further CT features of empyema which are less well described, or have only been reported in small groups of patients. The aim of this study was to establish the prevalence of the different CT imaging features of empyema in a large, well-characterised cohort of empyema patients.

Methods This was a retrospective cohort study comprising a subgroup of patients from the MIST 2 trial, who underwent a pre-treatment thoracic CT at a single institution. Patients in this trial had confirmed empyema using consistent diagnostic criteria. To ensure consistent and reliable image interpretation, each CT examination was assessed for predefined imaging features by three independent Thoracic Radiologists using a proforma. These features are listed in Abstract S62 table 1. We explored the sensitivity of the presence of five "classic" features of empyema described by Kearney *et al* (2000): loculation, parietal pleural thickening and enhancement and increased extrapleural fat thickness and attenuation.

Results 97 patients were included in the study. Imaging features are summarised in Abstract S62 table 1. 98.5% (95% CI 90.9% to 99.9%) of patients had at least two of five classic CT features of empyema. Additionally, we noted a significant number of patients with visceral pleural enhancement (66%), with indrawing/tenting of the visceral pleural (30%) and with subvisceral oedema (34%). Parenchymal changes were seen in the majority of patients. Associated consolidation was seen in the ipsilateral lung in 63% of patients; which was adjacent to the empyema in 87% of cases.

Conclusion This study describes the prevalence of multiple CT features of empyema and highlights the frequency of associated visceral changes. Many of the typical features of empyema were highly prevalent in this population but we also noted a high frequency of several other, less well-reported features. Subvisceral oedema is a previously unreported feature of empyema. These features may have implications for both diagnosis and prognosis.

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S63

TELEHEALTH IN ACUTE COMMUNITY ACQUIRED PNEUMONIA: PROOF OF CONCEPT AND PROVISIONAL EVALUATION OF IMPACT ON HOSPITAL LENGTH OF STAY

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Background/Aims Although remote patient monitoring systems are rapidly emerging, much has concentrated on managing chronic rather than acute conditions. British Thoracic Society (BTS) guidelines on acute community acquired pneumonia (CAP) suggest not all patients with CURB65 scores 0 to 2 need hospital inpatient treatment and, with the alternative of a supervised environment, we report post hoc analysis of what was initially a proof of concept model adopting a Telehealth enabled system as a potentially effective option designed to reduce hospital length of stay (LOS).

Methods Over 1 year to May 2011, 138 patients (60 male, 78 female) with mean (SD, range) age 65.5 (18.7, 19–95) years were admitted with CAP were identified. Selection for Telehealth was guided by initial CURB65 scores, patient competence/compliance with technology, social considerations and geographical factors as the provision was only within the area supported by Telford & Wrekin (T&W) PCT; patients were declined while on intravenous antibiotics. Remote monitoring (blood pressure, heart rate, respiratory rate, oxygen saturation, temperature) was via a Broomwell Health system (wrist watch concept) with twice daily planned data downloads managed and triaged through a HUB system filtering

recordings to community based nurses. Data on LOS were skewed and non-parametric analysis of median (IQ) values undertaken to compare outcomes by area.

Results Abstract S63 table 1 shows raw data by age, sex, and LOS (days). 85% had CURB65 scores 0 to 2 and 17 (12.3%) died (8 had higher CURB65 scores). 33/138 (24%) were managed using Telehealth (majority CURB65 0–1) representing 35.5% from the T&W area. Comparing groups as a whole showed significantly ($p<0.05$) lower (median, IQ) LOS (days) for T&W (4, 2–8) vs the rest (6, 4–9). Differences in initial CURB65 scores, age and sex distribution between groups were not statistically significant when considering those patients with CURB65 0–2 where again LOS was reduced for T&W ($n=75$) at 4 (2–7) vs the rest ($n=42$) at 6 (3.8–9.3). None on Telehealth died but one had an unrelated admission.

Abstract S63 Table 1

	All cases	Within T&W area	Not within T&W
Number (Male/Female)	138 (60/78)	93 (36/57)	45 (24/21)
Mean age (SD, range)	65.5 (18.7, 19–95)	66.4 (18.8, 19–95)	63.5 (18.4, 19–88)
Median age (IQR)	68 (53.8–81)	70 (53.5–82)	65 (50–81)
Mean (SD, range) length of stay	9.1 (12.5, 0–71)	8.0 (10.7, 0–56)	11.4 (15.4, 1–71)
Median (IQR) length of stay	5.5 (3–8.25)	4.0 (2.0–8.0)	6 (4.0–9.0)
CURB65 0–2 (%)	84.8	80.6	93.3
Deceased	17/138 (12.3%)	12/93 (12.9%)	5/45 (11.1%)

Conclusion We have shown the proof of concept in adopting this technology in managing acute CAP and although we provide additional evidence to demonstrate reduction in length of stay, more controlled studies with economic models and an assessment of the return on investment are required. Most of the observed benefit seems to stem from more actively managing and discharging patients with lower CURB65 scores but who nevertheless presented as acute hospital admissions and subsequently benefited from the same provisions offered by Telehealth.

S64

UNDERSTANDING BETTER THE PATHOPHYSIOLOGY OF ASPIRATION PNEUMONIA

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Background Aspiration of oropharyngeal or gastric contents into the lower airways can cause a number of syndromes including chemical

Abstract S64 Table 1 Clinical presentation and pre-disposing risk factors

Clinical presentation	N (out of 51)
Fever	20 (39%)
Tachypnoea	37 (73%)
Tachycardia	39 (76%)
Hypoxic	45 (88%)
Hypotension	8 (16%)
Altered mental state	28 (55%)
Crackles on auscultation	44 (86%)
Pre-disposing risk	22 (43%)
Nursing/residential home	35 (67%)
History of aspiration	20 (39%)
Dementia	24 (47%)
Oesophageal dysphagia	18 (35%)
PEG/NG fed stroke	4 (8%)

and bacterial pneumonia, although the pathophysiology of each entity is different.¹ Data from Dr Foster's Guide and our local coding department revealed a high incidence and mortality from aspiration pneumonia alerting us to study those patients.

Methods Retrospective analysis of 53 patients coded as aspiration pneumonia from February 2010 to March 2011. Analysis of presentation, investigations, management, pre-disposing factors and outcome was undertaken.

Results Average Age 78, M/F ratio (1:1). Out of 53 coded as aspiration pneumonia, 2 were re-coded to an alternative diagnosis. Out of 51 patients, 36 died (71%) and 15 survived but 17/51 (23%) had chest x-rays which were not suggestive of aspiration pneumonia. Of the 36 patients that died, 67% showed positive x-ray changes, while the 15 survivors had 80% x-rays suggesting pneumonia. Abstract S64 table 1 shows the list of clinical presentations and potential risk factors. On average each patient had 4 out of the 7 clinical features positive. 23/51 (45%) had either a basic swallow or SALT assessment of whom only 2/23 (9%) passed. 0/51 (0%) proceeded to mechanical ventilation. 51/51 (100%) had oxygen, intravenous fluids and antibiotics.

Conclusion Aspiration pneumonia has a high mortality, particular in those with a history of aspiration living in residential or nursing facilities. 23% of patients with a good clinical history of aspiration did not show x-ray changes to suggest pneumonia. It may suggest a difference in the pathophysiology of lung injury in these patients who aspirate acidic gastric contents causing a chemical injury without x-ray changes of pneumonia. Although the treatment at present is no different, research needs to be incorporated into guidelines to diagnose, prevent and treat the different types of aspiration.

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S65

EARLY SUPPORTED DISCHARGE SCHEME (ESDS) FOR PNEUMONIA & LOWER RESPIRATORY TRACT INFECTION (LRTI): ARE THERE ENOUGH SUITABLE PATIENTS?

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Background Despite the fact that ~75% of community acquired pneumonia (CAP) is managed in the community, admissions for pneumonia, influenza & LRTI account for more than 2.3 million bed days/yr in England alone. Strategies to enable increased outpatient care must be safe, acceptable to patients & potentially reduce costs & improve patient outcomes. Current guidelines suggest that patients with CURB-65 >2 require hospitalisation, but up to 70% of pneumonia admissions are CURB-65 =2. Median length of stay (LOS) for CAP is 6–12.9 days. Despite low risk-scores patients may have a prolonged hospital admission due to other reasons for example, comorbidities & social issues.

Aim To retrospectively investigate the number of patients that could potentially be discharged with an ESDS, akin to current COPD schemes.

Method We performed a retrospective audit of 54 case-notes randomly selected from 462 admissions (with J-codes 10–18) over a 2-month period. Certain inclusion & exclusion criteria were used to assess scheme eligibility (appropriate diagnosis) & scheme suitability.

Results Mean age=70 yrs old (range 18–96). Mean CURB-65=1.93 (range 0–4). Of CAP pts (n=38) CURB 0–1=32%, 2=26%,

3–5=34%. Comorbidities were common; COPD (16/54), cancer (13/54), IHD (10/54), dementia (8/54). Eligible for ESDS n=46, suitable n=22/46 (48%). 84% of those eligible for ESDS had comorbidities, but these did not necessarily make patients unsuitable for ESDS. The total potential reduction in LOS with ESDS is 2.75 (1–7) days. With a conservative estimate of 2400 pneumonia admissions annually & a 10-day mean LOS, (a total of 24 000 bed days/yr), 6600 bed days/yr could be saved in our hospital trust alone. Using HES data for annual admissions with pneumonia and influenza (~150 000/yr), this amounts to a potential saving of 412 500 bed days annually in England alone.

Conclusions This retrospective audit suggests that a proactive ESDS scheme could enable patients to be provided with high-quality safe, effective, efficient patient-centred care, tailored to their needs, in their own home. This is an opportunity to improve health policy, healthcare delivery/services & reduce admission rates; an area of major strategic importance to the NHS.

Abstract S65 Table 1

Inclusion criteria	Exclusion criteria
The below criteria were used to assess eligibility:-	
Pneumonia—community acquired (CAP) or hospital acquired (HAP)	Acute exacerbations of COPD—infected & non-infected (other services already provided)
Acute tracheo-bronchitis & acute bronchitis	
Non-pneumonic LTRI	
Infective exacerbation of asthma	
Infective exacerbation of bronchiectasis	
Lung abscess	
Pneumonia with concomitant COPD (if this service is not provided elsewhere)	
The below criteria were used to assess suitability:-	
Simple pleural effusions only (ideally a diagnostic pleural tap is performed in all cases)	Patients with CURB-65 >3 (MUST be discussed with the study doctor prior to discharge to define treatment ceilings and future plans)
Can manage ADLs with current support—immediate OT/physio/social assessment/care can be arranged prior to discharge (if needed) and continued at home	Patients unable to manage at home even with maximal support from ESDS (this may include some patients IV drug users, with ETOH excess or mental health problems)
Has a phone	Serious co-morbidities requiring hospital treatment (eg, CKD, CCF) or deemed unstable (significant AKD)
Age >18 yrs old	Neutropenia
Improving inflammatory markers (WCC/CRP)	Empyema or complicated parapneumonic effusion
Stable or improving U&Es	Sats <92% on air (unless patient has underlying respiratory disease [except asthma] when sats <88% - all these cases MUST be discussed with study doctor)
Pts requiring po or IV antibiotics	SBP <90 mm Hg
Patients able to give fully informed consent (If patient unable to give fully informed consent—this will be obtained via NOK and 2 doctors)	Suspected MI/raised Tnl consistent with NSTEMI OR acute ECG changes (within 5 days of discharge date)
EWS ≤2 AND SBP >90 AND mild confusion only	Well enough for discharge without ESDS scheme support
All observations must be stable for 12–24 h	
NB: If escalation of care not appropriate & palliative care appropriate if no improvement within 48 h: then criteria - stable SBP >90 AND sats >90% air AND phone AND >18 yrs old ONLY apply	
	Tuberculosis suspected
	No fixed abode