

University of Dundee

**Circulating plasma concentrations of ACE2 in men and women with heart failure and effects of renin-angiotensin-aldosterone-inhibitors**

Sama, Izhah E.; Ravera, Alice; Santema, Bernadet T.; van Goor, Harry; ter Maaten, Jozine M.; Cleland, John G. F.

*Published in:*  
European Heart Journal

*DOI:*  
[10.1093/eurheartj/ehaa373](https://doi.org/10.1093/eurheartj/ehaa373)

*Publication date:*  
2020

*Document Version*  
Peer reviewed version

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

*Citation for published version (APA):*

Sama, I. E., Ravera, A., Santema, B. T., van Goor, H., ter Maaten, J. M., Cleland, J. G. F., Rienstra, M., Friedrich, A. W., Samani, N. J., Ng, L. L., Dickstein, K., Lang, C. C., Filippatos, G., Anker, S. D., Ponikowski, P., Metra, M., van Veldhuisen, D. J., & Voors, A. A. (2020). Circulating plasma concentrations of ACE2 in men and women with heart failure and effects of renin-angiotensin-aldosterone-inhibitors. *European Heart Journal*, 41(19), 1810-1817. <https://doi.org/10.1093/eurheartj/ehaa373>

**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.

1 **Supplemental Table 2:** Baseline characteristics according to quartiles of plasma ACE2 concentrations for patients not on  
 2 RAAS-inhibitors (index cohort)

	Q1[2.78,4.80)	Q2[4.80,5.25)	Q3[5.25,5.76)	Q4[5.76,8.72]	p-value	N
	<i>N=67</i>	<i>N=79</i>	<i>N=81</i>	<i>N=60</i>		
<b>Index Cohort</b>						
ACE2 concentrations	4.39 (0.32)	5.03 (0.14)	5.49 (0.15)	6.23 (0.38)	<0.001	287
Sex:					0.585	287
Men	43 (64.2%)	52 (65.8%)	49 (60.5%)	43 (71.7%)		
Women	24 (35.8%)	27 (34.2%)	32 (39.5%)	17 (28.3%)		
Age (years)	72.0 [63.5;79.5]	74.0 [66.0;81.0]	75.0 [65.0;82.0]	76.5 [63.0;82.0]	0.421	287
Body mass index (kg/m <sup>2</sup> )	27.6 [24.5;32.2]	26.6 [22.9;30.2]	25.9 [23.9;28.7]	26.4 [23.5;30.0]	0.288	282
Heart rate (beats/minute)	75.0 [70.0;88.5]	75.0 [65.0;90.0]	84.0 [73.0;97.0]	80.0 [70.0;96.0]	0.225	286

	Q1[2.78,4.80)	Q2[4.80,5.25)	Q3[5.25,5.76)	Q4[5.76,8.72]	p-value	N
	<i>N=67</i>	<i>N=79</i>	<i>N=81</i>	<i>N=60</i>		
Systolic blood pressure (mmHg)	129 [120;146]	125 [110;140]	124 [114;143]	120 [110;138]	0.202	286
Left ventricular ejection fraction	35.0 [27.2;40.0]	30.0 [25.0;38.0]	34.0 [26.0;41.0]	35.0 [25.0;40.0]	0.272	257
New York Heart Association (NYHA) class:					.	276
I	2 (3.08%)	3 (3.95%)	2 (2.60%)	0 (0.00%)		
II	26 (40.0%)	29 (38.2%)	18 (23.4%)	15 (25.9%)		
III	27 (41.5%)	31 (40.8%)	41 (53.2%)	35 (60.3%)		
IV	10 (15.4%)	13 (17.1%)	16 (20.8%)	8 (13.8%)		
History of Atrial fibrillation	26 (38.8%)	31 (39.2%)	43 (53.1%)	35 (58.3%)	0.046	287
Renal disease	24 (35.8%)	31 (39.2%)	33 (40.7%)	28 (46.7%)	0.657	287
Diabetes	24 (35.8%)	24 (30.4%)	20 (24.7%)	26 (43.3%)	0.115	287
Hypertension	48 (71.6%)	46 (58.2%)	54 (66.7%)	31 (51.7%)	0.086	287

	Q1[2.78,4.80)	Q2[4.80,5.25)	Q3[5.25,5.76)	Q4[5.76,8.72]	p-value	N
	<i>N=67</i>	<i>N=79</i>	<i>N=81</i>	<i>N=60</i>		
Chronic obstructive pulmonary disease	15 (22.4%)	19 (24.1%)	12 (14.8%)	8 (13.3%)	0.261	287
Myocardial infarction	20 (29.9%)	26 (32.9%)	35 (43.2%)	20 (33.3%)	0.335	287
Ischemic HF aetiology	35 (52.2%)	38 (48.1%)	53 (66.2%)	32 (53.3%)	0.117	286
Coronary artery disease	25 (37.3%)	34 (43.0%)	42 (51.9%)	28 (46.7%)	0.344	287
Coronary artery by-pass graft	15 (22.4%)	11 (13.9%)	14 (17.3%)	13 (21.7%)	0.522	287
Percutaneous coronary intervention	11 (16.4%)	17 (21.5%)	15 (18.5%)	11 (18.3%)	0.886	287
Use of Angiotensin Converting Enzyme (ACE) inhibitor or Angiotensin Receptor Blocker (ARB): No	67 (100%)	79 (100%)	81 (100%)	60 (100%)	.	287
Beta-blockers	48 (71.6%)	57 (72.2%)	47 (58.0%)	40 (66.7%)	0.208	287
ACE inhibitors: No	67 (100%)	79 (100%)	81 (100%)	60 (100%)	.	287
ARBs: No	67 (100%)	79 (100%)	81 (100%)	60 (100%)	.	287
Mineralocorticoid Receptor Antagonist (MRA): No	67 (100%)	79 (100%)	81 (100%)	60 (100%)	.	287
ACE inhibitors and MRA: no ACEi and no MRA	67 (100%)	79 (100%)	81 (100%)	60 (100%)	.	287

