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ABSTRACTS

Meeting abstracts from the 2014 PCRS-UK Annual Conference—*Sharing success: inspiring excellence in respiratory care*

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1. Melding primary and secondary care to reduce paediatric asthma admissions

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Brief outline of the context: Asthma exacerbations are one of the most common reasons for emergency paediatric admissions, and 90% are avoidable with good self-management and robust health-care support.
Brief outline of the problem: In the Walsall CCG, there is a 20-fold variation in asthma admission rate stratified by GP surgery. This is not completely explained by demography or geography.
Assessment of the problem and analysis of its causes: Primary care and secondary care in isolation may have failed to achieve improvement because of fragmented patient pathways.
Strategy for change: Using the collaborative review approach of the National Review of Asthma Deaths process, I identified patients from the highest admitting local practice. I then reviewed their hospital notes before meeting the primary care team with my respiratory nurse to review and build a composite of the factors responsible for the outcome in these children and develop an action plan.
Measurement of improvement: Asthma emergency admission rates were collected on a rolling basis.
Effects of changes: Before the project, the surgery had 18 emergency admissions/1,000 patients in the preceding year.
Lessons learnt: Eighteen months later they had admitted only one emergency admission/1,000 patients in the preceding year and was one of the lowest admitting practices in the CCG, better than the local and national average.
Message for others: As system for flagging up 'frequent flyers' was instituted, along with a locally agreed self-management plan for every patient and use of the Asthma Control Test.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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2. The role of education from within an integrated COPD team

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University Hospital Southampton NHS Foundation Trust: COPD Integrated Team

Brief outline of the context: Ranked 45 out of 50 CCGs in the Commissioning Board Region for COPD prevalence and 50 out of 50 CCGs for COPD hospital admissions, Southampton City has significantly worse scores than the English average.
Brief outline of the problem: Variation in primary care skills and experience and in patient demographics, as well as a primary/secondary care communication divide, results in poor patient experience, education, concordance and potentially preventable AECOPD.
Assessment of the problem and analysis of its causes: Thirty-six practices are, in effect, 36 small businesses with varying budgets for accredited education. Practice nurses may be excluded from communication following acute intervention. Quality standards, patient education and onward referral to bespoke services may then be difficult to implement.
Strategy for change: Following appointment of a COPD educator nurse for primary care, training needs were analysed and education commenced extending from the provision of regular lunchtime workshops through to bespoke practice sessions. This is a long-term strategy for facilitating and supporting a skilled primary care workforce for quality disease management and admission avoidance in COPD.
Measurement of improvement: Anonomised feedback from primary care identifies motivation for change and high levels of satisfaction. Longer-term quantitative data are not yet available.
Effects of changes: Positive qualitative feedback illustrates intent to alter clinical practice. Communication channels and working relationships are opening between primary and secondary care.
Lessons learnt: Bespoke and flexible training is key because of the time constraints in general practice.
Message for others: Education and clinical support from the integrated team into primary care encourages better clinical and patient-centred outcomes.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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3. Could a 'reminder' reduce the September peak in wheeze?

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Aim: Many children with wheeze are better over the summer and stop taking their preventative medication. Interestingly, international observations show a September peak in wheeze presentations in children. Our aim was to determine whether 'reminders' should be sent out in August to remind parents to re-commence preventative treatment. Our hypothesis was that most children attending the Paediatric Emergency Department (PED) in September would be first-time wheezers and, therefore, there would be no point in sending reminders.
Method: Children presenting with wheeze to the PED over a 2-year period (2012–2013) were identified retrospectively using the PED electronic database. Children under 12 months were excluded. Data were obtained on age, gender, previous history, current treatment and allergy status for children presenting in September.
Results: In September 2012 and 2013, respectively, 178 and 145 children presented to the PED with wheeze, representing the peak attendance for both years. The median age in both years was 3 (IQR 2–4). In September 2012, 34% of children were first-time wheezers (66% had previous wheeze) and in

September 2013, 27% were first-time wheezers (73% had previous wheeze). An overall 22% of children were recorded as having 'multiple' previous episodes of wheeze. Of them, 33% were not using regular inhaled corticosteroids (ICS). Unfortunately, because of poor medical recording, we have documented evidence that only five children had a planned reduction in ICS over the summer months.
Conclusion: Contrary to our own hypothesis, the majority of children (~70%) presenting to the PED in September were not first-time wheezers. Therefore, sending out reminders in late August may be a good strategy for reducing the September burden in wheeze.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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4. Stepping down inhaled therapy in COPD patients

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Brief outline of the context: There is an increased risk of serious but nonfatal pneumonia in COPD patients prescribed ICS (Kew *et al.*, 2014). Patients are often over-treated with ICS. The aim was to identify those patients and step down inhaled therapy.
Brief outline of the problem: Many patients with COPD are over-treated with ICS. This could be due to a lack of awareness of other causes for respiratory symptoms.
Assessment of the problem and analysis of its causes: Airway reflux is an unrecognised agent provoking the symptoms of respiratory disease. Airway reflux is unlike gastro-oesophageal reflux disease (GORD). GORD is liquid acid reflux causing heartburn and indigestion. Airway reflux consists mainly of gaseous non-acid mist, which when deposited in the airways leads to inflammation, fibrosis, bronchoconstriction and cough (Morice, 2013).
Strategy for change: We began to use the Hull cough questionnaire in practice with COPD patients complaining of cough to identify patients with airway reflux. Patients identified as having reflux were treated as per protocol from http://www.issc.info/. Once the symptoms improved, we proceeded to stop combined inhalers in favour of LABA and/or LAMA.
Measurement of improvement: Exacerbations were reduced and symptoms improved as demonstrated by improved CAT scores. A CAT score of -2 is significant. CAT scores improved upto 10 once reflux was managed. Using the GSK POINTS audit, we found that in the 12-month period, 17 COPD patients had stopped the combined inhaler in patients who had FEV1 $>50\%$. GOLD 2014 recommended that COPD is not managed solely on FEV1 as this is a poor descriptor of disease status. This was also taken into account when discontinuing combined inhaler.
Effects of changes: Addressing airway reflux improved the quality of life and also reduced costs. For two consecutive years, the practice made the most savings relating to respiratory care within the CCG resulting in an underspend. Lincoln Green saved £12,071 on respiratory medicines, whereas most practices within the CCG increased spending by on average £6,680.
Lessons learnt: Rather than increasing inhaled therapy in the first instance, other conditions such as airway reflux and rhinitis should be assessed.
Message for others: The Hull cough questionnaire is a quick and easy tool that can be implemented in practice for respiratory patients with a cough. Addressing airway reflux improves the quality of life and reduces cost and also side effects from potent steroids. This can be a supplement to the GRASP tool for COPD to reduce the number of patients with FEV1 $>50\%$ on combination inhalers.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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5. Changing adherence-related beliefs about ICS maintenance treatment for asthma: feasibility study of an intervention delivered by asthma nurse specialists

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Aim: The Necessity-Concerns Framework (NCF) posits that nonadherence to inhaled corticosteroids (ICS) as maintenance treatment for asthma is influenced by doubts about ICS necessity and concerns about potential adverse effects. We examined whether these adherence-related beliefs could be changed by briefing asthma nurse specialists on the NCF and suggesting ways of addressing necessity beliefs and concerns.
Method: Three asthma nurse specialists attended a 1.5-day NCF briefing, including suggested ways to use the framework within hospital care. We monitored consultations before ($n=79$) and after ($n=57$) this briefing. Consultation recordings were coded by two blinded raters to assess intervention delivery. Patients' ICS beliefs and reported adherence were measured before consultation and 1 month after consultation to assess the intervention effect.
Results: After NCF briefing, nurse specialists elicited and addressed beliefs about medicine more frequently. However, the frequency of using the NCF remained low: open questions eliciting adherence were used in 0/59 pre-briefing versus 14/49 (28.6%) consultations post-briefing. Doubts about personal necessity for ICS and ICS concerns were reduced 1 month after consultation in the post-briefing group ($P<0.05$), but the intervention was not applied extensively enough to improve adherence.
Conclusion: The intervention changed nurse consultations but not sufficiently to fully address nonadherence or related beliefs (necessity and concerns). Although the NCF intervention shows promise, more effective techniques are needed to support nurse specialists and other practitioners to apply the intervention in hospital asthma review consultations.
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6. MISSION: Modern Innovative SolutionS to Improve Outcomes iN severe asthma

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Brief outline of the context: Asthma affects 5.4 million patients in the UK; despite treatment, $>50\%$ of asthmatics are poorly controlled.
Brief outline of the problem: The interval from recognition of severe poorly controlled asthma to an MDT diagnosis is associated with delay, significant health-care costs and poor patient experience.
Assessment of the problem and analysis of its causes: Poor recognition of uncontrolled asthma in primary and secondary care, timely access to specialist assessment and investigation.
Strategy for change: Poorly controlled asthmatics will be identified by MISSION through rapid specialist assessment in the community. Those with potentially severe asthma will undergo a full MDT assessment and investigation in a 'one-stop' weekend clinic.
Measurement of improvement: Rates of asthma exacerbations (courses of oral corticosteroids, hospitalisations), asthma control and quality of life at 3 and 6 months after assessment. Patient experience, knowledge and confidence in managing their asthma will be assessed.
Effects of changes: Better patient experience, rapid recognition of severe asthma, easy access to specialist MDT, increased treatment options and improved health-care professionals' knowledge of asthma.

Lessons learnt: So far, three practice systems have been interrogated; 866 records have been reviewed and 272 potentially uncontrolled asthmatics identified. It has been noted that searching IT systems is restricted by coding and does not identify all patients.
Message for others: By bridging the gap between primary and secondary care and working closely together, we will improve patient outcomes.
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7. 'Inspire Yourself'—transforming pulmonary rehab gains into lifelong change

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Brief outline of the context: Pulmonary rehabilitation is widely regarded as one of the most clinically effective and cost-effective interventions for patients with chronic respiratory disease. Patients normally attend a programme for 6–8 weeks, which includes exercise and education, provided by a specialist multi-disciplinary team. On completion of the programme, patients often show significant improvements in exercise tolerance, quality of life and emotional well-being. However, the clinical improvements have been shown to diminish over time, especially if patients do not continue with regular exercise. The limited provision of follow-on classes for respiratory patients across the UK is a confounding factor, and, therefore, patients often request repeat courses of pulmonary rehabilitation.
Brief outline of the problem: For patients who completed pulmonary rehabilitation on the Wirral, there was no exercise group that was willing or able to accept them for maintenance exercise. The physical and health-related gains made through pulmonary rehabilitation were being lost, and as patients became aware of this deterioration they requested repeat referrals into the service. This increase in demand for 'repeat PR' was encouraging but also over-burdened the service. Furthermore, the social interaction and relationships that patients built up over 6–8 weeks were lost by the lack of opportunities to continue group exercise.
Assessment of the problem and analysis of its causes: Decreased awareness and understanding of pulmonary rehabilitation coupled with a lack of local funding meant that the service could only provide standard pulmonary rehabilitation. Existing council exercise classes were unable to take large numbers of individuals (who wanted to stay in the PR group), and independent groups often refused participation on medical grounds. The BLF were also approached but refused to assist in providing exercise classes because of public liability issues. Patients reported finding it hard to motivate themselves to exercise alone and, therefore, often fell out of a healthy routine that included regular exercise. The short-term gains were not translating into long-term benefits, and subsequently follow-on groups were identified as an essential component of the pulmonary rehabilitation provision.
Strategy for change: A new approach was adopted by the PR team, which involved patient empowerment and education to help them set up and run their own follow-on classes. Appropriate venues were identified, and an 'unincorporated association' was formed to provide a framework for patients to develop small groups. As the pulmonary rehabilitation sessions came to a close, the physiotherapy staff facilitated the formation of groups and committees out of the existing patients, who were then taught how to organise, run and participate in their own follow-on exercise classes. The PR staff helped at the classes initially to get them up and running, and once the groups were sustainable and organised the patients were handed full control.
Measurement of improvement: Within 6 months of adopting this new approach, over 100 patients were attending five groups held at local community venues. Re-referrals into the PR service had decreased and the patients reported feeling that the health gains made from PR were being maintained. These outcomes will be audited formally in the near future.
Effects of changes: A reduction in re-referrals has resulted in a decreased waiting list for new patients, and we anticipate that follow-on classes will have an impact on admission rates, exacerbation rates and other clinical outcomes in the long term. By providing follow-on classes, PR staff also knew that the positive impact and improvements being made with patients were sustainable.
Lessons learnt: By empowering patients to set up, organise and run their own maintenance classes, pulmonary rehab teams can solve the problem of how to fund/provide follow-on classes. A small amount of time was required from the existing service to facilitate group development, assist with applications for public liability and search for venues, etc., but the time invested has returned more than could have been anticipated in decreased re-referrals. A small number of patients were unwilling to take on any level of responsibility for organising and running the groups, but the majority were more than happy to work together to set up a group based on the fact that workload could be shared.
Message for others: Sometimes we need to look outside the normal health structures to meet the needs of patients. Funding for maintenance classes on the Wirral had not been forthcoming and this could have been the end of the matter. However, empowering patients to help themselves and using the strength of a group to facilitate this outside of the confines of the NHS, but with support from the NHS, allowed PR patients on the Wirral to translate the short-term gains from PR into a lifelong change.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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8. Improving diagnosis and quality of COPD review in primary care using a guided consultation

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Brief outline of the context: Audits show deficiencies and variability in care but do not drive change.
Brief outline of the problem: QOF measures in COPD have encouraged better management but have not successfully addressed the quality or consistency of care delivery.
Assessment of the problem and analysis of its causes: Inconsistency of education, time pressures and many complex guidelines make it hard to deliver recommended care to all patients all the time.
Strategy for change: We have developed a comprehensive computer-guided consultation for COPD patients, aiding diagnosis and prompting individualised management plans based on NICE guidelines. Data are fed back to practices.
Measurement of improvement: A review of 2,000 patients on COPD registers across 78 practices in the UK.
Effects of changes: Eighty-one patients could not complete spirometry and 378 (19.3%) did not have obstruction; the range of misdiagnosis was 11.5–23.5%. After reviewing the 1,541 patients with COPD using the guided consultation, 28.8% of current smokers accepted referral to smoking cessation, 4/28 (14.3%) to oxygen assessment and 33.3% of those eligible to pulmonary rehabilitation.
Lessons learnt: Other recommendations included addition of a short-acting bronchodilator in 75 (4.9%), a long-acting bronchodilator in 78 (5.1%) and LABA/ICS in 75 patients. In 32 (1.8%) patients, some inhaled medication(s) were discontinued. An overall 13.1% had poor inhaler technique and these patients reported more frequent recent admissions (16 vs 7.8%).
Message for others: The high misdiagnosis rate for COPD patients persists and care delivery remains variable. Use of this guided consultation encourages NICE guideline standard care and allows practices to performance manage care delivery.
Conflict of interest and funding: The authors declare no conflict of interest. The computer-guided consultation was developed by LungHealth Ltd.

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9. A smartphone game for tobacco addiction: a novel addition to smoking cessation services

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Aim: A billion people smoke tobacco worldwide, making tobacco dependence a major public health challenge and the leading cause of preventable death globally. Although 66% of smokers want to quit, few successfully do so and 33% think health risks are exaggerated. Thus, new methods for smoking cessation are urgently needed. Smartphone games currently comprise the largest market share of mobile phone apps, making up 33% of all downloads, and offer a potentially cost-effective platform for health promotion. The use of gamification is effective in promoting healthy behaviours and delivering health promotion advice. However, there is as yet no dedicated game to promote smoking cessation. Our aim was to use gamification techniques to develop a new smoking cessation app implementing validated behaviour change methods.
Method: The app has been developed iteratively and collaboratively with public health practitioners, game designers, health psychologists and smokers invited through patient participation groups to try the game. A qualitative framework analysis of their comments was conducted.
Results: Players found the app an engaging and motivating way to deliver smoking cessation advice, providing a helpful distraction from smoking. We plan to conduct a randomised controlled trial against clinical outcomes.
Conclusion: Collaborative development has ensured that the game is engaging as well as potentially effective. Large-scale uptake of this app could have an enormous public health impact.
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10. Survey of a seven-step patient passport for COPD in primary care

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Brief outline of the context: In 2012, the Northwest respiratory clinical pathway leads developed a 'Patient Passport' describing seven steps towards the best COPD care (Roberts, 2012). We had input from primary and secondary care clinicians, the British Lung Foundation (BLF) and from patients.
Brief outline of the problem: The patient passport is intended to act as a patient-held set of standards with which to benchmark your care. In 2012 and 2013, a survey was carried out on the BLF website's patient forum (Gaduzo, 2013). The results may have shown bias as the participants were self-selected and from a motivated population.
Assessment of the problem and analysis of its causes: Cheadle Medical Practice is a suburban practice in northwest of England with 11,800 patients, of whom 183 were on the COPD register at the time of the survey (prevalence 1.6%). Although we achieve full QOF points for COPD, this may be an incomplete measure of the quality of care delivered.
Strategy for change: A survey of all patients on the register would give a better idea of the standards achieved. We, therefore, carried out a postal survey of all patients on our COPD register in December 2013, asking them to indicate whether they felt their care fulfilled the seven steps. The survey was anonymous, with a stamped addressed return envelope, with no reminders. Comments were also encouraged.
Measurement of improvement: After 4 weeks, we achieved a 64% response rate. Results suggested good performance in most of the seven steps.

183 Sent, 117 responses (64%)	*Number*	*%*
Diagnosis confirmed by QA spirometry	115	98
Supported to manage my COPD	101	86
Smoking cessation support	75	64
Activity, exercise, Pulmonary Rehabilitation	71	61
Medicines, inhaler technique	113	97
Written action plan, rescue medication	62	53
Annual structured review by GP/PN	107	91

Abbreviations: COPD, chornic obstructive pulmonary disease; GP, general practitioner; PN, practice nurse; QA, quality assurance.

Effects of changes: The high response rate suggests well-motivated, engaged patients. It is encouraging that >85% of responses were positive for four of the seven parameters. The survey involved various members of the practice team—admin, secretarial, audit, clinicians. Feedback of results was eagerly anticipated and received. We are keen to improve further and repeat the exercise to complete the audit loop.
Lessons learnt: Comments made were generally positive and constructive. However, there were some limitations to the survey: some patients felt they did not need smoking cessation advice as they had already quit smoking; also, distinguishing between advice on activity and referral to pulmonary rehabilitation was difficult. Inclusion of patient names may have facilitated follow-up actions.
Message for others: If you want to know how you are performing, why not ask your patients? Patient-held standards in the form of the seven-step passport can be a useful way of driving quality of care.
Conflict of interest and funding: The authors declare no conflict of interest. The survey was supported by an educational grant by Chiesi Pharmaceuticals.
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11. Real-world evidence on asthma review and change from fluticasone propionate/salmeterol to fluticasone propionate/formoterol

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Aim: To examine the success of reviews that included patient education on asthma disease management, inhaler technique check and change from fluticasone propionate/salmeterol (Seretide Evohaler: FP/SAL) to fluticasone propionate/formoterol (Flutiform: FP/FORM).
Method: Medical records of patients who attended for review and were changed to FP/FORM were retrospectively examined. The proportion of patients who continued using FP/FORM for a period of 18 months post review was calculated. The number of rescue and combination inhalers collected over a period of 18 months following the review was compared with the number of inhalers collected during an equal period before the review. Cost savings due to combination inhaler change and reduction of rescue inhaler prescriptions were also calculated.
Results: Sixty records from patients who changed to FP/FORM were examined. In total, 88.3% (53/60) of patients remained on FP/FORM at the time of analysis (90.6% (48/53) had received FP/FORM for 18 months and 9.4% (5/53) for between 10 and 15 months). Compared with an equal period before the change, the average number of prescribed rescue inhalers reduced by 1.89 inhalers per patient. The average number of combination inhalers increased by 2.68 inhalers per patient, suggesting an improvement in patient compliance with preventative therapy. A total of £5,781.34 was saved by using FP/FORM rather than FP/SAL, and the average cost per patient including cost of rescue inhalers reduced by £111.89.

Conclusion: The asthma review and change to FP/FORM was successful as 88.3% of patients continued on FP/FORM. Furthermore, the review process appears to have improved asthma management and patient compliance, while reducing costs.
Conflict of interest and funding: MS is an employee of Napp Pharmaceuticals Limited. The remaining authors declare no conflict of interest.
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12. Preventing and Lessening Exacerbations of Asthma in School-aged children Associated with a New Term (PLEASANT): recruiting primary care research sites—the PLEASANT experience

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Aim: To describe the PLEASANT trial and present results on factors that influence recruitment of primary care centres into a trial.
In the UK, there is a pronounced increase in the number of unscheduled visits to the doctor by school-aged children with asthma when they return back to school in September after the summer holidays. This increase is preceded by a drop in the number of prescriptions administered in August. It is possible, therefore, that children might not be taking their medication as they should just before the challenge they get on return back to school from mixing with children and picking up infections, which might affect their asthma.
PLEASANT is a cluster RCT that examines whether a brief intervention delivered by the GP to school-aged children with asthma is able to reduce exacerbation of asthma and unscheduled medical contacts in September.
Method: Data were collected on practice size and previous research experience from 433 practices within England and Wales on the CPRD database.
Results: Previous RCT involvement (HR = 1.806 (95% CI = 1.546–2.109) $P < 0.001$) and the number of studies a practice has engaged in (OR = 2.511 (95% CI = 1.713–3.783) $P < 0.001$) significantly influenced whether a practice would participate in PLEASANT. Practice size was not a significant deciding factor (OR = 1.035 (95% CI = 0.989–1.082) $P < 0.137$).
Conclusion: General practices with more research experience are more likely to participate in studies. Preliminary results from the PLEASANT trial expected in July 2014.
Conflict of interest and funding: The authors declare no conflict of interest. Funding by NIHR HTA.
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13. Patient experience of the quality of asthma care in England

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Aim: Asthma affects an estimated 4.5 million people in England and represents more than 1% of health service spending. More than 65,000 emergency hospital admissions occur every year and it is estimated that 75% of these might be avoided with the right care, meaning that asthma is a health service priority. Evidence-based expected standards of care for the English health service were published in February 2013. Required components of care include annual reviews and self-management support via asthma action plans and a check of the inhaler technique. This project aimed to understand patient experience of asthma care and assess which elements of good quality care patients were most likely to remember receiving.
Method: People with asthma were invited to take an online survey via the Asthma UK website (www.asthma.org.uk) between May and July 2013. Respondents were asked to report which relevant aspects of good quality care they recalled receiving using a questionnaire based on the key care components. Those who reported receiving all relevant aspects of good quality care were assigned an 'excellent' rating, those who reported receiving more than half of relevant aspects of care were assigned a 'satisfactory' rating and those who reporting receiving half or fewer of relevant aspects of care were assigned a 'poor' rating.
Results: During the data collection period, 4,967 people with asthma in England (including 548 children aged under 18) took the survey. In total, only 758 (15%) recalled receiving all elements of good-quality asthma care (results are shown in Table 1). Although 3,885 (78%) adults and 420 (77%) children reported that their inhaler technique had been checked, only 1,109 (22%) adults and 184 (34%) children reported being given an asthma action plan.

	Adults	*Children*
Excellent	677 (14%)	81 (15%)
Satisfactory	2,527 (51%)	292 (53%)
Poor	1,763 (35%)	175 (32%)

Conclusion: Most asthma patients in England do not recollect being given all of the components of asthma care that are outlined in government standards, including key elements of self-management support. This suggests that there may be shortcomings in the quality of asthma care being delivered.
Conflict of interest and funding: All authors are employed by Asthma UK, a charity that received funding for this project from Novartis Pharmaceuticals UK, Boehringer Ingelheim Ltd UK, Napp Pharmaceuticals, Chiesi Ltd, Teva Limited and Orion Pharma UK Ltd. During the last 5 years, SW has received reimbursement for speaker meetings and/or consultancy from ALK-Abello, Boehringer Ingelheim, GlaxoSmithKline, MSD, Novartis, Chiesi and Stallergenes.
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14. Quality of life and asthma control: a UK population survey

Humphreys E, Upton J, Price D, Walker S
Asthma UK

Aim: Asthma is a long-term condition resulting in >65,000 emergency hospital admissions/year in the UK. Interventions to improve asthma outcomes are required but up-to-date outcomes data are lacking.
The aim of this survey was to describe asthma-specific quality of life, asthma control and exacerbation rates in the UK.
Method: Adults (18–75 years) in England, Scotland and Wales with a diagnosis of asthma and a current prescription for asthma medication were invited to participate in this cross-sectional telephone survey. Measures included the Marks Asthma Quality of Life Questionnaire (AQLQ-M), 0–60; high scores = poorer control; the Asthma Control Test (ACT), well-controlled asthma ⩾20; and the Royal College of Physicians 3 Questions (RCP3Q), well-controlled asthma = 0; and exacerbation rates.
Results: Of the 658 participants (response rate 49%), 427 (65%) were female. The median (IQR) age was 50 (41–63 years) years. The median AQLQ-M score was 9.1 (IQR 2–12). An overall 17% reported ⩾1 episodes of asthma exacerbation over the last year. Asthma control was poor for 38% (ACT) to 52% (RCP3Q) of participants. Of those prescribed inhaled bronchodilators alone, 33% (ACT) to 45% (RCP3Q) did not have well-controlled asthma. In the past week, 50% of all participants reported having asthma symptoms, 16% said asthma had interfered with their daily activities and 15% had difficulty sleeping due to asthma; 27% felt dependent on asthma medication, 26% reported a general lack of energy, 19% were restricted in performing exercise and 18% had been troubled by episodes of shortness of breath.
Conclusion: Asthma outcomes remain sub-optimal in this UK population. Interventions to reduce morbidity and mortality should focus on preventing asthma attacks and improving asthma control.
Conflict of interest and funding: The authors declare no conflict of interest. This survey received funding from Astra Zeneca, MSD, Boston Scientific and GlaxoSmithKline.

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15. A qualitative study of a primary care-led active self-management intervention strategy in reducing unscheduled hospital admission with COPD

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Aim: In 2012, Hardwick CCG in Derbyshire serving a population of 102,000 identified COPD as one of its key clinical priorities. Our COPD unscheduled admission was significantly above the national average and we wanted to improve our care.
Method: Members from 16 practices attended one of our monthly education sessions. In the event, we discussed diagnostic tools in early detection of COPD, motivational training for staff on how to encourage patients to stop smoking, identifying the signs of exacerbation and when to use rescue medications using the COPD action plan booklet. We also offered free nebulisers for patients who suffer frequent exacerbations with clear advice on when and how to use the nebulisers. We used St George's Respiratory Questionnaire to assess the effectiveness of a home nebuliser.
Results: Between March 2012 and April 2013, 383 patients were admitted into the ED (exacerbation of COPD), which was a 25% increase on the previous year of 286. The average cost of these admissions was £1,500, which amounts to a total of £574,500. We have seen a reduction of 113 emergency admissions between March 2013 and April 2014, which is a 30% reduction. Using the £1,500 tariff, this equates to a potential cost saving of £169,500. Five questionnaires were returned so far after the nebuliser pilot. None of the patients called an ambulance. All of them felt that they can manage the lung condition more confidently.
Conclusion: There is clear benefit from encouraging patients to self-manage their condition. The sample size for the nebuliser pilot was too small but there is significant benefit in offering home nebulisers to carefully selected patients.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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16. Implementing an education programme to support primary care to improve outcomes for patients with COPD

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Brief outline of the context: In 2012, the regional Respiratory team offered the opportunity for networks to formulate a local project with a small amount of supporting fund for successful projects.
Brief outline of the problem: The Isle of Wight has low COPD admissions, a wide variation in prevalence among GP practices and high QOF exception reporting. There is high spend on respiratory medications and the highest spend on inhaled corticosteroids in the region.
Assessment of the problem and analysis of its causes: A local survey showed that the skills in primary care to record and interpret spirometry are variable. This variation can lead to both under- and over-diagnosis of respiratory conditions.
Strategy for change: To work with partners to deliver accredited training to targeted staff, starting with spirometry. To consider the use of a Locally Enhanced Service (LES) as incentive to participation.
Measurement of improvement: The number of nurses who achieve certification.
Comparison of prevalence before and after training.
Comparison of admissions per 100 people with COPD in all practices.
Measures for 2011–2012 will be compared with those for 2012–2013.
Effects of changes: Seventeen nurses were accredited. There was increased time for spirometry clinics, standardisation of verification processes, Island-wide PGD for reversibility and increased confidence in making diagnosis.
Lessons learnt: Try to avoid conflict with other courses; make objectives achievable.
Message for others: Be clear about the volume of work involved. You need a driver (completer/finisher) and the support of the local team. Have a plan for stragglers!
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17. Feasibility and effectiveness of an Asthma/COPD tele-medicine service for primary care

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Brief outline of the context: In the Netherlands, most asthma and COPD patients are treated in primary care. Correct and early diagnosis can reduce costs, morbidity and mortality.
Brief outline of the problem: Mis-diagnosis and under-diagnoses are common.
Assessment of the problem and analysis of its causes: Guidelines recommend spirometry for diagnosing; however, performing spirometry and interpreting the results can be challenging.
Strategy for change: Since 2007, the Asthma/COPD(AC) tele-medicine service supports GPs under the advice of pulmonologists. GPs can refer patients with respiratory problems to the service. Patients are assessed in a local laboratory by following a strict protocol. Pulmonologists inspect the data through the Internet and send the GP diagnosis and management advice.
Measurement of improvement: We report baseline data of 11,401 patients and follow-up data from 2,556 patients and we have evaluated the feasibility and effectiveness of this service.
Effects of changes: The service is used by 79% of GPs in the target area. Pulmonologists were able to diagnose 79% of patients. Patients improved in exacerbations/year: 36% had $\geqslant 1$ exacerbation in the year before inclusion. In the year after inclusion, 26% had $\geqslant 1$ exacerbation ($n = 991$, $P < 0.00$).
Lessons learnt: The AC tele-medicine service is considered to be feasible, well implemented and can improve patients' outcomes.
Message for others: This is an example of an effective collaboration system between primary and secondary care.
Conflict of interest and funding: R.Riemersma is member of the advisory board of Certe Laboratories. Thys van der Molen is a member of the board of Certe Laboratories. MG Piersma-Wichers is director of Certe Laboratories. The remaining authors declare no conflict of interest. Funding has been received by the University Medical Center Groningen.
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18. Read allergy codes—a cross-sectional study on 2,014,551 patients in primary care in Scotland

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Aim: 'Big data' has received huge amounts of funding to further research and improve medical practice in the UK. This raises the issue of the status of the available data. Although patient-based information in secondary care in the UK is well regulated, not much is known about this in primary care. We, therefore, studied the availability and usage of Read codes in primary care for allergic diseases, including asthma, as an exemplar clinical area. The purpose is to inform deliberations on the move to Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT) and the related development of a more comprehensive set of allergy codes covering NHS allergy care.
Method: Scottish Primary Care Clinical Informatics Unit—Research database was interrogated from 2003–2004 to 2009–2010. The codes

were classified into types, causal-allergens and level, across 11 allergic diseases.
Results: We identified 352 Read codes for allergies. These were used 2,311,843 times in 2,014,551 patients. Ten percent of the available codes were used 95% times; 21% codes were never used; 50% usage of codes was for process reporting; observation codes (15%) were used the most (65%); non-specific causal-allergen codes (42%) were mostly used (64%); the more specific low-level codes (42%) had little usage (8%); medium-level codes (54%) were mostly used (81%).
Conclusion: We can provide a recommended list of allergy codes and definition of terms to help decision makers with the implementation of SNOMED-CT concepts.
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19. Getting COPD evidence into practice: a participatory programme of shared learning involving patients, professionals and researchers

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Brief outline of the context: COPD is an under-diagnosed long-term condition with poor mortality figures, high levels of morbidity and high unplanned admission rates.
Brief outline of the problem: Evidence-based practice could improve outcomes for COPD patients but implementation is suboptimal in primary care.
Assessment of the problem and analysis of its causes: The challenge is to transfer evidence into everyday practice in a manageable, meaningful way that brings about sustained clinician and organisational change.
Strategy for change: To improve knowledge, skills and management of COPD in primary care, a 5-day educational intervention was delivered that incorporated taught sessions, project work and the patient perspective. Twelve practices were recruited.
Measurement of improvement: Evaluation involved surveys of attendees, and group and individual interviews at baseline and up to 12 months after completion of the intervention.
Effects of changes: There was (self-reported) improvement in attendees' awareness of what needs to change and why in COPD care. This improved knowledge and awareness resulted in clinician and organisational behaviour change related to improving care for COPD patients. These changes were reported to be sustained 12 months after completion of the intervention.
Lessons learnt: A gap between evidence and practice was confirmed. Key drivers of change were the undertaking of a project as part of the initiative, the use of local speakers and, in particular, the involvement of a local patient group.
Message for others: Interactive, participatory programmes of shared learning can effectively promote an increase in evidence-based practice in primary care.
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20. HELPing people with severe COPD: piloting a practical intervention

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Aim: To pilot the proactive assessment of the supportive care needs of people with severe COPD.
Method: We piloted HELP-COPD: a novel, structured, holistic review of care needs delivered at home after hospital admission with COPD. A respiratory nurse assessed social, psychological, spiritual and/or physical needs, provided advice and information and made further clinical/social care referrals. Summaries were given to the patient and their general practitioner (GP). Follow-up included three phone calls over 6 months. We recruited people during a COPD admission and randomised to intervention:usual care (ratio 3:1). Health-related quality-of-life and health-care utilisation were measured at baseline and at 3 and 6 months. Semi-structured interviews explored feasibility/acceptability with patients, lay-carers and health professionals.
Results: We recruited 44 patients to the trial, although substantial attrition (four deaths/nine ill-health/three uncontactable) meant only 19 completed the 6-month trial. A total of 14 patients, three caregivers and 28 professionals provided 41 interviews. Patients were generally positive about the assessment, although fewer unmet needs were identified than expected. Patients were often reluctant to access proffered services, valuing independence and preferring family support. Prior experience of inaccessible or unacceptable services and poor public understanding of their condition were practical barriers to accepting services. Professionals considered the intervention to be important, although actions (typically providing information, facilitating pulmonary rehabilitation, promoting GP review) overlapped with existing discharge planning and community support.
Conclusion: The HELP-COPD holistic assessment was feasible and generally welcomed. Fewer actions were identified than anticipated, perhaps due to duplication with existing services, reluctance to accept formal care, and long-term adaptation reducing recognition of need.
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21. The nature of need in people with severe COPD: a qualitative study nested in the HELP-COPD pilot trial

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The University of Edinburgh

Aim: Despite apparent unmet needs, people with COPD rarely ask for help. We explored the concept of need in this group, from the perspective of patients, their caregivers and professionals.
Method: We recruited inpatients at two NHS Lothian hospitals to the HELP-COPD pilot: a structured, holistic review of care needs delivered at home by a respiratory nurse. We explored the views of patients, caregivers and professionals on the intervention, and its utility in identifying and meeting needs. Thematic analysis was carried out using Bradshaw's classification of felt, expressed, normative and comparative needs.
Results: A total of 14 patients, three caregivers and 28 professionals provided 41 interviews. Professionals identified some practical 'normative' needs, which were often addressed during discharge planning. Although other needs (physical limitations, social/financial concerns, existential concerns) were 'felt' by patients and caregivers, adaptation to the disabilities meant they were often accepted rather than actively 'expressed' as needing action. Patients often prioritised retaining their sense of independence, preferring to accept care from family members rather than from formal agencies. Few unmet needs were identified by our intervention and few actions planned.
Conclusion: In contrast to professionally defined 'normative' needs, patients generally did not perceive themselves as needy, accepting their 'felt' needs as the result of a disability to which they had now adapted. Sensitive approaches that foster independence may enable patients to 'express' needs that are amenable to help without disturbing the adaptive equilibrium they have achieved. Primary care, with its on-going relationship with patients and families, may be best placed to provide this.
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22. PRISMS: a systematic meta-review of the evidence on supporting asthma self-management

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Aim: To synthesise the findings of systematic reviews (SRs) to provide a high-level overview of self-management support strategies to inform provision of asthma services.
Method: We systematically searched seven electronic databases plus snowball and manual searches. Outcomes of interest were measures of asthma control and asthma-related quality of life (QoL). We investigated the composition, delivery and setting of interventions to identify the optimal configuration of self-management support.
Results: We included 18 SRs (published 1995–2012) incorporating 157 randomised controlled trials. There is strong evidence that optimal self-management support reduces unscheduled health care and improves QoL and measures of control in people with asthma. Interventions were diverse, targeting health-care professionals, patients and/or caregivers. Effective interventions were often tailored to specific populations (e.g., age, ethnicity, severity of disease), contexts (e.g., in health care, school, home settings) or mode of delivery (e.g., group, individual, telephone, computer). Optimal asthma self-management included education with a written asthma action plan and was supported by regular review. Adherence to medication improved when self-management was delivered as a component of structured management of chronic disease.
Conclusion: When developing self-management support services, it is essential to consider not only the content of the intervention but also tailor the delivery mode and setting for the population and the health-care context. Delivery as a component of integrated supportive long-term condition care optimises the impact of asthma self-management.
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23. PRISMS: a systematic review of the evidence on implementing asthma self-management

Epiphaniou E, Parke H, Pearce G, Taylor SJC, Pinnock H
Queen Mary University of London

Aim: Asthma self-management is widely recommended by guidelines but poorly implemented. We undertook a systematic review of implementation studies of asthma self-management support interventions to inform implementation in real-life settings.
Method: We searched seven electronic databases, and performed snowball and manual searches. We assessed all eligible papers for quality, and extracted and synthesised data on process (e.g., number of action plans issued) and clinical outcomes (e.g., measures of asthma control, unscheduled health care). Narrative synthesis used the whole-systems approach as a framework.
Results: Eighteen studies (seven randomised, eight longitudinal database, three uncontrolled) were included in the review. Interventions that explicitly addressed patient, professional and organisational factors ($n=7$ studies) showed the most consistent improvement in both process and clinical outcomes. Targeting professionals ($n=2$ studies) improved process but not clinical outcomes. Targeting patients ($n=6$ studies) had an inconsistent impact on process/clinical outcomes. Targeting the organisation ($n=3$ studies) improved process, and had a small effect on clinical outcomes. Authors highlighted the need to support professional education by integrating new behaviour into practice, as well as the challenges of staff turnover and the importance of involving senior staff in the design of interventions.
Conclusion: Effective interventions were multi-faceted: actively engaging patients and training and motivating professionals within the context of an organisation that prioritised supported self-management. A supportive organisational culture underpins and enables integration of self-management principles into routine clinical care, such that the process and clinical impact of patient/professional interventions are realised.
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24. 'Light Touch' telemonitoring for people with COPD in Lothian: a pilot evaluation

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Aim: To evaluate the acceptability, perceived utility and impact of COPD Light Touch telemonitoring service.
Method: People with COPD maintained a daily symptom and a pulse oximetry diary. Community-based respiratory specialists provided a self-management plan that outlined the symptoms and/or physiological measures that should trigger contact with the Light-Touch telephone helpline and/or emergency self-treatment.
We undertook a before-and-after study with quantitative data collection at baseline and at 6 months. Outcomes were St George's Respiratory Questionnaire (SGRQ), Hospital Anxiety and Depression Scale (HADS) and service use. Nested semi-structured interviews with patients (at baseline and at 6 months) and managers, and a focus group of health-care professionals, explored the perceptions of the service.
Results:We recruited 51 patients. As per the SGRQ, the quality of life of 21 (46%) participants improved by $\geqslant 4$ (the minimum important difference), whereas that of 12 (26%) deteriorated by $\geqslant 4$. More participants had normal scores for anxiety (65%) and depression (80%) at 6 months than at baseline (51 and 64%), according to HADS.
There were fewer surgery consultations and more telephone consultations and antibiotic, oral steroid and nebulised therapy prescriptions recorded during the study period compared with the previous year. Only 18 (39%) contacted the Light-Touch Helpline.
Interviews from 20 patients (36 interviews), six managers and a focus group of eight clinicians suggested that 'Light-Touch' was generally regarded positively. The readings gave patients confidence to make self-management decisions. Health-care professionals expressed concern that some patients did not make contact.
Conclusion: 'Light-Touch' shows promise as a low-cost strategy for empowering self-management and reducing reliance on clinical supervision. Further evaluation is warranted.
Conflict of interest and funding: The authors declare no conflict of interest. Funded by Edinburgh and Lothian's Health Foundation.

25. Real-world effectiveness of changing fixed-dose combination therapy from Seretide metered-dose inhaler (MDI) to Flutiform in UK asthma patients

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Aim: To investigate the success of changing fixed-dose combination therapy from Seretide (fluticasone propionate salmeterol: FP/SAL) to Flutiform (fluticasone propionate formoterol: FP/FOR) in asthma patients.

Method: This was an observational study of UK primary care patients from the Optimum Patient Care Research Database changing fixed-dose combination therapy from FP/SAL via MDI to FP/FOR. Patients aged 12–80 years with asthma diagnosis and/or ⩾2 prescriptions for asthma therapy 1 year before their first FP/FOR prescription were included. Primary outcome was 'change success' defined as ⩾70% of patients with ⩾1 prescription for FP/FOR 6 months following therapy change (not including first prescription). Patient characteristics during the year before FP/FOR prescription were analysed and compared with those of patients prescribed FP/SAL as repeat prescription (Mann–Whitney and χ^2 tests, where appropriate). Oral steroid use in FP/FOR patients was compared 6 months before and after switch using the McNemar–Bowker test.
Results: Of 164 patients changing their therapy to FP/FOR, 88.4% had at least one further FP/FOR prescription 6 months following the change. A total of 164 FP/FOR patients were compared with 6,228 FP/SAL patients. Overall baseline characteristics were similar, although FP/FOR patients were significantly older, more likely to be current smokers and with more lower respiratory tract infection consultations leading to antibiotic prescriptions. Six-month effectiveness analysis before and after the FP/FOR switch showed no significant differences in the number of oral steroid prescriptions ($P = 0.175$).
Conclusion: Change success was achieved with 88.4% of FP/FOR patients receiving a second prescription 6 months following therapy change with no loss of asthma control.
Conflict of interest and funding: Gruffydd-Jones is a Napp speaker, consultant. Price is a Napp board member, speaker and consultant. The authors declare no conflict of interest. Funding was by Napp. Analysis was done through Research in Real Life.
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26. The role of an integrated respiratory specialist

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Aim: There is an increased drive towards health-care integration in the United Kingdom (UK) to adapt to new health-care needs. In response to this, new ways of delivering care have been developed, such as the provision of integrated respiratory specialists. A few already exist with some commonalities but there are differences in funding source and some core activities. This project set out to clarify the purpose and component of such posts and identify the barriers/enablers to undertaking the role effectively.
Method: A BTS survey on the role of integrated care specialists was sent to all BTS members. Interviews with 12 selected integrated care specialists were undertaken to clarify the value and obstacles faced in these new roles.
Results: The roles are multi-faceted, with a crucial role being that of a 'bridge', improving the links between all health sectors (secondary, community, etc.). Key areas of expertise include providing leadership, clinical governance, clinical decision-making and clinical supervision. These roles can be carried out by physicians, nurses or physiotherapists either solely or with a joint lead. Networking skills, respiratory expertise and knowledge of primary care and commissioning structure are needed. A willing CCG is needed on board, as well as a cohesive team and appropriate funding mechanisms.
Conclusion: This project set out to describe these roles and the experiences of those currently in the post. The project has also identified what needs to be done next—e.g., development of job descriptions, mapping out training for junior staff, as well as proposing new models of delivery for the care of respiratory long-term conditions.
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27. Real-world insights into treatment persistence with fluticasone propionate/formoterol (FP/FORM) combination inhaler

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Aim: To examine real-world treatment persistence with FP/FORM combination inhaler in a cohort of UK respiratory patients.
Method: Anonymised patient records were extracted from the Celesio UK Ltd pharmacy dispensing database, which includes dispensing data from 1,568 Lloyds Pharmacy pharmacies covering 14.9 million patients throughout the UK. Records were retrospectively analysed to identify all patients who were dispensed ⩾1 FP/FORM inhaler between September 2012 and December 2013. Patient records that had become inactive before the end of the analysis period, i.e., no medication from any class dispensed from October to December 2013, were considered lost to follow-up and excluded from the analysis set. Individual records were then assessed for continuation of treatment with FP/FORM at 6, 9 and 12 months post treatment initiation. Records were judged to indicate continuing treatment if ⩾1 FP/FORM inhaler had been dispensed in the 3-month period immediately preceding the analysis time point.
Results: Records of 5,477 patients who were dispensed ⩾1 FP/FORM inhaler between September 2012 and December 2013 were identified, of which 2,364 were identified as active patient records for the duration of the analysis period. A total of 1,127 records had 6 months of follow-up data available, 483 had 9 months' data and 144 had 12 months' data. At 6 months, 100% (1,127/1,127) of patients were retained in treatment with FP/FORM, 92% (444/483) at 9 months and 92% (132/144) at 12 months.
Conclusion: This retrospective analysis of real-world dispensing data across a cohort of UK respiratory patients indicates a high degree of treatment persistence with FP/FORM over a 6–12-month follow-up period.
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28. Using 'No Delays' to enhance access to pulmonary rehabilitation

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Brief outline of the context: No Delays is an online Patient Postcard system based on a platform that can support many long-term conditions. We are using this to support all aspects of patient education and self-care.
Brief outline of the problem: Remote and rural communities present PR challenges – e.g., patient and staff access, viable numbers and class frequency.
Assessment of the problem and analysis of its causes: Multiple sites, limited staff, large distances and lack of available multi-disciplinary staff combined with lack of patient knowledge/conviction with respect to PR benefits.
Strategy for change: Talking directly, patient to patient, and therapist/clinician to patient, can improve uptake, and provide alternative platforms for the exercise element of classes. It also provides a novel way of delivering multi-disciplinary education.
Measurement of improvement: Although early in the roll out, we have improved our PR uptake and footfall.
Effects of changes: Equitable access to PR and improved uptake.
Lessons learnt: Even an elderly population can and will use new technology, enhancing their self-care capability and improving their knowledge and empowerment level.
Message for others: No Delays is a novel and perhaps more cost-effective way of using telemedicine in COPD.
Conflict of interest and funding: The authors declare no conflict of interest. No Delays has been developed in partnership with Digital Life Sciences.

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29. A brief intervention to change prescribing behaviour: does it work?

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Brief outline of the context: NHS Respiratory Prescribing is often variable. Managed Clinical Networks support clinicians in understanding best practice and help Health Boards deliver cost-effective, evidence-based care.
Brief outline of the problem: Unlicensed ICS/LABA prescribing using pMDI devices was a common problem in Grampian. The financial implications were that other evidence-based interventions such as PR were severely restricted.
Assessment of the problem and analysis of its causes: Independent GP and Nurse Prescribers had their own reasons for prescribing in this manner, based on historic practice and their beliefs about the efficacy and usability of preparations. Using PRISMS data, we tracked rising unit use and overall costs.
Strategy for change: A simple brief intervention letter, composed and signed by the MCN group, was sent, with a follow-up at 3 months. This was augmented by 'meet the respiratory MCN' events as part of QPQOF in each of the three key geographical areas.
Measurement of improvement: PRISMS data show a substantial reduction in both units and cost dating from the time of the brief intervention, and sustained for >12 months.
Effects of changes: We have seen a reduction in recurrent spending of £250,000, prompting a joint working initiative where additional savings will be channelled into other parts of the patient pathway.
Lessons learnt: Clinicians will change practice in response to logical argument from their peers or leaders. Low-cost methods of facilitating change can be effective.
Message for others: Locally Enhanced Services, specialist teams and draconian measures are not always required to bring about effective results.
Conflict of interest and funding: The authors declare no conflict of interest. The authors declare that no funding was received.
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30. What factors affect smoker recruitment and retention in community-based smoking cessation programmes? Qualitative phase of the STOP smoking study

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Aim: To gain an understanding of factors related to participation and completion of smoking cessation services and factors that could help improve smoker recruitment and retention from the perspectives of stop-smoking advisors in community pharmacies.
Method: A total of 22 semi-structured in-depth interviews conducted with smoking cessation advisors from 28 participating community pharmacies were carried out. Thematic framework data analysis was used.
Results: The emergent themes have shed light on factors that may influence adult smokers' participation and retention in community stop-smoking programmes and how these can be improved. Influences include the following: characteristic differences among smokers who join and do not join the service and among smokers who join the service and quit and who do not quit; smoker expectations of the service; smoking advisors' methods of identification and use of communication skills to recruit and retain smokers in the service; pharmacy workload; and remuneration amount. Participation and retention in stop-smoking programmes could be improved by providing more training on smoker engagement in the smoking cessation service, addressing remuneration issues for advisors and increasing awareness of what the service offers to smokers.
Conclusion: Understanding the factors affecting recruitment and retention of stop-smoking services by adult smokers and how these can be addressed will help target a larger proportion of smokers, thereby increasing the potential for improved uptake and retention of the service and a higher number of quit rates. The study findings are being used to inform development of a training intervention that will be piloted this year.
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31. Pattern Urban Health Center (H.C) of Peristeri: Contribution of the Pneumonological Unit in the Primary Health Care (PHC) Best Practices

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Brief outline of the context: The role of the Pattern H.C on prevention of and health education for respiratory problems.
Brief outline of the problem: Respiratory problems are a major health concern and an economic burden on society.
Assessment of the problem and analysis of its causes: The function of the Pneumonological unit is standard, with a vision to develop a dynamic system organised according to the National Health Policy with a focus on quality in PHCs.
Strategy for change: In October 2013, the Pneumonological Unit formed a strategy for (a) prevention of and (b) provision of health education on respiratory problems. This strategy was to be implemented in collaboration with the HCDC, the municipality, schools and the Ministry of Education.
Measurement of improvement: The notion of 'Prevention' was introduced, and there has already been an increase of 30% in patients presenting for preventive measures.
Effects of changes: The dynamics of the Pneumonological Unit of the Pattern H. C Dove in terms of innovation and quality of service has within a short time revealed benefits in patients.
Lessons learnt: This has significant economic benefits for the health-care system in terms of strengthening the role of PHCs by demonstrating the importance of quality innovative actions.
Message for others: The following are the objectives of the strategy: (A) provide free preventive programmes (1) for smokers with COPD and (2) for those with sleep apnoea syndrome, as well as (3) smoking cessation programmes; (B) hold lectures on relevant issues by organising workshops for pupils, students, teachers, the general population, etc.; (C) present a video on the harmful effects of smoking at schools; (D) publish articles; (E) initiate awareness campaigns at subway stations; (F) approach enterprises to provide free spirometry and services to their employees; and (H) launch the 'Asthma School'.
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32. The contribution of physiotherapy in primary health care (PHC) in patients with chronic obstructiv pulmonary disease (COPD)

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Aim: To highlight the contribution of physiotherapy in COPD in PHCs.

Method: A thorough literature review was conducted and research studies on the benefits of physiotherapy in PHC in COPD were selected.
Results: COPD imposes a general restriction on patients' daily life because of progressively worsening dyspnoea and increasingly reduced exercise capacity. Effective interventions of pulmonary rehabilitation include physiotherapy and its training techniques, patient information on smoking cessation and preventive vaccination. Physiotherapy focuses on drainage of secretions without any technological equipment, on patients learning an effective cough, on placing the patient in appropriate positions/mobilization, on exercising respiratory muscles, on learning energy saving techniques, and on coordination of gait with the timing of breathing. The choice of the most appropriate technique depends on the patients' history and their current clinical and laboratory results.
Conclusion: The physiotherapeutic programme in PHC depends on the patients' alternating clinical signs and should be designed to meet different needs, such as whether the patient is stable or there is acute worsening of his condition. Physiotherapy in COPD contributes to the clearance of secretions, improvement of ventilation and gas exchange, reduction of the feeling of breathlessness and improvement of exercise capacity.
Conflict of interest and funding: Conflicts of interest could be raised as physiotherapy is not considered as necessary as the medications used. A combination of both in PHC could improve the patients' quality of life. No external funding has been received for this study
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33. Detection of pepsin as a marker of reflux in the coughed-up saliva samples of COPD patients

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Aim: Reflux occurs concurrently in 50–60% of chronic obstructive pulmonary disease (COPD) patients (by 24 h pHmetry) and is very strongly linked to acute exacerbations as reflux was identified in 54% and linked to frequent reflux symptoms.
The aim of this cohort study was to objectively identify reflux in the general COPD patient population by rapid detection of pepsin in expectorated saliva.
Method: COPD patients recruited from the Breathing Space clinic, Rotherham General Hospital. For inclusion, a HARQ (Hull airways reflux questionnaire) score $\geqslant 14$ to indicate likely reflux aetiology was required. The RSI and GERDQ questionnaires were also completed. The patient expectorated a single saliva sample into a collection tube at home at a convenient time. The sample was tested for the presence of pepsin using the Peptest diagnostic test specific for human pepsin A.
Results: The study sample consisted of 12 COPD patients of a mean age of 67 years (s.d. 5.0) and comprised seven female and five male patients. The mean HARQ score was 49.4 (range 30–67), the mean RSI was 32.3 and the mean GERDQ was 8.3. Six patients were taking PPI and four were using Gaviscon.
Of the 12 patients, 8 (66.7%) had detectable pepsin in their saliva sample, with a median concentration of 77.5 ng/ml (positive only—range 25–232 ng/ml), but the overall median concentration was 40.0 ng/ml. There was no significant correlation of pepsin concentration with questionnaire scores or anti-reflux medication use.
Conclusion: An overall 67% of general COPD patients had evidence of recent reflux episodes, as ascertained on the basis of detection of pepsin as a marker of reflux. COPD patients warrant further investigation especially to ascertain the role of reflux in the exacerbation of symptoms and understand the triggers for relapse of this serious condition.
Conflict of interest and funding: PWD is director of RD Biomed Ltd, owners of Peptest. The remaining authors declare no conflict of interest.
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34. Pepsin detection despite the use of acid suppressant medication in patients with airway reflux-related chronic cough

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Aim: Chronic cough (CC) is a problem that is not easy to treat with medication. Associated symptoms include hoarse voice, dysphonia and persistent tickling and irritation of the throat or chest. Airway reflux is a common cause of unexplained chronic cough, and proton pump inhibitor (PPI) medication is commonly prescribed as initial therapy. The following study assessed pepsin identification in CC patients as a marker of airway reflux on PPI.
Method: Symptomatic expectorated saliva samples were obtained from 16 patients (6M:10F, aged 50 years (range 37–76), BMI 30 (range 24–44)) attending an outpatient appointment with symptoms of CC (Castle Hill Hospital, East Yorkshire). Pepsin was identified using the Peptest diagnostic test specific for human pepsin A (RD Biomed Ltd, UK). All patients completed the Hull Airways Reflux Questionnaire (HARQ) (range 0–70; < 13 normal).
Results: Fourteen (88%) CC patients were positive for pepsin in saliva samples (median 83 ng/ml; range 25–250), providing non-invasive verification of the presence of reflux in this CC population. Thirteen pepsin-positive patients had an abnormal HARQ score (median 40; range 25–59) and all were taking PPI.
Conclusion: Pepsin was present in 88% of suspected airway reflux-related chronic cough patients, thus corroborating the diagnosis of reflux. Airway reflux is associated with unexplained chronic cough in patients receiving PPI, highlighting that symptoms and reflux are still present despite acid suppression. Overweight and obese BMI status is a common feature of airway reflux-related chronic cough patients. A reconsideration of the empiric use of acid suppression use may be warranted for unexplained chronic cough.
Conflict of interest and funding: PWD is Director of RD Biomed Ltd, owners of Peptest. The remaining authors declare no conflict of interest.
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35. Transformation in practice: an exploration of the large-scale implementation of Telehealth monitoring in Bristol in COPD patients in the community

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Brief outline of the context: Telehealth monitoring was introduced in Bristol in 2011, offering a new approach to home management of people with long-term conditions. The 3-year scheme was ambitious, focussing on the Quality, Innovation, Prevention and Productivity (QIPP) and Care Closer to Home agendas. This was not a pilot but a commissioned service to support different ways of working. The aim was to reduce the use of NHS resources through anticipatory clinical practice and improved self-care behaviour.
Brief outline of the problem: Within health care, there has been a move away from paternalistic care to enabling patients with long-term conditions (LTCs) to take more control over their care to enable self-management of their daily symptoms and appropriate reaction to exacerbations. Patients are expected to manage their condition independently for 99% of their time and seek help from Health Care Professioanls only when required. Developing self-care skills requires a number of strategies, of which telehealth may be useful (Steventon *et al.*, 2012).
Assessment of the problem and analysis of its causes: There is increased demand on community/primary care services for patients with LTCs as disease prevalence and complexity increases. Management of these LTCs to improve patients' self-care strategies and quality of life, while meeting the requirement to contain the cost of health care, has meant that there is considerable interest in the potential of technology to support this.
Strategy for change: Telehealth implementation required a partnership between commissioners and providers. As one of the largest Telehealth initiatives at the time, it offered significant challenges for all. During year 1, the

project plan took longer than anticipated to deliver, and reorganisation within the community services teams compounded this. Patients were recruited from referrals to community nurses, and the way in which nurses worked was challenged as processes changed. This led to resistance to Telehealth and poor engagement; therefore, nurse champions were identified to support implementation. Commissioner expectations were high, to ensure deployment targets were met. A Telehealth Support Team was introduced to manage installations and issues. Targets meant a move to numbers deployed, rather than appropriate selection. Attempts made to recruit patients managed by Primary Care failed because of lack of incentives and quality evidence.
Measurement of improvement: The following were the expected outcomes: improved patient self-care, measured by patient interviews and the LTC6 questionnaire, reduced hospital admissions and primary care consultations, and any reduction in community nurses' patient contacts, resulting in improved productivity. This depended on effective system integration and redesign and staff engagement with the change.
Effects of changes: Since 2011, 568 patients with COPD have been selected for Telehealth (51% of the total patient cohort; heart failure patients encompassed 46%, and both diseases 3%). Over 250 COPD patients are currently actively using the system. Patient experience is overwhelmingly positive: it reduces their need to contact their doctor and improves independence and confidence. Nurses believe Telehealth reinforces a patient's role in self-care and has led to improvements in productivity in the teams, through new ways of working. Nurse phone calls have reduced by 40% and visits by 18% compared with before Telehealth. There have been fewer contacts with GP practices: an average of 83% fewer phone calls and 57% fewer visits. LTC6 results show that 91% were 'somewhat' or 'very confident' in managing their condition before Telehealth, and 100% afterwards. A statistically significant reduction in unplanned admissions was seen for COPD (<0.05); some had fewer admissions, but those that were admitted had more. Community staff engagement in Telehealth is now good; most teams have adapted positively.
Lessons learnt: The findings are encouraging, considering the challenges faced. Key points of learning highlight the need for the following: incremental implementation at a pace that supports local adjustment; identification of champions to provide peer-to-peer support; effective patient recruitment, monitoring of progress and clear 'discharge' criteria to maximise benefits; and identify incentives for GP practice involvement—e.g., reduced demand. Although the evidence for Telehealth is not conclusive of improvement, there may be some 'real world' improvement in outcomes that could be explored further, especially around the use of comunity and primary care appointments.
Message for others: When investing in a large-scale approach to roll out a change in clinical practice, there is a requirement to implement at a pace that allows staff adjustment, especially when behaviour change (both of staff and patient is required) is helpful, as well as investing in clinical peer support to provide enablement. Expect resistance, especially when research confounds real-life experience from clinicians, and find strategies to work through these to support the care of patients.
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36. Can a community-based education and action plan intervention improve asthma management and reduce admissions in children?

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Aim: In 2008–2009, asthma admissions in the London Borough of Ealing among children younger than 14 years were the eighth highest in England. An informal scoping exercise revealed poor knowledge of asthma and sub-optimal use of action plans, which may contribute to poor asthma outcomes. The aim of this project was to assess the impact of a school- and home-based intervention on improving asthma management and reducing admissions in children younger than 19 years.
Method: A total of 62 out of 82 schools in Ealing agreed to participate in the project. Staff and children were taught in groups and individually about asthma and how to manage it effectively. Children with frequent asthma absences and symptoms at school were identified for home visits to assess barriers to self-management. The same children received detailed education involving the use of standardised resources (www.asthma.org.uk), as well as an action plan and self-management advice. Perceptions of improved confidence in the ability to manage asthma with quality of care were measured post intervention. Admission data were obtained through the Child and Maternal Health Intelligence Network (CHIMAT).
Results: Emergency admissions in children under 19 years fell by 40%, from 440 to 266 per 100,000 population, between 2010/2011 and 2011/2012. In addition, 97% of parents reported improved confidence in managing asthma, 97% of parents found the Asthma UK resource with symptom calendar and action plan helpful and 95% of doctors and nurses who attended training reported improved confidence in asthma management.
Conclusion: An integrated approach to asthma care that focusses on the importance of education and action plans can improve asthma management and reduce admissions.
Conflict of interest and funding: All authors are employed by Asthma UK.
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37. Assessing asthma risk in primary care: can the AAA test predict future asthma attacks?

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Aim: The AAA test (Blakey *et al.*, 2012) assesses the risk of asthma attacks but requires validation to confirm its utility.
Method: We searched records of 14,191 people with asthma from 26 UK general practices. The AAA test consists of eight factors with a consistent and clinically important (OR > 1.25) association with asthma attacks. Factors are weighted in proportion to effect size when expressed as an odds ratio (table).

Smoking	3
Adherence	3
Daily reliever use	3
Allergic rhinitis	2
Asthma admission in past 5 years	2
Leaving school age 16	1
BMI > 30	1
Written asthma action plan	1

Adherence was defined as collecting > 80% of prescriptions for inhaled preventer therapy over the preceding year. Daily reliever use was inferred from the frequency of prescription of short-acting bronchodilators. Patients' risk was retrospectively categorised as low (no noted risks = 0), medium (1–4 points) or high (> 4 points). The primary outcome was defined as a composite of emergency admission/ED attendance for asthma; asthma attack treated in primary care; or acute drop in FEV1 > 10% in the following 12 months.
Results:

Risk Score	*Patients* (n)	*Composite asthma attack endpoint,* n *(%)*
0	8,582	69 (0.80)
1–4	5,394	1,215 (2.24)
5+	215	20 (9.30)

There was an increased risk of unscheduled emergency asthma events in people with a risk score > 5 across all categories of event. People in the 'high' risk category were > 11 times more likely to see a worsening of condition or admission/ED attendance.

Conclusion: The AAA test appears to identify those at increased risk of asthma attacks but requires further validation.
Conflict of interest and funding: The authors declare no conflict of interest. The test part was funded by GlaxoSmithKline. Analysis was conducted by Health Intelligence.
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38. Health-care costs for high-risk asthma patients in England

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Aim: We aimed to estimate health-care costs for high-risk asthma patients from practices in Norfolk, England, to inform decisions about the provision of health-care services.
Method: High-risk asthma patients (severe asthma plus psychosocial problems) were identified from 29 GP practices in England. Their medical records were searched to identify annual levels of health-care resource use and any moderate–severe asthma exacerbations (death, hospitalisation, accident and emergency attendance, out-of-hours medical contact, or a course or boost in oral corticosteroids). Unit costs were assigned to levels of resource use to estimate overall health-care costs (including primary care, medication, secondary care and out-of-hours-care costs). Costs were also compared between those who had $\geqslant 1$ episode of moderate–severe asthma exacerbation in the past year and those who had no exacerbations.
Results: For the 852 identified high-risk asthma patients, the mean annual health-care cost was estimated to be £2,151, where medications constituted 40.4% and secondary care 44.3% of these costs. The mean cost was significantly ($P < 0.01$) higher for the 528 patients who had $\geqslant 1$ episode of moderate–severe asthma exacerbation (£2,482) compared with the 324 who had none (£1,612).
Conclusion: The mean annual health-care costs for high-risk asthma patients was $>$£2,100. Costs were lower for those who had no moderate–severe asthma exacerbations. The considerable cost of managing patients with high-risk asthma demonstrates the importance of interventions to improve their care and reduce exacerbations.
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