# Length of hospital stay, re-hospitalization rates and comorbidities in patients with worsening heart failure. Data from 3 large cohort studies in the US, Germany and Japan.

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# Declaration of Interest

- Employment in industry: Bayer AG

# Background and Objective

- **Background:** Worsening heart failure (WHF) is defined by escalating signs and symptoms of heart failure and its operational definition often comprises the need for hospitalization for heart failure (HFH) or the administration of intravenous diuretics in the outpatient setting. The concept of WHF has been used in context of clinical trial designs as an eligibility criterium, as well as a study endpoint. However, little is known about how far populations with WHF are comparable across different regions or countries.
- **Objective:** The current study investigated the comorbidity profile, length of hospital-stay (index hospitalization) and re-hospitalization rates (30-days and one-year) in three large cohorts of WHF patients from the US, Germany and Japan.

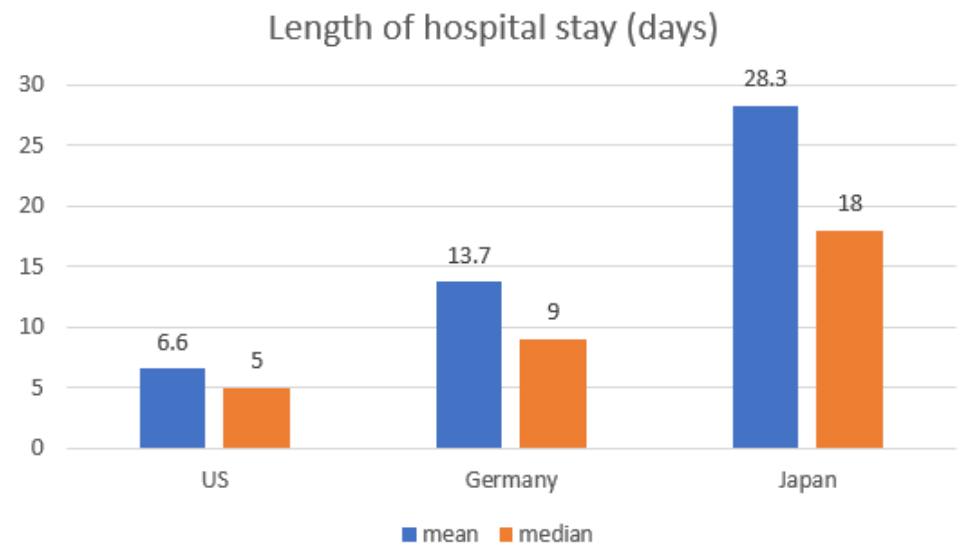
# Methods

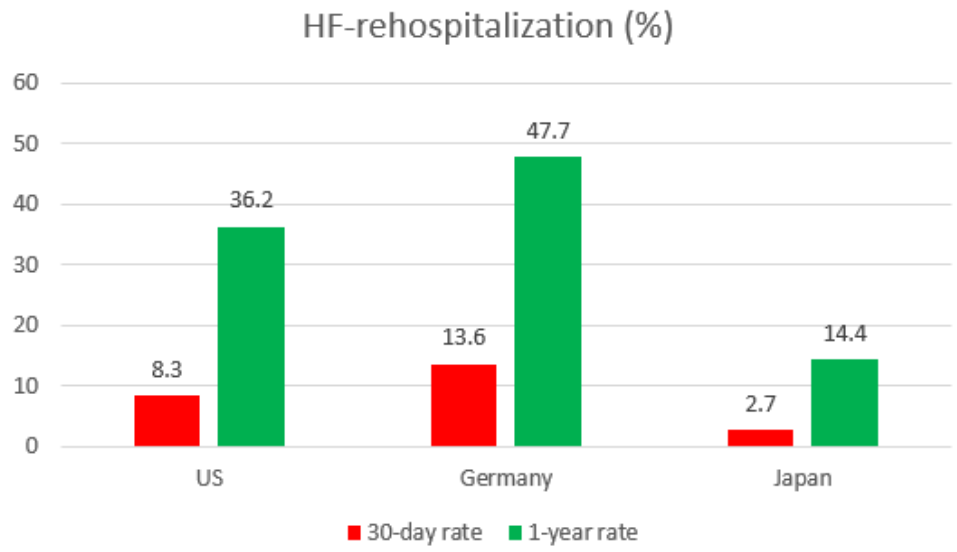
- **Data sources**
- US (claims): Optum® Clinformatics® Data Mart Database
- Germany (claims): InGef-database
- Japan (hospital-based): RWD Co Ldt., subsidiary of JMDC, maintained by the Health, Clinic and Education Information Evaluation Institute in Japan
- **Study population and time:**
- 3 cohorts of prevalent HF-patients with a HFH between 01/2016 and 06/2019, resp. 09/2019 for US and Japan (first HFH during this period, index hospitalization). Follow-up for outcomes ended in 12/2020.
- All patients in the 3 countries had prior evidence of HF and HF treatment, had continuous enrollment during the 12 months period before the index hospitalization and were alive at hospital discharge.

# Results

| Characteristics | US<br>n=75,140 | Germany<br>n=47,003 | Japan<br>n=9,091 |
|---|---|---|---|
| **Demographics** | | | |
| *Mean age (SD), years* | 74.24 (10.88) | 78.91 (10.02) | 77.55 (10.02) |
| *Female n (%)* | 33,968 (45.2) | 23,756 (50.5) | 4,084 (44.9) |
| | | | |
| **Comorbidities n (%)** | | | |
| *Hypertension* | 73,459 (97.8) | 44,660 (95.0) | 5,464 (60.1) |
| *Ischaemic heart disease* | 59,685 (79.4) | 29,715 (63.2) | 3,721 (40.9) |
| *Diabetes mellitus* | 44,900 (59.8) | 23,059 (49.1) | 2,352 (25.9) |
| *CKD (any stage)* | 44,280 (58.9) | 19,758 (42.0) | 5,005 (55.1) |
| *Atrial fibrillation* | 43,768 (58.2) | 24,574 (52.3) | 2,584 (28.4) |
| *Anemia* | 38,313 (51.0) | 10,297 (21.9) | 2,145 (23.6) |
| *Respiratory infection* | 36,697 (48.8) | 13,616 (29.0) | 3,383 (37.2) |
| *COPD* | 35,363 (47.1) | 15,738 (33.5) | 1,096 (12.1) |
| *Myocardial infarction* | 30,145 (40.1) | 10,300 (21.9) | 1,301 (14.3) |
| *Depression* | 21,057 (28.0) | 13,255 (28.2) | 424 (4.7) |
| *Hypothyroidism* | 20,420 (27.2) | 8,678 (18.5) | 698 (7.7) |
| *Hyperkalemia* | 12,000 (16.0) | 2,195 (4.7) | 692 (7.6) |
| *Cancer* | 11,763 (15.7) | 9604 (20.4) | 1,777 (19.5) |
| *Stroke* | 10,136 (13.5) | 4,747 (10.1) | 1,323 (14.6) |
| *Venous thromboembolism* | 5105 (6.8) | 3,697 (7.9) | 856 (9.4) |

# Results


Length of hospital stay (days)
30
25
20
15
10
5
0
6.6
5
13.7
9
28.3
18
US
Germany
Japan
mean
median


HF-rehospitalization (%)
60
50
40
30
20
10
0
8.3
36.2
13.6
47.7
2.7
14.4
US
Germany
Japan
30-day rate
1-year rate

# Conclusions

- There is considerable country/regional variability in the clinical profile, length of hospital stay and rehospitalization rates among patients with WHF.
- This should be considered in the planning of clinical trials as well as observational research.

Thank you for your attention !