Something old, something new …monitoring and wearables for patient safety

P176 PRELIMINARY RESULTS OF 'AT RISK' ASTHMA AND COPD REVIEWS BY SPECIALIST TEAMS IN PRIMARY CARE

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Background Respiratory disease is a common cause for primary care consultations, and increasingly, patients with complex and 'high-risk' lung disease are managed in the community. Variation in the quality of community management of 'high-risk' patients may lead to sub-optimal outcomes for some. The ASSIST study (REC: 16/5C/0629) has implemented a complex intervention aimed at identifying and optimising the management of asthma and/or COPD patients in primary care, in 'at risk' patients.
Method Patients with documented asthma and/or COPD were identified through 'Read code' searches of GP practice records. A DOSE score ≥3 defined 'at risk' COPD patients, whilst 'at risk' asthma patients were defined using a search algorithm identifying factors associated with poor control (including previous exacerbations and high bronchodilator requirements). The DOSE and asthma algorithms were run in 12 and 8 GP practices respectively. All eligible patients were invited to attend their GP practice for a specialist respiratory review.
Results A total of 464 patients were invited, 66 responded but only 35 were enrolled onto the study due to exclusions and drop-outs. 54% were male with a mean age of 67.23 (SD: 13.07). 16 (46%) patients had asthma, 15 (43%) had COPD, 4 (11%) had asthma/COPD overlap (ACO). Mean pack year was 40.96 (SD: 30.62), 4 patients (11%) were current-smokers, whilst 7 (20%) were never-smokers. Median FEV_1 was 1.43 litres (IQR 0.97–2.17) and FEV_1% predicted was 61% (IQR: 41%–109%). The primary diagnosis was changed in 12 (34%) patients. Changes to inhaled medications were recommended in 18 (51%) cases (including change of device/s, and/or addition of spacers), further tests were requested in 17 (49%) cases and onward referral for specialist review was advised in 19 (54%) cases.
Conclusions It is possible to identify high-risk patients from electronic GP record searches, although only a minority will attend, when invited, for subsequent review. Actions to improve outcomes, including diagnosis and treatment changes and onward referral, resulted for most patients. 12 month follow up data will evaluate patient reported outcomes, health care resource usage and overall cost effectiveness of the intervention.

P177 CARDIORESPIRATORY PHYSIOLOGY REMOTELY MONITORED VIA WEARABLE WRISTBAND PHOTOPLETHYSMOGRAPHY: FEASIBILITY AND INITIAL BENCHMARKING

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Background The ability to reliably remotely monitor physiological data including heart rate, respiratory rate and oxygen saturation in clinical scenarios such as in patients at risk for exacerbations of respiratory disease, patients at risk for progression to ventilatory failure and patients during home NIV setup would be of significant benefit. Advances in connected wearable device signal acquisition, data analysis and cloud-based computing make acquisition and real-time clinical monitoring of advanced biometric data a realistic prospect. The Wavelet photo-plethysmography (PPG) wristband and Wavelet health platform capture multiple physiological signals – an advance on activity and heart rate monitoring within standard wearable devices. These biometrics are surfaced via Bluetooth paired smartphone or tablet app for clinician review. Feasibility and benchmarking in the clinical environment is a necessary first step before testing the prospective value of these remote monitored wearable-derived physiology measurements.
Methods Patient setup, wristband sampling rate options and comparison of Wavelet derived heart rate (HR), heart rate variability (HRV), respiratory rate (RR) and oxygen saturation (SpO2) measurements across multiple nights have so far been evaluated in 9 patients undergoing sleep studies and/or CPAP or NIV initiation. Wavelet data was compared with simultaneously acquired 1st night single lead ECG, finger-probe SpO2 (Somnomedics polysomnography, S-Med) and transcutaneous HR and SpO2 (TCM5, Radiometer) data.
Results Wavelet dashboard and device setup was straightforward, with reliable data acquisition. Patient feedback on device acceptability has been positive. There was an encouraging corroboration between Wavelet acquired HR, HRV, RR and SpO2 and simultaneous ECG lead, finger probe and transcutaneous diagnostic monitoring. Standard deviation of absolute deviation for Wavelet derived HR (0.91), RR (0.82) and SpO2 (1.41) is encouraging indication of device accuracy, mirroring other recently acquired data.[1]
Conclusions Feasibility and early accuracy data from the wearable PPG device and remote-monitoring platform is encouraging. These preliminary results suggest that this device may be suitable for prospective clinical trials, for example evaluating utility of wearable physiological monitoring in digitally-enabled preventative service models for respiratory disorders.

REFERENCE

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P178 HOME REMOTE-MONITORED AUTO-NIV: REALISTIC PROVISION AND IMPROVED PROJECTED ADMISSION-FREE SURVIVAL IN PATIENTS WITH CHRONIC HYPERCAPNIC COPD

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Background The UK HOT-HMV-COPD study confirms benefit from home NIV in hypercapnic severe COPD patients. Home NIV provision presents clinical and service challenges, with repeated attendances and elective admission(s) unrealistic for COPD patients. 2-way remote monitoring and volume assured pressure support with auto-titrating EPAP (auto-NIV) modes offer prospects for realistic NIV optimisation and rationalised follow up.