



Il rischio cardiovascolare nel paziente con diabete tipo 2: l'approccio one health

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Conflitti di interesse di Angelo Avogaro

Dichiaro di aver ricevuto negli ultimi 2 anni compensi dalle seguenti aziende:

Pharma International Company, AstraZeneca, Boehringer Ingelheim, Bristol Myers Squibb, Eli Lilly, Bruno Farmaceutici, Mundipharma, Neopharmed, Amgen, Servier, GlaxoSmithKline, Merck Sharp & Dohme, Novartis, Novo Nordisk, Sanofi, Takeda.

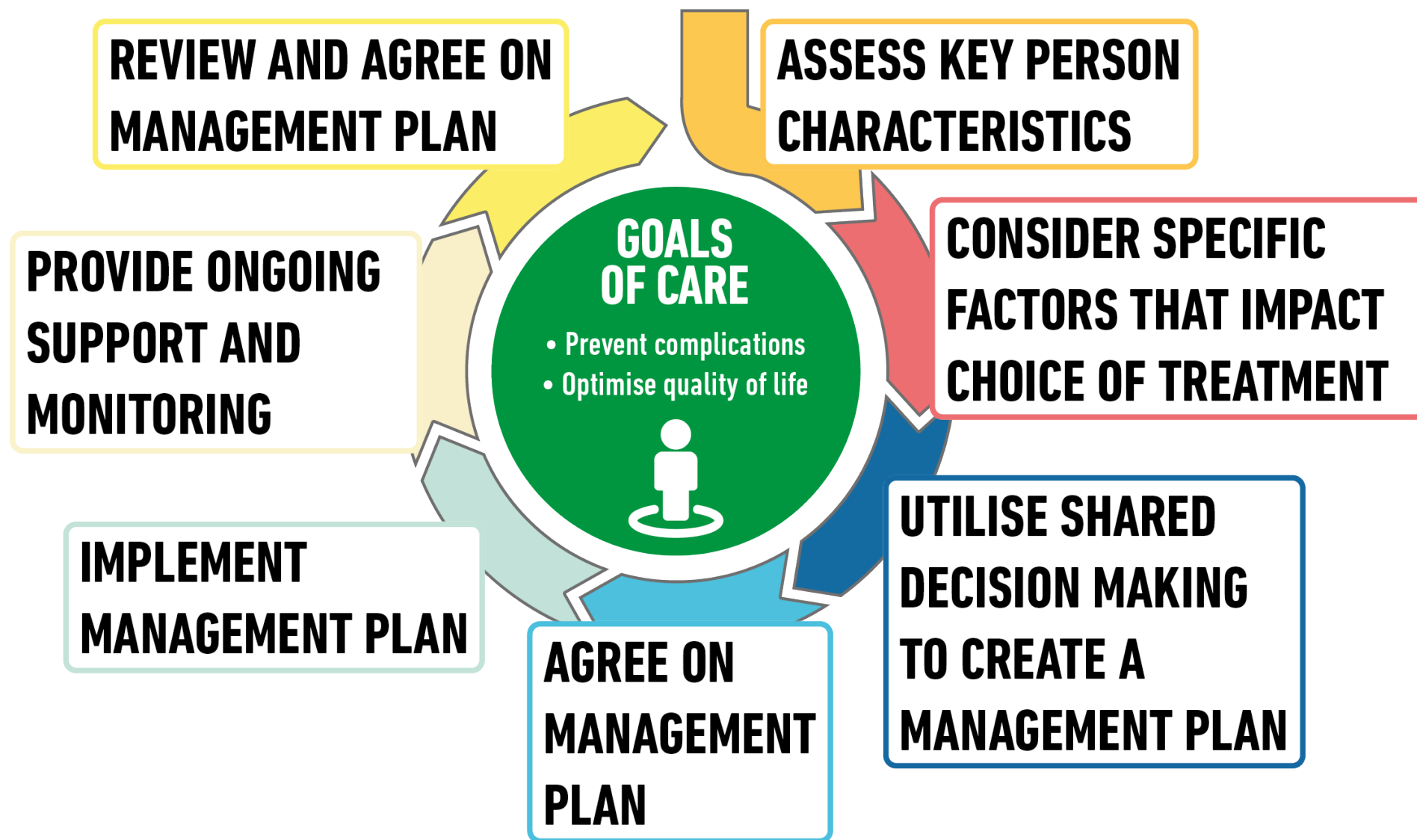
Putting the Person with Diabetes at the Centre of Care



Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, Rosas SE, Del Prato S, Mathieu C, Mingrone G, Rossing P, Tankova T, Tsapas A, Buse JB

Diabetes Care 2022; <https://doi.org/10.2337/dci22-0034>. *Diabetologia* 2022; <https://doi.org/10.1007/s00125-022-05787-2>.

FIGURE 1: DECISION CYCLE FOR PERSON-CENTRED GLYCAEMIC MANAGEMENT IN TYPE 2 DIABETES

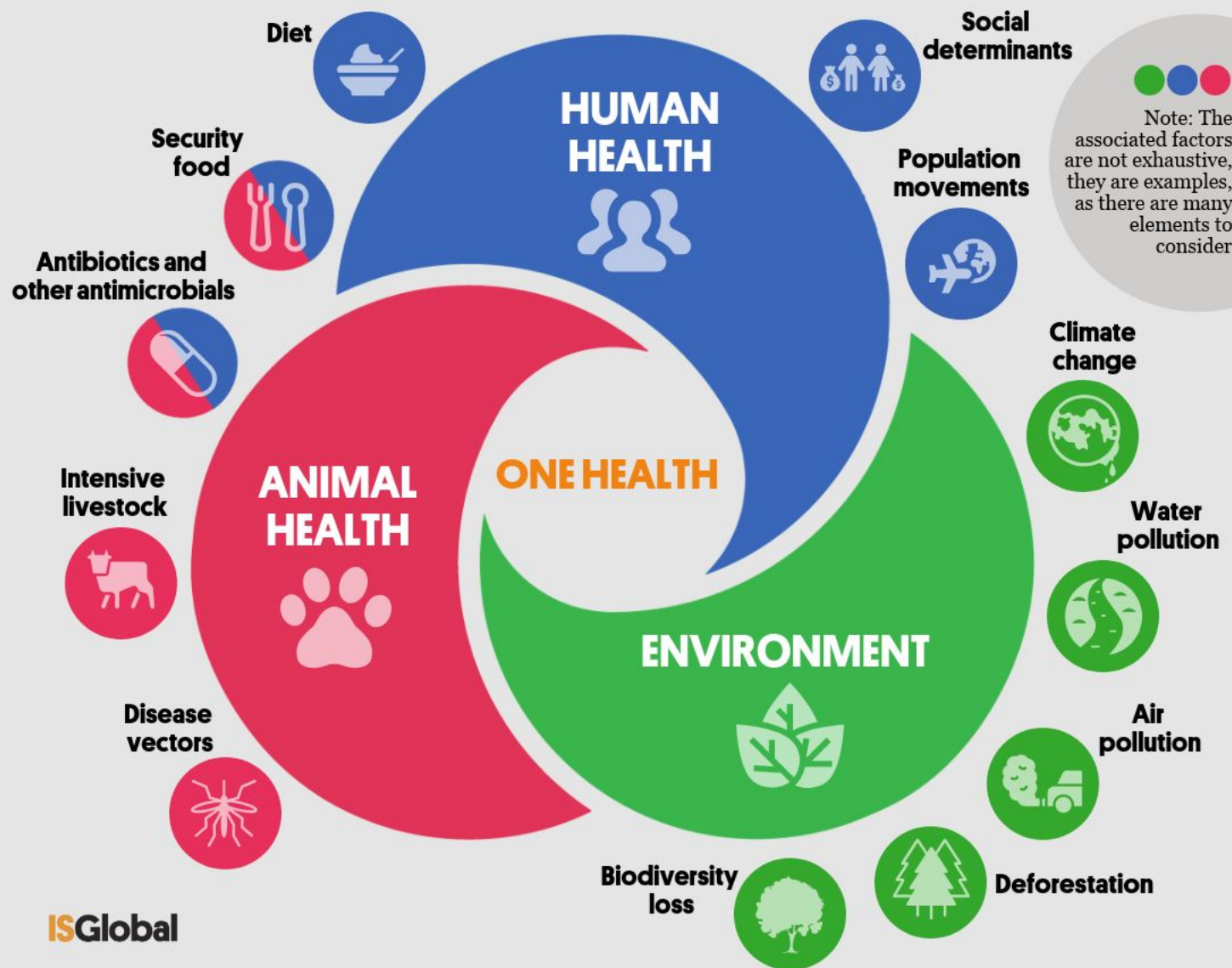


Non basta

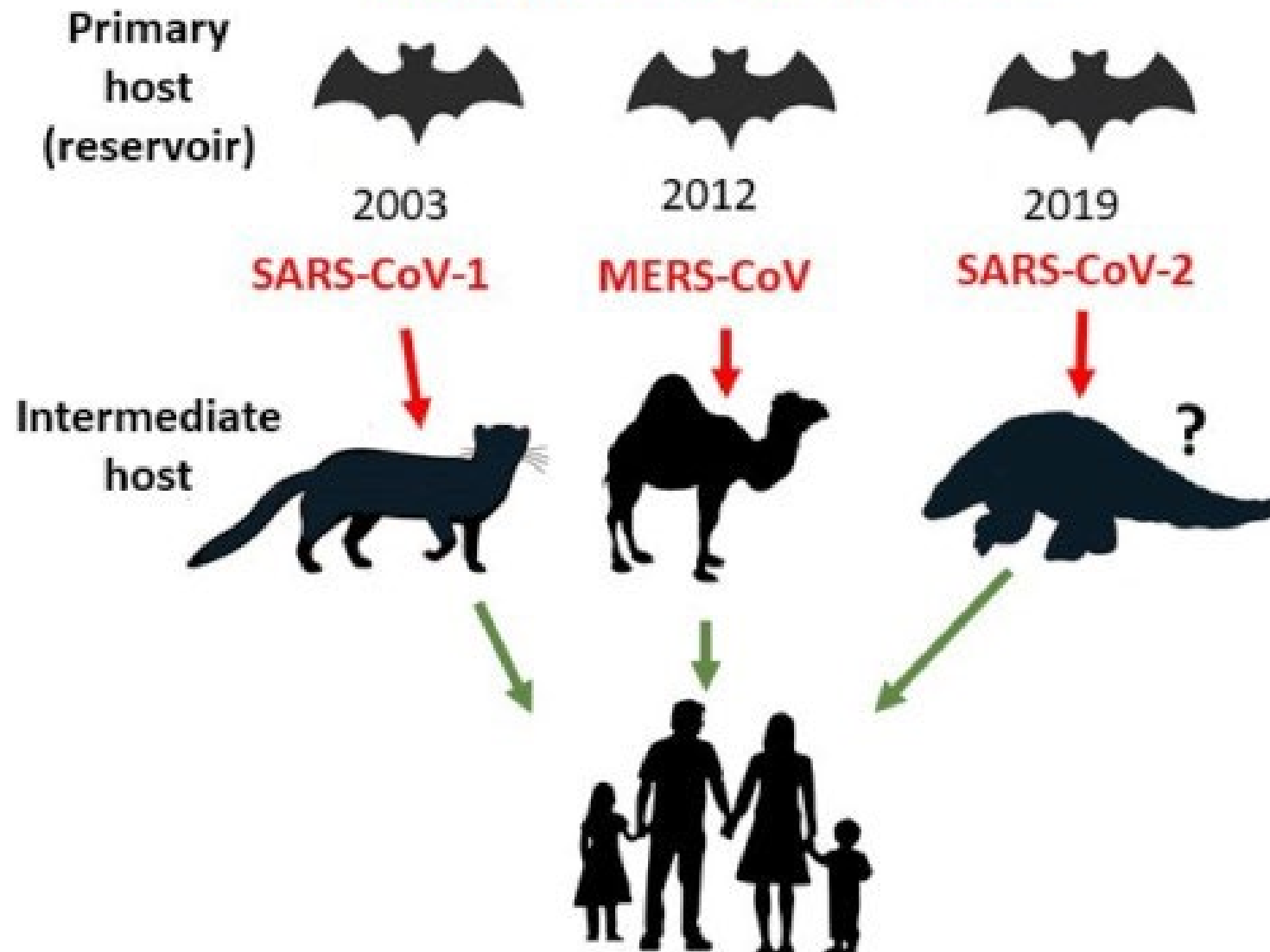


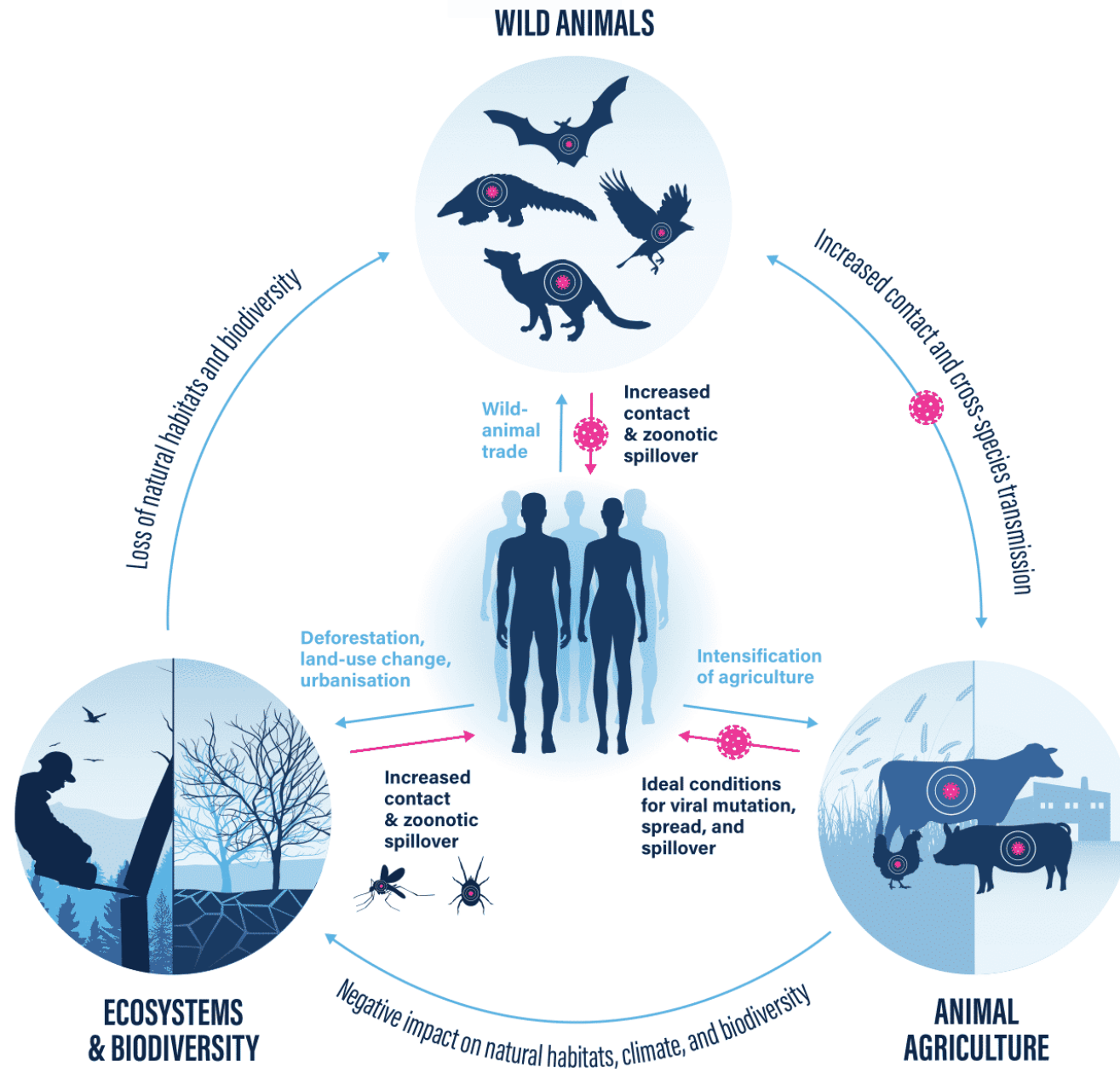
ONE HEALTH

Human health and animal health are interdependent.
At the same time, both depend on the environment.

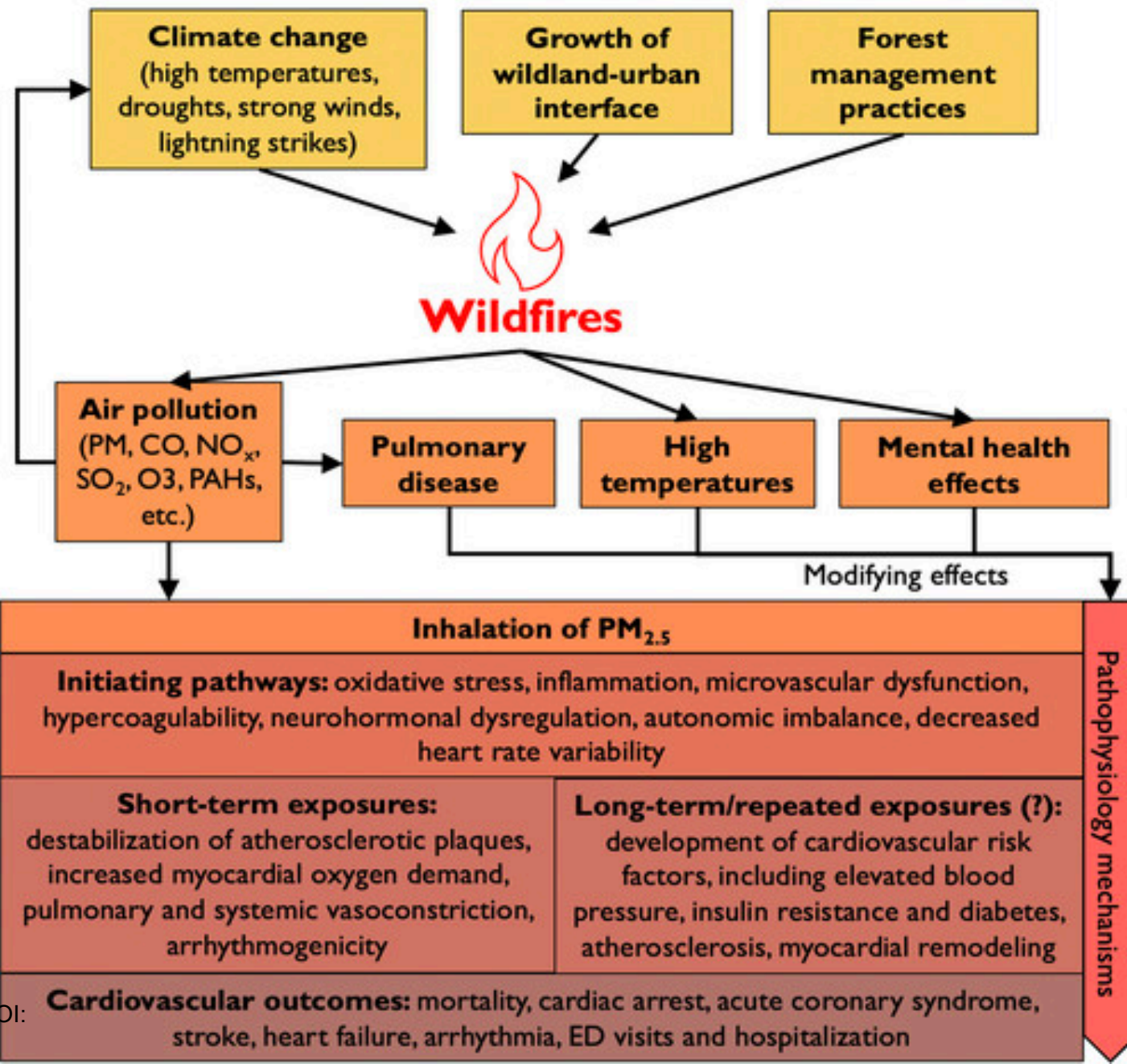


Highly pathogenic CoVs

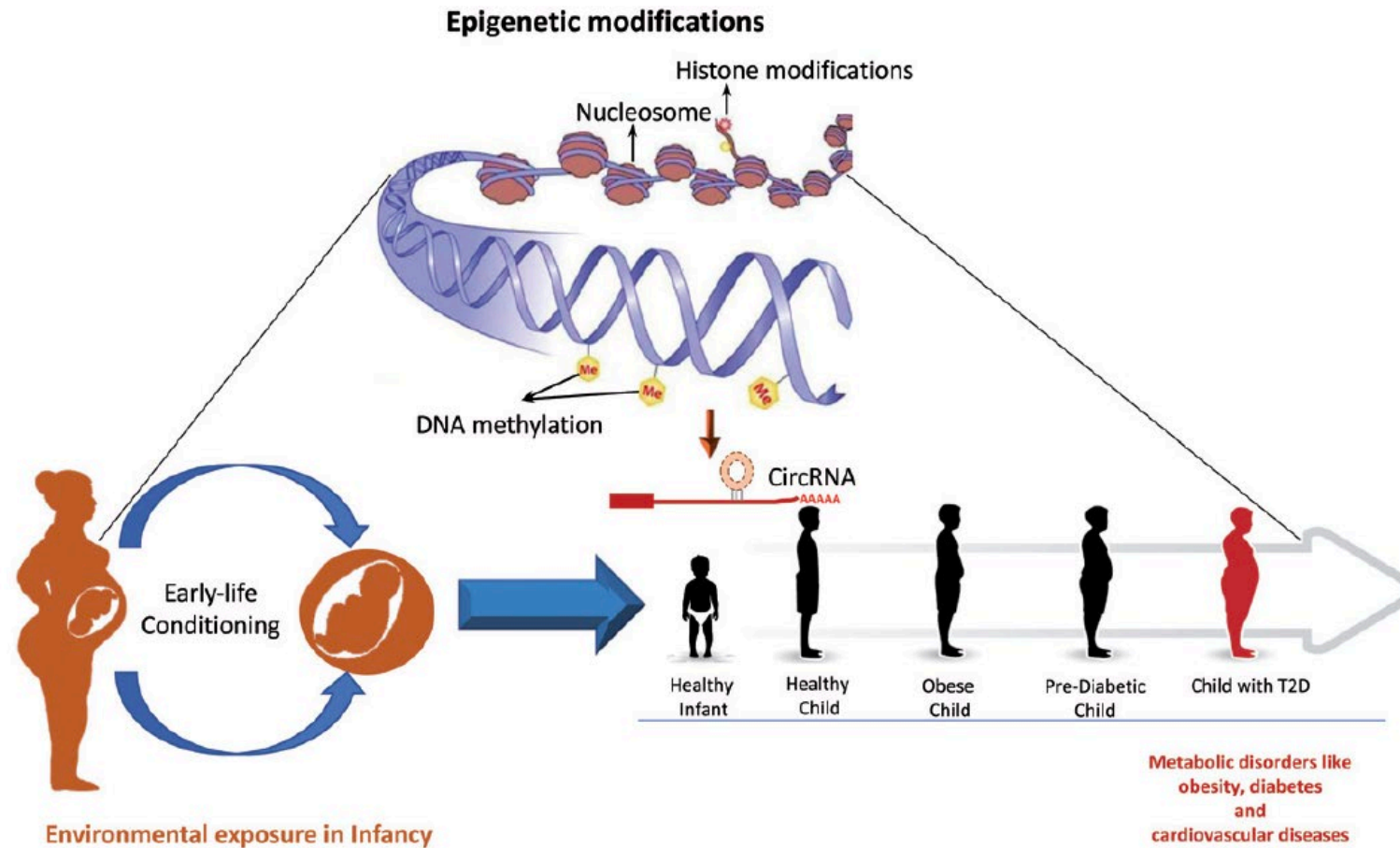




Pathways from wildfires to cardiovascular disease



Diabetes during pregnancy and epigenetic mechanisms influence the developmental origins of cardiometabolic disease





*Maternal
Effectors*

**Altered Maternal
Circulating Metabolites**
Hyperglycemia
Hyperlipidemia

**Altered Placental
Transport**
Glucose
Lipids
Amino Acids

**Altered Maternal
Hormones**
Insulin
Adipokines

EPIGENETIC PROCESSES



*Fetal
Adaptations*

Stem Cell Lineages
Increased adipocytes

Cell Proliferation
Beta-cell numbers

Organ Growth
Cardiomyocyte Hypertrophy

Metabolic Control
Mitochondrial Dysfunction

EPIGENETIC PROCESSES

POSTNATAL DIET/LIFESTYLE



*Adult
Phenotype*

Obesity

Hyperlipidemia

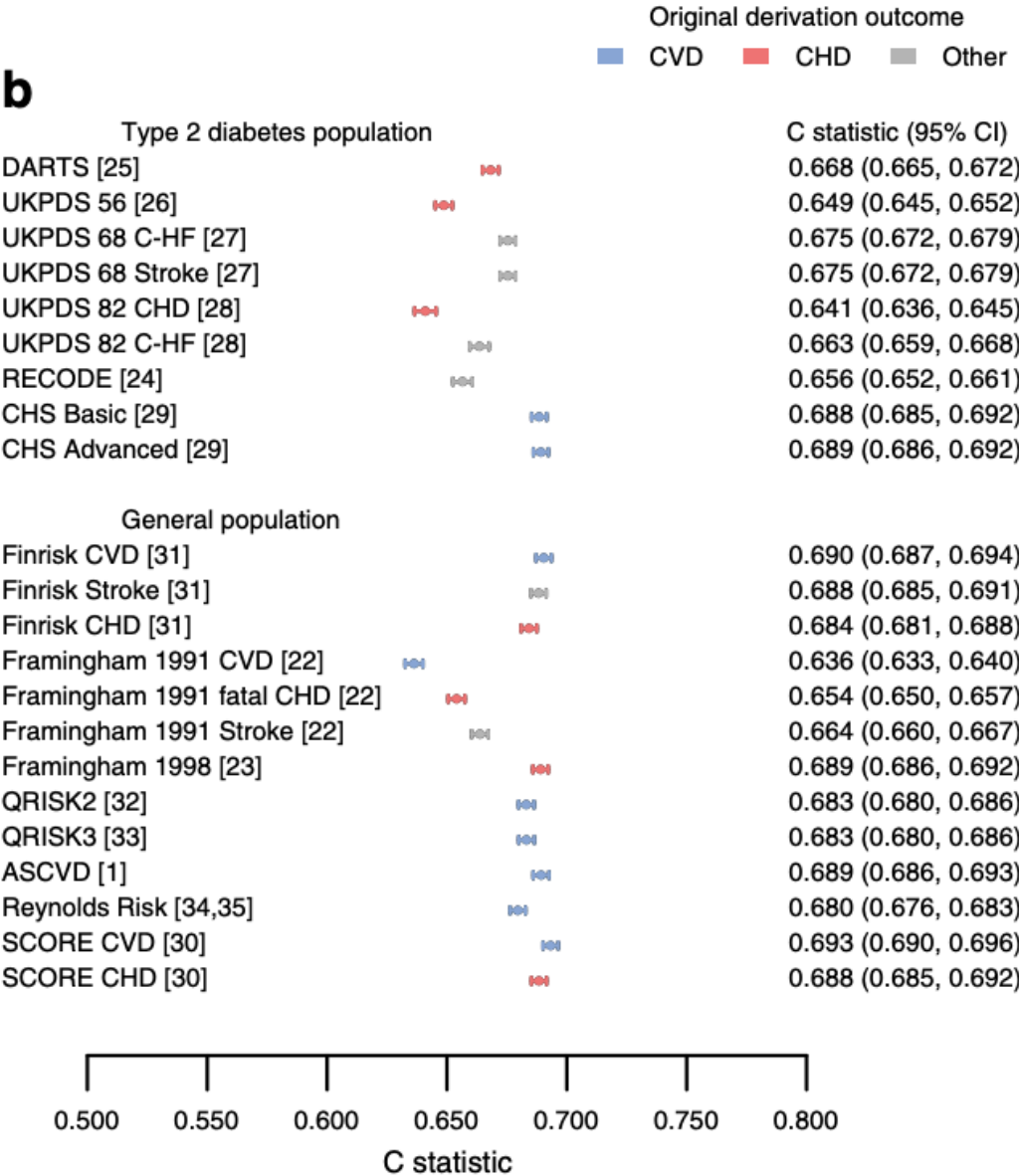
**Insulin
Resistance**

**Type 2
Diabetes**

**Cardiovascular
Dysfunction**

Inflammation

C statistics (discrimination) of 22 CVD risk prediction tools externally validated in a UK-based type 2 diabetes sample



Perché i calcolatori di rischio predicono male il rischio stesso?

Perché il rischio del paziente diabetico rimane elevato rispetto al non diabetico?

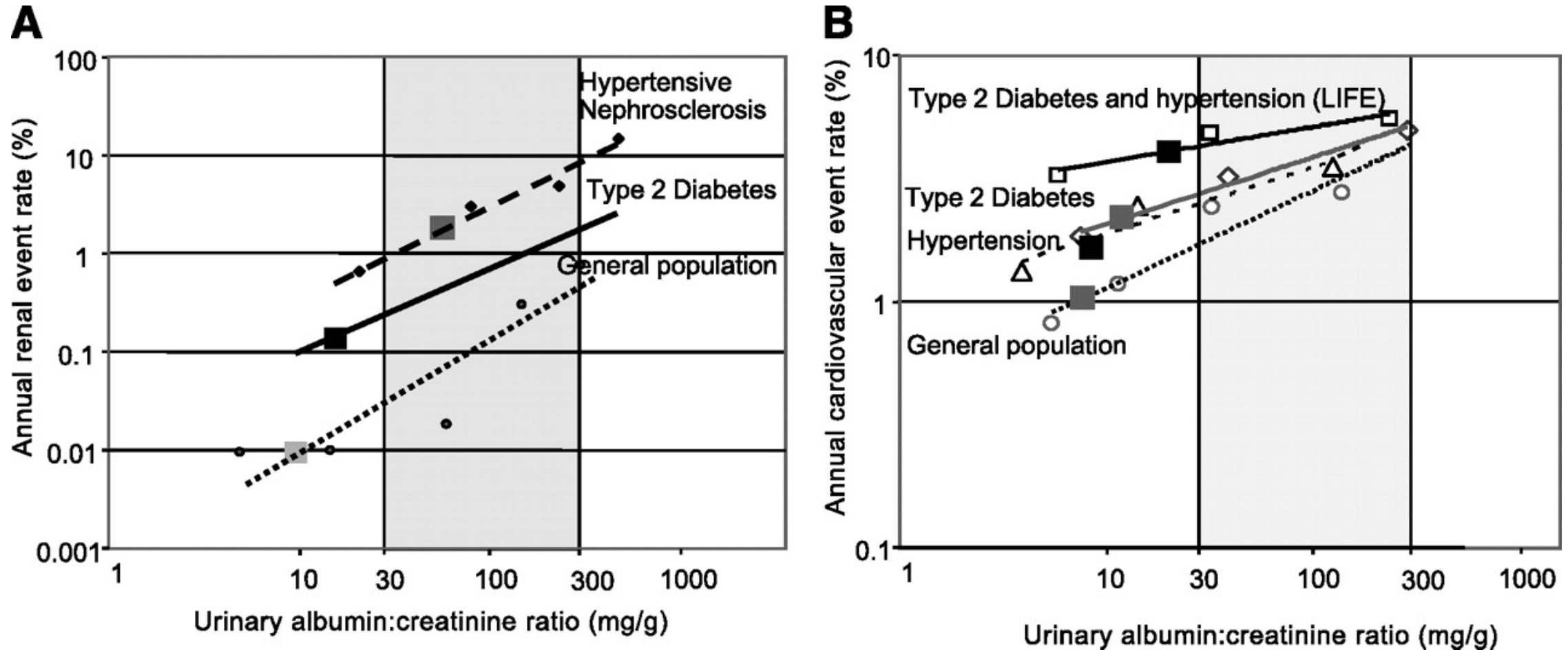
Perchè non riusciamo ad abbattere il rischio CV?

- **Presenza di Microangiopatia**
- **Presenza di Targets non adeguati**
- **Presenza di fattori di rischio identificabili ma non trattabili**

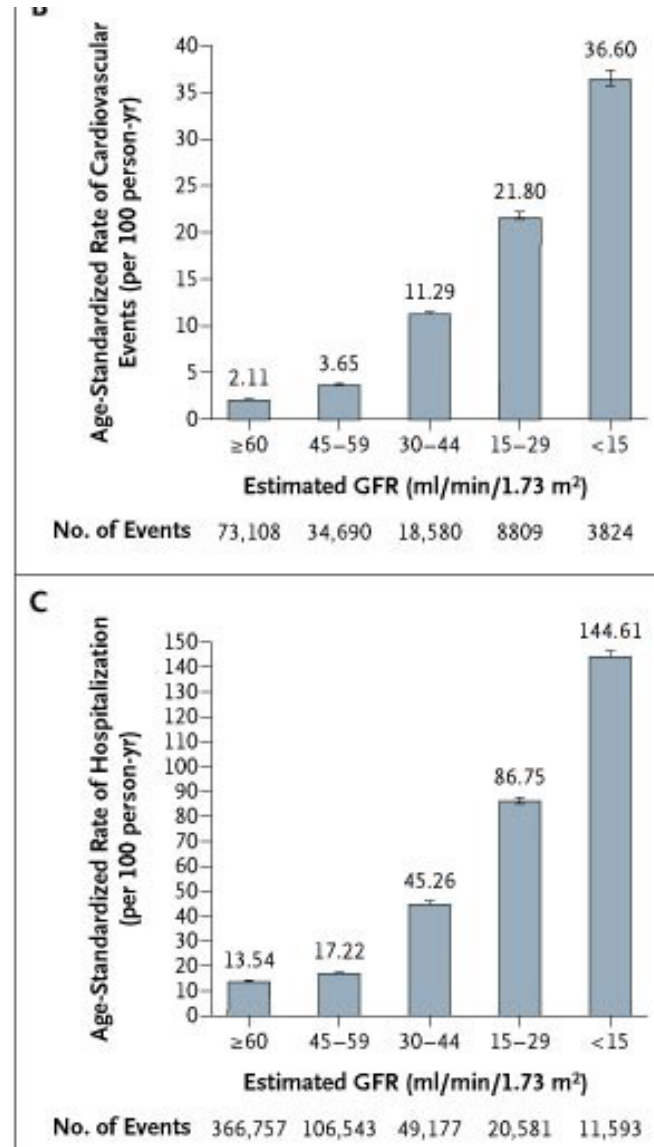
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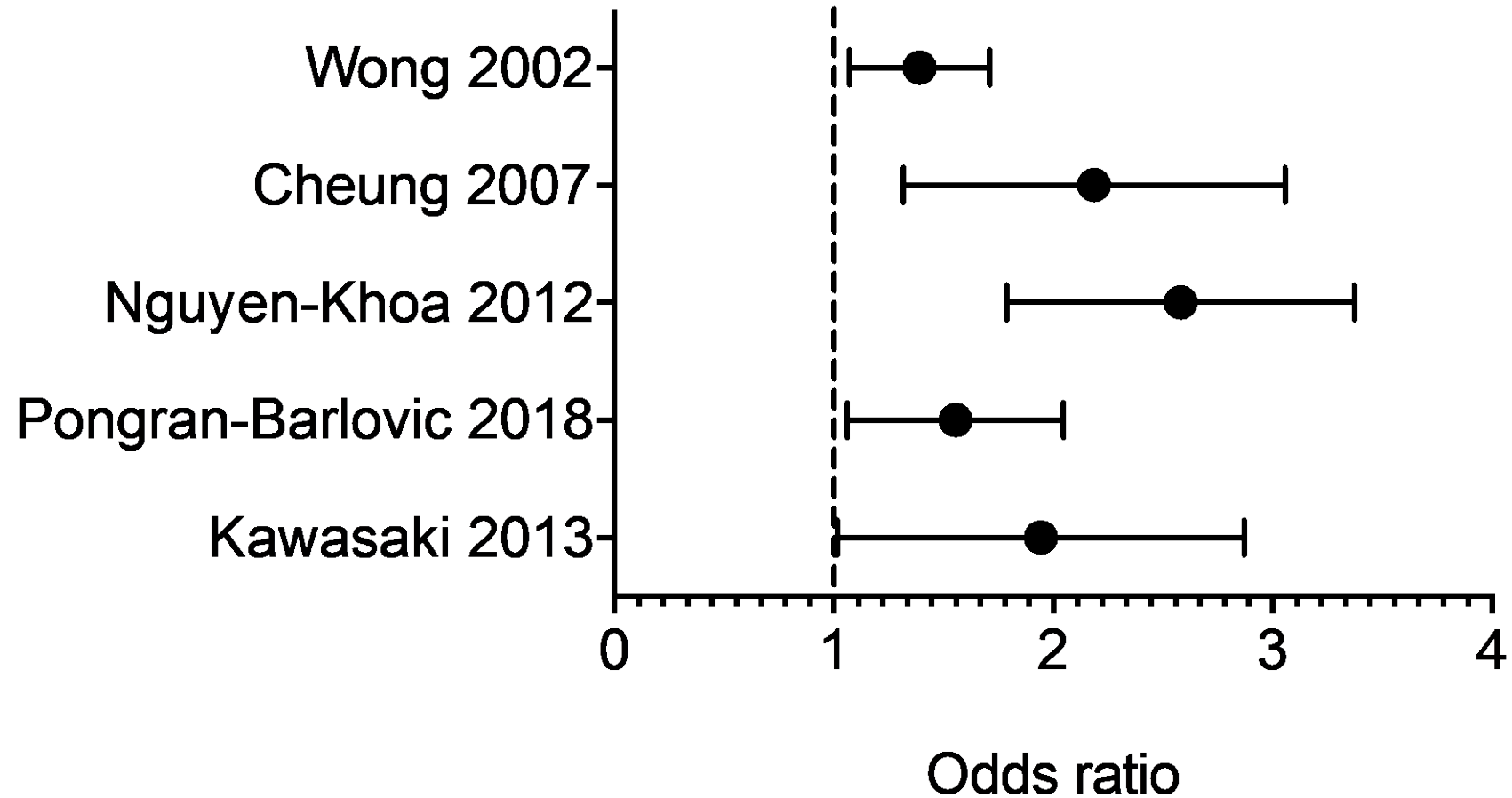
Association between albuminuria level and the risk for renal outcomes in different populations.



Age-Standardized Rates of Cardiovascular Events, and Hospitalization, according to Estimated GFR



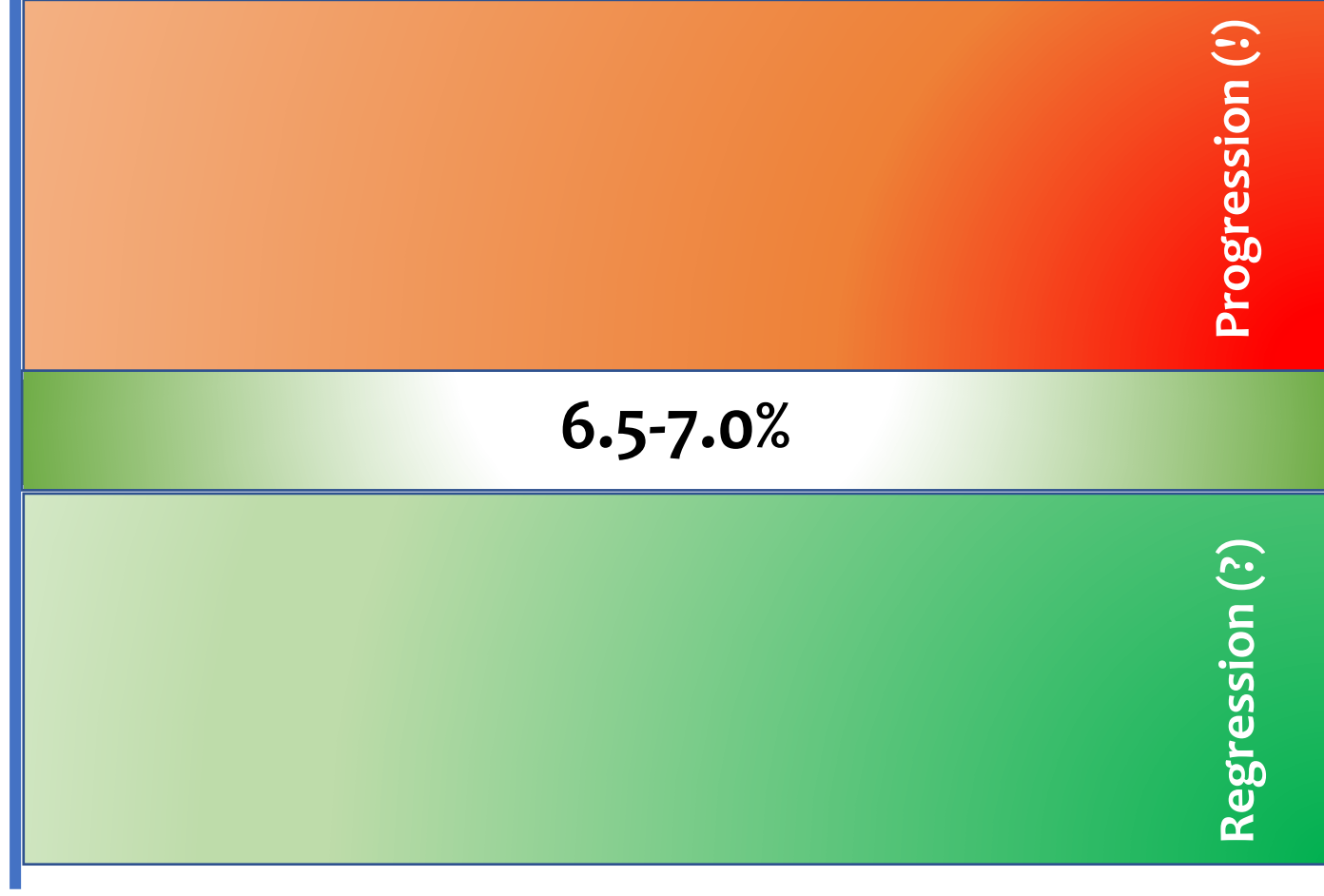
The prediction of diabetic retinopathy on incident CHD and HF



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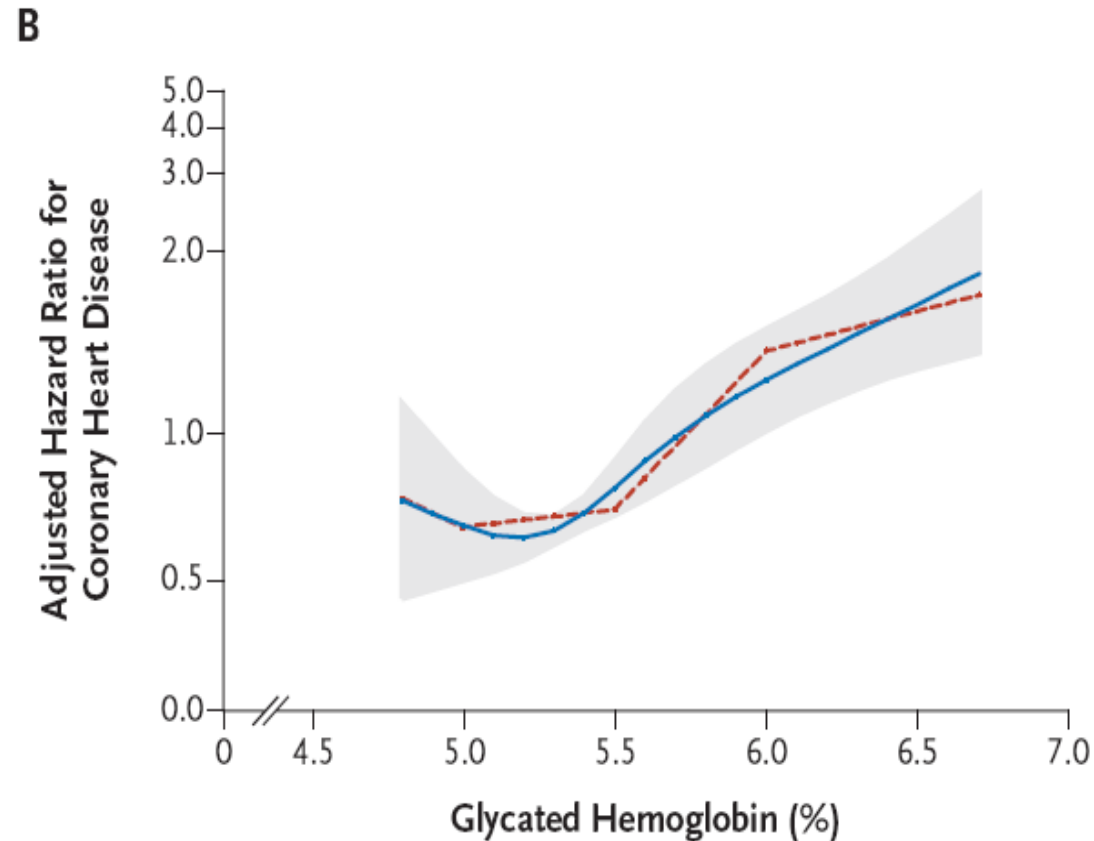
Complication burden



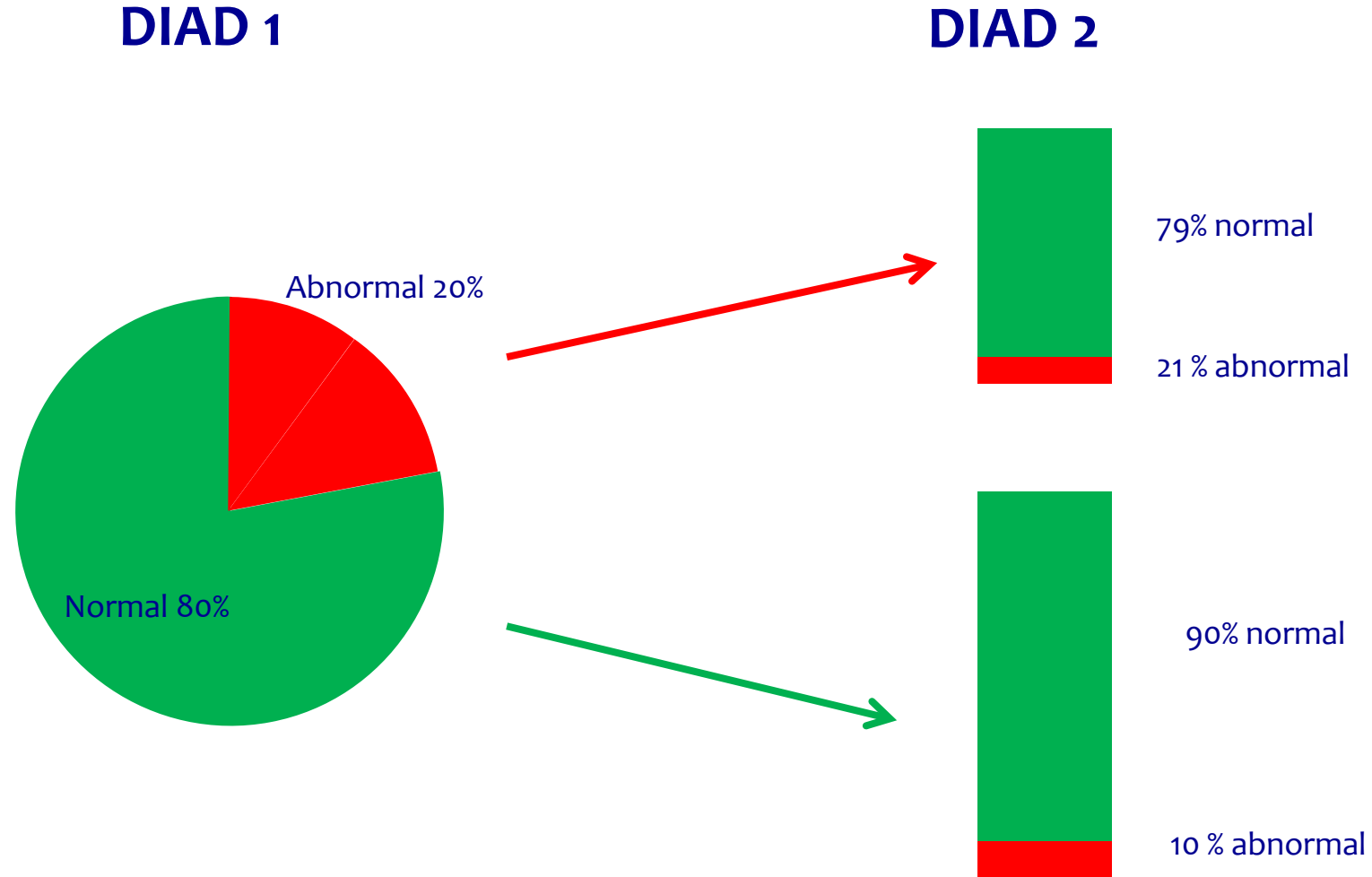
Glycated Hemoglobin, Diabetes, and Cardiovascular Risk in Non-diabetic Adults

Elizabeth Selvin, Michael Steffes, Hong Zhu, Kunihiro Matusushita, et al.

Data from 11,092 black and white subjects in the ARIC trial (Atherosclerosis Risk in Communities)
Median follow approximately 14 years.



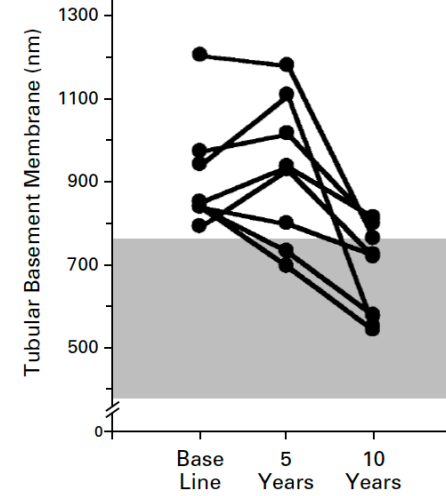
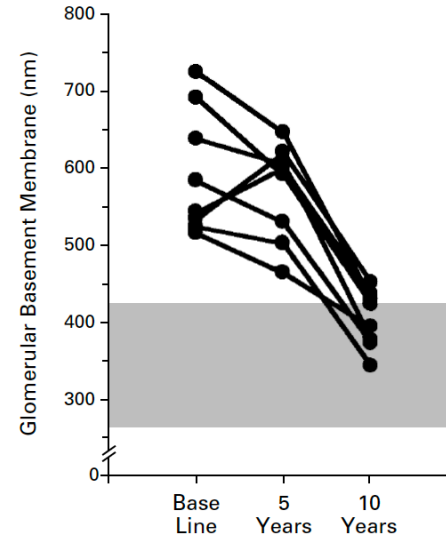
Detection of Silent Myocardial Ischemia in Asymptomatic Diabetic Subjects: the DIAD Study.



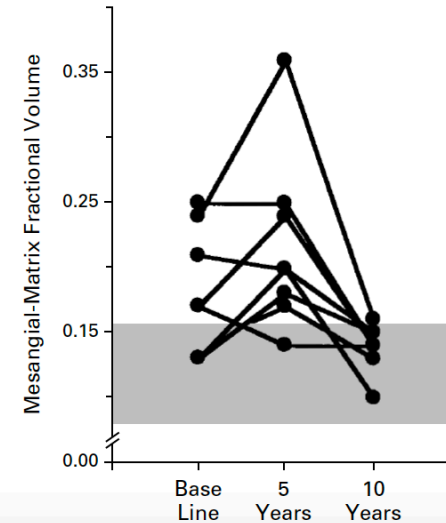
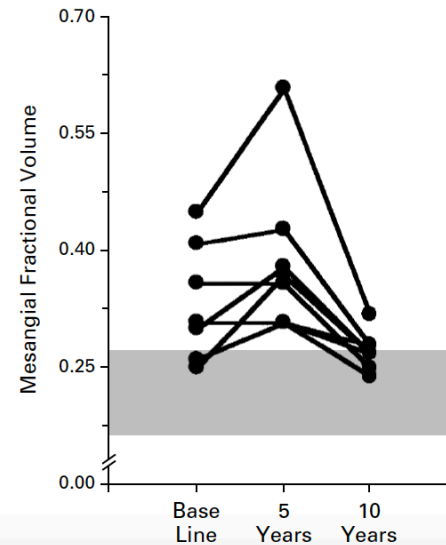
REVERSAL OF LESIONS OF DIABETIC NEPHROPATHY AFTER PANCREAS TRANSPLANTATION

PAOLA FIORETTO, M.D., PH.D., MICHAEL W. STEFFES, M.D., PH.D., DAVID E.R. SUTHERLAND, M.D., PH.D.,
FREDERICK C. GOETZ, M.D., AND MICHAEL MAUER, M.D.

HbA1c= $8.7 \pm 1.5\%$



HbA1c= $5.5 \pm 0.7\%$

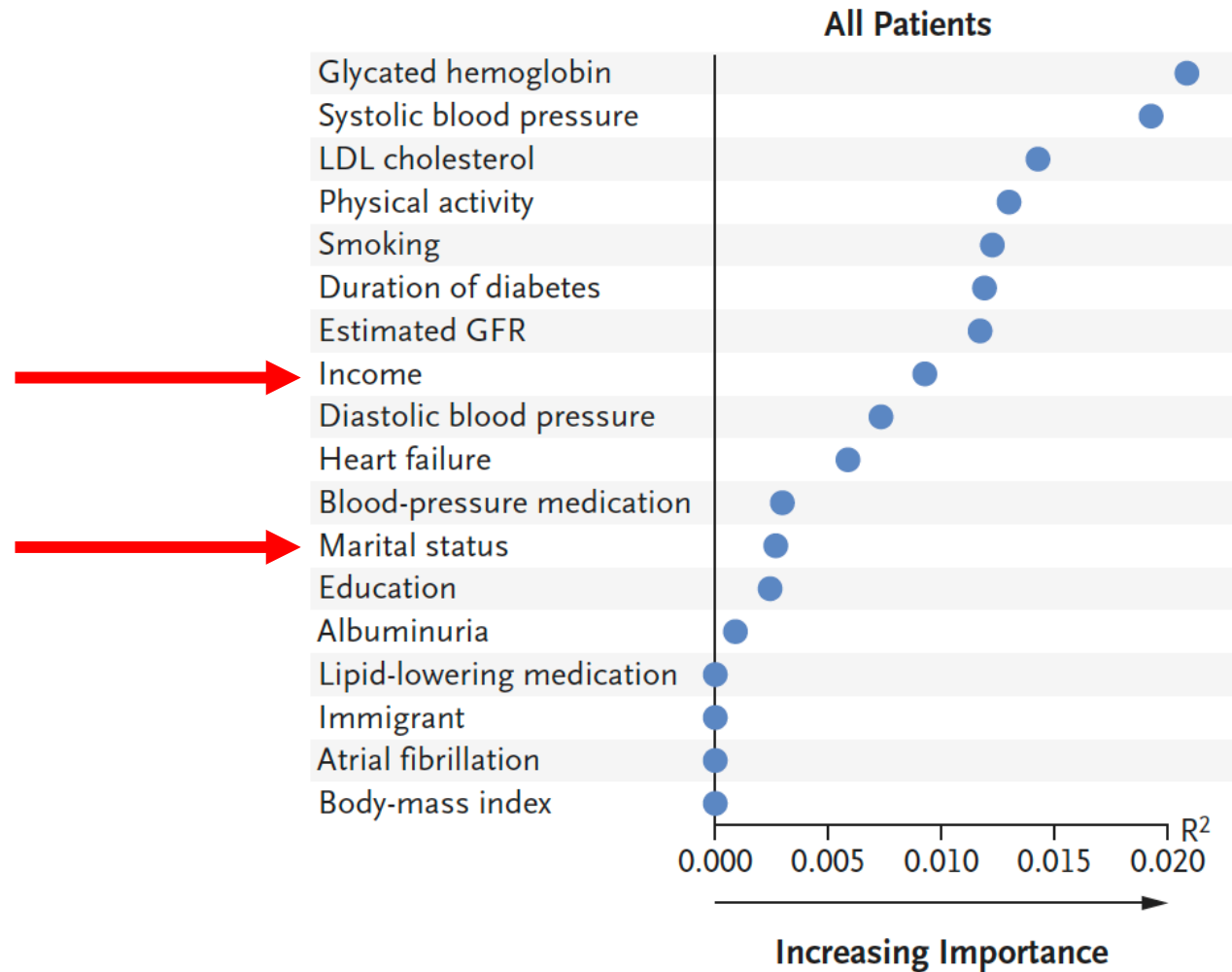


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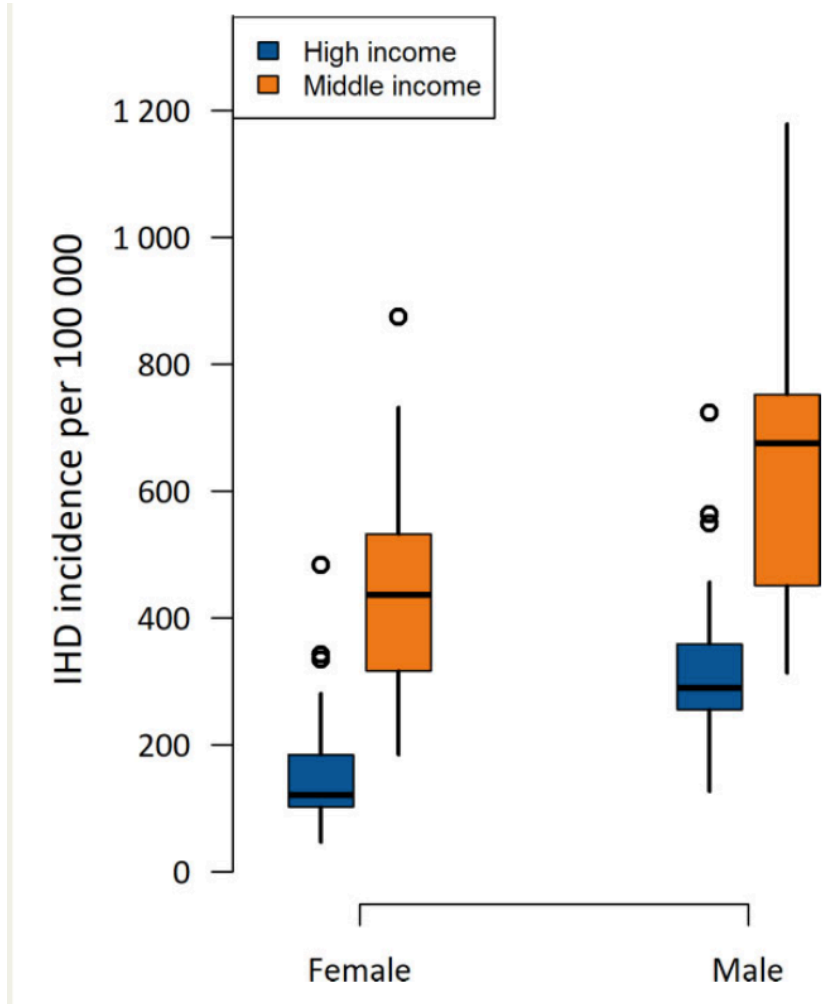
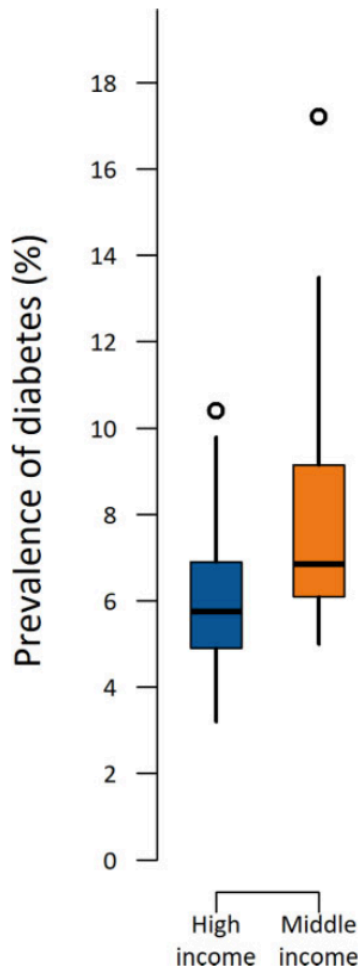
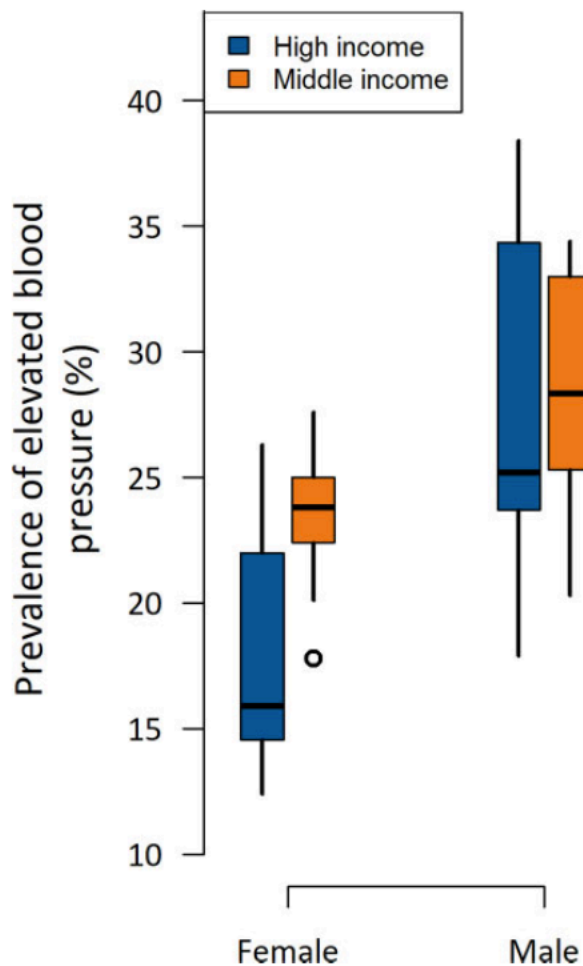
Relative Importance of Risk Factors for Predicting Death from Acute Myocardial Infarction, among Patients with Type 2 Diabetes

B Acute Myocardial Infarction





European Society of Cardiology: cardiovascular disease statistics 2021



Social Determinants of Health



Economic Stability



Neighborhood &
Built Environment



Education Access
& Quality



Healthcare Access
& Quality



Social & Community
Context

Chronic Psychosocial and Environmental Stressors

Low Socioeconomic
Status

Neighborhood Violence

Limited Healthcare

Early Childhood Adversity

Discrimination

Unsafe or Insecure Housing

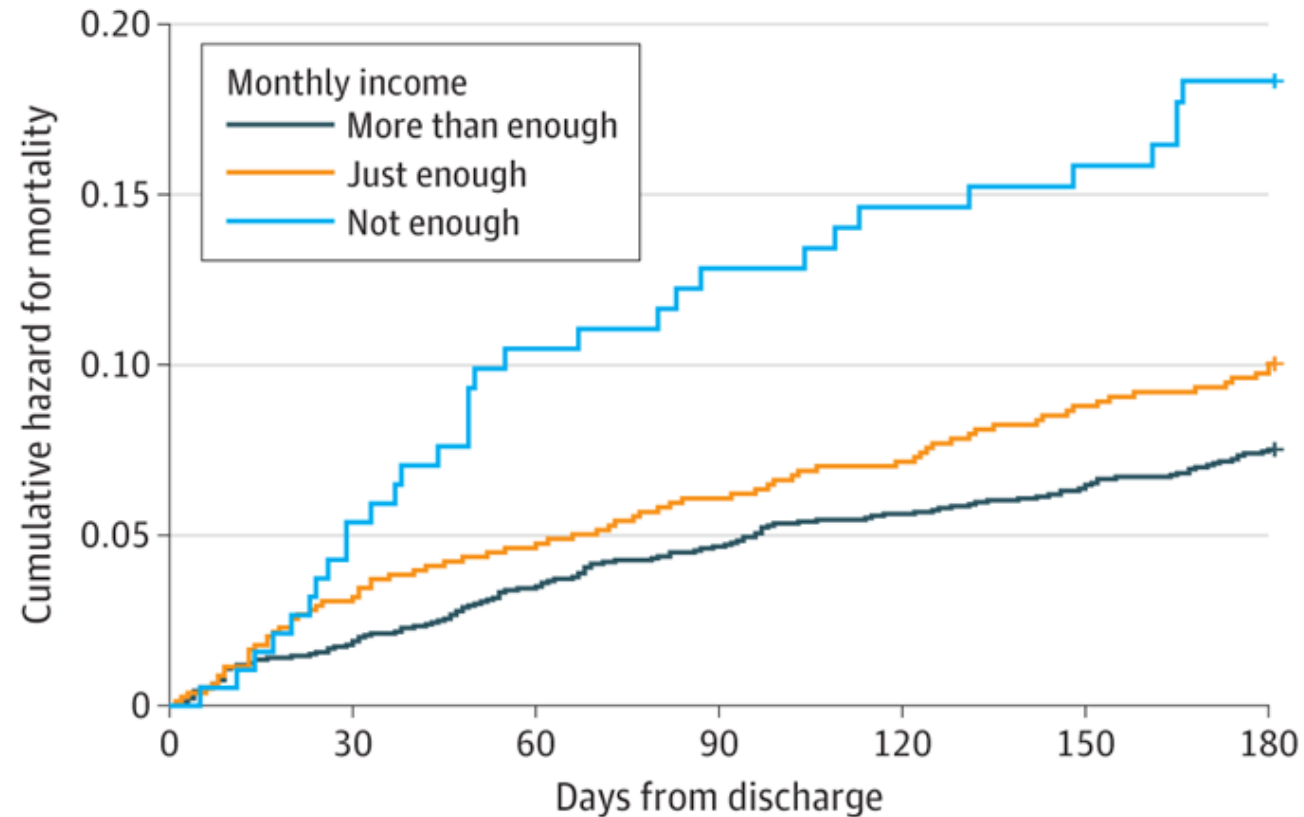
Transportation Noise Exposure

Food Insecurity

Social Isolation

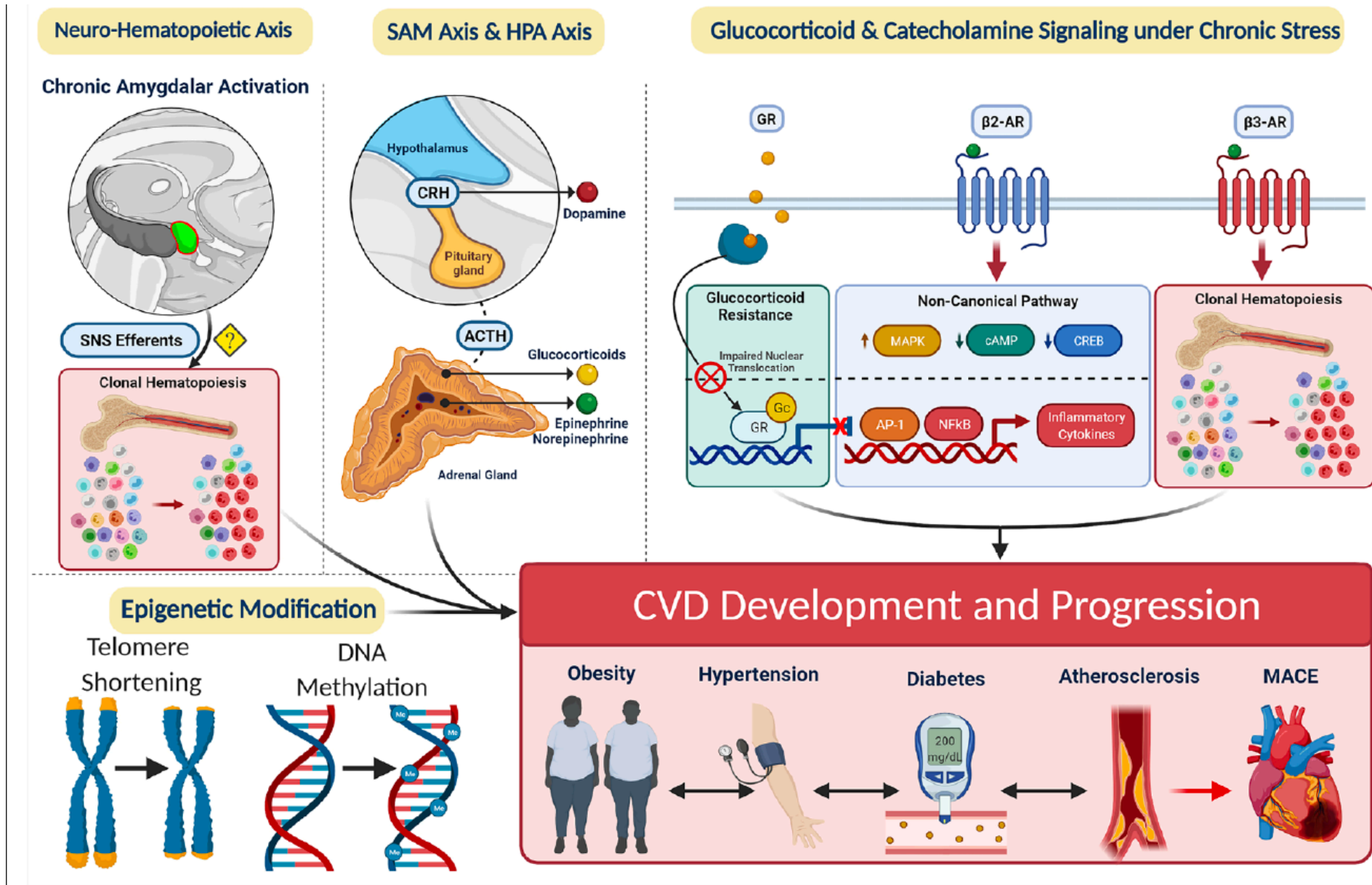
Pathway to Chronic Inflammation

Mortality Rates Across 180 Days After Acute Myocardial Infarction by Financial Strain Status



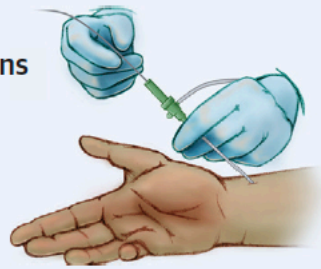
No. at risk

More than enough	1864	1831	1801	1779	1762	1749	1730
Just enough	796	772	760	749	741	729	722
Not enough	191	181	172	168	165	163	159



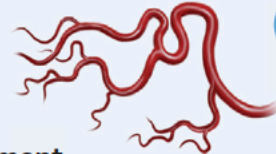
↑ Higher risk of vascular access-site complications and periprocedural bleeding

Recommendations:
Preferential use of radial artery access



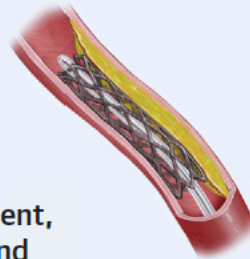
↑ Smaller vessel size, more tortuosity, more prone to dissection and perforation

Recommendations:
Careful stent sizing, deployment and utilization of atherectomy devices



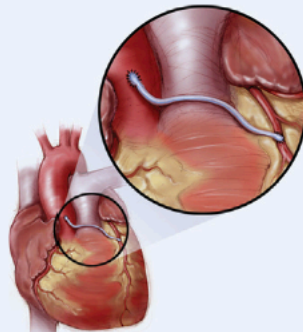
↑ Higher risk of target-lesion and target-vessel revascularization

Recommendations:
Optimal stent sizing and deployment, use of intracoronary physiology and imaging to guide stent implantation



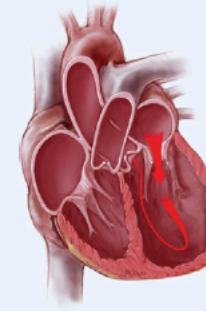
↑ Higher risk of operative mortality following CABG

Recommendations:
Earlier access to surgery-technical expertise of the surgeon may be important



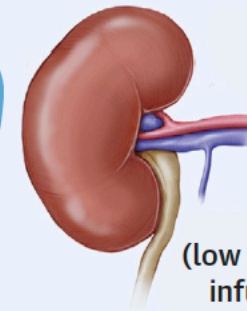
↑ Higher risk of heart failure and development of LV dysfunction after MI

Recommendations:
Increase recognition of symptoms of MI in women, enhance access to care, reduce symptom-to-device time



↑ Higher risk of acute kidney injury and contrast-induced nephropathy

Recommendations:
Routine implementation of nephroprotective strategies (low volume of contrast, crystalloid infusions, radial artery access and discontinuation of nephrotoxic drugs)



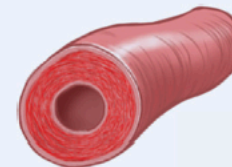
↓ Underutilization of GDMT in women as well as potent P2Y12-receptor inhibitors

Recommendations:
Appropriate use of GDMT and antithrombotic therapies both in the peri- and post-procedural period



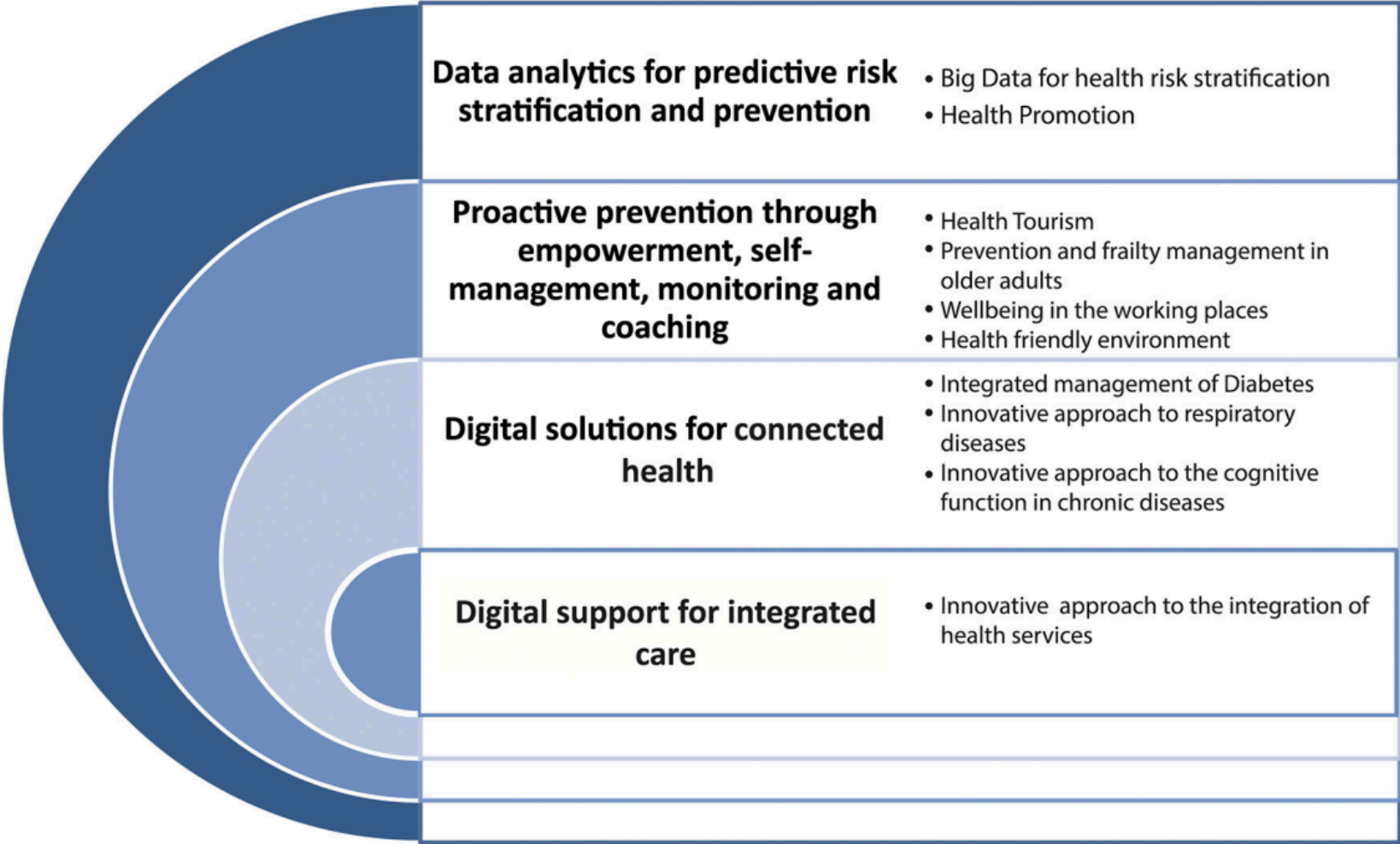
↓ Underutilization of multiple arterial grafting

Recommendations:
Preferential use of radial artery grafting



“One Health” Approach for Health Innovation and Active Aging in Campania (Italy)

Vincenzo De Luca¹, Giovanni Tramontano², Luigi Riccio³, Ugo Trama³, Pietro Buono³, Mario Losasso⁴, Umberto Marcello Bracale¹, Giovanni Annuzzi⁵, Rosa Zampetti⁶, Francesco Cacciatore⁷, Giannamaria Vallefucoco⁸, Alberto Lombardi⁹, Anna Marro¹⁰, Mariarosa Anna Beatrice Melone¹¹, Cristina Ponsiglione¹², Maria Luisa Chiusano¹³, Giancarlo Bracale¹⁴, Gaetano Cafiero¹⁵, Aurelio Crudeli¹⁶, Carmine Vecchione¹⁷, Maurizio Tagliatela¹⁸, Donatella Tramontano¹⁹, Guido Iaccarino²⁰, Maria Triassi¹, Regina Roller-Wirnsberger²¹, Jean Bousquet²² and Maddalena Illario^{1*}



La Maggioranza De-Digitalizzata

Il Rischio CV

