A noninvasive method and device for detecting onset of ischemia A. Marmor1, M.A. Marmor2, O.A. Goldberg3, M.H. Halabi4, F.E. Fitzger5, B.E. Edelman1, 1Rebecca Siefert Hospital, Safed, Israel; 2Bar-Ilan University, Safed, Israel

When myocardium contracts isometrically it generates vibration which can be recorded by an accelerometer. The peak intensity of endocardial acceleration (PEA) was reported as an index of contractility (C). During acute ischemia (AI) there is a reduction in C and subsequently in PEA, thus allowing detection of AI non-invasively. In order to test this hypothesis, we measured PEA in 27 patients (pts) admitted to routine catheterization in whom stent implantation was performed. Two accelerometers were placed around the precordial area using an elastic band, and PEA was recorded continuously, before, during and after routine balloon inflation of 25 seconds. PEA measured demonstrated significant (p<0.0001) reduction of 23% during balloon inflation (22.7±9.16.8±6) p<0.001 milig and increased to 22.1±9 milig after balloon deflation. AI was detected in all pts. Fig 1. In 7 pts concomitant ST segment depressions were recorded on ECG.

Thus we were able to non-invasively detect onset and resolution of ischemia in all pts.

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Background and aims: Public-access automated external defibrillators (AEDs) reduce time to defibrillation in patients with out-of-hospital cardiac arrest (OHCA) but the majority of the robust evidence emanates from urban areas. We describe the first public-access defibrillation programme in a geographically disperse region based on the use of fixed and mobile AEDs. We evaluate its uses and its role in overall survival rate to hospital discharge.

Methods: A total of 747 AEDs were distributed in 221 scattered villages in our province (Population density: 130 hab/km², 60% of the villages with less than 1000 inhabitants). 577 (77%) of the AEDs were fixed (1 per village or per each 1000 inhabitants and located in a visible, centric place) and 170 (23%) were mobile and were provided to trained first-responders: local policemen, firefighters and regional emergency medical services.

We prospectively registered all bystander-witnessed OHCA to which one of the AEDs was deployed between July 2011 and January 2017.

Results: In this 67-month study we assessed 342 AEDs uses, 290 (84%) of them adequate (latter verified OHCA by medical services) and the rest were open devices not eventually used for other reasons, the main one being lipotimia. Throughout the follow-up, we registered 5 acts of vandalism. Out of these 290 uses, 226 (78%) were from the mobile AEDs (Rate of mobile uses 1.32) despite being the fixed the main deployed source of AEDs (Rate of fixed uses: 0.11).

The overall survival among these OHCA victims was 11.7% (n=34). 26 from mobile AEDs (Annual Rate 0.027) and 8 from fixed AEDs (Annual Rate 0.0025).

44 (72%) of the survivors were patients from towns previously further than >15 minutes to an AEDs and that would have reasonably had little chance of surviving.

Conclusions: Having a public-access defibrillation programme in a geographically disperse region saved 34 out-of-hospital cardiac arrest victims.

The mobile AEDs seem to be the most useful devices in our region with 12 times more rate of use.