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ABSTRACT BOOK

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An easy and validated COPD management algorithm: the Syntepoc Project

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Clinical Research Results

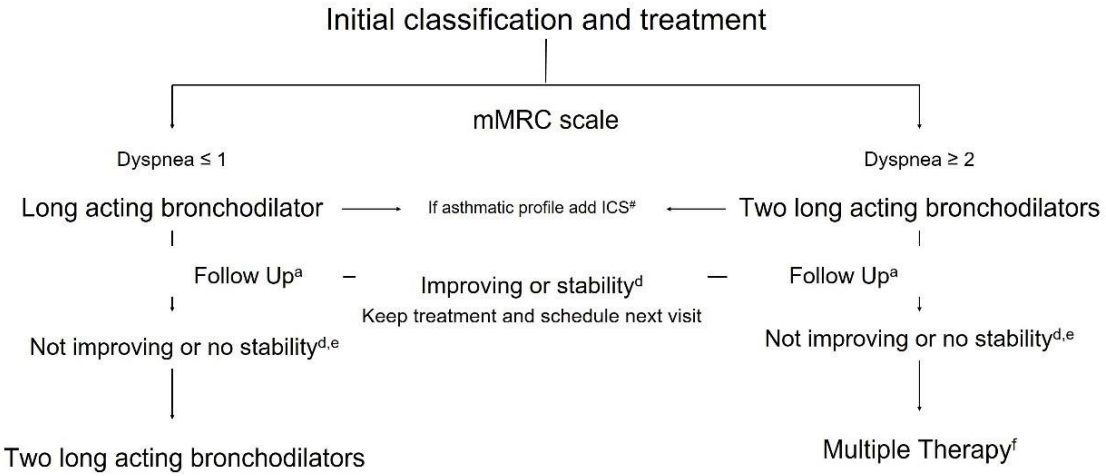
Aim: To develop an easy and validated COPD management algorithm for Primary Care.

Background: Chronic Obstructive Pulmonary Disease (COPD) diagnosis and management are difficult to implement in a primary care setting. Despite the international efforts made to standardize how COPD should be handled, the majority of patients are not diagnosed, treated and followed-up in accordance with actual recommendations [1].

Methods: Syntepoc was developed in 3 phases. A review of the existing evidence, a qualitative meeting with COPD experts to design the algorithm and a Delphi consensus to validate it (both with the participation of Pneumologists – NE- and PC). A cut off value of 75% agreement was set in order to consider the proposal validated.

Results: 10 PC, 9 NE as COPD experts and 75 PC and 43 NE in Delphi participated from Oct 2017 to Jan 2019. Two Delphi rounds were made to reach consensus (95% PC, 86% NE agreement) for the diagnosis, initial treatment and follow-up simple COPD management algorithm (Figure 1).

Fig. 1. Syntepoc Project algorithm



[a]1 month after initial treatment change / 2-6 months usual follow-up. Asses: Dyspnea (mMRC), ≥ 1 severe exacerbation[b], ≥ 2 moderate exacerbations[c].
[b]Life threatening or need of hospitalization
[c]Need of systemic antibiotics and/or corticosteroids
[d]Check for adherence and correct inhalator use, assess other comorbidities, modify treatment if necessary and schedule next visit
[e]Dyspnea persistence or worsening and/or 1 severe or 2 moderate exacerbations
[f]Add: Inhaled ICS if exacerbation, SABA as rescue therapy, systemic antibiotics and/or corticosteroids if acute exacerbation, PDE4 inhibitors if chronic brochitis and exacerbation, methylxanthines if no stability despite máximum treatment, mucolytics/antioxidants if plentiful secretions. Refer to specialized settings if not improve or no stability[d,e].
#Follow asthma guidelines

Conclusions: we propose a simple and validated COPD management algorithm that could help PC physicians to treat COPD patients according evidence based guidelines.

[1]Global strategy for the diagnosis, management and prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2019. Available at: http://www.goldcopd.org/. Last accessed January 2019

APEX COPD, USA Primary Care Registry to change COPD outcomes

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Clinical Research Results

Background: There continue to be treatment gaps in community management of COPD. While ongoing medical education may narrow physician knowledge gaps, optimizing management happens best when patients are involved in their own care. In this spirit, we established the Advancing the Patient Experience in COPD (APEX COPD) program.

Method: Headed by Optimum Patient Care (OPC) Global, a Scientific Committee (SC) of scientists, family physicians and pulmonologists have collaboratively created a series of clinical factors to be utilized in primary care in the United States to improve outcomes in COPD patients.

Results: Tools are being created to extract Electronic Medical Record (EMR) data from primary care, and measure patient reported information and observations (PRIO) to facilitate assessment of, and subsequent feedback for factors such as inhaler technique, adherence, quality of life (CAT) and dyspnea (mMRC). These tools will also offer electronic clinical decision support (CDS) for the primary care practitioner. The goal is to collect these measurements based on patients' feedback to their primary care clinicians at consultation. Using a Delphi process (first round included 189 variables) and consensus, the SC is determining which key patient factors to collect.

Conclusion: An agreement was made to approach COPD patients systematically, measuring how they are doing using the above tools, and adjusting therapy accordingly.

Declaration of Interest: Program sponsored by Boehringer Ingelheim, United States

Assessing treatment fidelity of lay health worker support to increase uptake and completion of pulmonary rehabilitation in COPD

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Clinical Research Results

Background: The benefits of pulmonary rehabilitation (PR), the most effective treatment for the symptoms and disability of COPD, are restricted by poor rates of uptake and completion. Lay health workers (LHWs) have been effective in improving access to treatment and services in other settings. A feasibility study of using trained volunteer LHWs, COPD patients who have themselves completed PR, was conducted. This work aimed to assess the fidelity of delivery of the LHW intervention.

Methods: LHWs attended a 3-day training programme which included communication, confidentiality and behaviour change techniques (BCT). Interactions between LHWs (n=12) and 24 of 66 people with COPD referred for PR receiving LHW support were recorded, transcribed, coded and analysed. Interactions were rated for treatment fidelity based on a set of predetermined criteria, including delivery of the BCTs taught, and competence metrics.

Results: The pace of learning differed between LHWs. The recorded interactions showed that some LHWs might have benefitted from more time to embed their learning. BCTs providing information about 'consequences' and 'credible source' were delivered frequently (≥79% of interactions), whilst 'goals and planning' interactions were ujsed infrequently (≤8% of interactions). Inter-rater agreement for coding of both BCTs and competence criteria was high (≥84%).

Conclusions: The consistency of intervention delivery by different LHWs in their interactions with patient-participants could be improved. It cannot be concluded whether this inconsistency is due to the LHWs' personalised approach to patients, or reflects a true loss of fidelity requiring more intensive training.

Association between short acting beta-agonists use and hospitalization in a real-life asthma patients' cohort

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Clinical Research Results

Aim: To evaluate the relationship between the number of SABA containers dispensed in pharmacy in one year and the risk for asthma hospitalization in the same period.
Methods: Cros-sectional descriptive study of patients with asthma from the Balearic population. Subjects were extracted from the Majorca real-life investigation in COPD and asthma cohort (68.578), including socio-demoghraphic and clinical data from primary and secondary care and electronic prescription system. Inclusion criteria: >18 years-old, ICD 9-493 diagnosis, who retrieved SABA canisters during 2014-2015.

Results: 7648 eligible patients, mean age 47 (SD=16.1), 38% were women, 23.2% active smokers. 77 patients (1%) required hospital admission due to exacerbation. In the bivariate analysis age, sex, smoking, heart failure, SAHS, GERD, asthma severity (treatment steps) were significantly associated with hospitalization. In the adjusted analysis patients getting more than 8 SABA canisters per year increased hospitalization risk OR 3.06 (CI95% 1.38-6.82).
Conclusions: A trend of hospitalization was observed on increasing SABA retrieval. The number of SABA canisters/year that best defines an increased risk of hospitalization is 8.

Declaration of Interest: This work was partially funded by a research grant from the Mallorca Primary care Health Service

Asthma awareness and training among youth soccer coaches in Canada

Andrew J. Cave, Chandu Sadasivan
University of Alberta

Clinical Research Results

Aim: Asthma is the most common chronic disease among youth. Exercise-induced bronchoconstriction is common in asthmatic patients, but also occurs individuals with no prior asthma diagnosis. Despite this, and the fact that soccer is a high ventilation sport, there are no validated asthma management protocols for soccer coaches. This study aimed to address 1) soccer coaches' current knowledge on asthma, 2) whether there is a need for asthma related training, and 3) barriers to administration of such training.

Method: A 22-question online survey was administered to 2300 volunteer youth soccer coaches from the Edmonton Minor Soccer Association (EMSA) from June 8, 2018 to July 8, 2018. Responses were analyzed initially using descriptive statistical analysis, followed by chi-square analysis to compare responses to different questions.

Results: There was a response rate of 22% (513 of 2300). Respondents were, on average, inexperienced coaches and coached young age groups. Approximately one-third of respondents had personal experience with asthma, but 93% had not received any asthma-related training at any coaching level. Coaches had strong knowledge on how to treat asthma attacks, but mixed levels of knowledge on asthma attack prevention. Experienced coaches were better at identifying the number of players with asthma on their team, and the number of asthma-related incidents they had encountered as coaches. Coaches demonstrated a receptive attitude towards receiving asthma-related training, with 91% of respondents saying that training would be beneficial and 69% saying that training should be mandatory.

Conclusions: The results of this study indicate that soccer coaches have limited knowledge regarding asthma management, acknowledge a need for asthma-related training, and are willing to participate in and could benefit from educational interventions as it pertains to their role as coaches.

Financial support: University of Alberta, Department of Family Medicine

Asthma Right Care project in Slovenia

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Clinical Research Results

Aim: In order to reduce hospitalisations due to the exacerbation of asthma, we analysed Slovenian data on hospitalised and deceased patients due to asthma by age and gender.

Brief outline of context: Asthma is the most common chronic respiratory disease; 339 million people in the world have asthma. Research on asthma control conducted worldwide – despite exceptional developments in the knowledge of asthma pathophysiology and pharmacotherapy – shows that in everyday life, few patients achieve the level of disease control that can be achieved in randomised prospective studies.

Intervention: Within the framework of the Slovenian Family Medicine Society, we examined the data provided by the National Institute of Public Health. We were interested in the number of hospitalisations by age and gender on the basis of diagnosis codes J45.0–J45.9 and J46 (ICD-10) from 2010 to 2016. The asthma mortality rates in the same period were also analysed. From 759 to 970 adults were hospitalised per year; more women were hospitalised throughout the period. The highest number of hospitalisations was in 2015, i.e. 970. There were fewer hospitalisations of children and adolescents in that period: 798 in 2010 and 481 in 2016. In 2010–2016 in Slovenia, 158 adults died from asthma, of which 113 were women and 45 men.

Strategy for change: Asthma Right Care project in Slovenia

Effects of changes: Translation of asthma ruler in Slovenian language.

Lessons learnt: We opened the arena of discussions about Asthma Right Care in Slovenia

Message for others: At the IPCRG meeting, we will compare the asthma mortality rates of different countries. We want to discuss why there are differences between the number of women and men who are hospitalised. We will share our experiences of the project Asthma Right Care.

Blended Learning for Primary Care Physicians on Chronic Obstructive Pulmonary Disease (COPD): A Feasibility Study in Bangladesh

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Clinical Research Results

Research question: Is blended learning a feasible approach for skilling primary care physicians (PCPs) to manage Chronic Obstructive Pulmonary Disease (COPD) in Bangladesh?

Background: COPD is currently the fourth leading cause of death in the world and projected to increase in coming decades because of continued exposure to its risk factors and aging of the population. However, it is often under diagnosed and insufficiently managed by PCPs in Bangladesh. Traditionally, training involves attending face-to-face study, but shortage of manpower in many areas of Bangladesh; it is difficult for a PCP to leave their practice to attend training courses of several days duration.

We aim to: Assess the feasibility of blended learning on COPD for primary care physicians

1. explore participants' perspectives towards the blended learning approach

Methods: A mixed methods approach will be used for this study:

- Quantitative data: We will collect process data (e.g. on course completion) to inform the feasibility of the blended learning, and learning outcomes (e.g. practice adherence to COPD guidelines at one month after completion of the training) to inform a potential outcome for a future trial.
- Qualitative data: We will use purposive sampling to recruit practitioners to two focus group discussions, and facilitators/ trainers will be interviewed. The topic guide will explore operational challenges and perceptions of participants. Focus groups and interviews will be recorded, transcribed verbatim and analyzed using thematic analysis.

Questions to discuss: Will policy makers adopt a blended learning approach for capacity building of physicians and others health professionals on COPD in Bangladesh?

Declaration of Interest: Funding: **RESPIRE NIHR Global Unit. All authors declare no conflict of interest**

Can a dance programme provide exercise for breathless people in a culturally familiar form, engage the entire body and change the language of engagement with a therapeutic programme?

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Clinical Research Results

Background: The *Life of Breath[i]* project, funded by the Wellcome Trust, has been researching the experience of living with chronic breathlessness (CB) in the North East of England from a medical humanities perspective. Breathlessness is associated with low socioeconomic status and is highly stigmatized in society, meaning that those who suffer from it are largely invisible. Also, CB is difficult to treat and few resources are available to patients. A key treatment approach is pulmonary rehabilitation, an exercise and education programme typically run by specialist physiotherapists in a gym-like space. This approach is very effective but uptake can be poor.[ii] This can be because people with CB are not attracted to a programme that will make them feel even more breathless through exercise. Research with British Lung Foundation 'Breathe Easy' (BE) support groups also identified unfamiliarity of the gym-like space and patients are put off by the language of 'pulmonary' and 'rehabilitation'. Collaborative work with neuroscientists has revealed that people with CB have poor 'interoception' -bodily awareness. Dance may provide an alternative exercise in a culturally familiar form, engage the entire body and change the language of engagement with a therapeutic programme. [iii] [iv] The ubiquitous nature of dance means there is scope for tailored culturally relevant programmes globally.

Method: This builds on an original proof of concept study Dance Easy, with Breathe Easy (BE) Haringey and Whittington Health that has provided over 80 hours of dance to breathless older adults.[v] See figure 1.

Deliver a series of 10 weekly dance workshops to volunteers with CB in Darlington, building on existing strong relationships with the local BE.

Williams will teach the teacher, an exercise trainer who already works with the group.

Evaluation will be by University of Durham Medical Humanities team.

Proposed Impact Measures

	Qualitative	Quantitative
Participants	Specific: responses to the programme, impacts on their daily lives, including perception of breathlessness, confidence in going out, sociability Context: life history	Numbers involved and continuing with the programme, before and after measurements of pulmonary function, exercise capacity, strength, quality of life, respiratory perception, interoceptive awareness.
Dance collaborators	Confidence	Skills acquisition
Clinicians	Response to additional options to support patients following PR	

Questions to discuss: We welcome additional references and comments on the method and measures.

Declaration of Interest: This study is funded by the University of Durham.

References & Clinical Trial Registry Information: [i] https://lifeofbreath.org/about/

[ii] Williams S, De Poli C. Service planning and delivery for chronic adult breathlessness. *In*: Bausewein C, Currow DC, Johnson MJ, eds. Palliative Care in Respiratory Disease (ERS Monograph). Sheffield, European Respiratory Society, 2016; pp. 172–196. doi:10.1183/2312508X.10012015

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[v] Williams S, Townes T. Dance Easy – potential for dance to improve wellbeing of people who are breathless Primary Care Respiratory Society UK. 2017 https://www.pcrs-uk.org/sites/pcrs-uk.org/files/pcru/2017-Winter-Issue-13.pdf (BP31)

Can the utilization of a practice formulary improve antibiotic prescribing habits in Primary Care?

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Slaney Medical Centre

Clinical Research Results

Aim: Antibiotic resistance is one of the biggest threats to global health today. Appropriate antibiotics should be prescribed, where clinically indicated, at an appropriate dose for an appropriate duration.[1] Our study aims to determine if the introduction of an up-to-date practice formulary can positively influence antibiotic prescribing habits with reference to evidence-based antimicrobial guidelines.

Methods: The electronic health record of adults attending the practice, who were treated for an acute infectious cough in January 2018 were examined. Patients who were not treated with antibiotics or those with chronic lung diseases or significant medical comorbidities were not included in this study. Data was examined by clinical staff and entered anonymously into a spreadsheet which was analysed using Microsoft Excel.

A practice meeting was held and the practice formulary was updated to reflect current national HSE guidelines for the treatment of infectious cough i.e. amoxicillin 500 mg TDS for 5 days or doxycycline 200 mg stat/100 mg OD for 5 days.[2]

Following this intervention in November 2018, the electronic health records of adults presenting with an acute infectious cough in January 2019 were examined, following the methodology outlined above and the results were compared.

Results: In January 2018, only 2% of patients were treated in accordance with guidelines for acute infectious cough. In January 2019, 70% of patients were treated in accordance with guidelines i.e. 70% improvement.

Table 1

	Jan-18		Jan-19	
	N=60		N=76	
Antibiotic	**Cases**	**%**	**Cases**	**%**
Amoxicillin 500mg TDS x 5/7	1	**2**	54	**71**
Amoxicillin 500mg TDS x 6/7	37	**62**	5	**8**
Amoxicillin 500mg TDS x 7/7	4	**6**	1	**1**
Clarithromycin 500mg BD x 7/7	1	**2**	8	**11**
Clarithromycin LA 500mg OD x 7/7	10	**17**	1	**1**
Doxycycline 200mg stat then 100mg OD for 5 days	0	**0**	1	**1**
Erythromycin 250m TDS x 5/7	1	**2**	0	**0**
Cefaclor 375mg BD x 6/7	1	**2**	0	**0**
Augmentin 625mg TDS x 7/7	3	**5**	6	**8**
Levofloxacin 500mg BD x 5/7	1	**2**	0	**0**

Conclusion: It is encouraging that a simple intervention such as the implementation of an up-to-date practice formulary can improve prescribing habits so quickly and effectively. In the future, we wish to continue improving our standard of care. To do this, we intend to audit antibiotic prescribing in other respiratory conditions such as community acquired pneumonia and infective exacerbation of COPD.

References:

[1] Who.int. (2018). *Antibiotic resistance*. [online] Available at: https://www.who.int/news-room/fact-sheets/detail/antibiotic-resistance [Accessed 3 Mar. 2019].

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Clinical effectiveness and models of pulmonary rehabilitation in low-resource-settings: a systematic review

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Clinical Research Results

Background: The increasing disability, reduced productivity, associated anxiety and depression from chronic respiratory diseases (CRDs) result in social isolation and economic hardship for patients and their families. Pulmonary rehabilitation (PR) is a guideline-recommended multidisciplinary and multifaceted intervention that improves the physical and psychological condition of people with CRD. However, PR services are under-provided and uptake is poor in the low-resource settings of low- and middle-income countries.

Aim: We aimed to review the effectiveness, components and mode of delivery of PR in low-resource settings.

Method: We systematically searched MEDLINE, EMBASE, CABI, AMED, PUBMED and CENTRAL from 1990 for clinical trials of adults with CRD (including but not restricted to COPD) comparing PR with usual care in low-resource settings. After a duplicate selection process, we extracted data on exercise tolerance and quality of life (QoL); component and mode of delivery and analysed using a narrative synthesis.

Results: From 7355 hits we included 16 studies. PR improved exercise tolerance significantly in all the studies and quality of life in 15. In addition to exercise training, most PR services included education and breath retaining technique; some included airway clearance, energy conservation, controlled coughing technique, psychosocial rehabilitation and a few also included coping symptoms, self-management, lifestyle modification, and inhalation technique. Low-cost services were typically home-based or delivered in outpatient departments usually over 8-12 weeks. Common barriers in effective PR were lack of multi-professional teams and lack of demand from patients.

Conclusion: PR can be delivered effectively in low resource settings by incorporating multifaceted components and employing a range of modes of delivery. However, there is a major need to raise awareness amongst professionals and patients to improve availability and access to PR.

Declaration of Interest: Neither the funder nor the sponsor (University of Edinburgh) contributed to protocol development. MH owns a Pulmonary Rehabilitation clinic in Bangladesh. All other authors declare no competing interests

References & Clinical Trial Registry Information: PROSPERO: CRD42019125326

Community-Based Management of Chronic Obstructive Pulmonary Disease in Nepal: Study Protocol for A Cluster Randomized Controlled Trial

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Clinical Research Results:

Research Question: Will it be an effective approach to mobilise female community health volunteers with a set of health promotion activities in lung health promotion, and COPD prevention and management?

Background: Chronic Obstructive Pulmonary Disease (COPD) is the fourth most important cause of death worldwide and is one of the commonest non-communicable diseases (NCDs) in Nepal. The presence of risk factors like indoor and outdoor air pollution, a high prevalence of smoking and the lack of general awareness of COPD makes it a serious public health concern. However, no attempt has been made in Nepal to estimate its burden and address the disease at the community level.

Method: This study aims to measure the burden of COPD, assess the magnitude of modifiable risk factors of COPD including tobacco smoking and indoor air pollution, and spreading awareness on the modifiable risk factors led by Female Community Health Volunteers (FCHVs) trained on COPD. An open-label, two-group, community-based, cluster-randomised controlled trial will be implemented in the semi-urban area of Pokhara-Lekhnath Metropolitan city of Nepal. The estimated sample size of the prevalence and intervention study will be 1,508 and 1,144, respectively.

Outcome: Prevalence of COPD and risk factors will be estimated using a population-based survey. The primary outcome will be the mean difference of forced expiratory volume in 1 second (FEV1) between intervention and control arm. The secondary outcome will be change in the proportion of risk factors.

Perspective: This study will estimate the burden of COPD, magnitude of its risk factors and generate evidence to mobilise community health workers for COPD prevention and management at the community level in Nepal.

Question to Discuss: 1. What could be the essential tools or health information and promotion package for lay health workers for COPD prevention and management at the community level of low and middle-income countries?

2. What would be the best and effective questions and devices for COPD screening in community settings with difficult topography and with limited resources?

Declaration of Interest: This proposed protocol is part of the PhD study at the Department of Public Health, Aarhus University. The Graduate School of Health at Aarhus University finance the PhD, but it is to note that it doesn't fund the research implementation and is planned to be financed by the salary received as PhD student by the principal author.

All the authors declare no other conflict of interest.

References & Clinical Trial Registry Information: The trial is registered at clinical trials: NCT03797768

Data on patients who received only SABAs in 2017 or who had at least two prescriptions per year (but did not receive any ICS, ICS/LABA and LAMA).

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Clinical Research Results

Aim: One of the priorities of the ASTHMA RIGHT CARE project running under the auspices of the IPCRG is to get conversations started among all healthcare professionals concerning the overreliance on short-acting beta2 agonists (SABAs) in the treatment of asthma, which indicates that the disease is poorly controlled. These include conversations between patients, pharmacists, GPs, nurses and others involved in front-line care.

Method: We analysed the number of patients and the number of SABA prescriptions for those in Slovenia who, in 2017, exclusively received the short-acting beta2 agonist, meaning that they did not receive any inhaled corticosteroids, nor an inhaled corticosteroid / long-acting beta agonist combination.

Results: Below we present the basic data on patients who received only SABAs in 2017 or who had at least two prescriptions per year (but did not receive any ICS, ICS/LABA and LAMA).

Patients ≥18 years who had only SABA prescriptions in 2017 (but no ICS, ICS/LABA and LAMA)	Number of patients
Number of patients	51,654
Number of SABA prescriptions (Ventolin)	35,822
Number of SABA prescriptions (Berodual)	75,054
Patients ≥18 years who had at least two SABA prescriptions in 2017 (but **no** ICS, ICS/LABA and LAMA)	
Number of patients	17,400
Number of SABA prescriptions (Ventolin)	21,762
Number of SABA prescriptions (Berodual)	54,860

Conclusion: On the basis of the obtained results, we prepared an educational programme in which we promoted the Reliever Consumption Converter developed by the IPCRG. We prepared practical presentations on the management of patients with suspected excessive use of short-acting beta2 agonists.

Delivering Asthma Action Plans in a Digital Era: an assessment of technological feasibility

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Clinical Research Results

Aim: Supported self-management, including personalised asthma action plans (PAAPs), improves asthma outcomes and is an integral component of routine asthma care. However, their completion typically requires a face-to-face consultation. I aimed to assess the technical feasibility of using screen-sharing technologies to review and complete PAAPs in remote consultations, to inform the IMP[2]ART (IMPlementing IMProved Asthma self-management as RouTine) implementation strategy.

Methods: We assessed the functionality of screen-sharing in 12 commonly used screen-sharing technologies. OH tested the technology with family, friends, and lay colleagues from the Asthma UK Centre for Applied Research (AUKCAR) Patient and Public Involvement (PPI) group. We attempted to complete the adult UK PAAP template using screen sharing, observed practicalities and made notes from feedback discussions with participating colleagues. Themes from the observations and feedback were interpreted using the Model for ASsessment of Telemedicine applications (MAST).

Results: Two applications were chosen: AttendAnywhere (NHS Scotland's preferred remote consultation facility), and Zoom (a user-friendly application with features, including recording, in-app file transfer and remote control). Ten friends/colleagues (ages: 20 to 74 years) using different devices and with diverse technological abilities participated. From a technical perspective screen-sharing was generally practical though occasional devices or browsers were incompatible. Both systems enabled PAAPs to be reviewed, though AttendAnywhere did not allow the 'patient' to edit the template, nor to download or print the completed PAAP. VoiceOver did not work for a visually impaired colleague. PPI colleagues thought the approach was comparable to a live situation, as well as more accessible, convenient, and efficient, and some appreciated being able to record the conversation.

Conclusion: Reviewing PAAPs using screen-sharing technologies was feasible, however barriers to implementation in clinical settings (e.g. NHS firewalls) need to be addressed. The approach may overcome the limitation of being unable to provide a PAAP in remote consultations.

Developing a patient-centred template for asthma reviews: an IMP2ART implementation strategy

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Clinical Research Results

Implementation Science / Service Development:

Background: Computer templates are used in consultation aim to improve adherence to key functions, but risk overriding the patient agenda. The IMPlementing IMProved Asthma self-management as RouTine (IMP^{2}ART) programme, aimed to develop an asthma review template to enhance patient-centred care, and promote supported self-management in primary care.

Methods: Building on current guidelines, recommendations of an Asthma UK and Royal College of Physicians workshop, patient-centred literature, and behaviour change theory, the multidisciplinary team (clinicians, health psychologists, technical experts) developed a prototype template. A professional advisory group of asthma-interested GPs and nurses (n=17), provided insights into item inclusions and advised on feasibility within primary care.

Results: Key features of the prototype template include: an opening question to establish the patient's agenda such that patients concerns and goals can be addressed; a reduction in extensive data collection e.g. by using different tabs for spirometry; considerations for poorly controlled asthma; links to access a range of external information sources for patients; and a closing question to confirm the patient's agenda has been addressed. The template highlights patient-centredness, encourages action plan provision, and supports patients to self-manage their asthma.

Conclusions: Our prototype template is designed to promote patient-centred care and overcome the risk of reducing asthma reviews to 'tick-box' exercises. We will now seek feedback on the utility of the template from professionals and patients.

Declaration of Interest:

Funding: NIHR PGfAR; preliminary work supported by Asthma UK.

Developing an education package for the IMP2ART programme; implementing supported asthma self-management in primary care

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Clinical Research Results

Background: Implementing supported asthma self-management in primary care practices requires a multifaceted approach. We aimed to develop an educational package that targets barriers to implementation and develops professionals' skills in delivering tailored supported self-management.

Methods: A multidisciplinary team (educationalists, clinicians, academics, health psychologists) built on contemporary understanding of effective adult learning and behaviour change theory, robust clinical evidence, and existing practice routines to design a team-based educational package. A focus group of clinicians working in general practice was held via recorded webinar to provide insights on the initial design approaches.

Results: Evidence from implementation research, and analysis using the theoretical domains framework, identified the importance of role identity, teamwork and perceived barriers to implementation (patient, health care professional and organisational) and barriers of practice routines. These themes, endorsed by the focus group, informed the content which includes:
1. A facilitated team-based introductory module to raise awareness of supported self-management and increase engagement, motivation and commitment to supporting self-management to become a priority across the practice team.
2. An individual on-line module to skill key professionals providing asthma reviews to use behaviour change strategies in general practice to facilitate supported self-management.

Conclusions: Practice-based testing will pilot and refine the prototype for inclusion within the IMP2ART (IMPlementing IMProved Asthma self-management as RouTine) implementation strategy.

Declaration of Interest:

Funding: NIHR PGfAR; preliminary work supported by Asthma UK.

Development and implementation of an awareness programme addressing household air pollution and tobacco smoke: a FRESH AIR project

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Clinical Research Results

Implementation Science / Service Development:

Aim: To develop and implement a feasible, acceptable, and effective lung health awareness programme on the risks of biomass- and tobacco smoke in three low and middle-income countries (LMICs): Uganda, Kyrgyzstan and Vietnam

Context: In many LMICs, many people are unaware of the damaging effects of tobacco and biomass fuel smoke.

Description of change: Group stakeholder meetings were held, to co-create intervention materials and develop an implementation strategy. Mixed methods were used to 1) evaluate the implementation process (guided by the *modified Conceptual Framework for Implementation Fidelity*), 2) determine the costs of the programme, and 3) evaluate the effect of the programme on local knowledge on lung health.

Strategy of change:
All education materials were adapted and an implementation strategy for a cascading train-the-trainer programme was developed in close collaboration with local stakeholders; the programme was then integrated into the existing health infrastructure.

Effects of changes:
A group of selected healthcare workers (HCWs) was initially trained. These HCWs then trained other groups of HCWs, who subsequently trained a group of community health workers (CHWs). CHWs educated their communities, reaching >15,000 people in both Uganda and Kyrgyzstan, and >10,000 in Vietnam. All education materials were approved by the Ministry of Health's education department. Costs varied from 13,000 to 15,400 euros across the countries. Knowledge on lung health among the trained HCWs, CHWs and community members increased significantly to an excellent level in each country.

Lessons learnt:
The implementation strategy, using a cascading train-the-trainer approach commencing with physicians and ending at community level, is feasible, acceptable and effective in diverse low-resource settings.

Message to others:
The increased understanding of lung health will enable communities to consider different possibilities to reduce exposure from HAP and start smoking cessation programmes.

Development of a real-time video inhaler instruction method for respiratory patients: an IRW study protocol

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Clinical Research Results

Background: Inhaled medication is the cornerstone of treatment of asthma and COPD. Unfortunately, 70% of patients use their inhaler incorrectly which leads to poor disease control, more exacerbations and unnecessary healthcare costs. One of the reasons of poor inhaler technique is the lack of knowledge about inhalers and inadequate teaching skills of healthcare professionals. Trained instructors are often not available. Providing patients with an effective inhaler instruction through real-life video connection by a trained health care professional might solve this problem.

Aim: To evaluate the technical and clinical feasibility of real-time video inhaler instructions in asthma and COPD patients.

Method: Hundred patients referred to an integrated Asthma/COPD-service will be randomly assigned to control or intervention group. An inhaler instruction by a trained health care professional is part of the regular assessment by the Asthma/COPD-service. The control group will receive care as usual whereas the intervention group will receive the inhaler instruction through video connection. We will try different devices to show the instruction (e.g. laptop, tablet, mobile phone) and we will investigate which online platforms are suitable and safe to use. The control patients, the intervention patients and the instructors will be asked to give feedback about the instruction procedure. Moreover, time needed for the instruction will be recorded.

Results: After this study, we will be able to know which devices can be used for these video instructions and which platforms are safe to use. We will be able to analyse differences in the level of satisfaction, differences in time between regular and video instruction and costs.

Questions to discuss: If video instructions are feasible to use, can it lead to improvements in inhaler education? More patients will be able to receive a proper instruction from a trained instructor even if the instructor is not close by. Would it be applicable in rural areas, for nursing homes and for patients who are house bound?

Declaration of Interest: The trial is funded by Certe laboratories and the University Medical Certer Groningen

Development of spirometry predictive values for Western Indian population (NIHR RESPIRE Study)

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Clinical Research Results

Background: Interpretation of spirometry involves comparing lung function parameters with predicted values to determine the presence/severity of a disease. The ERS Global Lung Function Initiative (GLI) derived reference equations for healthy individuals aged 3–95 years from multiple populations but highlighted India as a 'particular group' in whom further data are needed.

Aim: To derive predictive equations for spirometry in Western Indian population.

Methodology: We used spirometry data from 2,500 healthy adults (18 years and over) from Vadu Health and Demographic Surveillance System population to develop predictive values for the Western Indian population. We constructed sex-stratified prediction equations for FEV1, FVC, and FEV1/FVC dependent on age and height using multiple regression methods.

Results: FEV1 and FVC values decrease as age increases in both males and females and values are higher in males than females. Prediction equations and scatter plots for both males and females are shown in Figure 1. Further analyses will use the Generalized Additive Model for Location, Scale and Shape (GALMSS) method to derive the best fitting model of each outcome as a function of age and height in males and females

Conclusion: These prediction equations can be used as reference values for future use in the Western Indian population and compared with equations of other Indian populations. These data can contribute to the ERS GLI.

Declaration of Interest: NIHR Global Health Research Unit on Respiratory Health (RESPIRE) 16/136/109

Diagnosis and Management of COPD: A Descriptive Analysis Based on Data Obtained from the Yinzhou Electronic Medical Record System and the capability of COPD management in primary care

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Clinical Research Results

Aim Chinese government is building a tiered medical services system and trying to provide a family physician service model. COPD is now poorly managed in primary care in China. Yinzhou district is in Zhejiang, China with well-developed electronic medical record system. This research is based on Yinzhou regional medical record to describe the diagnosis rate and medication prescriptions of COPD, and describe the foundation of COPD diagnosis and treatment in primary care.

Method Cross-sectional data from Yinzhou Electronic Medical Record System was extracted to include all patients over 40 years of age recorded between 2009 and 2016. Descriptive statistics regarding clinical visits, diagnosis, and medication were calculated. Questionnaires are send to all the community health service center managers in Yinzhou district on the foundations of COPS diagnosis and treatment.

Results There were a total of 316,826 patients recorded between 2009 and 2016. Of these, 11,593 (3.7%)had a diagnosis of COPD. Of all 28,601 , theophylline accounted for 54.9%; systemic corticosteroids, 21.5%; SABA, 8.6%; ICS+LABA, 5.0%; ICS, 4.0%; LABA, 3.2%; LAMA, 2.9%; SAMA, 0.8%. Theophylline and systemic corticosteroid use declined steadily since 2012, whereas LAMA and ICS+LABA utilization are on the rise. Of all 20 community health service centers,25%(5/20)are equipped with spirometers, all 20 communities are equipped with SABA , SAMA , theophylline and systemic corticosteroid,90%(18/20) are equipped with ICS/LABA,50%(10/20) are equipped with LAMA.

Conclusion Based on the diagnostic statistics of Yinzhou District and the estimated prevalence, the diagnostic rate of COPD in this region is low.Long-acting bronchodilators are not the mainstay treatment for patients with COPD in Yinzhou District.There is an increasing convergence toward standard medical management as recommended by the GOLD guideline.Most COPD medication are available in community health service center in Yinzhou District,but spirometers are less equipped which may be a limit to COPD management.

Figure 1 - Percentage of medication prescription in total 2012-2016

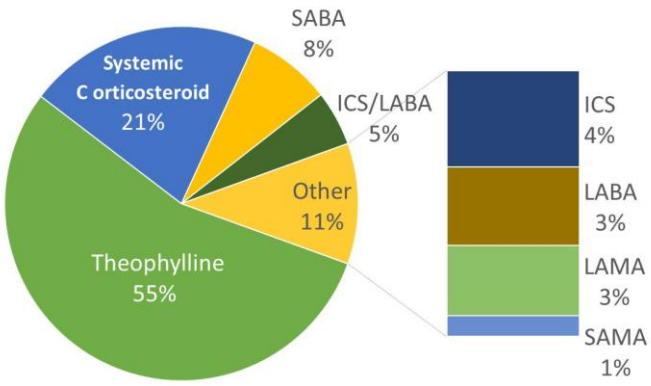
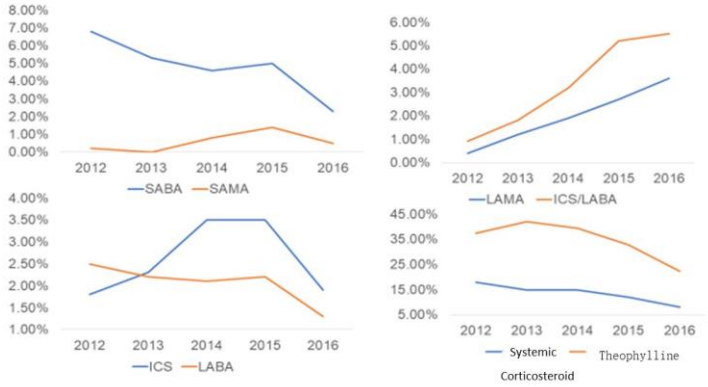


Figure 2 - Trend of medication prescription 2012-2016



Diagnostic accuracy of capnovolumetry – results of a prospective diagnostic study in ambulatory care

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Clinical Research Results

Aim One of the known weaknesses of spirometry is its dependence on the patients' cooperation, which can only partially be alleviated by educational efforts. Ultrasound-based capnovolumetry represents a promising novel method for the determination of airway obstruction, since the concentration of exhaled carbon dioxide is assessed during quiet tidal breathing, requiring only minimal cooperation from the patient. In a prospective study we investigated the potential of capnovolumetry for the identification of airway obstruction compared to conventional lung function.

Methods Consecutive patients from a pulmonary outpatient clinic were included. As a reference standard, the presence of airway obstruction was evaluated via spirometry and bodyplethysmography on the basis of published criteria. Capnovolumetry was performed over at least 10 cycles of quiet breathing using an ultrasound spirometer that provided a surrogate measure of exhaled carbon dioxide. The primary target parameter was the ratio of slopes of expiratory phases 3 and 2.

Results 1287 patients were included into the analysis (20% COPD, 34% controlled asthma, 18% other respiratory diseases, 28% without respiratory disorders). Airway obstruction according to the reference standard was present in 29% of patients. Regarding the detection of airway obstruction, the area under ROC-curve (AUC) for the ratio of slopes was 0.678 (95%CI 0.645, 0.710; sensitivity 59%, specificity 69%). When combining this parameter with three other parameters describing the shape of the measured expiratory curves, an AUC of 0.772 (95%CI 0.743, 0.801) was obtained.

Conclusion Capnovolumetry via an ultrasound spirometer had a statistically significant although moderate potential for the recognition of airway obstruction in a heterogeneous population of patients typically found in clinical practice. For best results the analysis of more than one parameter was needed.

Discontinuation of inappropriate use of inhalation corticosteroids in Dutch COPD patients in general practice

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Clinical Research Results

Aims In the Netherlands around 50% of primary care COPD patients use inhaled corticosteroids (ICS), 30% of these probably have no appropriate indication. The aim of the current study is a 10% reduction in ICS (+-LABA) prescriptions for COPD patients.

Methods A controlled pre/post intervention study with an incomplete control group (media-exposure). The intervention consisted of 1. Education within the regular “Pharmacotherapy meeting” between GP’s and pharmacists, 2. Providing GP’s with a flow chart to decide if the patient could safely stop their ICS, 3. Providing GP’s with a list of patients that might be suitable for de-implementation (patients>55 years who used ICS and had not received courses of predniso(lo)ne in the last year). Medication prescription data was gathered (all patients >55 years who received >2 prescriptions for copd/astma in the preceding 12 months). ICS (+/-LABA), LABA/LAMA, predniso(lo)ne, antibiotics and topical antimycotics were obtained before and after intervention. Intervention group data were compared to the rest of the country.

Results There was a significant decrease (11.4%) in ICS – ICS/LABA prescriptions in the whole group, however without significant differences between intervention and control group. See table 1.

Conclusions The 11.4% decrease in ICS prescriptions seems to be a national trend. Active de-implementation can play a role in promoting this. Decrease in ICS in COPD patients use does not seem to be accompanied by an increase in exacerbations

Declaration of Interest:

Do interventions that address health literacy needs improve self-management among people with asthma? A systematic review.

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Clinical Research Results

Background: Supported asthma self-management improves health outcomes.[1] However, these benefits may not be realised by people with limited health literacy in lower-middle-income countries (LMICs). Consideration should be given to whether tailored interventions can enable asthma self-management.

Aim: We aimed to assess the clinical effectiveness of asthma self-management interventions targeted at people with limited health literacy and to identify strategies associated with effective programmes.

Methods: Following the Cochrane methodology, we searched ten databases from January 1990 to date, without language restriction. We included controlled experimental studies whose interventions target health literacy to improve asthma self-management. Screening and extraction of articles were done independently by two reviewers. The primary outcomes were implementation (adoption/adherence to intervention and clinical (outcomes unscheduled care).

Results: We screened 4318 titles and abstracts, reviewed 52 full-texts and included five trials (one descriptive article describing a primary article). One trial was conducted in a LMIC. Risk of bias was high in four trials and low in one trial. Clinical outcomes were reported in two trials: only one trial reported a positive effect on unscheduled care. None reported implementation outcomes. Behavioural change strategies at the individual level were the focus in all trials. Interventions were aimed at improving an individual's capability (psychological and physical capacity)[2] to enact behaviour, i.e. emphasising comprehension of health information. The lacked of focus on the application of self-management skills was observed. Education using different approaches (i.e. video-based and face-to-face) was emphasised in many of the interventions.

Conclusion: There is a paucity of evidence about the effectiveness of interventions that address health literacy needs to improve asthma self-management interventions in LMICs. These findings can inform the development of intervention and enhance implementation success. Given the proportion of the world's population who have poor health literacy skills, this is a research priority.

Funding: NIHR Global Health Research Unit on Respiratory Health (RESPIRE)

Keywords: Asthma, Supported self-management, Health literacy, Systematic review, Low- and middle-income country

Declaration of Interest: The authors declare no competing interests

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Effectiveness and acceptability of a smart inhaler asthma self-management programme: a cluster RCT

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Clinical Research Results

Research question: This study aims to investigate the effectiveness of a smart inhaler asthma self-management program on medication adherence and clinical outcomes, to investigate who would benefit most based on patient characteristics, and to evaluate its acceptability.

Background: Self-management-based eHealth interventions are promising in increasing medication adherence and maintaining asthma control. However, evidence on long-term benefits and acceptability is scarce. This study will provide insight in the long-term benefits of a smart inhaler program on medication adherence and clinical outcomes in a real-world clinical setting and inform future studies on use and acceptance of eHealth self-management interventions.

Methodology: An open-label cluster randomized controlled trial of 12 months will be conducted in general practices in the Netherlands. Practices will be randomly assigned to intervention or control. The intervention consists of 1) an electronic monitoring device (EMD) attached to the patients' inhaler that measures medication use, 2) a smartphone application to set medication reminders, receive motivational messages and track asthma symptoms, and 3) a portal for healthcare professionals to view data on medication use. The control group will receive an EMD for measuring medication adherence objectively that can only be viewed by the researchers. Eligible patients are adults with partially controlled or uncontrolled asthma with evidence of non-adherence. The primary outcome is change in medication adherence over time. Other outcomes include asthma control, quality of life, SABA use, exacerbations, medication beliefs, eHealth literacy, acceptance and cost-effectiveness.

Questions to discuss:
- Threshold of medication adherence: when are patients 'adherent' or 'non-adherent'?
- Measures of adherence

Declaration of Interest:

This study is funded by AstraZeneca. All authors declare that they have no competing interests.

Effects of implementing improved cookstoves and heaters to reduce household air pollution: a FRESH AIR study

Frederik van Gemert[1], Corina de Jong[2], Bruce Kirenga[3], Patrick Musinguzi[3], Shamim Buteme[3], Talant Sooronbaev[4], Aizhamal Tabyshova[4], Maamed Mademilov[4], Berik Emilov[4], An Pham Le[5], Quynh Nguyen Nhat[5], Dang Tran Ngoc[5], Hong Le Huynh Thi Cam[5], Ryan Chartier[6], Job van Boven[2]
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Clinical Research Results

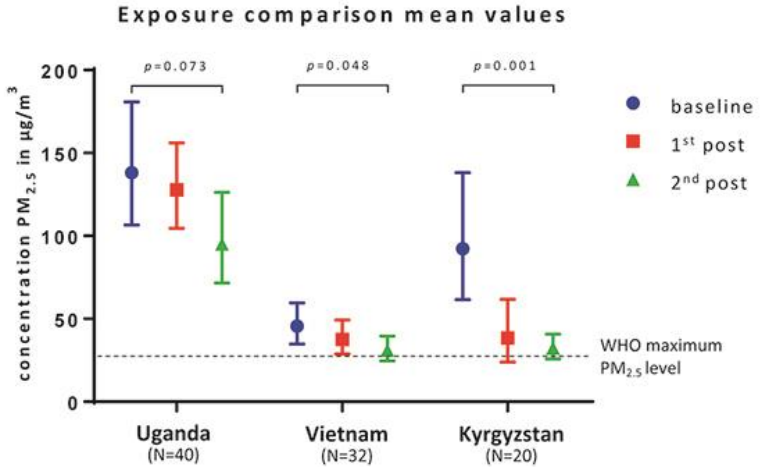
Aim: To evaluate the effectiveness and acceptability of locally tailored implementation of improved cookstoves/heaters in low- and middle-income countries (LMICs).

Context: Exposure to household air pollution (HAP) caused by biomass fuel use is associated with a wide range of health-damaging outcomes. The poorest people, living in the rural areas of Uganda, Vietnam and Kyrgyzstan have limited opportunities to switch to cleaner fuels in the immediate future.

Description of change Situational analyses and awareness programme followed by implementation of locally-made improved cookstoves/heaters.

Strategy of change Implementation of improved cookstoves/heaters among 649 adults and children living in rural communities in these three LMICs, provided by local energy providers. Health and HAP outcomes were compared between baseline (still using traditional cookstoves/heaters), and at 2 months and 6-12 months follow-up. Outcomes included respiratory symptoms, chest infections, school absence, objectively measured HAP ($PM_{2.5}$ and CO), and intervention acceptability. The process was evaluated using the RE-AIM framework.

Effects of change After implementation, many symptoms and infections diminished (and even disappeared) significantly in Uganda and Kyrgyzstan, and to a smaller extent in Vietnam. $PM_{2.5}$ exposures decreased with 31% to 65% but remained above the WHO guidelines. Figure 1 shows mean $PM_{2.5}$ exposures of randomly selected households with 95% confidence interval; *p*-value refers to baseline and 6-12 months difference. CO exposures remained below the WHO guidelines.



Lessons learnt
Locally tailored implementation of improved cookstoves/heaters had considerable effects on respiratory symptoms and HAP, yet $PM_{2.5}$ levels remained too high, especially in Uganda. Participants indicated high acceptance of the improved cookstoves/heaters and almost everybody recommended the cookstoves/heaters to others.

Message to others
It is important to understand the local socioeconomic and cultural circumstances when implementing improved cookstoves/heaters. The short-term effects of reducing HAP exposure may encourage communities to change their cooking methods, including the use of clean fuels.

Efficacy of tiotropium as add-on to ICS in children and adolescents with symptomatic asthma is similar to long-acting β2-agonists and greater than leukotriene receptor antagonists: a systematic review

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Clinical Research Results

Aim: This systematic review compared the reported efficacy and safety of LAMAs, LABAs and LTRAs as add-on to ICS in paediatric patients with symptomatic asthma.

Methods: We performed a systematic literature search to identify studies and meta-analyses comparing LABAs, LTRAs or LAMAs with placebo, or each other, as add-on to ICS. Data from RCTs lasting ≥4 weeks in patients aged 4–18 years with asthma were included; LABA manuscripts published post-January 2015, and LTRA manuscripts published post-July 2014, as prior studies were included within respective systematic reviews. Results were compared with data from tiotropium trials in children and adolescents (PensieTinA- [NCT01277523]; VivaTinA- [NCT01634152]; RubaTinA- [NCT01257230]; CanoTinA-asthma® [NCT01634139]).

Results: The search identified ten publications: three meta-analyses and seven RCTs. Overall, although study designs varied, improvements in FEV_1 percent predicted appeared to be greater with tiotropium or LABAs than LTRAs when added onto at least ICS (Table). Improvements in FEV_1 percent predicted ranged from 4.112–5.741% (peak) and 2.523–4.289% (trough) in patients with symptomatic moderate asthma receiving tiotropium as add-on to ICS±LTRA versus placebo. In patients with symptomatic severe asthma receiving tiotropium added onto ICS plus ≥1 controller medication, improvements ranged from 1.643–6.325% (peak) and 0.827–3.848% (trough) versus placebo. In comparison, a meta-analysis of LABA compared with placebo reported improvements of 2.99% (timepoint unspecified). For LTRAs, a meta-analysis and an RCT reported improvements of 0.09% and 1.9%, respectively (timepoints unspecified). The percentage of patients reporting AEs was comparable for tiotropium, LABAs and LTRAs versus their respective placebo groups. Exacerbation data were heterogenous between trials and more difficult to interpret.

Conclusions: This literature review suggests that when added onto ICS in children and adolescents with asthma, compared with placebo, tiotropium provides comparable improvements in lung function measures to those obtained with LABAs and greater improvements than with LTRAs.

Declaration of Interest: Alan Kaplan reports personal fees from Boehringer Ingelheim, GlaxoSmithKline, Teva, Novartis, Pfizer, AstraZeneca, Purdue, Sanofi, Paladdin and Trudell outside the submitted work.

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LeRoy Graham reports personal fees from Boehringer Ingelheim and serves as a speaker and member of the pediatric advisory board for Boehringer Ingelheim outside of the submitted work.

Alberto de la Hoz is an employee of Boehringer Ingelheim.

Eckard Hamelmann and Stanley Goldstein have nothing to disclose.

References & Clinical Trial Registry Information: PensieTinA-asthma® (NCT01277523); VivaTinA-asthma® (NCT01634152); RubaTinA-asthma® (NCT01257230); CanoTinA-asthma® (NCT01634139)

EHealth for people with COPD in the Netherlands: A scoping review

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Clinical Research Results

EHealth for people with COPD in the Netherlands: A scoping review

Aim: In the Netherlands are almost 600.000 people living with COPD in 2017, which decreases quality of life. Each year, COPD leads to 6.800 deaths and €1 billion healthcare costs. It is expected that eHealth may improve access to care and reduce costs. However, there is no scientific evidence yet of the added value of eHealth in COPD care.

We conducted a scoping review into the use of eHealth in Dutch COPD care. The aim of the research was to provide an overview of all eHealth applications used in Dutch COPD care and to assess these applications on a number of criteria, see below.

Method: In order to make an overview of all eHealth applications aimed at COPD patients in the Netherlands, literature was searched in the electronic databases PubMed and Google Scholar. In addition, Dutch healthcare websites were used to search for applications that have been evaluated for effectiveness and reliability. The identified eHealth applications were assessed according to six relevant quality criteria, eg whether research has been conducted on the effectiveness.

Results: Fifteen health care programs and patient platforms in COPD care have been found that use eHealth. In addition, 17 self-care and informative websites and 18 mobile apps were found that are available to citizens and patients. Five of fifteen care programs and patient platforms were found to be effective in improving quality of life or reducing hospital admissions. The effectiveness of the other eHealth applications should be established in the future.

Conclusion: More research into the effectiveness of eHealth applications for COPD patients is needed. We recommend to develop a nationwide open source platform where well-evaluated eHealth applications can be displayed and found by patients and healthcare providers to improve COPD care.

Declaration of Interest: The study was funded by the National Health Care Institute (Zorginstituut Nederland). The sponsor contributed to the design of the study and the drafting of the paper.

Evaluation of a pharmacy based personal health record by elderly respiratory patients

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Clinical Research Results

Background: Asthma and COPD are prevalent diseases which require ongoing self-management. eHealth can help but it is a challenge to match the needs of elderly patients.

Aim: In this study we evaluated the opinion of respiratory patients (mean age 66[55-78], 18% male, 55% asthma, 27 % COPD, 18% other respiratory disease) about a pharmacy based personal health record(PHR).

Method: Patients tested the PHR on the pc and thereafter we discussed their experiences in two focus groups (n=6 and n=5). These were audio recorded and transcribed verbatim. Data was coded according to content analysis with the following topics: login, general impression of the PHR, medication information, disease information, disease monitoring, social support.

Results: Navigating through the website was difficult and it was unclear where to login. Some had visual problems. It was sometimes complicated to find information (“I cannot see the wood for the trees”). They recommend to keep the website basic with a limited set of links at each page. Disease and medication information was considered to be relevant. Opinions about disease monitoring varied. Some were not interested (“If I have complaints I will let my GP refer me to the pulmonologist”), whereas others would like to monitor their complaints (“ because I hardly visit my GP”). Patients did not expect social support could be enhanced by this PHR.

Conclusion: Especially information about treatment and disease was perceived to be relevant, though difficult to find and not complete. When a PHR is used by elderly, specific needs of elderly regarding navigation and visual problems need to be taken into design. The target population needs to be consulted when optimizing the PHR.

M Evaluation of respiratory allergies burden and approach in Family medicine practice

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Clinical Research Results

Aim: Respiratory allergies, mainly asthma and rhinitis, represent an important health problem, with significant impact on patients quality of life and high costs for the health system. The prevalence of asthma increased after the second world, while allergic rhinitis has also increasing prevalence worldwide, up to more than 30% in general population. The aim of our study was to evaluate the burden and problematic of respiratory allergies in Family medicine doctors in Romania.

Method: Our study was based on a questionnaire with 25 questions addressed online to Family medicine doctors from Bucharest . We focused on the number of patients recorded with respiratory allergies, diagnosis tools, interdisciplinary collaboration, opinion and usefulness of guidelines, difficulties in managing this pathology. We obtained a response rate of 22,5 %.

Results: The doctors who answered to our questionnaire are aged between 30 and 65 years old, with a mean age of 45 years. Three quarters of responders are practicing family medicine for more than 10 years. About one fifth of responders declared to have more than 15 consultations for children and more than 10 adults with respiratory allergies per month. 70% of responders declared that respiratory allergic diseases represented at least 10% of the pathology encountered in their practice. A significant part of family doctors ask specialist advise, mainly ENT in case of rhinitis and pneumologist in case of asthma. Allergist advise is asked by 20% of responders only. Two third of responders considered that current guidelines are useful in medical practice.The majority of responders admitted the need for interdisciplinary collaboration in managing patients with respiratory allergic diseases.

Conclusion: We concluded that allergic respiratory pathology is a frequent cause of consultation in primary care, but a small number of patients are referred to allergist, despite admitted need for interdisciplinary collaboration.

Exploring low-resource contexts to prepare for lung interventions – a mixed-method FRESH AIR study

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Clinical Research Results:

Background: Transferring evidence-based interventions from high- to low resource settings requires adaptations to ensure a fit with the new context. Awareness of local perceptions and behaviours regarding lung health is key to successful adaptation and ultimately, to successful implementation. However, relevant studies on low-resource settings are largely lacking.

Aims: To explore local perceptions and behaviours regarding chronic respiratory disease (CRD) in diverse low-resource settings.

Method: This was a mixed-method Horizon2020 'FRESH AIR' study in low-resource settings in Uganda, Vietnam, Greece and Kyrgyzstan. Using a Rapid Assessment methodology, we conducted interviews, focus groups and observations with community members (CMs), key informants (KIs) and healthcare professionals (HPs). These findings were quantified with a survey among 1037 CMs and 204 HPs.

Results: Especially in Uganda, but also in Vietnam and Kyrgyzstan, informants mainly associated symptoms of CRD with tuberculosis and less frequently with asthma. Asthma was often considered severe, while awareness of its mild stages and chronic nature was low. COPD was often completely unknown, also to HPs. In Greece, awareness on CRD was much higher, especially among HPs. 589 (65.8%) of all CMs strongly agreed tobacco smoke contributed to respiratory symptoms, while only 198 (19.1%) thought so for household air pollution. Perceptions on the identity of CRD (what is CRD and what does it imply) and its causes determined risk behaviour. Risk behaviour was furthermore influenced by local cultural norms and traditions. For example, in the Kyrgyz setting, smoking was perceived disgraceful for women; and in Vietnam, it was perceived that burning coal in a poorly ventilated room during one month after childbirth is protective for health.

Conclusion: Perceptions and behaviours were mainly shaped by the locally perceived identity and causes of CRD, and by cultural norms and traditions. Interventions targeting CRD should address such local contextual traits to enhance implementation success.

Declaration of Interest: The authors have no competing interests to declare.

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Exploring primary care staff experiences of financial incentives for implementing asthma self-management: a qualitative study in Northern Ireland using normalization process theory

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Clinical Research Results

Aim: In 2008, Northern Ireland introduced a healthcare scheme that pays a financial incentive to general practices for providing self-management education, including an asthma action plan, to patients with asthma. We aimed to explore how primary care staff responded to the introduction of this scheme and how they implemented new processes into their practice routines.

Method: Qualitative interviews were conducted to explore staff response to the healthcare scheme and perceptions of its impact on the implementation of asthma self-management. Interviews were recorded, transcribed verbatim and analysed using a framework informed by the Normalization Process Theory (NPT) (May et al., 2009).

Results: 23 participants (five GPs; five nurses; 13 administrative staff) from 15 primary care practices across Northern Ireland provided 15 semi-structured telephone interviews, six individual in-depth interviews and two group interviews. Processes created since the introduction of the scheme appear successfully embedded into primary care practice routines. Multi-disciplinary teams and working together were continually discussed by participants in relation to the scheme, from inception to implementation and delivery in primary care practices. Significant support from the Public Health Agency and pharmaceutical companies in providing funding and training for nurses was acknowledged as a key to the successful embedding of new processes, but there was concern regarding reduction in funding from both of these sources and the impact on the future provision of asthma self-management education in primary care.

Conclusion: The NPT assisted in identifying the enablers and barriers to the implementation of the scheme in general practice in Northern Ireland. Primary care staff identified multi-disciplinary teamwork throughout the lifespan of the scheme as key to its “normalization”, which was now so embedded that concerns were expressed that threats to funding and withdrawal of external support. Understanding how practices “normalized” this healthcare scheme could inform further policy on similar initiatives.

Funding: The University of Edinburgh CMVM PhD Studentship [Asthma UK Centre for Applied Research PHD/14/16]

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Haze Pollution in Malaysia: An ecological analysis of asthma health outcomes and opportunities for intervention

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Clinical Research Results

Research question:
What is the effect of haze pollution on asthma outcomes in Klang Valley, Malaysia?

Background: Haze pollution is common in Malaysia with two peaks in air pollution index (API) over the last six years (2013 and 2015). Observational studies have reported significant increases in respiratory-related outpatient attendances and hospital admissions during haze episodes. However, robust evidence on the specific ill-effects of haze on asthma outcomes are limited.

Objective:
1- To determine the influence of potential environmental factors on asthma events in Malaysia
2- To identify potential strategies for intervention to reduce haze-related morbidity

Methodology: We plan three phases of work using data collected over a 4-year period incorporating the one peak year in API (2015) based on the eDPSEEA (ecosystems-enriched Drivers, Pressures, State, Exposure, Effects, Action) conceptual model framework applied to Malaysia.
The phases are:

1. Phase 1: Identifying and assessing the provenance of two major groups of data: environmental (air pollution index (API) data and meteorological data) and health data, specifically acute asthma events (nebuliser use in emergency and/or asthma hospitalisation).
2. Phase 2: Retrospective collection of the environmental and health data from January 2014 to December 2017 (encompassing one severe and three less severe haze periods) and establishing the association between asthma events and air pollution index data.
3. Phase 3: Identifying potential strategies for intervention.

The association between asthma events and air pollution index (API) data will be calculated using R with virological and climatic factors as confounders. This information will be used to determine the threshold levels of API that potentially predicts the risk of asthma exacerbation.

Questions to discuss:
1. How to develop a prediction model?
2. What potential strategies or intervention that can help reduce asthma exacerbation during haze episodes?

Declaration of Interest: This study was sponsored by the NIHR RESPIRE Global Health Research Unit and is written on behalf of the RESPIRE collaboration.

Heterogeneity of the coded prevalence of asthma across Northern Portugal: a comparitive study with type 2 diabetes mellitus

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Clinical Research Results

Aim: Unwarranted variation in the prevalence of chronic diseases may hide inequalities in healthcare provision. In this study, we address this issue by comparing the variability of coding practices for asthma and diabetes across the Portuguese North region.

Method: We conducted a cross-sectional study using anonymized information from all patients registered in health centres of the Northern Region of Portugal in 2014. Our database was organized in 5-year age groups with information on health centre, family doctor, number of patients with asthma diagnosis (ICPC-2: R96) or type 2 diabetes mellitus (ICPC-2: T90), and total number of patients registered, comprising a total of 3.795.724 individuals. We calculated the crude and age-standardized (world population) prevalence of coded asthma and diabetes for the entire Northern Region, and by 24 groups of neighbour health centre (mean average number of patients = 150.270) . To analyse the heterogeneity in the prevalence of asthma and diabetes mellitus among groups, we used the standard deviation and coefficient of variation.

Results: The number of patients coded with asthma and diabetes in the northern region of Portugal was 85.559 and 237.574, corresponding to a crude prevalence of 2.3% and 6,7%, respectively. The comparison of the standard deviation (sd) and coefficients of variation (cv) between the two distributions of the age-standardized prevalence showed a greater dispersion of values and heterogeneity for asthma than for diabetes (sd=0.63%, cv. = 0.27 vs sd = 0.56%, cv = 0.084).

Conclusion: The dispersion of the standardised prevalence was greater for asthma than for diabetes among the different groups studied. These differences in the coding patterns of two common chronic diseases are difficult to explain by epidemiological or clinical factors and may represent unwarranted variation that hide important health inequalities.

Declaration of Interest: Not applicable.

References & Clinical Trial Registry Information: Not applicable.

How much is too much (wrt SABAs), A social media experience/experiment

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Clinical Research Results

Aim: Short Acting Beta Agonists (SABAs) continue to be over-relied upon compared to appropriate use of anti-inflammatory therapy in the management of Asthma. As part of the International "Right Care for Asthma" initiative including six initial countries, the Canadian team led by the Family Physician Airways Group of Canada partnered with the Asthma Canada on an online platform called "Howmuchistoomuch.ca?" to review patient attitudes towards SABAs.

Method: Working with social media platform experts we created a series of questions designed to review how much short acting beta agonist was being used by patients in Canada. Advertisements were purchased to drive traffic to the site that included two different photos with the picture of a patient using a SABA being more directive than others.

Results: This program is ongoing, and data is reported here from April 4-July 1, 2018. There were 6,317,629 people who viewed the advertisement, 18,089 who actually clicked on the site, and 1,898 that actually completed all six questions (conversion Rate 10.49%). This is apparently a very high rate compared with industry averages. Interestingly some people visited the site more than once, for a total response rate of 18,353. 133 people shared their visit on social media with others. Most 'converters' responded to key words of Asthma and Inhalers. The key word Allergies did not seem to drive any interest. In terms of the actual responses, it would appear that there is a lot of SABA use and poor asthma control. Respondents used SABA more than four times per week(72%), after exercise more than twice weekly(51%), before exercise (50 %), and (54%) woke up at night due to their asthma. Conversely, patients readily admitted that SABA was the only asthma medication they used (48%) and if they did have another one, used it less than three times per week (53 %).

Conclusion: SABA overuse, controller underuse, and poor control of asthma is clearly demonstrated by using paid advertisements and social media to invite asthmatics to talk about their inhaler (mostly rescue) use. This may be another way to reach patients directly to try to educate and change behavior; we have future plans to invite patients to a second page to delve into the reasons for their behaviors.

Declaration of Interest: Dr. Kaplan is an advisory board member or on the speaker's bureau for Astra Zeneca, Boehringer Ingelheim,Grifols, GSK, Merck Frosst, Novartis, Novo Nordisk,Paladin, Pfizer, Purdue, Sanofi, Teva and Trudel

References & Clinical Trial Registry Information

Quiz Questions	% answered 'Yes'	% answered 'No'
Do you use **four or more** of your rescue inhaler /week?	72.73%	27.27%
Do you wake up at night because of asthma symptoms and need your rescue inhaler ≥1 nights a week?	54.43%	45.57%
Do you often use your rescue inhaler **before you exercise**?	51.79%	48.21%
Do you use your rescue inhaler after you exercise **> 2x/ week**?	49.59%	50.41%
Is your rescue inhaler the only medication you use for asthma?	48.63%	51.37%
Do you use any other asthma medication (apart from your rescue inhaler) **more than 3 times a week?**	53.19%	46.81%

Identifying respiratory care training needs for urban and rural primary care doctors

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Clinical Research Results:

Aim: To identify learning needs and gaps in urban and rural primary care practitioners in the field of respiratory care.

Method: cross-sectional analysis of all outpatient admissions to the typical urban and rural primary care clinics during one working week with use of an original questionnaire registered all information related to every admission during the work shift of a family doctor. In total all visits to 45 doctors were registered. Coding of causes of visits was performed according the International Classification for Primary Care (ICPC-2) classification.

To study the level of confidence and self-assessment of their competence and self-reported training gaps 123 family doctors representing all provinces of Kyrgyzstan were surveyed with original paper questionnaire which included open-ended questions and questions with Likert-scale responses.

Results: 1136 cases in Naryn rural province and 782 cases in Bishkek were included in the current analysis. Both in Bishkek and rural setting the main cause of visit to the family doctor was an acute medical condition (42% in both settings), and second main reason was so-called dispensary care, which assumes care after patients with chronic non-infectious diseases (urban - 37%, rural- 25%). In Bishkek and rural settings the most frequent visits to family doctors were respiratory symptoms (28.8% vs 21.1%). In a study of self-reported competence, rural doctors reported feeling confident in management of respiratory conditions in 93%, rural – in 95%. For tuberculosis (pulmonary and extrapulmonary forms), being a separate domain in a survey, doctors reported lack of confidence in 6% both in rural and urban setting. For oncology (respiratory and non-respiratory forms), 30% of urban doctors and 39% of rural doctors feel absolutely unconfident. As for skills in respiratory care, 3% (rural) and 2% (urban) reported unsatisfactory level of skills in peakflowmetry, 4% (rural) and 5% (urban) – in smoking cessation counseling.

Conclusion:

- Respiratory conditions are found the most common reason for admission to primary care and they are managed both by rural and urban primary care doctors with high level of confidence.
- Tuberculosis and cancer are domains that require training in rural and urban doctors. This is especially important as TB and cancer patients are managed by the primary care doctors.
- Primary care doctors self-identified training gaps in basic respiratory skills: peakflowmetry, tobacco cessation counseling. This should be used also in the training of future family doctors.
- The fact that a large proportion of those who visit family doctors come for a routine follow-up for their chronic conditions emphasizes the need for optimization of the doctor-nurse teamwork.

IMPlementing IMProved Asthma self-management as RouTine: the IMP2ART programme

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Clinical Research Results

Background: Supported self-management improves asthma control and reduces attacks, however is not widely implemented. Only one third of people replying to a recent Asthma UK web-survey owned an action plan. Successful implementation of supported self-management requires attention to patient resources, professional motivation and training, and prioritisation and organisational support.

Aim: The IMP^{2}ART programme aims to develop an implementation strategy that will improve implementation of supported self-management in routine primary care practice.

Methods: Building on preliminary findings, and working with six general practices, Asthma UK, PRCS-UK and Education for Health, we are developing multifaceted components of an implementation strategy:

1. *Patient resources to support self-management* (e.g. information for patients)
2. *Professional education to motivate and train practices* (e.g. online, team-based modules to raise awareness and skills)
3. *Organisational strategies to facilitate adoption* (e.g. audit/feedback; asthma review templates)

The three components are under development by the IMP^{2}ART team, with input from patient and public involvement (PPI), and a professional advisory group (facilitated by the UK Primary Care Respiratory Society). Feedback on the components will be sought using qualitative interviews, with staff (n ≈ 18) and patients (n ≈ 30). Data will be analysed using a framework analysis. Feedback from the interviews will be incorporated into the components, which will be pre-piloted in four practices to assess feasibility.

Discussion: Following a pilot trial, the implementation strategy will be evaluated in the UK-wide IMP^{2}ART cluster-RCT (n = 144 practices), assessing the impact and cost-effectiveness of the implementation strategy on unscheduled care and action plan ownership. A mixed-methods process evaluation will explore potential for scaling-up and sustainability.

Declaration of Interest: Funding: NIHR PGfAR; preliminary work supported by Asthma UK.

Increased costs associated with the coexistence of allergic rhinitis in primary care real-life primary care asthma population cohort

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Clinical Research Results

Research question: Are direct and indirect costs associated with asthma, including work absence, increased on those suffering from co-morbid allergic rhinitis?

Background: Asthma and allergic rhinitis are common co-morbidities. Suffering from both diseases increases the risk and number of exacerbations and deals to higher medical costs. Several studies have explored the impact of asthma on work absence and lost productivity. The estimated percentages of adults with lost workdays caused by asthma rates from 27% to 17% depending on the regions. To our knowledge, no studies have been conducted on work absence in asthma patients suffering from co-morbid allergic rhinitis. In addition, most studies get work absence information from patients' survey whereas the best way to analyze the use of resources and absenteeism from work should be coming from objective measurements.

Proposed Methods: Study design: Descriptive, observational cohort study. All the data will be extracted from the cohort of Mallorca Real-Life Investigation in COPD and Asthma (MAJORICA). It includes data on all 18-year-old patients diagnosed with asthma and/or COPD in primary care in 2012 (N: 68,578), regardless of health insurance, with at least 2 years of follow-up available. This cohort contains combined data from the primary care system; the hospital claims system, as well as the electronic prescription system in the Balearic Islands, Spain. Asthmatics >18 will be included. Two subpopulations will be identified based on the presence of allergic rhinitis. Periods and number of days of work absence during the year 2014 will be our dependent variable. All demographic and clinical data, as well as the use of resources, pharmacy dispensing data and patient reported will be collected for the study period.

Questions to be discussed: Would it be of interest to include asthma-COPD overlap patients? Should we make separate analysis for different causes of work absence? Are there any missing variables that would be of interest in the analysis?

Declaration of Interest: The authors declare no conflict of interest related to this work. No external funding was used

Introduction of Bedaquiline (BdQ) in Programmatic Management of Drug Resistant TB (PMDT) Program in Khyber Pakhtunkhwa (KP), Pakistan

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Clinical Research Results

Background: Pre XDR & XDR-TB (Extensively Drug resistant tuberculosis) is posing a great threat to global TB control. Pakistan ranks 6th among 27 MDR-TB countries. KP is one of the Province of Pakistan, where BdQ has introduced under PMDT from 3Q 2016.

Objective: The aim of the study is to have an overview of the PMDT Program in KP & to see the interim result & outcome in those patients who has completed course. We retrospectively reviewed data from 01 PMDT center in KP.

Methodology: PTP KP stepped up & has introduced BdQ to the failing regimen of MDR TB, close contact of resistance to Flouroquinolone (FQ) & Second line injectable (SLI) and in Pre XDR & XDR TB patients. This drug has introduced into 01 PMDT center in the Province i.e in Lady Reading Hospital Peshawar, to see the interim results and good final outcome. The enrolled DR TB patients at these centers were not only provided free second line drugs but also social support and travelling allowance on monthly visits. Regular monthly & need based visits were paid to see any side effects of drug.

Result: Total 40 patients were given BDq, among them 31(77%) were MDR having FQ resistant while 09 (22%) were XDR. Among 31 Pre XDR, 25 (81%) having Neg Smear & culture result at interim result (month 06). Only 01 (3%) was having positive smear & culture at interim, 03 (10%) did not produce sputum and 01 (3%) was lost & 01(3%) was died.

Among 09 XDR , 05 (56%) were having negative smear & culture at interim result, 01 (11%) was positive smear & culture, 02 (22%) died & 01(11%) did not produced sample.

To see Treatment success rate (TSR) among 31 Pre XDR 22 are still on treatment while 9 have completed course. Among 09, cured were 05 (56%), 2 (22%) died, 01(11%) lost & 01(11%) failed.

While in 09 XDR, 05 are still on treatment while 04 completed course. Among 04, cured were 02 (50%) & 02 (50%) died. None of patients had serious side effect due to BdQ.

Conclusion: Introduction of new second line drug Bedaquline has improved the interim result at month 06 and will improve DR TB outcome both Pre XDR & XDR TB if regimen is failing.

MDR & XDR TB is an emerging challenge in Pakistan. There is dire need to introduce more new drugs to improve TSR.

Involving patients in developing, refining and testing an implementation strategy to promote asthma self-management using the National Standards for Public Involvement

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Clinical Research Results

Aim In 2018, the National Standards for Public Involvement were launched in the UK to guide investigators effectively to include patient and public involvement in research. We aimed to undertake meaningful patient and public involvement in the IMP[2]ART (IMPlementing IMProved Asthma self-management as RouTine) study using the National Standards for Public Involvement.

Method Ten patient representatives volunteered to join the IMP[2]ART patient advisory group with one Lead member. The patient advisory group were supported to contribute to the development and refinement of the implementation strategy through face to face meetings, teleconferences and email. Involvement is guided by the six National Standards (Inclusive Opportunities; Working Together; Support & Learning; Communications; Impact; Governance).

Results We advertised the patient advisory group role and provided interested representatives with information of what would be involved (Inclusive Opportunities). The patient Lead is a grantholder for the study and reviewed the grant application and study protocol (Governance). Meeting chairs ensure that patient representatives in meetings contribute to decision making and feedback is provided for all types of involvement so patient representatives can see the impact of their contributions (Working Together). Support is provided for patient representatives who have accessibility needs in order to attend meetings and review documents (Support and Learning, Communications). Feedback from patient representatives' is collected, recorded and acted upon (Impact).

Conclusion The standards provided useful guidelines to increase meaningful patient involvement in the IMP[2]ART study ensuring research benefits the day to day lives of people living with asthma.

Is it possible to reduce over-reliance on SABA for asthma management with clinical sessions using a "Question and challenge cards" set among health care professionals ?

maría mar martínez vázquez
osakidetza

Clinical Research Results

Research question: Can clinical sessions with "Questions and Challenge cards" set among health care professionals reduce over-reliance on SABA for asthma management at Primary Care Centers?

Background: Asthma is a long-term inflammatory disease that comes and goes and its treatment is based on taking an inhaled corticosteroid on a regular basis(1). This treatment, which is anti-inflammatory, sometimes requires rescue medicine in times of flare-ups. For these specific occasions,inhaled short-acting beta-2-agonists (SABA) should be used for a short period of time. There are patients who base their asthma treatment on these bronchodilators when they should be only be an additional support at times when the symptoms worsen.Those asthmatics who do not follow the anti-inflammatory treatment remains with a poorly controlled asthma and they end up abusing SABA. Several studies proved that using more than 12 SABA canisters per year increases exacerbations and mortality(2).

IPCRG is developing Asthma Right Care Project in several country pilots for testing different tools to creat a sense of discomfort and dissatisfaction with over-reliance on SABA among all stakeholders.One of these tools are "Question and challenge cards" set(3).These cards are a way to trigger conversations to create a desire for change in the management of asthma.

Possible methodology: We propose developing clinical sessions with "Question and challenge cards" set among general practitioners, paediatricians and nurses at Primary Care Centers to raise awareness about over-reliance on SABA and measure the effect on SABA and Inhaled Corticosteroids(ICS) purchase at pharmacies by asthmatics.

To measure the effect of this intervention we propose analysing number of SABA and ICS canisters dispensed to asthma patients at pharmacies in the year before and after the explained intervention.

Questions discuss: SABA devices can be bought at pharmacy over the counter without possibility of being monitorized in this study.

We assume that reducing SABA canisters for the management of asthma improves health outcomes, but may it be neccesary to measure health outcomes (in terms of exacerbations, hospitalization and mortality)?

Declaration of Interest: I declare not having any conflict of interest.

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Is Pulmonary Rehabilitation an acceptable method of care for patients with COPD? Results from Sri Lanka

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Clinical Research Results

Brief outline of context -Chronic Obstructive Pulmonary Disease (COPD), characterized by progressively irreversible airflow limitation, is a major cause of morbidity and mortality. Recently, Pulmonary Rehabilitation (PR) has been successfully employed in health care institutions to improve the quality of life of COPD patients in addition to pharmacological treatment. PR programme include exercise training, education and behavior change support. However, patient buy-in or motivation is a major determinant of the extent of the benefits PR attendees will gain.

Aim: The study was designed to determine the attitudes and opinions of Sri Lankan COPD patients before commencing the delivery of a PR program.

Brief description of the change/intervention: A descriptive cross-sectional study was conducted among 139 diagnosed COPD patients attending respiratory clinics in Colombo district. Patients who were selected by systematic random sampling were assessed by a pre-tested interviewer administered questionnaire. The data were compiled into an Excel database and analyzed using SPSS statistical package.

Out of 139 COPD patients, 53% were male and most were (52.2%) between 60 – 80 years of age. 52.9% were in paid employment. Difficulty in breathing affected the paid work of 89 (63.8%) patients and unpaid work of 110 (79.7%) patients. When compared to others of the same age 56% were not able to carry out their work because of breathing difficulties. Amongst these patients difficulty in breathing had a detrimental impact on their level of physical activity in 67% (n=139). Maintaining relationships were affected in 58% (n=139). 80% of COPD patients were interested in attending a PR program. Most (49.3%) preferred to have a PR program supervised by a nurse at a hospital. 32% were willing to spend one to two hours per day for treatment.

Lessons learnt: Breathing difficulties related to their COPD are directly affecting patients' daily living and they are willing to attend PR programs at the hospitals under the supervision of qualified personnel in Sri Lanka.

Lung Function Among Patients with And Without Airway Hyper-Responsiveness In Primary Care

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[1]Queen's University, [2]University of Toronto

Clinical Research Results

Aim: The purpose of this study was to evaluate differences in lung function and demographic characteristics between patients with and without airway hyper-responsiveness who present with symptoms compatible with asthma and normal spirometry in primary care.

Methods: Retrospective chart review was conducted for 69 patients with normal spirometry (including a lack of response to bronchodilator challenge), symptoms compatible with asthma and who were referred for methacholine challenge testing (MCT). Chi-square and independent t-tests were performed to examine differences in demographic characteristics, Forced Expiratory Volume in one second (FEV_1) and Forced Vital Capacity (FVC) among patients with or without a positive MCT.

Results: Patients testing positive for MCT (n = 21) demonstrated significantly greater family history of asthma compared to those with a negative MCT (52% vs. 23%, respectively) and reduced pre- and post-bronchodilator FEV_1 compared to those who tested negative (pre:2.68 ± 0.66 litres (L) vs. 3.13 ± 0.88 (L); post: 2.77 ± 0.73 (L) vs. 3.22 ± 0.90 (L), respectively; $p < 0.05$ for all comparisons). No significant group differences in FVC and other lung function parameters were observed.

Conclusion: Our study suggests that patients with airway hyper-reactivity had greater family history of asthma and reduced pre- and post- bronchodilator FEV_1 compared to individuals with a negative response to methacholine. Our findings can be explained by increased baseline airway tone among patients with airway hyper-reactivity. The findings of this study highlight the need to clarify the role of MCT in the primary care setting.

Declaration of Interest: The authors report no conflicts of interest

Medical staff's perceptions and opinions on pulmonary rehabilitation to inform service development.

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Clinical Research Results

Implementation Science / Service Development

1. Aim: To explore the perceptions of medical staff about Pulmonary Rehabilitation (PR) and their opinions on improving the service delivery of PR.
2. Brief outline of context: Pulmonary rehabilitation is an integral part of disease management for chronic respiratory diseases. However, in India PR is underutilized which is attributable to several factors influenced by the stakeholders, including medical staff (staff).
3. Strategy for change/ Methodology: An observational cross-sectional questionnaire-based study was conducted among 41 doctors and allied health professionals (physiotherapists, respiratory therapists and occupational therapists) in Pune and Mumbai, India. The questionnaire asked staff about their understanding of the eligibility criteria for PR, preparedness for PR referral, perceptions of reasons for patients taking up or declining PR, and their thoughts on potential improvement of PR services.
4. Effects of changes/ Results: 85.4% staff believed that PR is worthwhile. On a Likert scale of 0 (not at all) to 10 (completely), most staff reported that they understood the eligibility criteria for PR median 8 (5-9.7) were well prepared for the PR referral median 7 (4-10). Perceptions about referrals based on the eligibility criteria and other factors were analyzed (Figure 1). Staff were asked about the factors that would ease PR referrals and their ideas on improving PR uptake by patients (Figure 2).
5. Lessons learnt/ Conclusion: Breathlessness and low exercise tolerance were believed to be the strongest influential pointers on the eligibility criteria to refer the patients to PR whereas most staff were unsure of the factors other than eligibility criteria that may influence the patient referrals. In staff's experience, patient's motivation, counselling and improving PR awareness may improve their PR engagement.
6. Message for others: Staff's opinions about improving PR services will be worth exploring further to inform service development.
7. Figure 1: Factors influencing patient referral to PR

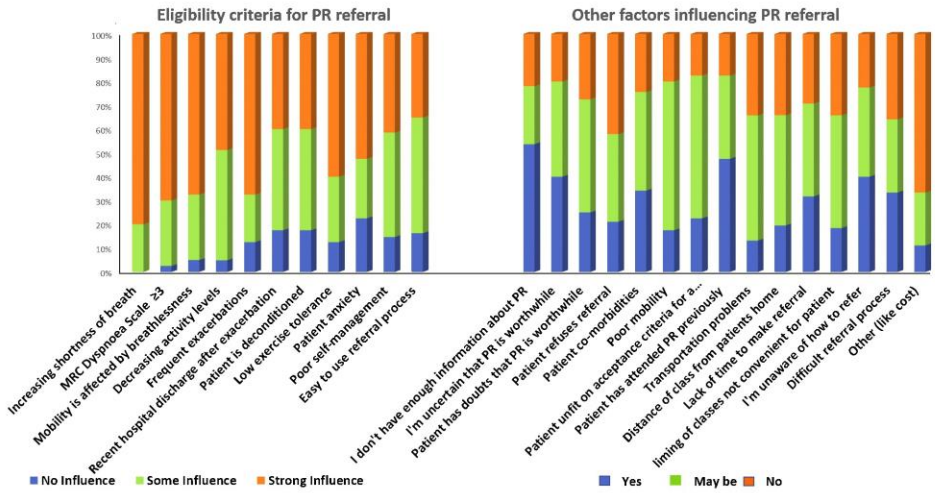
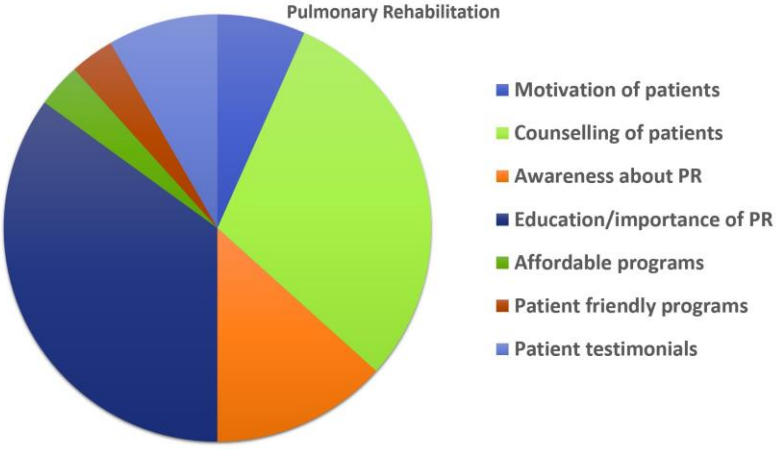


Figure 2: Opinions of Medical staff on improvement of patient engagement in Pulmonary Rehabilitation



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Opinions and Practise of Pulmonary rehabilitation amongst health care providers in selected areas of Sri Lanka

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Clinical Research Results

Background: Chronic lung disease is extensively prevalent across the developing world, and often affects the most vulnerable in society. It causes profound disability in low and middle income countries as the workforce is affected at a young age. Further, pulmonary rehabilitation (PR) is a known low cost, high impact intervention that contributes to reversing the disability associated with lung disease. However PR is not widely available in Sri Lanka. The awareness and opinion of health care workers to PR is not known. The objectives of the study were to determine the opinion of the health care providers on the process and practice of PR in selected areas of Sri Lanka.

Methodology: Consenting health care workers employed in teaching hospitals and chest clinics of two provinces were studied. After obtaining written informed consent, a self-administered questionnaire was used to collect data. The data were entered into an Excel database and analyzed using SPSS statistical software.

Results: Sixty two health care providers participated in study. Of them, 26 (46%) most were hospital doctors, 20% family physicians and 27% nurses. Forty-one (68%) health care personnel were involved in diagnosis, and 33 (55%) were involved in primary care. 16 (25%) of health care personnel had over 10 years of experience in caring for patients with respiratory problems. There was no established pulmonary rehabilitation programme available in these areas. Most (52.5%) health care providers were not sure about the eligibility criteria for PR. Twenty eight 28 (45%) of health workers were not adequately prepared to refer patients for PR. However 100% believed that PR is worthwhile in respiratory disease.

Conclusions: The study reveals awareness about PR is poor amongst the health professionals. There is an urgent need to train health care personnel on appropriate referral and providing care for patients with COPD.

Patient beliefs about SABA: the modifiable driver of over-reliance

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Clinical Research Results

Introduction and Aims:

Poor asthma management is often related to underuse of Inhaled corticosteroid (ICS) controller therapy overuse of short-acting beta agonist (SABA) reliver medication in adults and children[1-3]. Underuse of ICS is often driven by patients 'beliefs about ICS particularly doubts about the *necessity* of ICS *concerns* about steroids[4]. This study is the first to apply this Necessity Concerns Framework[5] to identify the key beliefs influencing over-reliance on SABA and examine whether these beliefs can be changed using behaviorally-intelligent messages. We also examined patient perceptions of anti-inflammatory reliever treatment

Methods: 446 patients were surveyed using validated questionnaires, adapted for ICS and SABA to assess (a) Patient perceptions of SABA and ICS (Necessity beliefs and Concerns)[6], (b) Reported adherence to ICS[7] and (c) perceptions of anti-inflammatory reliver therapy (AIR)[6]. We examined whether beliefs about SABA and AIR were amenable to change in cohort of 55 patients who, after completing baseline questionnaires, were exposed to brief messages designed to change their beliefs and repeated questionnaire assessments after receiving he messages and two weeks later.

Results: Many patients held beliefs about SABA that were consistent with over-reliance. The BMQ-SABA™ Necessity found that 71.7% of patient felt that using their reliever was the best way to 'keep on top' of their asthma, that the benefits of the reliever markedly outweighs any risks (59.9%), having their reliever with them is the 'best way to say on top of my asthma' and that they prefer to rely on their reliever than preventer (60.5%). Over-reliance on SABA coincided with low adherence to ICS preventer treatments. 77% reported that they sometimes, often or always used their ICS only when breathless, avoided using it (59%) or kept in reserve (62%) In the subset of 55 patients who completed follow up assessments on the day and two weeks later, Brief messages, designed to change SABA over-reliance led to a significant change in BMQ SABA Necessity beliefs ($p<0.0001$) and in increase in SABA Concerns ($p=0.05$). Messages about inflammatory reliver therapy (AIR) resulted in a significant increase in perceptions of BMQ-AIR Necessity ($p<0.0001$) and reduction in BMQ-AIR Concerns|($p<0.01$). However patient beliefs about SABA and AIR tended to revert back towards baseline value at 2 week follow-up.

Conclusions: Patients have real concerns about taking their medications, even when they feel they are necessary. The message about an AIR is acceptable and effective at reducing SABA Necessity beliefs driving over-reliance. But the message impact falls within two weeks, indicating the need to reinforce educational materials to promote longer term change in patient attitudes and behaviours.

Declaration of Interest: Research done by Spoonful of Sugar Research company, United Kingdom

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Peak inspiratory flow (PIF) in chronic obstructive pulmonary disease (COPD): a simple tool for assessing the risk of suboptimal PIF

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Clinical Research Results

Background: PIF is the maximal flow achieved during an inspiratory cycle. Internal inhaler resistance—which varies by design and is an underappreciated and a likely key variable preventing effective COPD pharmacotherapy—can impact PIF achievement. Not all dry powder inhalers (DPIs) are the same: some require PIF ≥60 L/min for adequate drug deaggregation and dispersal, whereas >30 L/min is sufficient for others. Additionally, many patients, although technically capable, fail to achieve optimal PIF with their inhalers.

Objective: To create a PIF assessment tool (PIF-AT) for identifying patients at risk of suboptimal PIF (sPIF).

Methods: PubMed was systematically searched using the terms “peak inspiratory flow” AND COPD (limit: English), titles/abstracts/full-text articles were reviewed, and original reports of patient-related factors influencing PIF were selected (Figure 1).

Results: The analysis included 23 of 84 screened articles. Sex, age, forced vital and inspiratory capacity, and COPD severity were independent predictors of PIF (Figure 2). Generally, % predicted forced expiratory volume in 1 second did not correlate with PIF.

Conclusions: sPIF may be associated with increased COPD-related symptom burden and hospitalizations. Therefore, DPIs should be considered only after ensuring sufficient PIF. Otherwise, devices requiring lower PIF for effective medication delivery (eg, metered-dose inhalers with spacers, nebulizers, slow-mist inhalers) should be considered. Per the proposed PIF-AT, PIF should be measured when clinician suspects low PIF or when a patient with COPD is (a) symptomatic despite appropriate therapy, proper inhaler use, and medication adherence, (b) female, (c) older (aged >65 years), and/or (d) having moderate-to-very severe disease. PIF should be assessed after stabilization of exacerbation.

Implications: Clinicians should consider PIF as a patient-related factor influencing inhaler choice and properly assess patients with COPD when prescribing inhaled medications, particularly for those at risk of sPIF. PIF-AT would help identify patients at risk of sPIF but requires further evaluation and validation.

Declaration of Interest:

writing supported by Boehringer Ingelheim United States

Pediatric asthma in Canada: A cross-sectional, epidemiological study

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Clinical Research Results

Aim: In Canada, estimates of childhood asthma vary widely depending on region and detection method. The Canadian Primary Care Sentinel Surveillance Network (CPCSSN) is a national surveillance system based on primary care electronic medical records. As asthma is predominantly managed in primary care, this database provides an opportunity to describe the epidemiology of asthma. This study aimed to describe the national prevalence and management of pediatric asthma in primary care practices in Canada.

Method: The CPCSSN database was searched using a validated tool for childhood asthma. Records of patients aged 1-17 inclusive and having a diagnosis of asthma from January 2008 to December 2016 were included in the study.

Results: From 2008 to 2016, the CPCSSN database included 374,365 children, 24.1% of which had been diagnosed with asthma at any time in their lives (18.0% in 2016). Among the identified asthmatic children, 14.6% were prescribed only salbutamol (9.3% in 2016). 76.7% of children had ever had a prescription for an inhaled corticosteroid (ICS) (16.5% in 2016). 7.1% of children were ever prescribed a combination therapy (1.0% in 2016). In 2016, a small number (0.7%) of children were prescribed prednisone, and few (3.8%) asthmatic children had one or more asthma-related visits.

Conclusions: Despite a high prevalence of pediatric asthma in primary care, few patients are seen annually. The prescription of ICS and combination therapies is not consistent or continuous. The diagnosis and treatment of asthma in Canada requires greater structure and regularity.

Financial source: Astra Zeneca Canada Ltd

Prevalence of influenza vaccination in COPD patients in the Balearic Islands (Spain), and its effect on COPD exacerbations. A population-based retrospective cohort study

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Clinical Research Results

Aim: to determinate the prevalence of influenza vaccination in COPD patients and its effects specially on COPD severe exacerbations.

Method: retrospective population-based cohort study analyzing real-life data from the MAJOrca Real-world Investigation in COPD and Asthma cohort (MAJORICA-cohort) in the Balearic Islands (eastern Spain) after restricting to COPD diagnosed patients, and ≥40 years old who were using respiratory medication during the study period (2012-2013). Moderate and severe exacerbations (hospitalization due to COPD exacerbation) during all 2013, and restricted to the epidemic period, were treated as dependent variables. Odds ratios (OR) were estimated by logistic regression, adjusting for age, gender, concomitant asthma diagnosis, COPD severity, smoking status, number of moderate exacerbations and number of severe exacerbations the previous year, and the following comorbities: Heart failure, Atrial fibrillation, Cor pulmonale, Anxiety disorder, Osteoporosis, Allergic rinitis, Gastroesophageal reflux disease, and Diabetes.

Results: 59.6% of the patients received seasonal influenza vaccination during 2012-2013 campaign (7393/12396). The percentage of patients who suffered exacerbations the following year was higher among those vaccinated, so influenza vaccination had a statistically significant negative (non-protective) crude effect favouring the risk of severe exacerbations: OR: 1.20 (95%CI; 1.05-1.37). This association diminished and loosed statistical significance, after adjusting for the main confounding variables: adjusted OR: 0.93 (95%CI; 0.74-1.18). A non significant protective effect against the risk of severe exacerbations was observed when 2013 influenza epidemic period was analysed only: ORa: 0.82 (95%CI; 0.58-1.16). Same non-protective effect was obtained for the risk of moderate exacerbations.

Conclusions: prevalence of influenza vaccination was suboptimal as described by other studies. In contrast with most of the available evidence, our results did not support a protective effect of influenza vaccination in the risk of admission for COPD exacerbation during the following year, not even restricting to influenza epidemic period only.

Declaration of Interest:

This study was partially funded by the Spainsh Ministry of Economy and Competitininess, Carlos III Institute (www.isciii.es) grant PI14_01754, supported with European Union ERDF funds. The funders had no role in the study design, data collection, management, analysis, interpretation, decision to publish, or preparation of the manuscript

The authors declare no conflicts of interest related to the development of this manuscript

Promoting understanding of asthma in children and young people in community settings

Viv Marsh[1], Julia Neal[1], Janice Koistinen-Harris[1], Hollie Masterson[1], Ettienne Marais[1], Kim Douglas[2]
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Clinical Research Results

Aim: To help people who work with children and young people (C&YP) improve their knowledge and understanding of asthma

Context: Asthma is a common medical condition and frequent cause of morbidity in children and young people (C&YP) in the UK and internationally. School absence, activity avoidance and feeling different are issues repeatedly highlighted by C&YP with asthma[1]. C&YP spend much of their time away from their parents/carers, with adults who may be lay people with little understanding of asthma[3]. Asthma deaths in the UK are amongst the highest in the world[2] and often occur outside of hospital[4].

Description: A free online educational resource was developed – 'Supporting Children's Health (SCH)'. This charitable initiative, by Education for Health and the George Coller Memorial Fund, helps users to:

- Understand how asthma affects a child's quality of life
- Recognise triggers that may affect a child's asthma
- Understand how medicines work and how inhalers are used
- Recognise when a child may be developing an asthma attack
- Know how to help a child having an asthma attack

Strategy for change: The primary target audience is staff working in schools, followed by any other professionals working with C&YP, including healthcare professionals developing their understanding of asthma in C&YP.

Originally launched in 2015 with a UK based target audience, SCH had **20,972** registered users.

Further to collaboration with Open Airways – Bermuda, SCH re-launched in September 2018 with an international target audience.

Effects of changes

Table 1: Evaluation

Month	UK registrations	International **(Bermuda)** registrations	Total registrations	% HCP Vs other profession registrations
Sept 2018	1225	17 **(5)**	1242	7.5%
Oct 2018	888	8 **(2)**	896	5.5%
Nov 2018	773	71 **(65)**	844	6.5%
Dec 2018	320	75 **(70)**	395	9%
Jan 2019	565	19 **(16)**	584	7.5%
Feb 2019	395	9 **(5)**	404	12%
6 month totals	4,166	199 **(163)**	4,365	Average 8%

Lessons learnt: User feedback is overwhelmingly positive, with >80% finding the site as easy to use and 94% reporting increased confidence in supporting C&YP with asthma.

"I feel that I have improved my knowledge of asthma and how to deal with a child in an emergency"

Message for others: SCH is a valuable educational resource, appropriate for international use, to improve understanding of asthma in children and young people.

Declaration of Interest:

SCH is funded by the following charities; Education for Health, George Coller Memorial Fund, Open Airways - Bermuda

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Pulmonary Rehabilitation Club (PRC) to Scale up Quality of Care for Chronic Respiratory Diseases (CRDs): A Pilot Study in Bangladesh

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Clinical Research Results:

Research question: Is Pulmonary Rehabilitation Club a feasible approach to scale up the quality of care for chronic respiratory diseases (CRDs) in Bangladesh?

Background: Pulmonary Rehabilitation (PR) is a multidisciplinary and multifaceted intervention that reduces disease burden for people with CRDs globally. However, like many low-resource-settings, PR centers are not adequately established in Bangladesh. Pulmonary Rehabilitation Club (PRC) will be a hub to accommodate multidisciplinary team including various professionals (e.g. primary care professionals, nurses, paramedics) and working with patients of CRDs in the community. We aim to pilot an effective low-cost PRC especially focusing on public sector- in the area of the lowest level of primary health care facility in Bangladesh.

Methods: We plan a mixed methods approach to assessing feasibility in this study. The quantitative data on patients with CRDs will inform the feasibility of the club formation approach. The qualitative data will explore operational challenges and perceptions of stakeholders including professionals, health care managers and patients.

Question to discuss: What will be our challenges in terms of recruiting patients?

Should we start in one centre or two in urban or rural areas?

What are the best outcomes?

What do we need to assess to inform scalability of Pulmonary Rehabilitation Club in Bangladesh?

Declaration of Interest:

All authors declare no conflict of interest.

Smoking among Medical students at Carol Davila University

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Clinical Research Results

Aim: Smoking is the main risk factor for both cardiovascular diseases and a number of neoplastic diseases (e.g. pulmonary, oropharyngeal, bladder, renal, colon cancer). In the last years, in Romania, we are talking about a huge progress regarding the legislation against smoking in public places.

Method: Our study has been addressed to medical students and was based on a questionnaire. The goal was to determine the number of smoker students. It was applied to the 6th year students from the Faculty of General Medicine throughout the family medicine course, during the course of prevention in primary health care.

Results: The questionnaire was addressed to all students in the 6th year of medicine in the academic year 2017-2018. The students who answered to our questionnaire are aged between 23 and 26 years old. Only 1% of the interviewed mothers admitted they have smoked during pregnancy and 20% of students have smoker parents. Almost 15% of the students are smokers, more males than females. The number of cigarettes varies between 10-20 per day. The onset of smoking was 19 years old, corresponding with admission at university. Everyone knows what the consequences of smoking are, especially at young ages. Only half of them has taken into consideration the possibility to quit smoking, but 10% have tried and had a period of abstinence longer than 2 months.

Conclusions: Smoking among medical students is 15%, under the prevalence of smoking in Romania or in Europe. Smoking prevalence is higher in males than in females. The prevalence of smoking among students is lower than among their parents.

Stakeholder Engagement in the Malaysian Asthma Hajj Study

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Clinical Research Results

Background: There is increasing recognition of the importance of stakeholder engagement – in particular, Patient and Public Involvement (PPI) – in research. Many Hajj pilgrims experience exacerbations of their asthma. We are investigating the health status of pilgrims with asthma, the practices of pre-Hajj medical screening and the perceptions of individuals involved in this service about asthma-associated risk to pilgrims. This will necessitate involvement of relevant stakeholders throughout the research process.

Aim: To describe the process of engaging relevant stakeholders.

Methods: The study employs a mixed-methods study design: qualitative interviews with pilgrims and observation of practices involved in pre-Hajj screening; and quantitative survey questionnaire and data from their medical records. We engaged members of the public who had gone for the Hajj, the Malaysian Pilgrim Board (Lembaga Tabung Haji (TH)) and the Ministry of Health Malaysia prior to starting the study.

Results: We discussed the process of data collection during stakeholder engagement activities with the public and revised the study instruments based on their feedback. For example, we revised to more suitable wordings for a layperson to understand in Patient Information Sheet. Collaboration with TH facilitated approval from the Manager of Pilgrimage Department. We also engaged with the Division of Pilgrimage Management and Division of Research and Development to present the study proposal and to seek approval to use the pilgrims medical record data. We contacted the Division of Disease Control of the Ministry of Health and sought approval from the ministry's Director General.

Conclusion: Engaging relevant stakeholders in research has enabled data collection for this study and the development of key relationships, which should facilitate implementation of findings.

Research Ideas on Respiratory Conditions & Tobacco Dependency:

Declaration of Interest: This study was sponsored by the NIHR RESPIRE Global Health Research Unit and is written on behalf of the RESPIRE collaboration.

Surveys of Chronic Respiratory Diseases (CRDs) in Low and Middle-Income Countries (LMICs): a systematic scoping review

Dhiraj Agarwal[1], Nik Sherina Hanafi[2], Soumya Chippagiri[3], Evelyn Brakema[4], Shalini Selvaratnam[2], Hilary Pinnock[5], Ee Ming Khoo[2], Sanjay Juvekar[1]
[1]KEM Hospital Research Centre, [2]University of Malaya, [3]Christian Medical College, [4]Leiden University Medical Centre, [5]Usher Institute of Population Health Sciences and Informatics

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Clinical Research Results

Background: Understanding the prevalence and burden of CRD underpins healthcare planning. We systematically scoped the literature to identify existing strategies (definitions/questionnaires/diagnostics/outcomes) used in surveys in adults for CRDs in low resource settings to inform our NIHR funded RESPIRE protocol titled- "Estimating CRD burden in adults in Asian LMICs [4CCORD study - 4 Country ChrOnic Respiratory Disease study]".

Methods: We searched MEDLINE, EMBASE, ISI WoS, Global Health, WHO Global Health Library; [search terms: prevalence AND CRD (COPD, asthma) AND LMICs; from 1995], and extracted data from selected studies.

Results: From 20,638 hits, 487 potentially met our eligibility criteria. We have identified the following limitations in the body of evidence from CRD surveys conducted in LMICs: 1) Surveys typically focus on detecting one condition (asthma or COPD); few identify both conditions and hardly any detect other CRDs. 2) Very few surveys define phenotypes of asthma and COPD. 3) Algorithms for making a clinical diagnosis (as opposed to recording lung function) were not well formulated. 4) Although respiratory symptoms were assessed in most surveys, broader aspects of the individual, societal and economic burden of CRDs was rarely assessed. 5) Awareness of respiratory disease, attitudes to medications/complementary therapies are rarely explored. **Conclusion:** The surveys we identified provide a very narrow picture of the burden of CRD in LMICs. Future surveys should seek to assess the burden of CRD from the perspective of individuals, their family, community, and national healthcare services.

Declaration of Interest: NIHR Global Health Research Unit on Respiratory Health (RESPIRE) 16/136/109

References & Clinical Trial Registry Information: Not Applicable

Team Based Learning improves peer to peer discussion

Liesel Dsilva, Melanie Wilson, Adrian Baatjes, Melanie Vig, Raza Zaheer, Thys van der Molen
GSK

Clinical Research Results

Introduction: The pharmaceutical industry commonly supports medical education through scientific meetings and workshops. The didactic model in these meetings is mostly the lecturing style. This results in passive receipt of information and little opportunity for peer-to-peer discussion [1]. Interactive platforms may provide an alternative to traditional methods, aiding active learning through shared clinical experience.

Aims and Objectives: To foster peer-to-peer discussion, utilizing a novel interactive engagement platform to promote optimal gains in clinical knowledge and competency with the potential to impact positive change to practice.

Methods: We piloted an interactive Team-based Learning (TBL)[2] exercise led by a panel of experts as part of an asthma scientific workshop for primary care physicians and respirologists. TBL is an evidenced-based collaborative learning and teaching strategy aimed at enhancing engagement and quality of learning. Participants were divided into teams and asked to review patient cases that addressed challenges and clinical dilemmas in asthma management. Learning evaluation was done by having each team select a consensus answer to multiple choice questions (MCQs). Using electronic voting, “BEST” answer selections from all teams were displayed simultaneously. The expert panel then facilitated a discussion across teams.

Results: 8 attendees participated in the face-to-face TBL session and 1 online. The room was split into 2 teams, the online attendee represented the third team. TBL was an engaging platform to encourage peer to peer discussion (50% strongly agreed, 50% agreed) (Fig 1a). Digital tools helped to increase engagement during the session (50% strongly agreed, 50% agreed). All expressed interest in attending similar scientific meetings in future (38% strongly agreed, 62% agreed) (Fig 1b).

Conclusions: TBL was a highly interactive and collaborative learning experience that enhanced peer-to-peer engagement through active contribution from the participants. It may be an effective approach to engage the medical community with the potential to increase positive practice change in the clinical management of asthma.

Ref:
1: Roopa S et al. J Clin Diagn Res. 2013; 7: 2244–6

2: Burgess A et al. BMC Med Educ. 2017 Dec 8;17(1):243. doi: 10.1186/s12909-017-1068-z

Figure 1. Feedback from the attendees at the face-to-face TBL session (N=8)

Research Ideas on Respiratory Conditions & Tobacco Dependency

Declaration of Interest:

GLAXOSMITHKLINE PHARMACEUTICALS LTD (GSK)

References & Clinical Trial Registry Information

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3843470

2. https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-017-1068-z

The difficulty of measuring and communicating breathlessness-a cognitive interview study

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Clinical Research Results

Aim: Sensorial anthropology takes as it's object of study the process of turning sensations into measurable symptoms. Our aim in this study was to explore the mis-match between the measurement of breathlessness on the multidimensional dyspnoea profile scale (MDP) and the lived experience of sensations of breathlessness.

Method: This was a qualitative study using cognitive interviewing techniques. 16 participants living with COPD were invited to complete the MDP scale whilst thinking aloud their thoughts, in order to reveal patterns in answer mapping and comprehension.

Results: Findings show four items on the MDP scale were particularly problematic and led to participants reformulating questions (answering different questions to those posed)', recontextualizing (drawing on contexts which make the response non sensical) or challenging the assumptions underlying the scale as irrelevant or incomprehensible. The items are: "I am not getting enough air", "I am breathing alot", "my breathing requires muscle work or effort" and " my breathing requires mental effort or concentration".

Conclusion: A recent independent comparison of the MDP scale with other measures of breathlessness reported that the MDP was readily understood by patients. Whilst the MDP is a positive movement towards understanding the incommunicable symptom of breathlessness, our study highlights a number of problems in answer mapping and comprehension that are not acknowledged by the authors of the MDP scale. We relate these findings on the inherent difficulty in using instruments to create objective measures to cultural and historical precedents.

The importance of Pulmonary Rehabilitation in Kyrgyzstan in the framework of the International RECHARGE project

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Background: Against the background of the high incidence of chronic lung diseases and the high cost of medicines, developing of an appropriate program of pulmonary rehabilitation (PR) for low- and middle-income countries (LMICs) is of the upmost importance.

Objectives: The main goal of the questionnaire-based study was to find out what the readiness of population of Kyrgyzstan is to implement PR and understand its importance. Patients with post-tuberculosis changes in the lungs and respiratory diseases, as well as health workers took part.

Methods: Within one week, 30 patients from four medical institutions and 30 medical workers from different disciplines participated in the study. Participants completed the questionnaire in a comfortable environment, without any pressure or time limit, at their workplaces or in the wards.

Results: Of the 30 patients surveyed, most were female (N=17, 56.6%), aged <40 years (N=12, 40%), unemployed (N=16, 53.3%) and reported breathing problems (N=26, 86.7%). The main problem of the patient respondents was low tolerance to physical exertion and reduced quality of life. Of all study participants, 27 patients (90%) agreed to participate in PR. Thoughts of healthcare workers on PR eligibility are provided in Figure 1, with the main reason for referring to PR cited as frequent exacerbations (73.3%). The main reason for not referring to PR is patient refusal (37.9%). Healthcare workers, for the most part, believe that patients with post-tuberculosis changes and respiratory diseases should attend PR program (60%).

Conclusions: As can be seen, patients with post-tuberculosis changes and respiratory diseases in Kyrgyzstan need a PR program and are ready to participate in it. Healthcare workers also support the implementation of PR in Kyrgyzstan. It is curious that health workers believe that believe that patients will not participate in PR, when, judging by the answers of the patients, the situation is reversed.

Therapeutic failures, recurrences and early re-admissions due to exacerbation of COPD in a cohort 'real life' in Spain

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Clinical Research Results

Aim: To describe the prevalence of therapeutic failures, recurrences and early re-admissions for COPD exacerbations in a 'real life' respiratory cohort population.

Methods: Retrospective population-based cohort study analyzing real-life data from the MAJOrca Real-world Investigation in COPD and Asthma cohort (MAJORICA-cohort after restricting to COPD patients ≥40 years old who were using respiratory medication during the study period (2012-2013). Moderate and severe exacerbations (hospitalization) were computed during each year. Therapeutic failure was defined as a symptoms' worsening that happens during the exacerbation itself requiring additional treatment. Relapse was defined as a new symptomatic exacerbation occurring between the end of the initial exacerbation treatment and the 4 subsequent weeks. Early re-entry was defined as a new admission less than 30 days after discharge.

Results: From a total COPD population of 12396, 5882 patients (47.5%) had at least one moderate exacerbation during 2012 for a total number of 9772 moderate exacerbations. 19.8% of those moderate exacerbations were associated with at least one therapeutic failure. In 2013, 10500 moderate exacerbations (728 more) from 6006 patients (48.5%) occurred, 20.8% of them associated with at least one therapeutic failure.

Regarding severe exacerbations, 985 patients (7.9%) were admitted for a COPD exacerbation during 2012 for a total number of 1373 hospitalizations, being 148 of them (10.8%) readmissions less than 30 days after the index episode. In 2013, 1562 admissions (189 more), from 1056 patients (8.5%) were registered. The frequency of early readmissions rose to 14.6% (228/1562) in 2013.
Conclusions: Population observational studies help to understand real-life clinical patterns. Approximately 8% COPD patients will have an admission due to COPD. Our results suggest a 20% prevalence of therapeutic failures & relapses from moderate exacerbations, and 11 to 15% COPD exacerbations early readmissions. Public health interventions to reduce relapses and readmissions in COPD exacerbations are needed

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The authors declare no conflicts of interest related to the development of this manuscript

Tiotropium has similar efficacy to long-acting β2-agonists and greater efficacy than leukotriene receptor antagonists as add-on to ICS in adults with asthma: a systematic review

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Clinical Research Results

Aim: This systematic literature search compared the efficacy of LAMAs, LABAs and LTRAs as add-on to ICS in adults with asthma.

Methods: We identified studies and meta-analyses that compared LABAs, LTRAs or LAMAs with placebo, or compared LAMAs directly with LABA/LTRAs as add-on to ICS. Data from RCTs ≥4 weeks long reporting changes in FEV_1 or number of exacerbations requiring OCS (adults only) were included.

Results: The search identified eight publications (Table): three meta-analyses and five RCTs. A meta-analysis reported improvements in FEV_1 with tiotropium versus placebo of 0.14L (trough) and 0.19L (peak); for LABAs, the improvements versus placebo were 0.07L (trough) and 0.13L (unspecified timepoint). An RCT (Wechsler et al.) investigating tiotropium versus LABA showed no significant difference between treatments (0.025L [trough]), but a meta-analysis comparing tiotropium with salmeterol showed tiotropium improved trough FEV_1 (mean treatment different 0.05L). Compared with LTRAs, tiotropium and LABAs had a greater effect on FEV_1. Mean change in FEV_1 (unspecified timepoint) from baseline versus placebo was 0.03–0.10L with montelukast and 0.12L with zafirlukast. ORs for risk of exacerbations requiring OCS were significantly reduced with tiotropium and salmeterol, but not montelukast, versus placebo; there was no difference between tiotropium and LABAs. Risk of exacerbations requiring additional controller therapy (70% required OCS) was significantly reduced with zafirlukast versus placebo (Table). There were no differences between LAMA or LTRA versus placebo, or tiotropium versus salmeterol, in patient-reported AEs (Table).

Conclusions: Efficacy and safety data with LAMAs (tiotropium) and LABAs as add-on to ICS were broadly similar, with a possible lung function benefit with tiotropium. The review shows that tiotropium provides greater improvements in FEV_1 than LTRAs as add-on to ICS in adults with asthma. This suggests that LAMAs, LABAs and LTRAs may be considered as add-on controllers for patients who remain symptomatic on ICS.

Declaration of Interest: Alan Kaplan reports personal fees from Boehringer Ingelheim, GlaxoSmithKline, Teva, Novartis, Pfizer, AstraZeneca, Purdue, Sanofi, Paladdin and Trudell outside the submitted work. J. Mark FitzGerald has received honoraria from Boehringer Ingelheim for presenting at industry-organised symposia and attending advisory boards in the past two years. Branko Jugovic and Michael Engel are employees of Boehringer Ingelheim. Roland Buhl reports grants and personal fees from Boehringer Ingelheim, GlaxoSmithKline, Novartis and Roche, and personal fees from AstraZeneca, Chiesi, Cipla and Teva.

Validating the ICS Stop and Monitor tool on applicability and usefulness in daily Primary Care Practice

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Clinical Research Results

Aim: The use of inhaled corticosteroids (ICS) in the treatment of chronic obstructive pulmonary disease (COPD) is widespread in the Netherlands but not always in line with current treatment guidance as specified in the Dutch GP guidelines (COPD-standaard NHG). For some patients this may lead to avoidable risk for adverse events. A Dutch decision support tool (ICS Stop and Monitor tool) has been developed to support primary care physicians in evaluating which patient is eligible for using ICS and which is not. The IPCRG desktop helper has been used as an example. This ICS Stop and Monitor tool consists of two parts: a flowchart and a monitoring part. The purpose of this study was to evaluate the first part of the tool on applicability and usefulness in daily primary care practice.

Methods: In this study, physicians and nurses were asked to complete a questionnaire with 22 questions on the applicability and usefulness of every step of the flowchart of the ICS Stop and Monitor tool. The questionnaire was validated by a group of Dutch respiratory care experts. After completing the questionnaire, three physicians were selected to participate in an interview on the usefulness of the tool.

Results: Nine GP practices were included and indicated that they could include enough patients (at least four per practice). However, eventually five practices were able to participate. The flowchart part of the ICS Stop and Monitor tool was assessed by physicians and nurses with 17 patients. All participants indicated that appropriate use of ICS is important in optimizing COPD care and that the tool is convenient and appropriate to support COPD treatment decisions in daily practice.

Conclusion: The findings of this study suggest that the ICS Stop and Monitor tool is considered appropriate for use in daily practice by primary care physicians and nurses.

Validation and cut off score of PUMA screening questionnaire and use of COPD-PS and CDQ to detect COPD in high risk southern Chinese primary care population – A pilot study

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Clinical Research Results

Aim: Chronic obstructive pulmonary disease (COPD) occurs globally and is a progressive disease affecting quality of life and leads to significant morbidity and mortality. However early detection and treatment can improve outcomes. Screening questionnaires can be effective to identify patients at risk for COPD to undergo spirometry. This study is to validate the PUMA screening questionnaires to detect COPD.

Methods: A cross-sectional study was conducted in two large group primary care clinics in Hong Kong. Subjects were recruited if they were ≥ 40 years old and a current/former smoker (≥10 packs per year). Screening questionnaires included (a) PUMA score (Lopez et al, 2016); 7 items and the maximum score is 9. Items included gender, age, pack-years smoking, past spirometry, dyspnea, sputum and cough, (b) COPD Diagnostic Questionnaire [CDQ], 8 items (score range is 0-38), (c) COPD Population screener [COPD-PS], 5 items (score range 0-10). All participants underwent spirometry and diagnosed with COPD defined as FEV1/ FVC < 0.70.

Results: Sixty participants were recruited. The prevalence of COPD was 13.8% (n=8). The completion rate of PUMA, CDQ and COPD-PS was 100% (n=60), 95% (n=57) and 98.3% (n=59) respectively. According to Youden's index, the best cut-off point of PUMA score questionnaire was ≥6, which is higher than previously published studies. COPD-PS was ≥4 and CDQ was ≥24. The AUC of PUMA and CDQ were of moderate accuracy (0.73 and 0.82 respectively). Meanwhile COPD-PS had a low accuracy (AUC=0.60). Based on these cut-off points, the sensitivity and negative predictive values of all questionnaires were similar. However positive predictive value and specificity of PUMA was similar to CDQ and higher than COPD-PS.

Conclusion: The PUMA screening questionnaire with a cut off at 6 points can be used in the clinical environment to screen patients at high risk in COPD and comparable to CDQ. The detection of COPD of participants was clinically significant at 13.8%.

Table 1: The AUC, sensitivity, specificity, PPV, PNV and best cutoff score of PUMA, CDQ and COPD-PS

	AUC	Sensitivity (%)	Specificity (%)	PPV	NPV	CUTOFF SCORE (Youden's index)
CDQ	0.819	87.5	66.7	0.30	0.97	≥24
COPD-PS	0.60	100	30	0.186	1	≥4
PUMA	0.733	87.5	68	0.30	0.97	≥6

Reference

1. Lopez et al (2016). Development of a simple screening tool for opportunistic COPD case finding in primary care in Latin America: The PUMA study. 2016 Oct;21(7):1227-34. doi: 10.1111/resp.12834. Epub 2016 Jun 20

Validation of an Adult Asthma Case Definition

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Clinical Research Results

Aim: Although asthma is one of the most common chronic conditions affecting Canadians, its burden is poorly understood. The Canadian Primary Care Sentinel Surveillance Network (CPCSSN) is a national chronic disease surveillance system based on primary care electronic medical record data. The application of validated diagnostic algorithms is used in the CPCSSN database in chronic disease surveillance and for epidemiological study. In this study, we aimed to develop and validate a case definition and case-finding algorithm to identify asthmatics in primary care in Canada.

Method: Following a consensus development exercise, four clinicians each examined 250 records patient records from the Southern Alberta branch (SAPCReN) of CPCSSN to identify asthmatic adults. The population included patients over age 17 of any gender and health status who had visited a CPCSSN primary care provider during the period January 1, 2014-December 31, 2016. An operational case definition to identify adult patients with asthma was developed using clinical expertise, and a computer-generated case definition was applied to a case-by-case auditing of the 1000 patient records. The case-finding algorithm was then used to identify adult asthmatic patient records in the SAPCReN-CPCSSN database.

Results: The case definition had 83.33% sensitivity (95% CI: 63.61-93.88%), 99.28% specificity (95% CI: 98.51-99.67%), a positive predictive value of 74.07% (95% CI: 55.03-87.14%) and a negative predictive value of 99.59% (95% CI: 98.93-99.86%). The prevalence of adult asthma in southern Alberta, Canada was 4.20% (95% CI: 4.09-4.31).

Conclusion: The case definition and algorithm yielded strong sensitivity and specificity metrics and was found valid for clinical and research purposes. The case-defined algorithm may allow primary care physicians to improve the identification and management of their patients with asthma.

Declaration of Interest: The study was supported by the Family Physicians Airways Group of Canada and the Department of Family Medicine at University of Alberta.

Vitamin D Deficiency in Patients Referred for Evaluation of Obstructive Sleep Apnea.

Izolde Bouloukaki, Rodanthi Pateli, Manolis Markakis, Ioanna Tsiligianni, Ioanna Alexaki, Christina Ermidou, Sophia Schiza
University of Crete

Clinical Research Results

Aim: Several studies have reported an association between Vitamin D levels and obstructive sleep apnea (OSA) patients. To assess the levels of vitamin D in a large cohort of OSA patients and to investigate possible correlation with clinical and polysomnographic parameters.

Method: In this cross-sectional study, 555 consecutive patients who had undergone a PSG for OSA diagnosis were recruited. They were grouped according to apnea-hypopnea index (AHI) as mild, moderate and severe. Patients with AHI < 5 served as controls. Demographic, PSG data, serum levels of vitamin D were measured and compared between groups.

Results: OSA was diagnosed in 499 of the patients (89.9%). Of those77 (14%) had mild OSA, 116 (21%) moderate OSA, 306 (55%) severe OSA. The mean age was 55± 15 years and body mass index of 33 ± 7 kg/m^2. The risk of vitamin D deficiency (< 20 ng/mL) was observed in 42% of the cohort. OSA patients had lower Vitamin D levels compared to controls (22 vs 26, p=0.006). The lowest levels [median 20, (13, 28)] (p=0.013 among all groups) and the higher prevalence for vitamin D deficiency (48%) were observed in severe OSA patients. After multiparametric adjustment for age, gender and obesity, severe OSA showed significant independent associations with the risk of vitamin D deficiency [OR (95% CI) 1.683 (1.137–2.490), p=0.009].

Conclusions: A large proportion of patients referred for OSA evaluation had vitamin D deficiency, which was independently associated with severe OSA. Therefore, screening and treatment for vitamin D could be considered to prevent potential associated comorbidities.

Declaration of Interest: Nothing to declare

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