Conclusion Consistent timely delivery of key interventions led by a *specialist pneumonia intervention nursing (SPIN)* team is associated with significantly improved crude and adjusted mortality rates and may be an exemplar for improving the management of this common and serious condition.

P24 PATIENT EXPERIENCE OF RECOVERING FROM PNEUMONIA – A QUALITATIVE LONGITUDINAL INTERVIEW STUDY

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Introduction Symptom resolution in community acquired pneumonia (CAP) has been shown to lag behind clinical cure as assessed by healthcare professionals, with return to pre-pneumonia function and general health reported to take over three months. Despite the high burden of disease experienced by patients during recovery, there are scant data on post-hospital needs and interventions in the management of CAP. Therefore, this study aims to capture specific and detailed patient insight, knowledge and experience of their recovery journey with pneumonia in order to inform and direct recommendations to clinical practice and future research studies.

Methods A qualitative longitudinal design was utilised to collect accounts from 15 participants recovering from CAP. Each participant completed 3 semi-structured interviews during recovery (2, 6, and 14 weeks following discharge). Data were analysed using thematic analysis.

Results Three main themes and associated subthemes emerged from the data: 1) Slow recovery from CAP. Participants viewed the slow recovery as a symptom of pneumonia. Expectations of the time taken to recover from CAP often fell short of the actual recovery time. Failure of antibiotics was perceived to be a main cause of slow recovery. 2) Exposing participant vulnerability. Participants disclosed that they had periods in which they experienced vulnerability. The perceived vulnerability to reinfection manifested in anxieties especially with mixing with individuals showing coryzal symptoms. Further vulnerability was grounded in concerns that CAP would cause damage leading to long term health conditions or the fear that pneumonia could either kill them or significantly reduce their life span. 3) Participants support needs. Participants expressed feelings of isolation and an inability to self-manage their pneumonia symptoms post hospital discharge. They expressed a need for further support during recovery beyond the usual support currently offered.

Abstract P24 Table 1 Themes and subthemes and corresponding verbatim quotes

Theme	Sub-theme	Verbatim quote
1). Slow recovery from CAP		"It's just an infection and you're fine", it is nothing like you think it's going to be, it's nothing like an infection previously, it goes on forever!" (N06 (2) line 105).
2).Exposing participant vulnerability	i). Disease reoccurrence	"The fear of catching it yeah. The fear of going back to hospital again yeah." (N10 (1) Line 367).
	ii). Morbidity due to pneumonia	"Oh my god, I've got heart damage." (N06 (1) line 410).
	iii). Mortality due to pneumonia	"You've got pneumonia" and it's the biggest killer of people with MS is pneumonia." (N13 (1) line 81).
3). Participant's support needs		"you're definitely sort of out there on your own". (N07 (2) line 68).

Conclusion This study demonstrates the significant morbidity experienced by patients during recovery; Symptom persistence, anxiety, functional impairment, and healthcare re-consultation rates are high, with marked impact on quality of life. The information reported by patients should be carefully considered and utilised to develop resources and interventions to improve outcomes for patients.

P25 INSPIRATORY MUSCLE TRAINING (IMT) FOR ADULTS DISCHARGED FROM HOSPITAL WITH COMMUNITY ACQUIRED PNEUMONIA (CAP) – A FEASIBILITY STUDY

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Introduction Patients report significant morbidity following community-acquired pneumonia (CAP); 70% report persistent symptoms and up to 50% impaired daily activity at 4 weeks post-discharge. Respiratory muscle weakness is one possible mechanism for delayed recovery. Inspiratory muscle training (IMT) increases strength and endurance of inspiratory muscles, with improvements in patient-reported outcomes in other conditions. To our knowledge IMT has not previously been investigated in CAP.

Aim To assess the tolerability of IMT in adults discharged from hospital with community-acquired pneumonia.

Methods Patients hospitalised with a diagnosis of CAP between February 2017 and March 2018 were eligible for inclusion and convenience sampling was used for participant selection. Participants received an IMT device (POWERbreath KHP2) following familiarisation. Training frequency (twice daily) and load (50% PImax) were fixed, however training volume was incremental during weeks 1–3 (10, 20, 30 breaths) and constant thereafter (30 breaths.) Participants were followed by combination of telephone and clinic visits for 9 weeks. Outcomes of interest were; utilisation of IMT device per protocol (defined as >94% training adherence), patient-reported IMT acceptability, and number of device-related side effects. Statistical analysis was conducted using Stata (version 15.1.)

Outcome/results Twenty-two participants were recruited; 16 were male (72.7%), mean age was 55.2 years (range 27.9–77.3.) Participants completed IMT per protocol in 72.7% cases. One unrelated, unexpected serious adverse event (death) occurred during follow-up and 3 participants active at this time were stopped from further IMT by research sponsor pending investigation. Two participants were lost to follow-up. Side effects during IMT were reported on 15 occasions across 22 participants over a total 1183 training days. Reported side effects included chest pain (x2), cough (x1), dyspnoea (x4), and dizziness (x8). All side-effects were rated grade 1 and did not prevent participants from continuing training. Participant-reported IMT acceptability, defined by participants rating training as both 'useful' and 'helpful' at each follow-up contact, was 99.4%.

Conclusions Inspiratory muscle training appears to be safe, tolerable, and acceptable to patients following CAP.

Distinguishing CAP related symptoms and device-related side effects is challenging in patients recovering following an acute infective illness. A clinical trial to determine efficacy is warranted.

P26 CORRELATION BETWEEN VIRAL RESPIRATORY PANEL TESTING RESULT AND OUTCOMES IN ADULTS

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Multi-plex reverse transcription polymerase chain reaction (RT-PCR) testing has enabled the rapid, accurate diagnosis of viral lower respiratory tract infections in clinical practice. However, the impact of RT-PCR testing for respiratory viruses (VRP) on outcomes in adults is unclear. We retrospectively reviewed the electronic medical records of all patients (at least 18 years old) who had VRP testing (Biofire Film Array) performed at 4 community hospitals in the northeastern USA between November 1, 2014, and June 15, 2015. Viruses detected by VRP included adenovirus, coronavirus, human metapneumovirus, influenza A and B, parainfluenza and respiratory syncytial virus. Patients with positive cultures for acute bacterial or mycoplasma infections were excluded as were those with chest x-ray or chest CT findings consistent with pneumonia. Of the 475 in the study group, 214 (45%) had positive VRP while 261 (55%) had negative VRP. Of those with positive VRP, 147 (69%) were treated with antibiotics. Of those with negative VRP, 145 (56%) received antibiotics. The average duration of antibiotics after VRP testing was 3.7 days in those with positive VRP (n=147) and 4.3 days in those with negative VRP (n=145). The average hospital length of stay (LOS) following VRP was 4.8 days in those with positive VRP (n=208) and 4.5 days in patients with negative VRP (n=257). There were 25 (12%) readmissions within 30 days of discharge for inpatients with positive VRP and 40 (16%) readmissions within 30 days of discharge for inpatients with negative VRP. Positive VRP was associated with a higher frequency of antibiotic therapy but a shorter duration of antibiotics. Positive VRP was associated with a lower frequency of hospital readmission within 30 days of discharge. Average hospital LOS was similar for positive VRP and negative VRP patient groups. Prospective study is warranted to further our understanding of the impact of VRP testing on clinical outcomes in adults with lower respiratory tract infections.

P27 EXPLORING THE EFFECT OF HUMAN RHINOVIRUS-16 INFECTION OF EXPRESSION OF PANNEXIN-1 IN ALVEOLAR CELLS

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Rational and hypothesis: Human rhinovirus (HRV) infections are a major causative agent of upper respiratory tract infection (URTI) and are associated with acute exacerbations of asthma and COPD. URTI is associated with excessive production of mucus within the airway, particularly in sufferers of chronic respiratory conditions. This mucus may lead to altered osmolality within the airway and contribute to hypotonic stimulus of the airway epithelium and airway hypersensitivity leading to cough. Hypotonic stimulus has previously been shown to activate transient receptor potential vanilloid 4 (TRPV4) ultimately leading to ATP release via pannexin-1. We hypothesised that HRV infection alters expression of proteins within this pathway leading to a hypersensitive cough reflex.

Methods Immortalised alveolar epithelial (A549) cell line was first infected with HRV-16 for 1 hour at multiplicity of infection (MOI) 1 then allowed up to 72 hours to incubate. Following a time course of infection, the A549 cells were incubated with inhibitors for either TRPV4 (HC067047), RhoA (H-1152), myosin light chain kinase (ML-7) or pannexin-1 (carbenoxolone) then exposed to 33% hypoosmolality. Cells were lysed and subject to western blot analysis for pannexin-1 and TRPV4 expression. UV inactivated virus and isotonic buffer were included as negative controls.

Findings No change was seen in TRPV4 whole cell expression over a 72 hour infection from any treatment group. No change was also seen in pannexin-1 whole cell expression over a 72 hour infection when treated with HC067047, H-1152 or ML-7. Interestingly, HRV-16 infection of A549 cell line caused a 9 fold upregulation of pannexin-1 whole cell protein expression significantly by 72 hours when treated with carbenoxolone and standardised to isotonic control $p<0.001$.

Conclusions HRV-16 at MOI 1 causes increased expression of pannexin-1 in alveolar cells. HRV-16 caused no effect to TRPV4 whole cell expression.

P28 WEAKLY SUPERVISED DEEP LEARNING ON CT SCANS PREDICTS SURVIVAL FROM CHRONIC PULMONARY ASPERGILLOSIS

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Background Chronic Pulmonary Aspergillosis (CPA) is a severe fungal infection caused by the ubiquitous genus Aspergillus. Individuals with mild immunocompromise and/or pre-existing lung conditions are susceptible to CPA. Signs on high-resolution computed tomography (HRCT) imaging include uni- or bilateral fungal balls in lung cavities and associated pleural thickening and fibrosis. Despite antifungal therapy, mortality is high. Early diagnosis and radiological identification of disease progression are key to improve prognosis. We have designed a weakly-supervised deep learning network to recognize CPA, localize affected lung regions and predict 2 year survival post baseline on HRCT imaging.

Methods Our dataset consists of 75 normal HRCT studies and 277 studies from 99 patients showing signs of CPA, which were gathered over a period of 12 years. Following segmentation of the lung regions, an original approach was used via