

Metformin Therapy to Inhibit Progression in Patients with Abdominal Aortic Aneurysm (MetAAA Trial)

Johannes Klopfa, Andreas Scheuba^a, Annika Brandau^a, Hubert Hayden^a, Rüdiger Schernthaner^b, Christine Brostjan^a, Christoph Neumayer^a, Wolf Eilenberg^a

Medical University of Vienna, Vienna General Hospital, Vienna, Austria

^aDepartment of Surgery: Division of Vascular Surgery and Surgical Research Laboratories

^bDepartment of Biomedical Imaging and Image Guided Therapy: Division of Cardiovascular and Interventional Radiology

Background

An abdominal aortic aneurysm (AAA), defined as a degenerative enlargement of the (mostly infrarenal) aorta to ≥ 30 mm in diameter, can rapidly lead to death in the event of a sudden vessel rupture. Currently there is no approved drug therapy for abdominal aortic aneurysms. Previous studies (retrospective analyses) have shown that diabetic patients treated with metformin show slower progression rates and are less likely to develop an AAA than non-diabetic patients. This effect is not observed with other anti-diabetic drugs. Thus, metformin seems to be a promising drug to limit AAA progression.

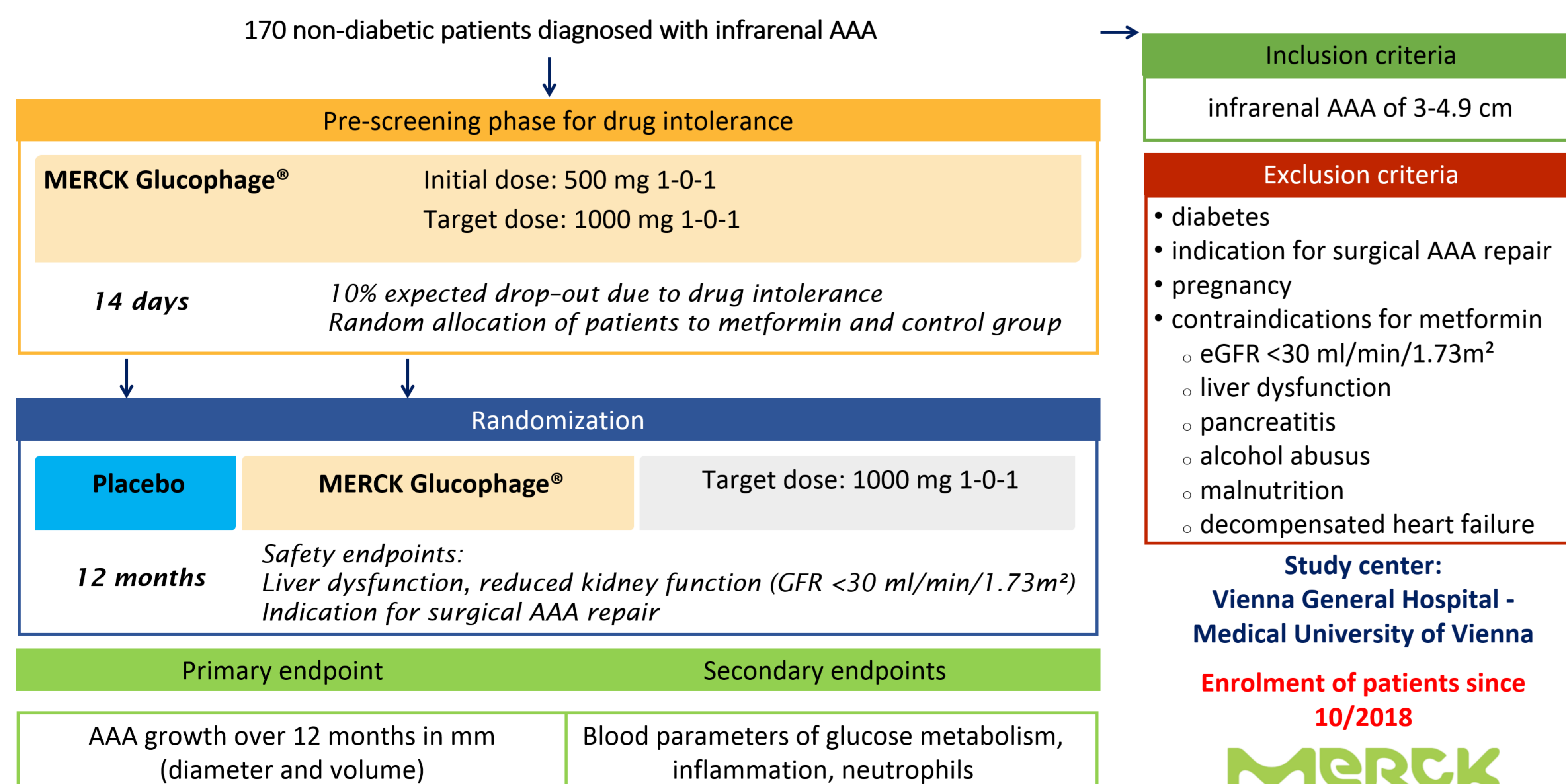
Fujimura N. et al. JVS 2016
Golledge J. et al. BJS 2017
Golledge J. et al. EJVES 2019
Itoga N.K. et al. JVS 2019
Yu X. et al. Heart 2019

Hypothesis

Metformin may provide a conservative treatment option for non-diabetic AAA patients
→ **Vienna MetAAA Trial**
prospective, double-blind, randomized and placebo-controlled safety and efficacy study

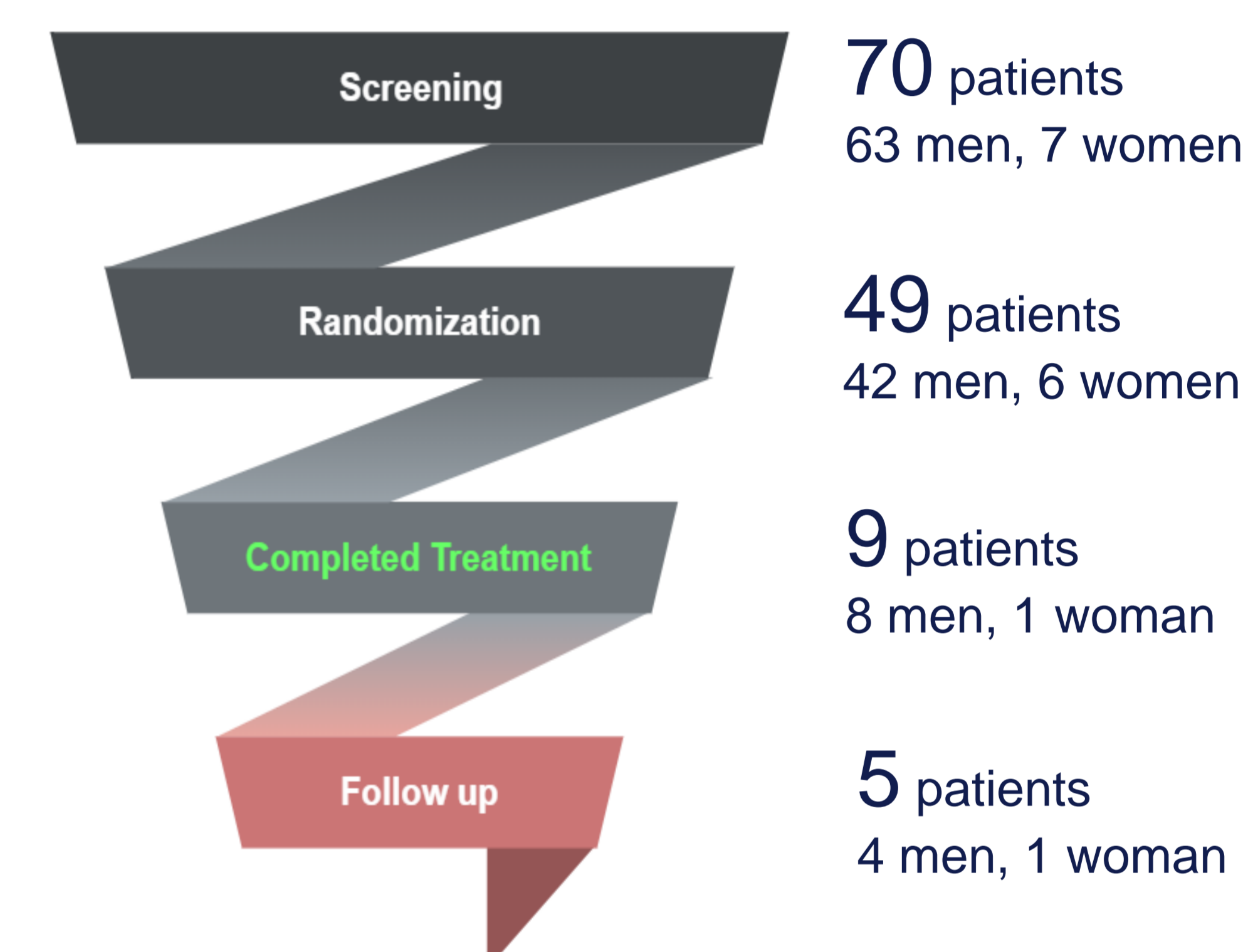
Study Design

The MetAAA trial is currently conducting patient recruitment and includes **1 year of metformin therapy** and 6 months of follow-up.



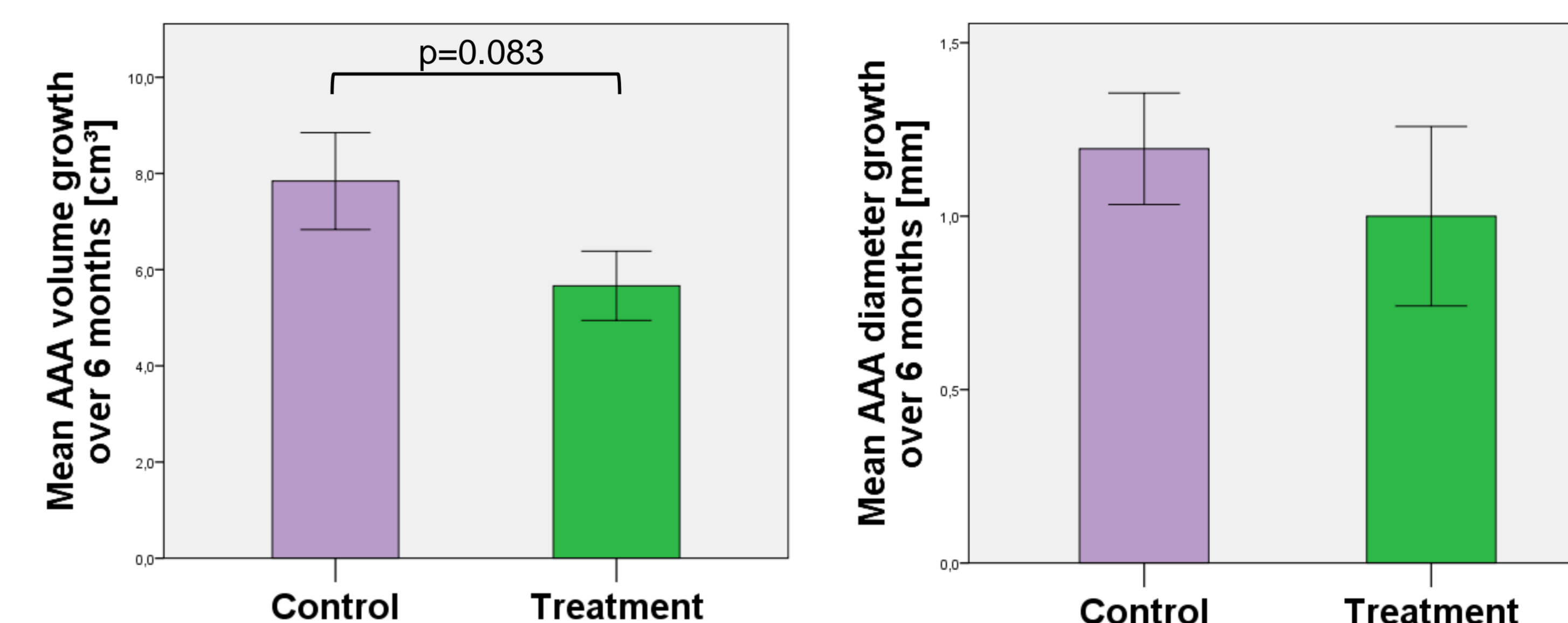
Current Status

- 21 screening dropouts: mostly gastrointestinal side effects or low kidney function
- 7 treatment dropouts: AAA rupture, death, autoimmune disease, withdrawn consent, unspecific side effects
- 6 SAE:
1 AAA rupture
2 deaths (cardiac arrest, influenza)
3 non-elective hospitalizations (resolved w/o sequelae)



Preliminary Data Analysis

12 MetAAA trial patients (blinded) vs 36 historic AAA controls (untreated); matched for baseline AAA diameter (± 1.6 mm)



Conclusion & Outlook

- Based on the clinical evidence with diabetic AAA patients, we have initiated a prospective, randomized, double-blind, placebo-controlled trial to demonstrate the efficacy of add-on metformin therapy in non-diabetic AAA patients.
- We aim to establish the first medical treatment to inhibit progression of AAA and thereby possibly reduce the need for major surgery or risk of rupture with the associated mortality, morbidity and cost.