

University of Dundee

## Repurposing metformin for cardiovascular disease

Rena, Graham; Lang, Chim C.

*Published in:*  
Circulation

*DOI:*  
[10.1161/CIRCULATIONAHA.117.031735](https://doi.org/10.1161/CIRCULATIONAHA.117.031735)

*Publication date:*  
2018

*Licence:*  
No Licence / Unknown

*Document Version*  
Peer reviewed version

[Link to publication in Discovery Research Portal](#)

*Citation for published version (APA):*

Rena, G., & Lang, C. C. (2018). Repurposing metformin for cardiovascular disease. *Circulation*, 137(5), 422-424. <https://doi.org/10.1161/CIRCULATIONAHA.117.031735>

### General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from Discovery Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Trial (NCT number)	Patient group	Enrolled patients; duration & dose of metformin	Publication date	Selected outcome measures
<b>Jadhav and co-workers</b>	Cardiac syndrome X	33; up to 500mg BID for 8 weeks	2006	Improved endothelium-dependent microvascular responses;  Stress Test: maximal ST-segment depression,  Duke score and chest pain incidence
<b>TAYSIDE (NCT00473876)</b>	Chronic HF with insulin resistance	62; 1000mg BID for 4 months	2012	No effect on primary endpoint of peak VO <sub>2</sub> .  Improved pre-determined secondary endpoints of VE/VCO <sub>2</sub> , fasting insulin resistance index and decreased body weight
<b>CAMERA (NCT00723307)</b>	Coronary artery disease with central obesity	173; 850mg BID for 18 months	2014	No effect on primary endpoint of mean distal cIMT

	already taking statins			
<b>GIPS III (NCT01217307)</b>	STEMI without diabetes	380; 500mg BID for 4 months	2014	No effect on the primary endpoint of LVEF
<b>REMOVAL (NCT01483560)</b>	Type 1 diabetes	428; 1000mg BID for 3 years	2017	No effect on the primary endpoint of mean far-wall cIMT. Improvement in the secondary/tertiary endpoints of HbA <sub>1c</sub> ; LDL cholesterol; eGFR and maximal cIMT.
<b>MET- REMODEL (NCT01483560)</b>	Normotensive with insulin resistance and coronary artery disease	64; 2g daily for one year	2018 (expected end of study)	Primary: LV mass index Secondary: Fasting insulin resistance index; obesity; LV size, function and improvement in endothelial function
<b>VA IMPACT (NCT02915198)</b>	Pre-diabetes and established atherosclerotic	7868; up to 2g daily for 4.5 years	2024 (expected end of study)	Primary: Time to non-fatal myocardial infarction;

	cardiovascular disease			stroke; hospitalization for unstable angina; or symptom-driven coronary revascularization. Secondary: Cumulative/recurrent incidence of primary endpoints
--	---------------------------	--	--	---

**Table 1 Summary of CVD outcomes in selected repurposing trials for metformin.**

Abbreviations: BID is twice daily. HF is heart failure. VO2 is oxygen consumption. VE/VC02 is minute ventilation – carbon dioxide production ratio. cIMT is carotid intimal media thickness. STEMI is ST-segment elevation myocardial infarction. LVEF is Left ventricular ejection fraction. HbA1c is glycated hemoglobin. LDL is low-density lipoprotein. eGFR is estimated glomerular filtration rate. LV is left ventricle