

➢ 113年度徵求重點

以**心血管疾病**為主軸訂定研究重點

1. Integrated Patient-oriented Study on Cardiovascular Diseases

- 以病人為導向並聚焦於缺血性心臟病、心肌梗塞及心臟衰竭的研究
- 研究內容可包括預防、診斷與介入治療，病人出院後之整合性照護等層面，進行包括如致病機轉、危險因子的健康管理、Biomarker/ 藥物/ 醫療器材或輔助裝置、及心血管疾病相關的醫療效益評估等研究
- 鼓勵多中心合作

過去TRG計畫徵求與通過情形

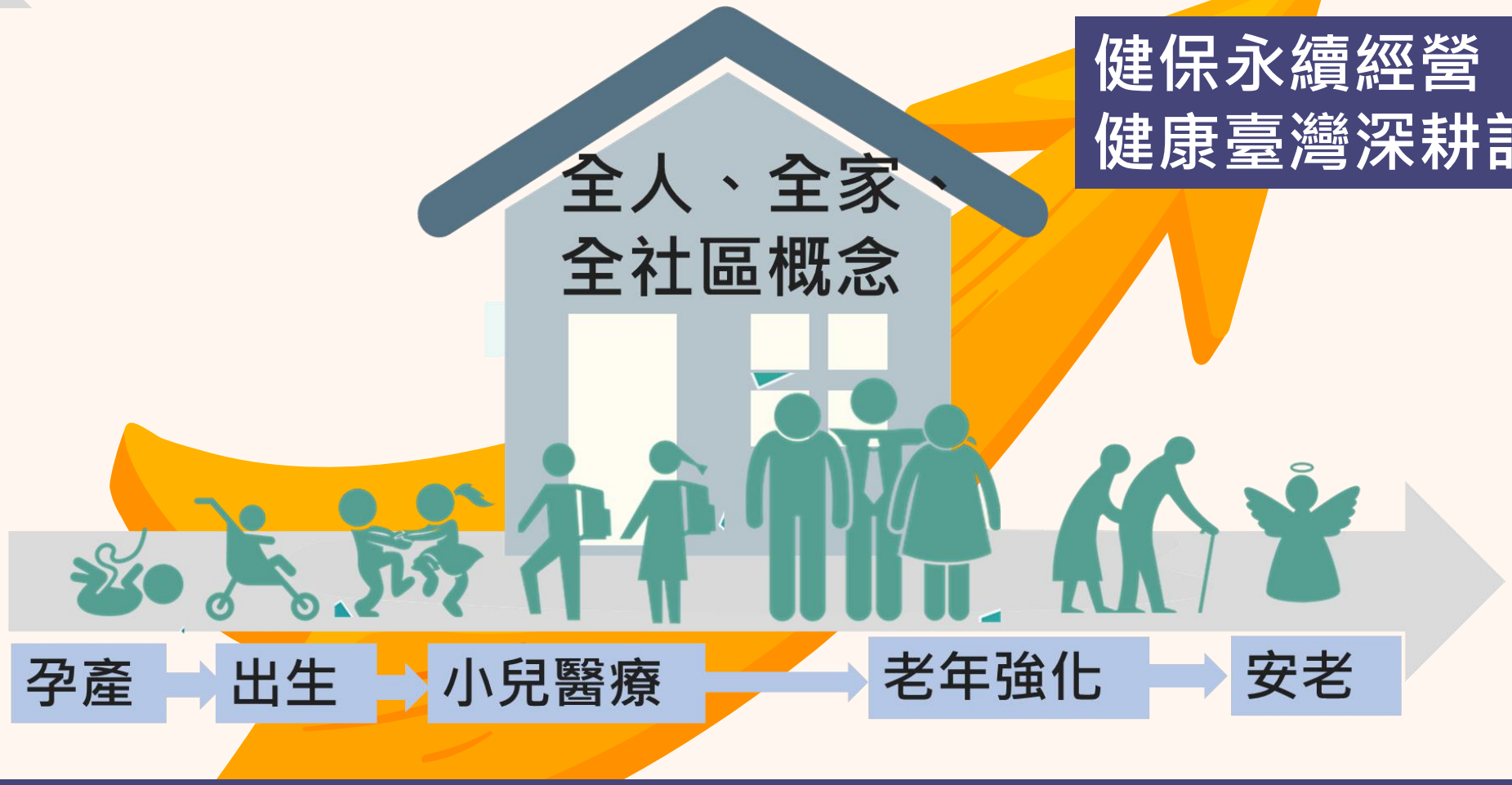
年度	徵求重點	申請件數	審查件數	通過件數	通過率
109	1. 腎病變	7	6	1	20.0%
	2. 糖尿病	5	4	1	
111	1. 神經退化	6	5	1	16.7%
	2. 免疫療法	3	1	0	
113	心血管疾病	5	3	0	0%

二、近年政府推動健康議題重點

健康臺灣藍圖

心靈照顧：心理健康促進

健保永續經營
健康臺灣深耕計畫



身體照顧：健康促進及疾病預防(888計畫)、強化國家癌症防治、長照3.0、醫療與長照銜接

一、健康促進及慢性病預防-888計畫(1/2)

執行策略

健康檢查發掘三高、代謝症候群者

1. **找得出**：調降篩檢年齡、增加頻率、鼓勵資料上傳
2. **要介入**：就風險因子提供生活習慣諮詢、異常管理
3. **要改善**：自我健康管理
4. **延緩失能**：規劃65歲以上民眾於成健一併提供ICOPE評估

三高病人就醫

1. **推行大家醫計畫**：三高、心腦血管疾病、初期慢性腎臟病病患加入照護網
2. **導入生活習館諮商**：健康資料建檔
3. **建置大家醫平台**：導入數位化照護、AI風險預估及疾病嚴重度分級

一、健康促進及慢性病預防-888計畫(2/2)

目標

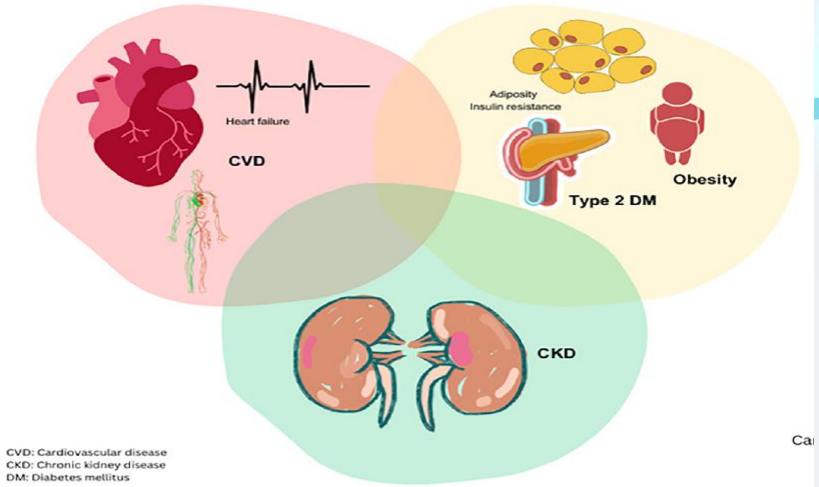
短期
- 成健利用率30%
- 三高收案率14%
- 三高介入率65%
- 三高改善率36%
- 三高病人接受健保慢性病相關專案照護率65%

中期
- 成健利用率35.5%
- 三高收案率25%
- 三高介入率69%
- 三高改善率48%
- 三高病人接受健保慢性病相關專案照護率73%

長期
- 成健利用率38.5%
- 三高收案率40%
- 三高介入率73%
- 三高改善率60%
- 三高病人接受健保慢性病相關專案照護率80%

註：
1.前3項三高定義為健康檢查發掘三高、代謝症候群者
2.第4項三高病人定義為「三高病人接受健保慢性病相關專案照護者」

Circulation

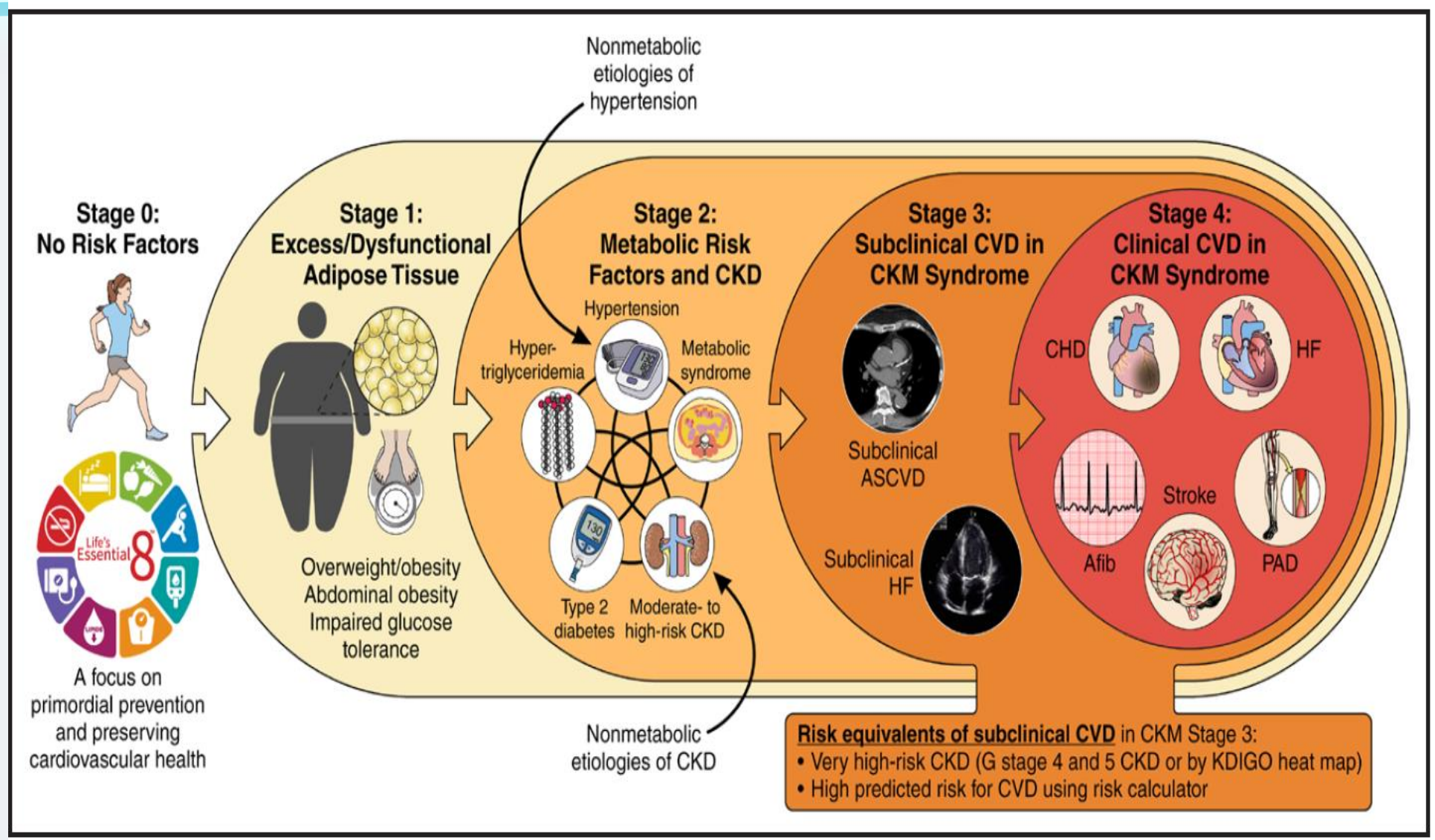


AHA PRESIDENTIAL ADVISORY

Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association

Ndumele CE, et al. Circulation 2023;148:1606-1635.

Stages of CKM Syndrome



Ndumele CE, et al. Circulation 2023;148:1606-1635.

KDIGO Heat Map for CKD Classification

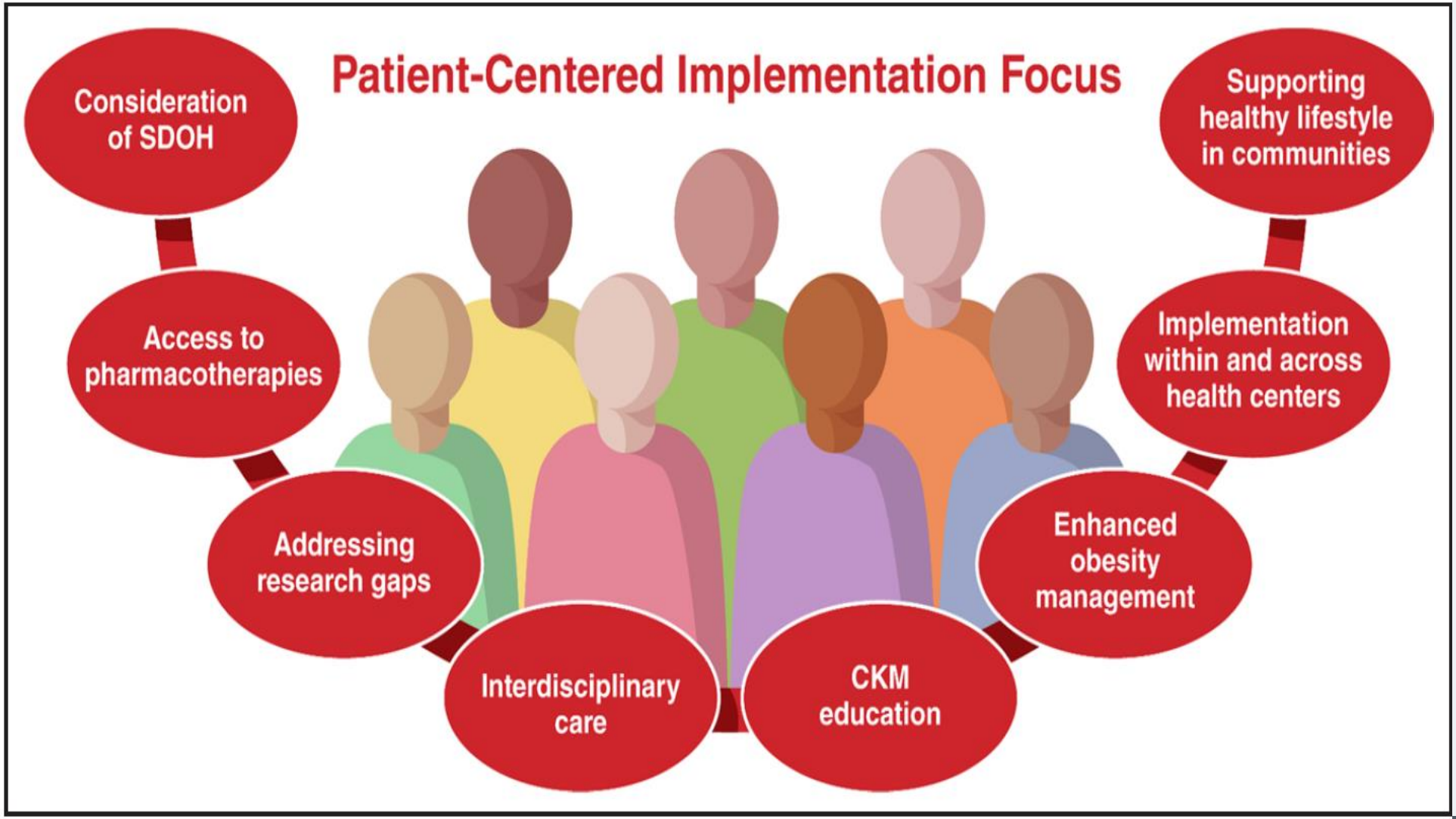
CKD is classified based on:
Cause (C)*
GFR (G)†
Albuminuria (A)†

GFR categories (mL/min per 1.73 m²) Description and range				Albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–299 mg/g 3–29 mg/mmol	≥300 mg/g ≥30 mg/mmol
	G1	Normal or high	≥90	Screen 1	Treat 1	Treat and refer 3
	G2	Mildly decreased	60–89	Screen 1	Treat 1	Treat and refer 3
	G3a	Mildly to moderately decreased	45–59	Treat 1	Treat 2	Treat and refer 3
	G3b	Moderately to severely decreased	30–44	Treat 2	Treat and refer 3	Treat and refer 3
	G4	Severely decreased	15–29	Treat and refer† 3	Treat and refer† 3	Treat and refer 4+
	G5	Kidney failure	<15	Treat and refer 4+	Treat and refer 4+	Treat and refer 4+

Low risk (if no other markers of kidney disease, no CKD)
Moderately increased risk
High risk
Very high risk

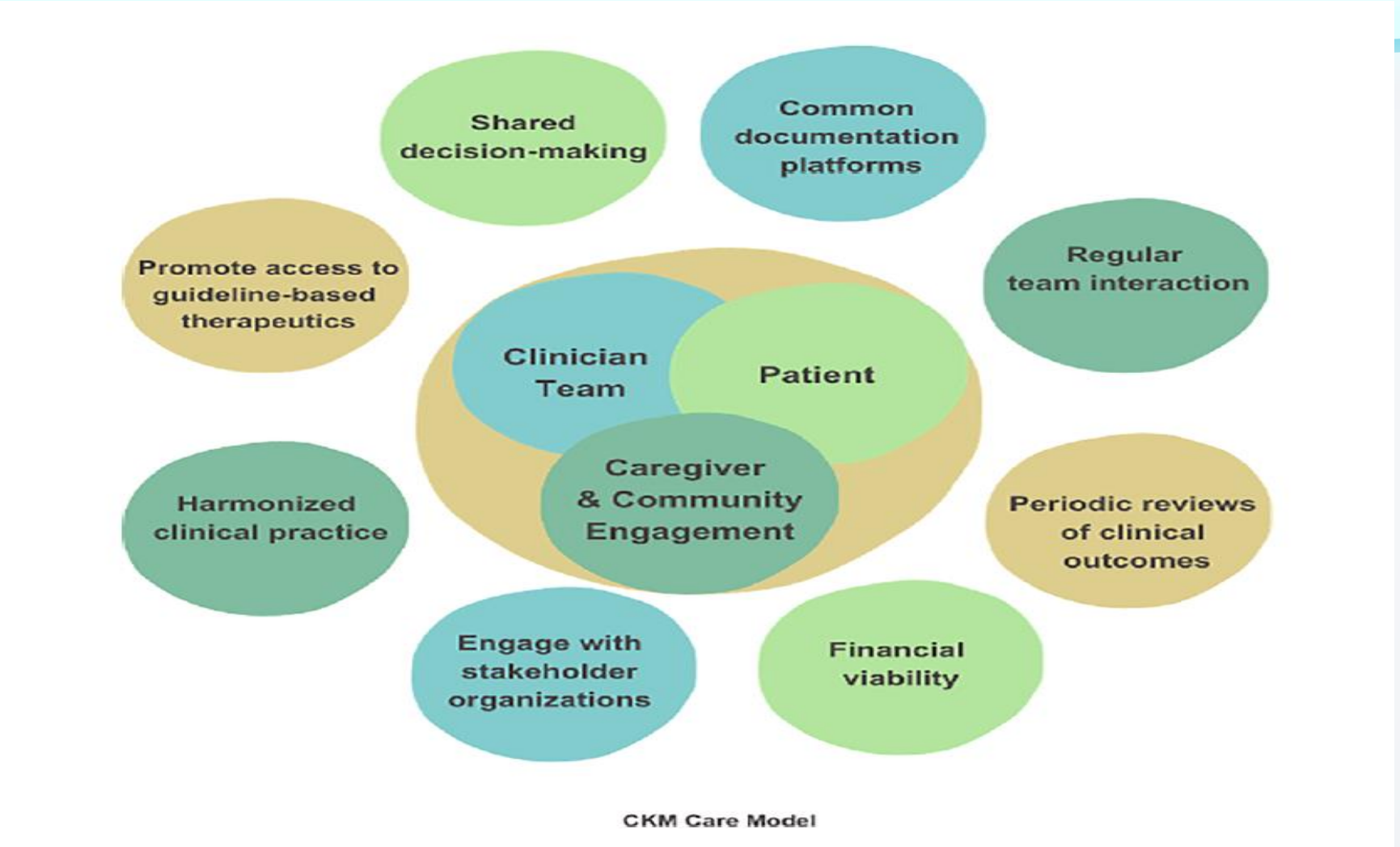
Ndumele CE, et al. Circulation 2023;148:1606-1635.

CKM Syndrome Call to Actions



Ndumele CE, et al. Circulation 2023;148:1606-1635.

CKM Care Model



Sebastian LA, et al. Curr Prob Cardiology 2024;49:102344

三、115年國衛院徵求TRG計畫

115年TRG研究重點規劃過程

- 歷經數次院內、外專家諮詢會議討論，達成共識：
  - 一、聚焦於國人最常見的多重慢病共病CKM為主軸
  - 二、配合大數據、AI、或新的科技方法
  - 三、以實證醫學探討疾病機轉與落定應用
- 國衛院提出臨床試驗核心架構：Taiwan Cardiovascular, Renal and Metabolism (**T-CaReMe**) **Program**

115年TRG徵求重點 (1/3)

Elucidating the Pathogenic Mechanisms and Advancing a Precision Medicine-Based Comprehensive Care Model for Cardiovascular-Kidney-Metabolic (CKM) Syndrome in Taiwan

探討台灣心腎代謝症候群的致病機轉及建構全方位的精準照護模式

- **Objective:**

  Elucidate CKM syndrome pathophysiology and develop strategies to reduce healthcare burden in Taiwan

- **Background--Healthcare Challenges in Taiwan:**
  - High burden of CKD, DM, hypertension, and CVD
  - Interconnection of cardiovascular, kidney, and metabolic diseases
  - Comprehensive, patient-centered models, individualized care are critical.

115年TRG徵求重點 (2/3)

- Research Priority:
  - The study must fulfill the study frame of Taiwan Cardiovascular, Renal and Metabolism (T-CaReMe) Program.
    - ✓ Patient-oriented study focusing on CKM disease interconnections
    - ✓ A clinical trial aimed at investigating pathogenesis, prevention, treatment, and prognosis. (recommended)
      - Target 2–3 disease systems (e.g., Type 2 diabetes + CKD)
      - Stratify patients using DNA profiling and polygenic risk scores
      - Implement multifactorial interventions
      - Regularly monitor potential biomarkers (e.g., blood, urine, microbiota, body composition assessment…)
      - Assess outcomes over 3–4 years

115年TRG徵求重點 (3/3)

- **Incorporating advanced medical technologies**: AI, Big Data, IoT for precision health strategies

- **Unrestricted research perspectives and approaches:**
  - ✓ Prevention, prediction, diagnosis, therapeutic intervention, and outpatient care…
  - ✓ Mechanistic studies, risk factors management, biomarker development, medical devices, and cost-effectiveness analysis…

- **Interdisciplinary and international collaborations are encouraged.**

他山之石

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 30, 2003 VOL. 348 NO. 5

Multifactorial Intervention and Cardiovascular Disease in Patients with Type 2 Diabetes

Peter Gæde, M.D., Pernille Vedel, M.D., Ph.D., Nicolai Larsen, M.D., Ph.D., Gunnar V.H. Jensen, M.D., Ph.D., Hans-Henrik Parving, M.D., D.M.Sc., and Oluf Pedersen, M.D., D.M.Sc.

The largest diabetes centre in northern Europe

Gaede P, et al. N Engl J Med 2003;348:383-393.

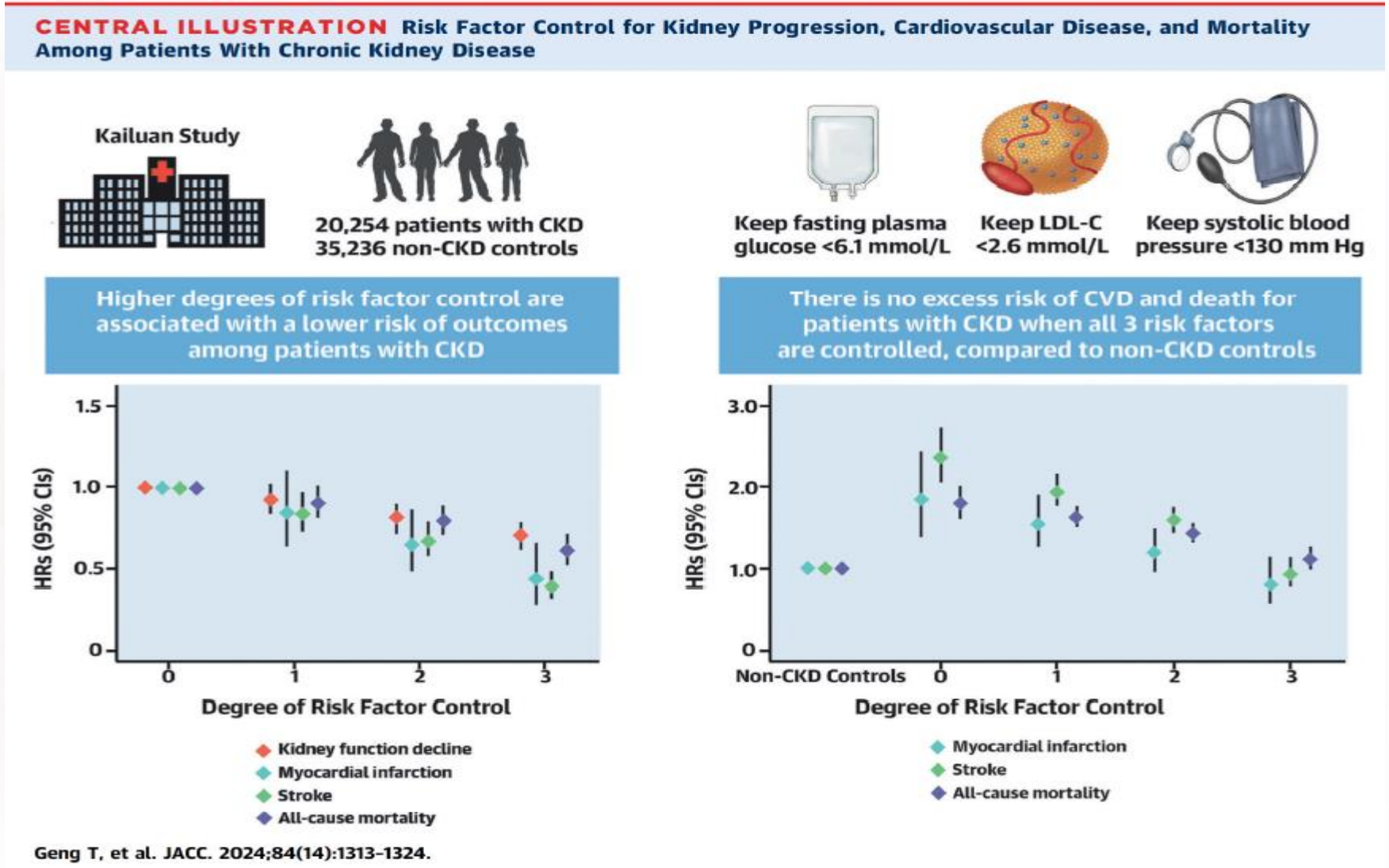
糖尿病需要全方位控：血糖、血壓、血脂肪、aspirin等，但是有證據嗎？

Steno-2 study

- A long-term, targeted, intensive intervention involving multiple risk factors **reduced the risk of cardiovascular and microvascular events by 50% patients with type 2 DM with microalbuminuria.**

Gaede P, et al. N Engl J Med 2003;348:383-393.

Risk Factors Control for Kidney Progression, CVD, and Mortality among Patients with CKD



Geng T, et al. JACC 2024;84:1313-1324.

FLOW Trial

Perkovic V, et al. N Engl J Med 2024; 391: 109-21.

FLOW Trial

- 2024 *New England Journal of Medicine*上所發表的FLOW Trial是一個很好的案例
  - ✓ 由Novo Nordisk藥廠所贊助，研究挑選T2DM與CKD的高危險群病人
  - ✓ 將其隨機分為兩組，其中一組每週注射一次GLP-1 (Semaglutide)
  - ✓ 對照組則每週注射placebo
  - ✓ 經過2~3年後觀察cardiovascular outcome
  - ✓ 結果顯示GLP-1可有效減少這些高危險族群不論是大血管或小血管的併發症機率

Perkovic V, et al. N Engl J Med 2024; 391: 109-21.

FLOW TRIAL

The rationale, design and baseline data of FLOW, a kidney outcomes trial with once-weekly semaglutide in people with type 2 diabetes and chronic kidney disease

Background

Evidence has emerged of potential kidney-protective effects of GLP-1RAs in people with T2D. FLOW is a dedicated kidney outcomes trial to assess semaglutide in a population with CKD and T2D at high risk of kidney disease progression.

Methods

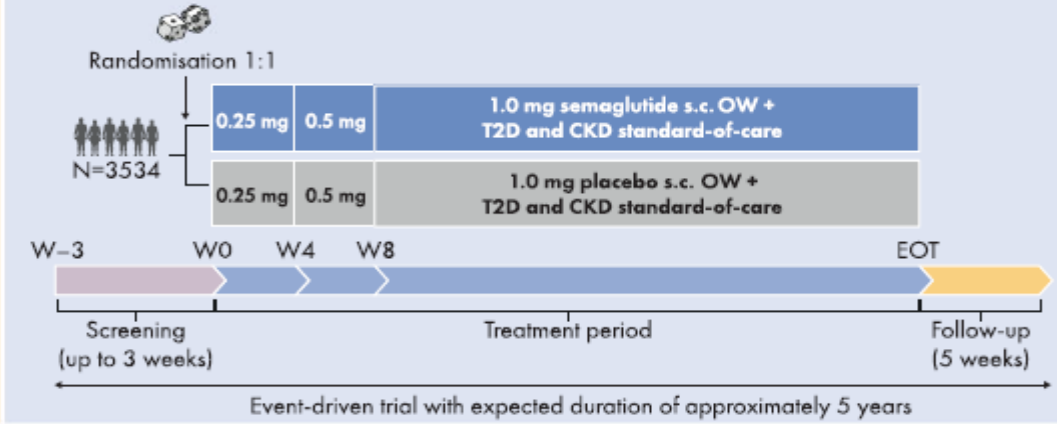
Participants:

- Adults with T2D
- eGFR ≥50 to ≤75 ml/min/1.73 m² and UACR >300 to <5000 mg/g OR
- eGFR ≥25 to <50 ml/min/1.73 m² and UACR >100 to <5000 mg/g

Composite primary endpoint:

Time to first occurrence of:

- Kidney failure (persistent eGFR <15 ml/min/1.73 m² or initiation of CKRT);
- Persistent ≥50% reduction in eGFR; or
- Death from kidney or CV causes



Baseline characteristics

68.2% at very high risk for CKD progression according to KDIGO categorisation, eGFR of 47.0 (15) ml/min/1.73 m²; median UACR of 568 (range: 2–11 852) mg/g

Advanced type 2 diabetes:
Mean age 66.6 years
Mean diabetes duration 17.4 years
Mean HbA_{1c} 7.8%

15.5% receiving SGLT-2is

CKD, chronic kidney disease; CKRT, chronic kidney replacement therapy; CV, cardiovascular; eGFR, estimated glomerular filtration rate; EOT, end of treatment; GLP-1RA, glucagon-like peptide-1 receptor agonist; HbA_{1c}, glycosylated haemoglobin; KDIGO, Kidney Disease: Improving Global Outcomes; OW, once weekly; s.c., subcutaneous; SGLT-2i, sodium-glucose cotransporter-2 inhibitor; T2D, type 2 diabetes; UACR, urine albumin-to-creatinine ratio; W, week.

Conclusion

FLOW will evaluate the effect of semaglutide on kidney outcomes in participants with CKD and T2D, and is expected to complete in late 2024.

ERA NEPHROLOGY DIALYSIS TRANSPLANTATION

Rossing, P., et al. NDT (2023)
@NDTSocial

感謝聆聽
歡迎踴躍申請