Operational Protocol	
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Collaboration on Quality Improvement Initiative for Achieving Excellence in Standards of COPD Care (CONQUEST): A Global Operational Protocol

CONQUEST (COllaboratioN on Quality improvement initiative for achieving Excellence in STandards of COPD care) is an integrated quality improvement programme to promote targeted, risk-based management of patients with modifiable high-risk chronic obstructive pulmonary disease (COPD), who are either currently undiagnosed or diagnosed, but options to optimise management are available. The focus is on appropriate assessment, intervention, and follow-up of these patients, while supporting the adoption of guideline-led clinical decision-making for all COPD patients. This Global Operational Protocol describes the core components required to implement the CONQUEST programme.

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LIST OF ABBREVIATIONS AND DEFINITION OF TERMS

Abbreviation or special term	Explanation
BEC	Blood Eosinophil Count
BNP	B-type natriuretic peptide
BMI	Body Mass Index
CAT	COPD Assessment Test
CCQ	Clinical COPD Questionnaire
CDS	Clinical Decision Support
CONQUEST	COllaboratioN on a QUality improvement initiative for achieving Excellence in STandards for COPD care
COPD	Chronic Obstructive Pulmonary Disease
CT scan	Computed Tomography scan
CRT	Cluster Randomised Controlled Trial
CVD	Cardiovascular Disease
DEXA scan	Dual energy X-ray absorptiometry scan
ECG	Electrocardiogram
ECHO	Echocardiogram
EMR	Electronic Medical Record
FRAX	Fracture Risk Assessment tool
GERD	Gastroesophageal reflux disease
GOLD	Global Initiative for Chronic Obstructive Lung Disease
GSC	Global Steering Committee
HRQoL	Health Related Quality of Life
ICD	International Classification of Diseases
ICS	Inhaled Corticosteroids
IT	Information Technology
LABA	Long-acting beta-agonist
LAMA	Long-acting muscarinic antagonist
MACRE	Major adverse cardiac or respiratory event
MRC/mMRC	Medical Research Council/modified Medical Research Council dyspnoea scale
NICE	National Institute for Health and Care Excellence

Abbreviation or special term	Explanation
OCS	Oral Corticosteroids
OPC	Optimum Patient Care, developers of the CONQUEST programme
OPCG	Optimum Patient Care Global
OPCRD	Optimum Patient Care Research Database
PRI	Patient Reported Information
PRO	Patient Reported Outcomes
QI	Quality Improvement
QIP	Quality Improvement Programme
Quality Standards (QS)	Quality Standards for the COllaboratioN on QUality improvement initiative for achieving Excellence in STandards of COPD care
SABA	Short-acting beta-agonist
SABD	Short-acting bronchodilator
SAMA	Short-acting muscarinic antagonist
SNOMED	Organised computer processable numerical collection of medical terms
UK	United Kingdom
USA	United States of America

CONQUEST LEXICON OF KEY TERMS

The CONQUEST Quality Improvement Programme (QIP) will be innovative in its development of a central set of "Quality Standards" for global COPD care, and in its approach to characterising target patient groups and their clinical management. For consistency in the use of clinical and programme language across the programme, an agreed lexicon of key terms has been summarised below.

Term	Definition
CONQUEST Quality Improvement Programme	**Full name: Co**llaboratio**n** on a **Qu**ality Improvement Initiative to Achieve **E**xcellence in **St**andards of COPD Care. The purpose of the CONQUEST programme is to improve the prompt identification of patients with modifiable high-risk COPD, and to support the adoption of guideline-led clinical decision-making for all COPD patients, with a focus on assessment, therapy, and follow-up of patients with modifiable high-risk COPD. The components of the CONQUEST programme form the basis of the intervention evaluated in PREVAIL.

Term	Definition
PREVAIL Cluster Randomised Controlled Trial	**PR**agmatic **EVA**luation of a quality **I**mprovement programme for people **L**iving with modifiable high-risk COPD. The impact of the CONQUEST programme on COPD outcomes will be evaluated in the subset of patients with modifiable high-risk COPD by a cluster-randomised controlled trial (CRT); self-contained primary care sites (PCS) or general practitioner (GP) practices will be the cluster units of randomisation
COPD exacerbation **(EMR database definition)**	A significant worsening in respiratory symptoms in people with COPD. Either a **moderate** exacerbation defined as requiring an acute course of systemic corticosteroids and/or a course of antibiotics with a lower respiratory consultation* within 3 days, or an emergency room visit for a respiratory cause; or a **severe** exacerbation (i.e. an exacerbation resulting in a hospital admission or death (from a respiratory cause)) [1]. Exacerbations occurring a minimum of 7 days after treatment of the initial exacerbation has ended will be considered as separate exacerbations. Additional prescribing instructions held in the EMR record will be used to identify the end of an exacerbation (i.e., using recorded information on the duration of the treatment). *validated lower respiratory consultation clinical code lists will be used to identify these events and will include acute bronchitis, general respiratory infections, and respiratory symptoms.
Exacerbation of potential COPD **(EMR database definition)**	A significant worsening in respiratory symptoms analogous to a COPD exacerbation in people with potential but undiagnosed COPD. Either a **moderate** potential exacerbation defined as requiring an acute course of systemic corticosteroids and/or a course of antibiotics with a lower respiratory consultation* within 3 days, or an emergency room visit for a respiratory cause; or a **severe** potential exacerbation resulting in a hospital admission or death (from a respiratory cause). Exacerbations occurring a minimum of 7 days after treatment of the initial exacerbation has ended will be considered as separate exacerbations. Additional prescribing instructions held in the EMR record will be used to identify the end of an exacerbation (i.e., using recorded information on the duration of the treatment). *validated lower respiratory consultation clinical code lists will be used to identify these events and will include acute bronchitis, general respiratory infections, and respiratory symptoms.
Systemic steroid burden	Total annual corticosteroid exposure from oral tablets, intravenous injection, or intramuscular injection measured as the average annual dose of prednisolone taken via any route, in milligrams. Records of systemic steroids other than prednisolone will be converted to prednisolone equivalent doses using USA and UK national formulary conversion tables[2,3]
Complicated exacerbation	A severe COPD exacerbation OR A moderate COPD exacerbation involving any of the following: • additional acute course(s) of corticosteroids and/or respiratory antibiotic between 8 and 28 days after the initial event • further record of COPD exacerbation between 8 and 28 days after the initial event
MACRE	Major adverse cardiac or respiratory event. Occurrence of any of the below events: New diagnosis for heart failure, Hospitalisation for heart failure, Revascularization, Myocardial Infarction, Stroke, All-cause mortality (further categorised as sudden death, cardiac deaths, respiratory death, none of these), hospitalisation or hospital admittance for respiratory event, or Complicated exacerbations

Term	Definition
Modifiable "High-risk" patient	Patients with COPD (or potential COPD) who have had 2 or more moderate or 1 or more severe exacerbation in the last 24 months (with at least one exacerbation occurring in the last 12 months), AND whose medical record data indicates clearly that there is scope for management optimisation. Patients with frequent exacerbations are at higher future risk of exacerbations. Frequent exacerbations are linked to accelerated lung function decline, greater risk of cardiovascular events and death. Guidelines state that frequent exacerbators should have their treatment optimised to reduce the risk of future exacerbations and potentially other adverse events. CONQUEST aims to address the management needs of such patients by promoting improved treatment and follow-up.
Undiagnosed patient with potential modifiable high-risk COPD	Patients without a COPD diagnosis who fit the modifiable high-risk criteria with respect to recent exacerbations of potential COPD, and who are smokers or former smokers ≥ 40 years of age. Exclusion: Those with an active asthma diagnosis i.e., with an EMR diagnostic code for asthma and evidence of an asthma consultation in the preceding 2 years.
Newly diagnosed modifiable high-risk COPD patients	The subset of the above undiagnosed patients who receive a COPD diagnosis following diagnostic assessment in the most recent CONQUEST QIP cycle. OR The subset of the above undiagnosed patients who receive a COPD diagnosis during the follow up period of the PREVAIL CRT.
Modifiable high-risk COPD diagnosed patients	Patients with a COPD diagnosis at baseline who fit the modifiable high-risk criteria with respect to recent COPD exacerbations and are ≥40 years of age, and in whom there is an opportunity to optimise management.
Patients with scope for management optimisation	The programme will focus on patients who continue to have exacerbations whilst on their current therapy (including no therapy or SABA/SAMA only) and/or whose management may be optimised by correct diagnosis, or additional non-pharmacological interventions such as smoking cessation interventions or pulmonary rehabilitation.
Collation of PRO/PRI questionnaire data	In patients receiving the QIP, PRO/PRI instruments will be completed at least annually, bringing together data received during the implementation of the programme to be used in annual data analysis and feedback.
Optimum Patient Care (OPC) Affiliated sites	Those health care sites participating in the PREVAIL CRT or implementing the CONQUEST QI Programme with the direct support of OPC.
Independent sites	Healthcare systems or sites wishing to implement the CONQUEST QI programme (in accordance with the Global Operational Protocol) who are not supported by OPC directly. Independent sites will have access to resources and templates related to the programme via the Global Operational Protocol and the CONQUEST website. These sites will not participate in the PREVAIL CRT.

PROTOCOL SYNOPSIS

CONQUEST is a quality improvement programme (QIP) focused on the care and management of modifiable high-risk COPD patients. “High-risk” refers to patients who are at a higher risk of future exacerbations and increased morbidity given a history of confirmed or potential COPD exacerbations. The term “modifiable” is used to describe those patients whose medical records indicate there is scope to optimize management. The aim of the programme is to close the gaps in management of these patients using targeted risk-based treatment strategies following enhanced clinical assessment, and therefore modify the risks for this patient population. This Global Operational Protocol describes the core components of the programme required to implement CONQUEST in a healthcare system or practice. The following synopsis summarises the CONQUEST QIP and provides cross-references to the relevant section of the protocol where greater detail is provided.

The CONQUEST Global Operational Protocol:

This protocol describes the core components of the programme, and the steps involved in implementation. It serves as an architectural framework for any healthcare system or site wishing to implement the CONQUEST programme and mandates the core components required to use the ‘CONQUEST’ title. Adaptions to local context and national guidelines are possible where they do not undermine the core components and are discussed throughout the protocol where applicable.

CONQUEST Background and Rationale:

QI in healthcare is a formalised way of analysing and reviewing standards and practice of care to identify areas and strategies for improvement, implementing change, and analysing the impact of that change. CONQUEST embodies the cyclical, iterative QI approach through evaluation of current practice against the specially developed CONQUEST Quality Standards (detailed in section 1.3), the translation of these standards into routine clinical care, and

evaluation of the impact of the programme with feedback and analysis of outcomes helping to modify existing approaches for ongoing improvement.

CONQUEST QI is focused on patients considered to be at a modifiable but higher risk of morbidity and mortality because of a history of potential or confirmed COPD exacerbations. Patients who experience (potential) exacerbations of COPD but who are not yet diagnosed, and patients who are diagnosed with COPD but whose medical records show that there are options to optimize therapy are the target populations for the programme (detailed in sections 1.1 and 1.2). These patients are at a higher risk of future exacerbations and cardiac events, greater lung function decline and increased mortality; but there is an opportunity to modify that risk, improving outcomes through thorough assessment and enhanced patient management.

While keeping the focus on the identification and management of these 'modifiable high-risk' populations CONQUEST also supports routinization of guideline-led care and pro-active patient follow-up for all COPD patients.

Objectives and Outcomes:

The objectives of the CONQUEST QIP are:

- To embed identification, assessment of disease status, optimization of pharmacological and non-pharmacological intervention, and appropriate follow-up of targeted patients into routine care using an iterative, QI programme.
- To improve health outcomes of these patients including, but not limited to, reduced exacerbation rates, reduction in COPD related hospital admissions and reduction in major adverse respiratory and cardiovascular events.

Impact and outcomes following implementation of the programme will be assessed using routinely collected clinical data elements and quality metrics (Quality Indicators) occurring prior to implementation where appropriate, and then at least annually thereafter. The indicators are directly linked to the CONQUEST Quality Standards and will be used for analysis and feedback by implementing sites, they are detailed in section 2.2 and Appendix1.

The CONQUEST Programme Methodology:

The core components of the CONQUEST QIP relate to the implementation of the Quality Standards, Clinical Decision Support (CDS), data collection, data analysis and feedback. They are outlined further in section 3.1. CDS refers to all the elements that combine to give physicians and health care providers assistance in clinical decision making. In CONQUEST, these elements include point-of-care feedback and considerations for physicians, and education and training activities to support the implementation of the Quality Standards.

The initial step in the programme is the identification of the target populations using electronic medical record (EMR)-based algorithms adapted from previously established algorithms (see section 4.1.1). This is then followed by thorough assessment, pharmacological and non-pharmacological interventions and appropriate follow-up of identified patients. Throughout this process CDS activities and algorithms support healthcare practices and systems in provision of care. As the QI cycle progresses, data analysis informs and allows for on-going modification of the programme. Sites implementing CONQUEST in affiliation with OPC (i.e., 'affiliated sites' - those involved in the initial roll out of the programme and the associated cluster randomised trial) will be directly supported in many areas, but resources for independent sites implementing the programme (i.e., those sites not directly supported by OPC) are available throughout the protocol and on the CONQUEST website[1]. Section 3.1.1 describes this level of support and available resources.

A diagrammatic representation of the programme (Figure 3) is presented in section 3.1 which highlights the interlinking of core programme components.

Implementation:

Each Quality Standard has core components and requirements that must be implemented in order to translate it into practice, and these are described in section 4.1. Where acceptable, options to allow sites to decide how to adapt programme components in order to align with local

[1] CONQUEST (and PREVAIL) websites to be created following final approval of protocol. Any reference to the website within the protocol will be updated as soon as links become available.

healthcare systems or regional guidelines are provided. Each Quality Standard has associated CDS elements to aid healthcare providers.

Data collection and analysis:

Independent sites are responsible for collecting and analysing data in accordance with the core requirements of the programme: collection of data based on the Quality Indicators (section 5.1), production of status reports to analyse this data, and the evaluation of programme impact and process (section 5.2). This process is driven by OPC for affiliated sites.

Quality Indicators form the basis of (at least) annual data collection by sites and this is then analysed and summarised into annual Status Reports. The reports provide feedback for the site into their current practice and management performance relative to the Quality Standards and in comparison to previous status reports as the programme continues. In the first year of implementation sites should produce quarterly reports summarising key impact indicators.

Monitor progress and sustain improvement:

CONQUEST is an ongoing QIP that aims to embed quality improvement into routine care; therefore there is a need for regular review and adaption of the programme informed by scheduled data analysis and periodic feedback (quarterly key impact reports in the first year and then at least annual status reports thereafter). This iterative process is used to make the necessary modifications to existing approaches that will continuously improve performance and create a learning healthcare system.

AMENDMENT HISTORY

Date	Section of study protocol	Amendment or update	Reason
<< >>		<< >>	
		N/A	

THE CONQUEST GLOBAL OPERATIONAL PROTOCOL

The CONQUEST Global Operational Protocol aims to provide a globally applicable architectural framework for implementation of the CONQUEST Quality Improvement programme (QIP). The protocol will describe the core programme components that must be implemented by any healthcare system or site wishing to develop a programme using the "CONQUEST" label. We recognize that there are regional, national and international differences in healthcare system structures and context, therefore suitable alternatives are given for certain programme components where appropriate. The Global Operational Protocol, and the resources it contains, will be available to all healthcare systems or sites wishing to implement the CONQUEST QIP. Local Operational Protocols specific to the implementation of CONQUEST in the United Kingdom (UK) and United States of America (USA), with the support of Optimum Patient Care (OPC), have been developed separately using this protocol as a basis.

The Global Operational Protocol components and methods are developed with an implementation science approach in mind[4,5], and are initially aligned with standards defined and agreed to in the associated PREVAIL Cluster Randomised Trial (CRT) which will evaluate the impact of the CONQUEST QIP. This Operational Protocol will be available via the programme website[2] and will be subject to annual review and update by OPC as new information becomes available through initial pilot site implementation and on-going programme expansion. It is anticipated that annual updates would include topics related, but not limited to: the feasibility of identifying patients on the basis of environmental exposure or other factors, the use of different or emerging diagnostic assessment methods, practical experiences with handling the COVID-19 pandemic and the ease and acceptability of implementation.

Sites wishing to run the CONQUEST QIP should refer to sections 4 and 5 of this document for description of actions required for implementation, as well as the relevant appendices described

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in these sections. The CONQUEST website will also contain regularly updated guidance for sites and healthcare providers wishing to implement the programme.

The secondary use of routinely available electronic medical record (EMR) data for quality improvement and benchmarking is an important aspect of any QI programme so that real-world routine practice patterns can be evaluated. Unless data is made available to OPC, benchmarking and the full QI programme will not be possible. Therefore, when implementing CONQUEST, independent sites (i.e., those implementing the CONQUEST programme without direct OPC support) are encouraged to share de-identified data wherever possible, and when ethically approved by appropriate governing bodies. Data from a CONQUEST labelled QI programme carried out by independent sites will be made available to OPC for ongoing program evaluation and ethically approved research. Opportunities to build patient registries and/or databases containing de-identified information within the CONQUEST programme will be subject to local regulations and expert advisory bodies protecting human subjects and their personal health information.

To express interest in joining the CONQUEST program, or obtain further information, please contact the CONQUEST team at
info.conquest@optimumpatientcare.org