Nye metoder: Innspill til metoder (forslag/metodevarsler/oppdrag)

Alle har anledning til å komme med tilleggsopplysninger til en metode som er foreslått for nasjonal metodevurdering. Det er ønskelig at innspill kommer inn så tidlig som mulig i prosessen, fortrinnsvis før behandling i Bestillerforum RHF.

Bruk dette skjemaet for å gi innspill til forslag, metodevarsler og oppdrag. På nyemetoder.no vil nye forslag/metodevarsler ha statusen «Forslag mottatt/åpent for innspill» før behandling i Bestillerforum RHF. Utfylt skjema sendes nyemetoder@helse-sorost.no.

NB: **Punkt 1-3 og 11 fylles ut av alle.** Punkt 4-9 fylles ut avhengig av rolle og kjennskap til metoden.

Jeg er klar over at skjemaet vil bli publisert i sin helhet på nyemetoder.no (kryss av): ☒
Har du informasjon du mener ikke kan offentliggjøres, ta kontakt med sekretariatet før innsending**.**

Jeg har fylt ut punkt 11 nedenfor «Interesser og eventuelle interessekonflikter» (kryss av): ☒

1.Hvilken metode gjelder innspillet?	
Metodens ID nummer*:	ID2024_002
Metodens tittel:	Bærbar hjertestarter (wearable cardioverter defibrillator) for personer med høy risiko for plutselig hjertestans

*ID-nummer finner du på metodesiden på nyemetoder.no og har formen ID2020_XXX

2. Opplysninger om den som gir innspill	
Navn	Dr. Frank Semrau, Dr.med. Kathrin Staudacher, ZOLL CMS GmbH Mattias Kyhlstedt, Synergus RWE
Eventuell organisasjon/arbeidsplass	Senior Manager Health Policy &Economics, Senior Manager Medical Sector Consultant
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3. Oppsummert innspill til metoden (besvares av alle)

We would suggest that “Hurtig metodevurdering” is the most relevant approach in the current setting.
In the previous evaluations by Wales and Austria, the remote monitoring functionality of the product was not incorporated. This feature may provide particular importance in Norway due to the widespread population and sometimes long distances to hospitals. Furthermore, the medical setting was not appropriately considered. For example, the chance of surviving an out of hospital sudden cardiac arrest (OH-SCA) at least 30 days after subsequent hospital discharge is generally below 10%, specifically in Norway it is 11.2% for attempted resuscitations and 7.7% for all SCA (Norsk hjertestansregister, Årsrapport 2022). This is because 44.5% of all cases are not witnessed (Alm-Kruse 2021). Even in hospital, only 27.6% of SCA cases survive to 30 days, 15% with irreversible neurological deficits (Norsk hjertestansregister, Årsrapport 2022). Critical for survival without neurological deficits is a timely shock within about three minutes. This can only be accomplished by a systematic protection of patients with a known high risk of sudden cardiac death (SCD).

Zoll will be able to provide a “Single Technology Assessments (STA)” template, including a cost-effectiveness model adapted to the Norwegian setting.

Overview:
The Wearable Cardioverter defibrillator (WCD) «LifeVest» is a non-invasive automatic defibrillator worn on the skin. It measures several vital parameters including ECG. It can detect life-threatening arrhythmias and delivers automatically lifesaving shocks, typically within one minute of arrhythmia onset. The device is meant for transient use in the early high-risk phase after an event (e.g. post myocardial infarction with low LVEF). In spite of a high risk for a sudden cardiac death (SCD), patients can be safely discharged home with a WCD. Here, medication can be up-titrated to optimal levels to guarantee optimal effects on heart remodelling and recovery of the patients. The longer the waiting times, the more patients recover and the less patients need an implantable cardioverter-defibrillator (ICD) at the end of the risk-stratification period.
The transmissions of the WCD allow for telemedicine management of the patient and a data based decision for further treatment at the end of the wearing time.
Alternatively, patients could be monitored in hospital (e.g. ICU), or discharged home unprotected.

Nærmere informasjon om metoden og innspill til PICO*

*PICO er et verktøy for å formulere presise problemstillinger i metodevurderingsarbeid. PICO er en forkortelse for Population/Problem – Intervention – Comparison – Outcome. PICO brukes til å presisere hvilken populasjon/problem som skal studeres, hvilke(t) tiltak (metode/behandling) som skal vurderes, hvilket tiltak det er naturlig å sammenligne med, og hvilke utfall/endepunkter det å er relevant å måle/vurdere. PICO er viktig for planlegging og gjennomføring av en metodevurdering.

4. Kjenner du til om metoden er i bruk i Norge i dag?

Currently, the WCD (LifeVest) is not in use in Norway.

Er metoden i bruk utenom kliniske studier i dag:
Yes, the LifeVest is in use e.g. in the USA, Japan, Australia, Israel, and several European countries, such as Germany, France, Switzerland, Austria and Italy.

Fra hvilket tidspunkt har den vært i bruk:
since 2001 (CE-mark and FDA approval)

Hvor er eventuelt metoden i bruk:
See above.

5. Hvilken pasientgruppe i den norske spesialisthelsetjenesten er metoden aktuell for? (PICO)

Beskriv kortfattet:

The population comprises generally all patients with a potentially transient high risk of dying from a sudden cardiac death (SCD).
While an implantable cardioverter-defibrillator (ICD) is used for patients with a confirmed permanent, lifelong high risk for a SCD, the WCD is a non-invasive device, which protects patients with an acute high risk for SCD temporarily; while a lifelong risk is not confirmed and medical therapy may lead to recovery of the patient.
Another population consists of patients with an already confirmed ICD-indication, when the ICD cannot be implanted right away, does not work correctly or was explanted for e.g. infection, until re-implantation is feasible.
The WCD allows for a safe out-of-hospital period of medication up-titration and risk stratification. During this phase, the WCD sends data of the patient´s medical status to the treating physician. (Reek 2017)

6. Er du kjent med behandlingsalternativer til denne metoden og hvordan disse fungerer for pasientgruppen i dag? (PICO)

Beskriv kortfattet:

Patients with a low LVEF and therefore a high risk for SCD need optimal pharmaceutical therapy, which has to be initiated immediately and then titrated to an individually optimal dose within months. Medical guidelines recommend at least three months on optimal medical therapy before it becomes clear whether the patient recovers or stays with a permanent low LVEF <36%, defining the indication for an ICD.
Until it is not completely clear that the SCD risk is persistent, an ICD is not indicated. Unfortunately, these early months constitute the period with the highest risk (Solomon 2005, Sjöblom 2014).

According to the high sudden cardiac death risk, patients need appropriate protection 24/7 during that time. This could be accomplished by having the patient in a monitored bed in hospital (ICU) or by a WCD in the home environment of the patient.
In regions where the WCD is not available, patients are often discharged from hospital without protection.

When a sudden cardiac arrest (SCA) occurs, the chance of survival decreases by 10% every minute. The goal is a defibrillation within three minutes. In Norway, EMS reaches the patient in 50% of cases within 9 min. (Norsk hjertestansregister, Årsrapport 2022). Therefore, the chance of surviving a SCA outside the hospital is below 10%. The chance of survival with a WCD is >95%, because defibrillation is delivered automatically within one minute (Nguyen 2018).
HTA Wales considered unprotected discharge from hospital after ICD explantation as unethical and did not include this option into their final considerations.

Several health economic evaluations show cost-effectiveness for patients post myocardial infarction and even cost savings for patients after ICD explantation (Botto 2022, Boriani 2021, Cortesi 2021, Sanders 2015, Healy 2015). The evaluation of HTA Wales was conducted with a rather low willingness to pay threshold of £20,000.

7. Har du innspill til hva som vil være viktig for pasienter som er aktuelle for behandling med metoden? (PICO)

Hva kan oppfattes som en fordel for pasienter og brukere med denne metoden sammenlignet med aktuelle alternativer? Hvilke endepunkter/resultater av behandlingen er det aktuelt å måle? Beskriv kortfattet:

The WCD prevents SCD by reliable termination of a SCA due to ventricular tachycardia/ fibrillation (VT/VF) by appropriate shocks.
Therefore, the patient can leave the hospital safely protected as an alternative to remaining in hospital for months or leaving the hospital unprotected. With a WCD, patients can safely protected undergo rehabilitation or resume their private life, or return to work again, providing relief from a long burdensome hospital stay, including potential health and socio-economic issues.

In a large RCT, patients with a WCD had significantly less frequently shortness of breath episodes. Furthermore, the most reliable outcome parameter **total mortality** was significantly reduced by a WCD (ITT-Analysis: 3.1% vs. 4.9%, p=0.04), even though the compliance was considerably lower compared to real world observational studies (Wässnig 2016, Odeneg 2019, Kovascz 2020, Garcia 2023). The primary outcome *arrhythmic death* (as well as the secondary outcome *non-arrhythmic death*) were significantly reduced in the *As-treated* and *Per-protocol* analyses (Olgin 2018, 2020).
However, cardiologists know that SCD (*arrhythmic death*) is a weak outcome, because there are generally only scarce or even no data on the events. Additionally, those often insufficient data have to be interpreted by human beings from remote. The principal investigator of the VEST study (Olgin 2018) suggested right away that misadjudication of arrhythmic mortality was the reason for the not met primary endpoint in relation to the significantly reduced total mortality (in ITT, As-treated and Per-protocol analyses).

In a large study with autopsy confirmation, the commonly used definition of SCD by the WHO was shown to have a positive predictive value of only 58.8%. Vice versa, about 40% of supposed SCD, not meeting WHO criteria, were in fact SCD (Tseng, Circ 2018).

Studies suggest that wearing a WCD leads to a more comprehensive prescription of medication, and as a consequence to better medical compliance and an accordingly better health recovery (Mirro 2018). One could suggest that this may lead to less frequent SCA.
The WCD does not influence patients negatively, apart from some skin irritations. On the contrary, shortness of breath – as an indicator of stress and others – was significantly lower in patients with a WCD (Aidelsburger 2023).

Furthermore, the WCD transmits data on the patient´s health, such as ECG, heart rate, activity and more, to the treating physician, giving him insights in the patient´s recovery process. This is especially helpful in regions with long distances between health service and patient´s homes.

The patient is also able to record periods of discomfort, allowing early medical treatment of potential complications. The insights provided by the WCD, can support informed clinical decisions during and after the risk stratification phase. Patients feel well protected. A completed up-titration of the individually optimized medication aides the optimal remodelling recovery process of the heart. The longer the optimization phase, the more patients recover (Duncker 2017), improving the quality of the nomination process of patients for long-term implantable ICD therapy. Improvements in the clinical ICD nomination process lead to benefits for both, patients by avoiding inappropriate implantations of ICDs and for the health system by ensuring efficient resource allocation.

Most important outcomes:
Effectiveness -
Total mortality
Appropriate shocks
Successful termination of VT/VF
Compliance (wear-time per day)

Safety –
Total mortality
Inappropriate shocks
Patient reported outcomes (PRO)

Further important parameters -
LVEF recovery during WCD use (an improvement above LVEF 35% takes away an ICD indication)
ICD-implantation rate during guideline recommended waiting times of 40d – 3 months (country specific)
ICD-implantation rate after WCD wear-time

General risk of SCA/SCD in the respective population
(Frequency of SCA is potentially not influenced by a WCD, while ICD and WCD reduce SCD)

8. Spesielt for medisinsk utstyr (besvares av leverandør): CE-merking
Foreligger det CE-merking for bruksområdet som beskrives i metoden? I så fall angi type og tidspunkt: The LifeVest got CE-Mark (and FDA approval) for adults in 2001. The LifeVest® system is indicated for patients 18 years of age and older who are at risk for sudden cardiac arrest and are not candidates for or refuse an implantable defibrillator.

9. Spesielt for legemidler (besvares av leverandør): Markedsføringstillatelse (MT)
Har legemiddelet MT for indikasjonen som omfattes av metoden? Angi i så fall tidspunkt eller ventet tidspunkt for MT: - Not applicable –

10. Andre kommentarer
We are happy to answer your potential questions and discuss any details. You may talk to Mattias Kyhlstedt or come back to Frank Semrau or Kathrin Staudacher directly (English). Your literature collection is already very comprehensive. You may, however, also want to include into your considerations: - Cortesi, PA et al. (2021) Health Technology Assessment on the use of the Wearable Cardioverter Defibrillator in Patients with Myocardial Infarction and with ICD Explant. Farmeconomia. Health economics and therapeutic pathways 2021; 22(Suppl 1): 3-54; https://doi.org/10.7175/fe.v21i1S.1486 - ECRI, Clinical Evidence Assessment (2022) LifeVest Wearable Cardioverter Defibrillator (Zoll Medical Corp.) for Treating Ventricular Arrhythmia. https://www.ecri.org/solutions/clinical-evidence-assessment - Nguyen, E et al. (2018) Wearable Cardioverter-defibrillators for the Prevention of Sudden Cardiac Death: A Meta-analysis. Journal of Innovations in Cardiac Rhythm Management, 9:3151–3162 Cortesi et al. includes health economic models for post-MI and explant patients, while ECRI has a specific, pragmatic way of displaying their results. Nguyen et al. did a meta-analysis on important parameters of the WCD.

11. Interesser og eventuelle interessekonflikter
Beskriv dine relasjoner eller aktiviteter som kan påvirke, påvirkes av eller oppfattes av andre å ha betydning for den videre håndteringen av metoden som det gis innspill på (for eksempel: økonomiske interesser i saken, oppdrag eller andre bindinger).

Beskriv kortfattet:
Dr. Frank Semrau:
I am employed by the company ZOLL CMS GmbH. However, I am as well a natural scientist and health economist. Due to my professional ethics, I am subject to a neutrality requirement. This implies that I am not subordinate to ZOLL in terms of both content and science and am not bound by instructions.
Dr. med. Kathrin Staudacher
I am employed by the company ZOLL CMS GmbH. However, I am as well a physician. Due to the requirements of professional law, I am subject to a neutrality requirement. This implies that I am not subordinate to ZOLL in terms of both content and science and am not bound by instructions.

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