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High Incidence of Inappropriate Alarms in Patients with Wearable Cardioverter-Defibrillators: Findings from the Swiss WCD Registry

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BACKGROUND
The wearable cardioverter defibrillator (WCD) uses surface electrodes to detect arrhythmia before initiating a treatment sequence. However, it is also prone to inappropriate detection due to artefacts.

OBJECTIVE
The aim of this study is to assess the alarm burden in patients and its impact on clinical outcomes.

METHODS
Patients from the nationwide Swiss WCD Registry were included. Clinical characteristics and data were obtained from the WCDs. Arrhythmia recordings ≥30 s in length were analysed and categorized as VT/VF, atrial fibrillation (AF), supraventricular tachycardia (SVT) or artefact.

RESULTS
A total of 10653 device alarms were documented in 324 of 456 patients (71.1%) over a mean WCD wear-time of 2.0 ± 1.6 months. Episode duration was 30 s or more in 2996 alarms (28.2%). One hundred and eleven (3.7%) were VT/VF episodes. The remaining recordings were inappropriate detections (2736 (91%) due to artefacts; 117 (3.7%) AF; 48 (1.6%) SVT). Two-hundred and seven patients (45%) had three or more alarms per month. Obesity was significantly associated with three or more alarms per month (= 0.01, 27.7% vs. 15.9%). High alarm burden was not associated with a lower average daily wear time (20.8 h vs. 20.7 h, = 0.785) or a decreased implantable cardioverter defibrillator implantation rate after stopping WCD use (48% vs. 47.3%, = 0.156).

CONCLUSIONS
In patients using WCDs, alarms emitted by the device and impending inappropriate shocks were frequent and most commonly caused by artefacts. A

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high alarm burden was associated with obesity but did not lead to a decreased adherence.

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