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Title	Noncontact Simultaneous Measurement of Cough-Associated Electromyogram, Electrocardiogram, and Body Proximity Using an In-Bed Fabric-Sheet Electrode
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Abstract

Cough is an important symptom of many respiratory illnesses. We propose a new approach for the simultaneous measurement of cough-associated capacitive electromyogram (cEMG), capacitive electrocardiogram (cECG), and body proximity (BPx) signals using a fabric-sheet unified sensing electrode and for cough detection using a cEMG signal combined with BPx and cECG signals. For the cEMG signal, electromyographic firings were observed synchronously with cough motion in supine, right lateral, and left lateral body postures. Simultaneously, stable cECG and BPx signals were measured at each posture. Every cough motion was successfully detected for each posture for three subjects using cEMG, cECG, and BPx signals. An increased number of subjects are necessary to gain more reliable results. Verification of the proposed approaches via a long-term experiment is also necessary for future work.