



# National Clinical Programme for Respiratory

An End to End Model of Care for Asthma

Part 1: Adult Asthma

December 2021



---

# Contents

<b>Foreword</b> .....	<b>5</b>
Glossary of Acronyms.....	6
<b>1.0 Executive Summary</b> .....	<b>7</b>
1.1 Purpose and Aims.....	7
1.3 Asthma Epidemiology and Costs.....	7
1.4 Support Materials.....	7
<b>2.0 Rationale and Strategic Background</b> .....	<b>8</b>
2.1 Key Principles of the National Clinical Programme Respiratory.....	10
2.2 Scope of the document.....	11
2.3 Improving Outcomes for Asthma.....	11
2.4 Introduction to the End to End model of care for Asthma.....	13
2.4.1 Definition.....	13
<b>3.0 The End to End Model of Care for Asthma</b> .....	<b>14</b>
3.1 Key elements of the model of care.....	15
3.1 The Service.....	16
3.1.2 Location of services.....	17
3.1.3 Delivery of the service-roles of Health Care Professionals (HCPs) in delivering the Model of Care.....	20
<b>4.0 Asthma Management in Ireland</b> .....	<b>20</b>
4.1 Level 0 Living with a chronic disease.....	20
4.1.1 Pre-Hospital Emergency Care.....	20
4.2 Level 1 GP Management & Structured Review.....	21
4.2.2 Management of asthma attacks/flare ups/exacerbations in Primary Care.....	22
4.3 Level 2: Community Specialist Ambulatory Care Hubs.....	24
4.4 Level 3 Acute Specialist Ambulatory Care.....	27
4.4.1 Respiratory Specialist Outpatient Service.....	27
4.5 Level 4 Hospital Inpatient Specialist Care.....	28
4.5.1 Emergency department attendance for flare up/ attack or exacerbation.....	28
4.5.2 Inpatient care.....	30
4.5.3 Discharge from hospital.....	31
<b>5.0 Severe or ‘Difficult to Treat’ Asthma Specialist Service</b> .....	<b>33</b>
<b>6.0 Integrated Approach to Asthma Management</b> .....	<b>34</b>
6.1 Core components.....	34
6.2 Prevention of asthma and reduction of risk factors.....	34
6.3 Assessment, treatment and monitoring of Asthma.....	36
6.4 Asthma control.....	37
6.4.1 Assessing Asthma control.....	37
6.4.2 Treating to achieve control.....	39
6.4.3 Monitoring to maintain control.....	39

---

<b>7.0 Patient Education, Self-Management and support</b>	<b>40</b>
7.1 Planned review	40
7.2 Review following hospital admission for acute Asthma attacks	40
7.3 Follow-up after an attack managed at home	41
<b>8.0 Asthma Epidemiology and Costs</b>	<b>42</b>
<b>9.0 Guidance for Asthma during the COVID 19 Pandemic</b>	<b>44</b>
<b>10.0 Implementation Plan</b>	<b>45</b>
<b>11.0 References</b>	<b>46</b>
<b>12.0 Appendices</b>	<b>47</b>
Appendix 1 MECC	47
Appendix 2 Self- Management Support	48
Appendix 3 Asthma Multidisciplinary Team	49
Appendix 4 Irish Clinical Resources	52
Appendix 5 Pre-Hospital Emergency Care	53
Appendix 6 GINA Guideline: Selecting Controller Treatment in Adults	54
Appendix 7 GINA Guideline: Selecting Controller Treatment In Adults with a Diagnosis Of Asthma	55
Appendix 8 GINA Guideline:Personalised Managemnt for Adults	56
Appendix 9 Management in the ED	57
Appendix 10 The 5 A's Framework for Smoking Cessation	58
Appendix 11 Asthma Self Management Plan	59
Appendix 12 Logic Model	60
Appendix 13 Implementation Plan	61
<b>13.0 Acknowledgements</b>	<b>63</b>
<b>14.0 Membership of the Clinical Advisory Group 2021</b>	<b>63</b>

---

# Table of Figures

<b>Figure 1</b> Sláintecare principles.....	<a href="#">8</a>
<b>Figure 2</b> Population Health Triangle.....	<a href="#">12</a>
<b>Figure 3</b> Spectrum of Services.....	<a href="#">14</a>
<b>Figure 4</b> Integrated Model of Service.....	<a href="#">17</a>
<b>Figure 5</b> GINA Primary Care Management.....	<a href="#">22</a>
<b>Figure 6</b> NCEC Acute management.....	<a href="#">23</a>
<b>Figure 7</b> Map Regional Health Authorities.....	<a href="#">24</a>
<b>Figure 8</b> Scheduled care pathway for asthma.....	<a href="#">26</a>
<b>Figure 9</b> NCEC ED pathway.....	<a href="#">28</a>
<b>Figure 10</b> Discharge.....	<a href="#">32</a>
<b>Figure 11</b> Asthma Management cycle.....	<a href="#">39</a>
<b>Figure 12 A</b> Age- Sex Standardisation hospitalisations.....	<a href="#">42</a>
<b>Figure 12 B</b> Age- Sex Standardisation for OECD countries.....	<a href="#">43</a>

# Table of Tables

<b>Table 1</b> Risk and Trigger Factors.....	<a href="#">13</a>
<b>Table 2</b> Elements of Model of Care.....	<a href="#">15</a>
<b>Table 3</b> Summary of spectrum asthma care.....	<a href="#">19</a>
<b>Table 4</b> Elements of structure GP Review.....	<a href="#">21</a>
<b>Table 5</b> Reasons for Specialist Referral.....	<a href="#">27</a>
<b>Table 6</b> Elements of hospital management asthma.....	<a href="#">31</a>
<b>Table 7</b> Severe asthma.....	<a href="#">33</a>
<b>Table 8</b> Prevention.....	<a href="#">35</a>
<b>Table 9</b> Early Diagnosis and assessment.....	<a href="#">35</a>
<b>Table 10</b> Diagnostic Challenges.....	<a href="#">36</a>
<b>Table 11</b> Assessment of symptom control and risk.....	<a href="#">37</a>

# Membership of the current working group from NCP Respiratory

- **Dr Desmond Murphy** Clinical Lead
- **Susan Curtis** Programme Manager
- **Dr Mark O Kelly** ICGP Representative
- **Dr Dermot Nolan** ICGP representative
- **Angela Ryan** HSCP Representative
- **Sarah O Connor** representing Asthma Society Ireland
- **Joan Johnson** representing COPD Support Ireland

Please see acknowledgement section for other contributor's.



---

# Foreword

Asthma is the most common chronic respiratory disease in Ireland, with approximately 1 in 10 of the population asthmatic. Asthma control remains suboptimal in a large proportion of patients which places significant health, social and economic burdens on the community. The reasons why asthma control remains poor is multi-factorial but fragmented and unstructured care is believed to be an important factor. The cost of asthma care in Ireland is over €500 million per annum.

Adults with asthma will benefit from being part of a well-managed integrated system of care. This Model of Care follows international best practice. It covers the full spectrum of care provided in hospitals and in the community with a focus on developing partnerships between the acute hospital services, general practice and community services together with the patient and his/ her family.

The End to End Model of Care for adult asthma has been developed in tandem with an overall Health Service Executive (HSE) strategy for chronic diseases. It outlines the structures that we should adhere to and adopt in the care of patients with, or at-risk for asthma. The document is not meant to be a guideline document outlining interventions to be used in varied clinical circumstances that present when managing patients with asthma. In this regard the NCP Respiratory endorses the guidelines produced and updated regularly by societies such as the Irish Thoracic Society, The Irish College of General Practitioners (ICGP) and Global Initiative for Asthma (GINA). However, this document does detail how patients should be able to access care at various stages of their asthma, and also the duties of those providing this health care. We believe that the implementation of this Model of Care will result in a reduction in the variation of care delivered to patients with asthma in Ireland and additionally result in an improvement in their clinical outcomes.



Clinical Lead for the National Clinical Programme for Respiratory (COPD& Asthma)



# Glossary of Acronyms

## Abbreviations:

<b>ABG</b>	Arterial Blood Gas	<b>ICU</b>	Intensive Care Unit
<b>ACT</b>	Asthma Control Test	<b>LTI</b>	Long Term Illness
<b>ACQ</b>	Asthma Control Questionnaire	<b>LTOT</b>	Long Term Oxygen Therapy
<b>ACOS</b>	Asthma/COPD overlap syndrome	<b>LABA</b>	Long-acting beta-2 agonist
<b>AE Asthma</b>	Acute Exacerbation of Asthma	<b>LAMA</b>	Long-acting muscarinic antagonist
<b>AIR</b>	Anti-inflammatory reliever therapy	<b>MAU</b>	Medical Assessment Unit
<b>AMAU</b>	Acute Medical Assessment Unit	<b>MDI</b>	Metered Dose Inhaler
<b>ANP</b>	Advanced Nurse Practitioner	<b>MDT</b>	Multi-Disciplinary Team
<b>BMI</b>	Body Mass Index	<b>MECC</b>	Making Every Contact Count
<b>CHO</b>	Community Healthcare Organisation	<b>MOC</b>	Model of Care
<b>CNS</b>	Clinical Nurse Specialist	<b>mMRC</b>	modified Medical Research Council
<b>COPD</b>	Chronic Obstructive Pulmonary Disease	<b>NCEC</b>	National Clinical Effectiveness Committee
<b>DALY</b>	Disability-Adjusted Life Years	<b>NCP</b>	National Clinical Programme
<b>DIT</b>	Dublin Institute of Technology	<b>NIV</b>	Non-Invasive Ventilation
<b>DPI</b>	Dry-powder inhaler	<b>NSAID</b>	Non-steroidal anti-inflammatory drug
<b>ED</b>	Emergency Department	<b>OCS</b>	Oral Corticosteroids
<b>FeNO</b>	Fractional exhaled Nitric Oxide	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>FEV1</b>	Forced Expiratory Volume in 1 second	<b>OPD</b>	Outpatients Department
<b>FVC</b>	Forced Vital Capacity	<b>PaO<sub>2</sub>, PaCO<sub>2</sub></b>	Arterial oxygen and carbon dioxide tension
<b>GINA</b>	Global Initiative for Asthma	<b>PCRS</b>	Primary Care Reimbursement Service
<b>GMS</b>	General Medical Services	<b>PDE4</b>	Phosphodiesterase-4
<b>GOLD</b>	Global Initiative for Chronic Obstructive Lung Disease	<b>PEF</b>	Peak expiratory flow
<b>GORD</b>	Gastro Oesophageal Reflux Disorder	<b>pMDI</b>	pressurised Metered Dose Inhaler
<b>GP</b>	General Practitioner	<b>PR</b>	Pulmonary Rehabilitation
<b>HCP</b>	Health Care Professional	<b>QNHS</b>	Quarterly National Household Survey
<b>HIPE</b>	Hospital Inpatient Enquiry Scheme	<b>QOL</b>	Quality of Life
<b>HRQoL</b>	Health Related Quality of Life	<b>SABA</b>	Short-acting beta-2 agonist
<b>HSE</b>	Health Service Executive	<b>SMART</b>	Single combination ICS/LABA inhaler Maintenance and Reliever Therapy
<b>HDU</b>	High Dependency Unit	<b>SpO<sub>2</sub></b>	Oxygen saturation measured by pulse oximetry
<b>IARS</b>	Irish Association of Respiratory Scientists	<b>WHO</b>	World Health Organization
<b>ICGP</b>	Irish College of General Practitioners		
<b>ICP</b>	Integrated Care Programme		
<b>ICS</b>	Inhaled corticosteroid		

---

# 1.0 Executive Summary

## 1.1 Purpose and Aims

The End to End Model of Care (MOC) for adult asthma has been developed in tandem with an overall Health Service Executive (HSE) strategy for all chronic diseases. This MOC seeks through the implementation of its guidelines to improve the standard of care provided to adult asthma patients in all healthcare settings, with a particular focus on primary care where the majority of asthma is managed. This MOC will place a particular focus on the ‘at risk’ patients -those in lower socio-economic groups, smokers, patients with multiple co-morbidities and those with psychological problems. This MOC is a guide for best practice in the care of those at risk of developing asthma as well as those diagnosed with the condition across the continuum of care and includes both acute and chronic management of asthma in both primary and secondary and tertiary care settings. Through the implementation of this Model of Care, the Irish health service will be ensuring that the right care is delivered to people with asthma at the right time and in the right place.

## 1.2 An Integrated Model of Care for Adult Asthma

The End to End Model of Care for adult asthma reflects the full spectrum of care and service provided in Irish hospitals and in the community for people with asthma. Its development has been guided by international best practice. The spectrum of services, ranging from primary prevention to tertiary care, includes:

- Primary prevention and health promotion.
- Risk factor identification and management.
- Early detection of asthma and its diagnosis.
- Secondary prevention.
- Primary care management of asthma.
- Shared primary and secondary care management of asthma.
- Secondary care management of chronic asthma.
- Tertiary care.

The spectrum of services is ideally delivered across five “Levels of Service” delivery /settings which are **(Level 0) Living well at home**, **(Level 1) General Practice**, **(Level 2) Community Specialist Ambulatory Care**, **(Level 3) Acute Specialist Ambulatory Care** and **(Level 4) Hospital Inpatient Specialist Care**. The five levels of service are described in detail in section 3.1. In addition, advice and other services pertaining to asthma care are available from the [Asthma Society of Ireland](#).

## 1.3 Adult Asthma Epidemiology and Costs

Supporting the development of this Model of Care was an analysis of the data and evidence available to the National Clinical Programme for Respiratory in relation to the prevalence and burden of asthma in Ireland. More detail is available in section 8.

## 1.4 Support Materials

Information and tools to support the application of the Model of Care are provided in the appendices section.



## 2.0 Rationale and Strategic Background

The Sláintecare Report of the Oireachtas Committee on the Future of Healthcare (2017) set out the ten-year vision for the health service in Ireland and identified the nine elements that will underpin the ten-year reform programme, through the creation and implementation of a Citizen Care Master plan. A key element of the Citizen Care Master plan is service redesign based on population health planning, knowledge of current levels of service delivery and configuration and the principle of collaboration with partners (1).

This document describes the MOC for adult asthma from the National Clinical Programme for Respiratory, following international best practice to be delivered within an integrated service approach. It covers the full spectrum of care provided in HSE hospitals and in the community.

The MOC for asthma outlined in this document details how physicians, nurses, and other health care professionals (HCPs) will work with patients to make the clinical decisions most appropriate to their circumstances, to allow empowerment of patients to self-manage their asthma where possible and to promote collaboration with and between specialist colleagues in providing optimal care for patients in the Irish healthcare system.



Figure 1 Sláintecare principles

This model of care aligns to the Sláintecare principles (2) outlined as follows:

### Population Health Perspective

The model is based on the population health pyramid set out in Figure 2. Within the population, adults will experience different levels of disease complexity or risk and therefore, have different requirements for healthcare services. Many people will be managed within primary care. Prevention of disease progression and development of complications occurs at every level. Unless actively managed, individuals will progress up the pyramid to develop severe and complex asthma.

---

## Person-centered Care

Services will be developed to provide the right care, in the right place, at the right time and built around the needs of the individual. Person-centered care involves building care around the needs of the individual. This model of care for asthma describes a continuum of services from self-management to care in the community, the ambulatory care hub and care in the acute setting. Case management is an intervention that identifies subsets of particularly vulnerable individuals who have complex care needs and who are at high risk of adverse outcomes. Following a comprehensive assessment, a bespoke care plan may be developed in partnership with the individual, their carer or family that can anticipate and inform on future care needs. Patient-reported outcome measures will also be an important element of the monitoring and evaluation process.

## Health and Wellbeing

As per the Sláintecare Model of Care principles (2) a model of care that will have the greatest impact is one that supports a “shift left” where particular interventions can move patients from a ‘high risk’ category to a ‘low risk’ category. This means taking actions and providing supports to keep people well, to address risk factors, to detect diseases early and intervene early or to support rehabilitation or palliation in order to prevent or reduce the impact of the disease. The HSE’s Self-Management Support Framework (3) and the Making Every Contact Count Frameworks are two essential elements of model of care for the prevention and management of asthma.

## Co-ordination of Care

The full spectrum of care services are required and need to be provided in an integrated way through agreed clinical pathways between community, ambulatory care hubs and hospitals. For true integration of services to occur, information must be shared across the services in a timely and secure manner.

## Equity

Addressing health inequality is a core focus for the National Clinical Programme for Respiratory. The asthma model of care is following on from the model for the prevention and management of chronic disease and addressing this challenge by focusing services on vulnerable populations such as individuals from lower socioeconomic groups and older people as these populations are known to have a higher prevalence of risk factors, chronic disease diagnoses, multi-morbidity and poorer outcomes (4).

## Self-care and self-management

This MOC should include supports to enable individuals to self-care and self-manage their risk factors and/or conditions at home. Patients should be empowered to manage their own health and be provided with the necessary skills and supports to do so. This model of care for adult asthma places the Self-Management Support Framework and the Making Every Contact Count Framework (Appendix 1 & 2) at the base of the pyramid, thus highlighting it as one of the foundations for the prevention and management of asthma. These frameworks have robust implementation plans, which include important interventions such as education and training for healthcare professionals and patients alike, which are in progress across Ireland. Self-management support services should be prioritised and technological solutions for self-management developed.

## Top of License Practice and Teamwork

The services for asthma will develop specialist multidisciplinary teams which will provide specialist level support to General Practice, to enable patients to be managed in the community. For care to be truly integrated, all healthcare professionals will be required to work together, placing the needs of the patient to the forefront. This will involve new ways of working together across different sites. Changing care for people living with asthma requires changes in healthcare professionals’ knowledge, skills and practice, improved organisation of care and new ways of working together to best support individuals across all health and social care settings. To achieve consistent, high-quality, cost effective, person-centered care, team members have clear roles and responsibilities and are committed to maintain continuity of care through communication and record keeping where personal continuity is not possible.

## Supported by technology

Asthma services will require technological support to enable clinical data sets to be collected, analysed and fed back for quality improvement and planning. Technology enabled information, communication and self-management support is necessary for patients. Technology, particularly as we adjust to living alongside COVID-19, is an essential component of the MOC. Services will be designed and resourced to be flexible in delivery: face-to-face, online and blended service delivery models will be designed to best support individuals. The COVID-19 pandemic has presented opportunities to move towards virtual and digital models for certain aspects of care which may better suit some people living with asthma.

## Quality and Safety

The provision of high-quality, safe care is an integral component of integrated care. Robust governance structures to support accountability and the delivery of high-quality, safe, patient-centered care are a key consideration in this model of care. New ways of working will require clear governance and oversight at the local, regional and national levels. Governance structures for integrated care for chronic disease will be set up nationally and locally, key stakeholders including users will be involved. Robust measurement and evaluation processes are being developed to support this model of care.

## 2.1 Key Principles of the National Clinical Programme Respiratory

The aims and objectives of the National Clinical Programme (NCP) for Respiratory specific to adult asthma are set out below:

### Aims

- Maximise health and quality of life of people with asthma.
- Minimise future risk for patients.
- Prevent avoidable mortality due to asthma.
- Standardisation of care for asthma patients in Ireland.

### Objectives

- To improve access to structured integrated asthma care for patients diagnosed with asthma which will address asthma education in the most appropriate setting.
- To facilitate the provision of guideline concordant care, based upon a patient's level of asthma control
- To maximise the proportion of patients with asthma whose asthma is controlled.
- To identify the appropriate resources needed to deliver on the aims of the NCP for Respiratory in relation to asthma.
- To engage with key stakeholders and foster relationships in order to deliver on the aims of the NCP for Respiratory in relation to asthma.

In addition to guiding the delivery of the above objectives, this End to End Model of Care for adult asthma reflects the key reform themes identified by the HSE to improve the health of the population, and to reshape where and how healthcare services are provided in Ireland. These themes include:

- Improving population health.
- Delivering care closer to home.
- Developing specialist hospital care networks.
- Improving quality, safety and value.

---

## 2.2 Scope of this document

The scope of this MOC is to define the services required to support the general population of adults in the management of asthma. It includes health services operated and funded by the HSE and includes community-based services as well as hospital-based secondary and tertiary care services. This model of care is guided by national and international best practice. It is not intended to be a stand-alone clinical guideline. It acknowledges that specific health and social care settings, high risk and vulnerable groups will require additional interventions and support. Working with other relevant national clinical programmes and services, this MOC will inform the future development of shared pathways, policies, strategies and services to improve health outcomes in these settings. Supporting documents include clinical guidelines published by the ICGP (5) [Asthma - Diagnosis, Assessment and Management in General Practice Quick Reference Guide](#) and the NCEC (6) [The National Clinical Guideline for the Management of an Acute Asthma Attack in Adults 2015](#) will also be referred to in this document.

The NCP Respiratory is collaborating with NCP Paediatrics and Neonatal to form a paediatric working group to develop Part 2: Paediatric Asthma.

## 2.3 Improving Outcomes for Adult Asthma

Asthma is the most common chronic respiratory disease in Ireland, and continues to have a significant adverse effect on the health of the population. Asthma control remains suboptimal in a large proportion of patients which results in significant health, social and economic burdens on the community. The reasons why asthma control remains poor is multi-factorial but fragmented and unstructured care is believed to be an important factor.

Adults with asthma will benefit from being part of a well-managed integrated system of care, coordinated for the majority of asthmatics at primary care level. Further integrated information Technology (IT) support will be necessary to facilitate electronic monitoring and eHealth referrals for patients with asthma throughout the continuum of the proposed reformed healthcare system. The NCP Respiratory defines in this MOC the optimal care that it believes should be available and delivered to adults in Ireland with asthma.

The End to End MOC for adult asthma aims to reflect the HSE spectrum and levels of services outlined by the proposed Integrated Care Programme (7). The spectrum of services, ranging from primary prevention to tertiary care, includes:

- Primary prevention and reduction of risk factors associated with adverse outcomes in asthma.
- Early detection and diagnosis of the condition.
- Asthma Control.
- Self-management support
- Secondary prevention: (Making Every Contact Count-MECC Appendix 1).
- GP led primary care management of asthma.
- Shared primary and secondary care management of asthmatic patient care.

### Tertiary care

The spectrum of services is ideally delivered across five levels of service delivery /settings. The MOC takes a holistic, person centred and life course approach to the provision of adult asthma services. It reflects the principles of integrated care which in essence is to provide patients with the right care at the right time by the right team in the right place.

It reflects the goals of Healthy Ireland (8) which are to increase the proportion of people who are healthy at all stages of life, to reduce health inequalities, to protect the public from threats to their health and wellbeing and to create an environment where every individual and sector of society can play their part in achieving a healthy Ireland. The Healthy Ireland Framework sets out a whole of government and whole of society approach to address the determinants of health and wellbeing across an individual's life course.

The NCP Respiratory proposes to change how we deliver care to people with adult asthma and support a National Model of Integrated Care. This integrated care approach will be developed with the co-operation and collaboration of the HSE primary, secondary and tertiary sectors.

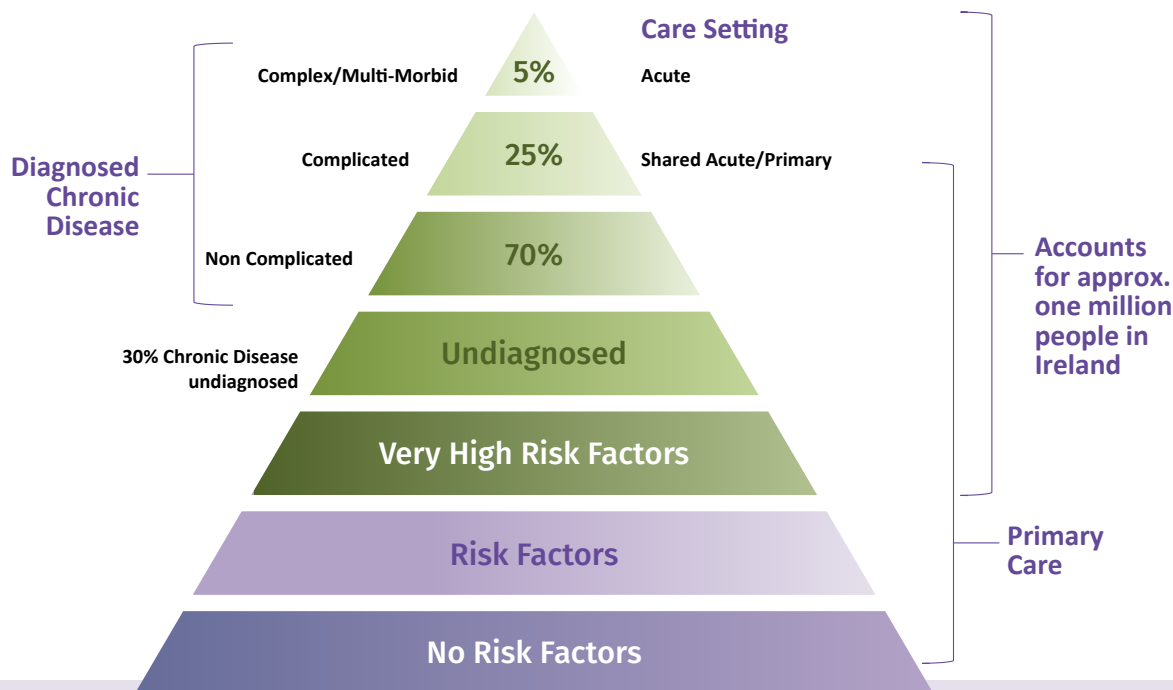
### The aims of this Model of Integrated Care for adults are to:

- Manage asthma in terms of:
  - Symptom control.
  - Improved quality of life.
  - Reduced future risk of adverse outcomes.
- Improve the delivery of care to people with asthma across all five levels of care supported by patient self-management.
- Reduce the risk of death from asthma.
- Ensure care is in line with the aims and objectives of the NCP Respiratory.

These aims in turn reflect many of the actions outlined in the Sláintecare Implementation Strategy which continues the cross-government focus on health and wellbeing set out in the Healthy Ireland Framework (1, 7, 8).

The Population Health triangle is an important concept which underpins the population approach to chronic disease (Figure 1). This model demonstrates how there are different levels of progression of chronic illness in the population. Individuals within the population may require acute secondary care either for exacerbations of their already diagnosed chronic disease or for other reasons. People will usually progress up the pyramid unless their condition is actively managed. With good healthcare management many will improve their condition. It can be seen that of the approximate 1 million people in the top 5 levels, the vast majority (70 % to 95%) are managed in Primary Care (7).

Figure 2 Population health approach for chronic disease



## 2.4 Introduction to the End to End model of care for Adult Asthma

### 2.4.1 Definition

The Global Initiative for Asthma (GINA) in its Global Strategy for Asthma Management and Prevention has developed a newer more practical definition of asthma:

**“ Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms e.g. wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity.’ together with variable expiratory airflow limitation”** (9).

This clinical definition focuses on two key features needed for the diagnosis of asthma -variable respiratory symptoms and variable airflow limitation. The following risk factors have been identified as contributing to the disease development and or triggering of asthma symptoms (Table 1) (9).

Recognition of these factors is important for identifying people most at risk of developing asthma and for whom prevention strategies may be effective.

For the majority, asthma cannot be cured or prevented, but it can be controlled, giving patients the freedom to live with fewer restrictions, thus improving their quality of life.

Table 1 Risk and Trigger Factors

Risk Factors	Trigger Factors	
<ul style="list-style-type: none"><li>• Maternal smoking (in utero).</li><li>• Parental smoking (post-natal).</li><li>• Occupational exposure to pollutants.</li><li>• Family history of asthma.</li><li>• Pre-term birth.</li><li>• Low birth weight.</li><li>• Exposure to infections early in life.</li><li>• Adverse environmental conditions.</li></ul>	<ul style="list-style-type: none"><li>• Cigarette smoke.</li><li>• Occupational sensitisers.</li><li>• Viral respiratory infections.</li><li>• Exercise.</li><li>• Emotions e.g. anxiety, stress and laughter.</li><li>• Exposure to known allergens e.g. dusts mites, pollens, animal dander and moulds.</li><li>• Drugs e.g. aspirin, non-steroidal anti-inflammatory drugs (NSAIDs), beta blockers and some complementary medicines.</li></ul>	<ul style="list-style-type: none"><li>• Foods, especially nuts and food additives e.g. colourings, metabisulfite and monosodium glutamate.</li><li>• Medical conditions, such as gastro-oesophageal reflux, allergic rhinitis or sinusitis.</li><li>• Exposure to irritants e.g. industrial chemicals, cleaning agents and pressure pack products</li></ul>

# 3.0 The End to End Model of Care for Adult Asthma

The **Integrated Care Programme for the Prevention and Management of Chronic Disease (ICPCD)** proposes a continuum of preventive, diagnostic, care and support services. These are based on the following guiding principles;

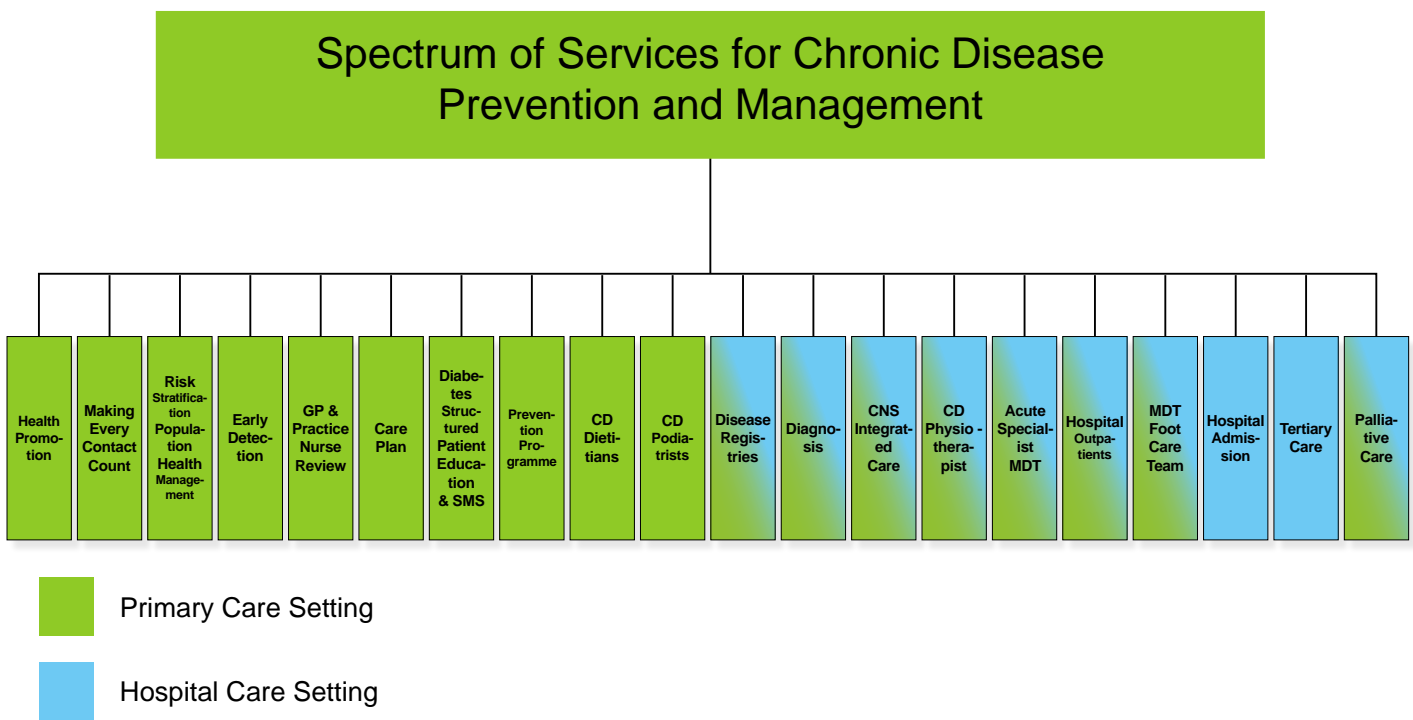
**Guiding principles:**

- Actively engaging people in the prevention of their condition or its disimprovement, improving their health behaviours and encouraging self-management of their condition.
- Most care for people with chronic diseases will be provided by a patient’s GP and practice nurse.
- Patients will have access to diagnostic services and multidisciplinary teams to support their care.
- Specialist knowledge and services will be available in the community with links between local assigned/involved hospital specialists and clusters of GP practices<sup>1</sup>.
- Standard clinical pathways will be implemented through the local clinical networks.

The person’s relevant medical information will be shared (with their consent) to support decision making at the point of care.

People at risk of; or living with a chronic disease, such as asthma, will be able to receive a spectrum of services /care according to their needs (Figure 3).

Figure 3: Spectrum of services provided to people living with, or at risk of, chronic disease



This figure highlights the role of various services across the Irish health service continuum and the patient care pathways required to achieve, both primary and secondary prevention, and effective chronic disease management. It is envisioned that patients with chronic diseases will be active partners when accessing these services.

<sup>1</sup> 96 Community Healthcare Networks



### 3.1. Key elements of the model of care

An effective End to End MOC for asthma defines the way in which health care services are delivered (Table 2).

- It describes the care/service required.
- It outlines where the service or care should be delivered.
- It details who should provide the service.

Table 2 Summary of the overall elements of the End to End Model of Care for asthma

Elements of Asthma Model of Care	
<b>Care / service required</b>	<ul style="list-style-type: none"> <li>• Prevention and reduction of risk factors.</li> <li>• Diagnosis and assessment of disease.</li> <li>• Symptom control.</li> <li>• Management of asthma attacks.</li> <li>• Self-Management support.</li> </ul>
<b>Where care will / should be provided?<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• <b>Level 0 Living well with a chronic disease</b></li> <li>• <b>Level 1: General Practice Chronic Disease Management</b></li> <li>• <b>Level 2: Community Specialist Ambulatory Care</b></li> <li>• <b>Level 3: Acute Specialist Ambulatory Care</b></li> <li>• <b>Level 4: Hospital Inpatient Specialist Care</b></li> </ul>
<b>Care provided by</b>	<ul style="list-style-type: none"> <li>• Multi-Disciplinary Team (MDT).</li> <li>• People with asthma will require different levels of care as the severity of their condition changes.</li> <li>• Care will be delivered by different members of the MDT depending on the level of service.</li> <li>• The various members of the MDT (for all levels of care) and description of roles are available in Appendix 3.</li> </ul>

<sup>2</sup> The pyramid (Figure 3) five levels of service aligned to local clinical networks, Community Health Organisations (CHOs) and hospitals

---

### 3.1.1 The service

For this MOC the specific **clinical management of asthma** is evidence-based and focused primarily around the GINA guidelines (9), with GINA stepdown pathways available in the appendices. Other guidelines taken into consideration are the BTS/SIGN (10) guidelines and the GOLD guidelines (11).

There are also clinical guidelines (5) published by the [ICGP Asthma - Diagnosis, Assessment and Management in General Practice Quick Reference Guide](#) and the NCEC (6) [The National Clinical Guideline for the Management of an Acute Asthma Attack in Adults 2015](#)) which may also be referred to in this document. Further detail is available in Appendix 4.

Management of asthma at all stages involves the avoidance of risk factors to slow disease progression and therapy as needed to control symptoms. The management of asthma requires a number of factors to improve quality of care;

1. Accurate diagnosis. Up to 30% of patients in primary care diagnosed with asthma have not been objectively proven to have asthma (13). Objective measurement of diagnostic criteria is key to improving diagnostic accuracy.
2. Risk factors such as smoking, obesity and damp housing make it more difficult to control asthma and are risk factors for exacerbations.
3. Asthma medications require demonstration of inhaler technique and close supervision to ensure compliance and instructions to prevent poor inhaler technique.
4. Anti-inflammatory medication, in particular inhaled corticosteroids (ICS) are essential to control symptoms and to prevent disease progression. Over-reliance on short acting medications (SABA) is a significant problem in Ireland which needs to be addressed.

Patients with severe - 'difficult to treat' asthma are at risk of exacerbations and death and consume a disproportionate amount of resources. This cohort needs to be reviewed at regular intervals (as appropriate) to identify and address risk factors. This can often be carried out in general practice but may require systematic evaluation by a dedicated multi-disciplinary service involving specialist nurses and consultant care. The benefits include confirmation of the diagnosis or alternate diagnoses, improved adherence with prescribed therapies, treatment of comorbidities or alternative diagnoses.

Adherence to asthma medications is only about 30% (9). This is due to a number of factors such as worries about side effects, cost of medications and a lack of education about the mode of action of these medications. This issue needs to be addressed at every opportunity, from pharmacy, GP to tertiary care. This can be time consuming and allowance must be made for this. Patients should be asked in a non-judgmental way about compliance and asked to show how they use their device. Education of all health care professions about the different asthma treatments is essential for this.

In addition to patient education, health advice and pharmacotherapy, patients with asthma may require specific counselling about smoking cessation, guidance for women planning a pregnancy, instruction and support in physical exercise and a healthy lifestyle and nutritional advice and continued health care support. Not all approaches are needed for every patient. Assessing the potential benefit of each approach at each stage of the illness is a crucial aspect of effective disease management. See GINA guidance Appendices 6-9.

### 3.1.2 Location of services

The delivery of this End to End Model of Care requires the collaboration of hospitals, General Practice and community based services working together to maintain an individual's health and reduce the necessity for hospital admissions. The spectrum of services in Figure 2 will support people at risk of, or living with asthma. The pyramid (Figure 4), developed by the HSE's Integrated Care Programme for Chronic Disease, depicts this approach with five levels of service aligned to local clinical networks, Community Health Organisations (CHOs) and hospitals.

Figure 4: Asthma Integrated Care Pathway

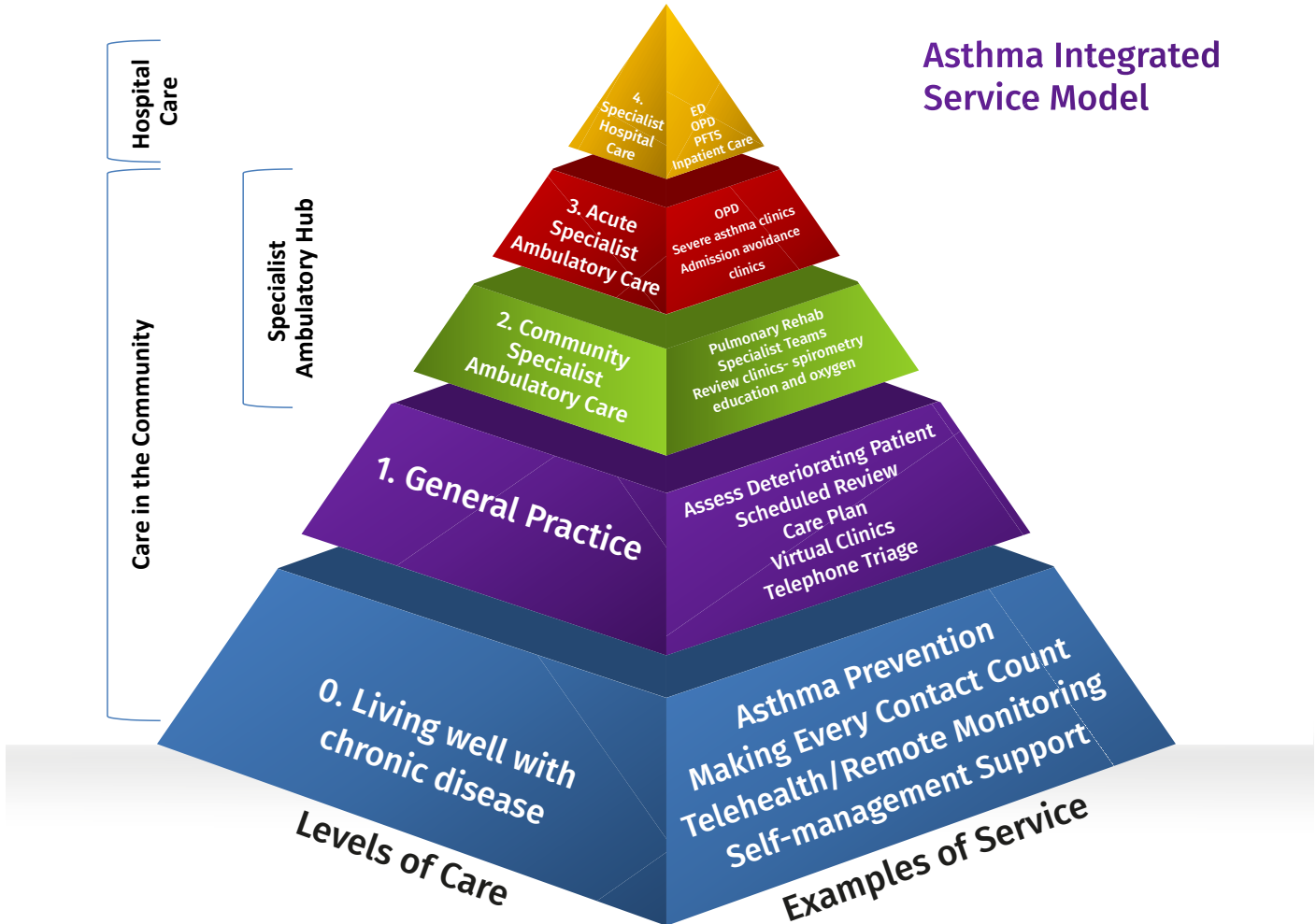


Figure 4 above sets out the **Integrated Care Pathway for Adult Asthma** allowing patients to receive a high standard of respiratory care and maintain as normal a life as possible.

This model of care supports people to live well within the community, with ready and equitable access to General Practitioner (GP) and practice nurse review, diagnostics, health and social care professionals (HSCP's) input and specialist opinion, as required. The focus is on keeping people well and on providing care as close to home as possible. (See section 4 for more details on services).

This model describes a whole-system approach to integration that encompasses population health and wellbeing, preventive, acute, non-acute and community-based services. It aims to join together the various strands of Ireland's health service with the ultimate goal of providing a person-centred service by ensuring that individuals receive "the right care, at the right time, by the right team and in the right place". This is in line with The 'Integrated Model of Care for the Prevention and Management of Chronic Disease'.

The delivery of healthcare in an adaptive system with autonomous factors is complex and it is widely accepted that no one approach to integrated care will fit all individuals perfectly. However, some key elements need to be in place to facilitate the integration of care and to ensure equity and standardisation of services for people with asthma.

---

On this pathway in the management of **stable asthma** it is envisaged that care will be primarily delivered in **Level 1** and **Level 2** of the proposed model with rapid access to respiratory specialist expertise ambulatory care and /or specialist in patient care where further diagnostic investigations or respiratory specialist advice may be necessary (**Levels 3** and **4**).

The patient may need to access these services on an intermittent basis or for on-going care. Once the patient's condition has stabilised and management plans are in place, the level at which continuing care will be delivered will reflect the disease severity.

Patients on GINA step 5 more severe or uncontrolled asthma will likely need to remain under the care of **Level 3** – Consultant Respiratory Out patients (Appendices 6-9). Patients with asthma who are pregnant may require level 3 care for the duration of pregnancy and subsequently be stepped down to **Level 1** post-partum and once stable.

The patient can move back and forwards between the five levels of service as clinical need dictates, with the GP and the primary care team having a lead role in supporting and managing patients with chronic disease and referring to a specialist when appropriate.

Table 3 Summary of the spectrum of Asthma care

Level 0	Level 1	Level 2	Level 3	Level 4
<b>Living well with chronic disease</b>	<b>General Practice</b>	<b>Community Specialist Ambulatory Care</b>	<b>Acute Specialist Ambulatory Care</b>	<b>Specialist Inpatient Care</b>
<ul style="list-style-type: none"> <li>• HSE Living Well Programme</li> <li>• Risk factor management</li> <li>• Making Every Contact Count</li> <li>• Self-Management Supports</li> <li>• Patient Advocacy Groups</li> <li>• Asthma Advice line from ASI</li> <li>• Asthma action Plan</li> <li>• Wellbeing and mental health</li> <li>• Positive ageing</li> <li>• Smoking cessation</li> <li>• Social prescribing</li> <li>• Telehealth monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• CDM and Prevention Programme</li> <li>• Case Finding</li> <li>• Assess deteriorating patient</li> <li>• Managing a flare up</li> <li>• Scheduled Reviews</li> <li>• Care Planning</li> <li>• Vaccinations</li> <li>• Onward referral to community and acute specialist teams</li> <li>• Referral to Pulmonary rehabilitation team</li> <li>• Working with acute and community specialist teams</li> <li>• Telehealth, telephone triage, virtual clinics</li> </ul>	<ul style="list-style-type: none"> <li>• Community Specialist Respiratory &amp; CNS Respiratory Integrated Care;</li> <li>• Pulmonary rehab team: Clinical Specialist Coordinator , CNS &amp; Physiotherapist</li> <li>• Close links with general practice and with specialist acute services.</li> <li>• In some cases, integrated working between sites.</li> <li>• Integrated GP Clinics</li> <li>• Consultant</li> <li>• Clinics Joint MDT clinics</li> <li>• Structured Patient Education</li> <li>• Community Diagnostics- Spirometry with reversibility</li> <li>• Allergy testing</li> <li>• Breathing re-education clinics</li> <li>• Education and inhaler technique</li> </ul>	<ul style="list-style-type: none"> <li>• Acute Specialist Teams: Consultant; Specialist Nursing; Specialist Physiotherapy,</li> <li>• Respiratory Outreach</li> <li>• Access to biological treatments</li> <li>• Severe asthma clinics</li> <li>• Admission avoidance</li> <li>• Early Supported Discharge</li> <li>• Ambulatory Spirometry</li> <li>• Screening of high risk patients in community through enhanced referral pathways</li> <li>• Ambulatory Long Term Oxygen clinic</li> <li>• Post exacerbation reviews in MDT led clinics</li> <li>• Domiciliary review</li> </ul>	<ul style="list-style-type: none"> <li>• Specialist Inpatient management for acutely unwell patient</li> <li>• Discharge Pathways to GP/ community/ acute specialist teams</li> <li>• Acute admission</li> <li>• Investigation, full PFTs</li> <li>• Bronchoscopy</li> <li>• Biological treatments</li> <li>• NIV</li> <li>• Complex Disease</li> <li>• Complex Comorbidity</li> <li>• Rapid deterioration</li> <li>• Anticipatory care</li> </ul>

---

### 3.1.3 Delivery of the service- Roles of Health Care Professionals (HCPs) in delivering the Model of Care

Patients with asthma will require care in different contexts as their asthma severity differs and as the characteristics of their illness fluctuates. The majority of patients are in the mild to moderate spectrum but it is important to recognise that these patients are still at risk of exacerbation and death. Patients often underestimate the severity of their disease and a structured formal assessment is useful to identify this cohort. It will be age appropriate and directed by the medical lead.

HCPs have a key role in the education and empowerment of patients. It is essential that all HCPs involved in asthma management have up-to date asthma education to allow them to be confident in providing this information to patients. The various members of the asthma MDT (for all levels of care) and description of roles are available in Appendix 3. The End to End MOC for asthma details how physicians, nurses, and other HCPs will work with patients to make the clinical decisions most appropriate to their circumstances and to collaborate with specialist colleagues in providing optimal care for asthma patients in the Irish healthcare system.

## 4.0 Adult Asthma Management in Ireland

### 4.1 Level 0: Living well with a chronic disease.

Health promotion and community programmes underpin all levels of service. They encompass all the supports required at local level for young people and families to manage their asthma. It includes community programmes, online resources and brief advice provided during routine and opportunistic consultations with healthcare professionals. It is important to empower people to make the best decisions for their health by arming them with the knowledge and skills to support them in this pursuit. Self-management support encompasses a broad range of interventions that aim to increase patients' knowledge, skills and confidence in managing their health problems. Interventions to support self-management include education sessions so individuals can learn more about their condition and how to manage it, goal-setting and the development of an action plan, or participation in activities such as counselling or peer-support groups to increase resilience, exercise classes or stop smoking services (Appendix 2).

#### 4.1.1 Pre-Hospital Emergency Care (PHEC)

Many asthma patients will require assistance from pre-hospital emergency care providers, such as Emergency Medical Technicians, Paramedics and Advanced Paramedics. When an emergency call is received by the ambulance service it is triaged according to acuity and would typically be of a higher priority due to a presentation of shortness of breath. Appropriate resources can then be dispatched to the patient. Pre-hospital emergency care practitioners are regulated by the Pre-Hospital Emergency Care Council (PHECC) who set and monitor standards of care. Practitioners follow treatment algorithms known as Clinical Practice Guidelines (CPG) set by PHECC. There are specific CPGs for asthma including asthma adults.

Asthma patients may also access pre-hospital emergency treatment via Medications for Listed Organisations under SI 449 of 2015, whereby an institution or organisation may have trained some personnel to administer salbutamol to a patient suffering an asthma attack without that person to have access to their own medication in this emergency situation. For further information see Appendix 5.

## 4.2 Level 1 GP management & structured review

The key component to improving overall asthma control is a structured review by an asthma trained healthcare professional such as an asthma trained practice nurse with overall supervision by the general practitioner.

Patients should preferably be seen 1–3 months after starting treatment and every 3–12 months after that, except in pregnancy when they should be reviewed every 4–6 weeks depending on the severity of symptoms. After an exacerbation, a review visit within 1 week should be scheduled. The frequency of review depends on the patient’s initial level of control, their response to previous treatment, and their ability and willingness to engage in self-management with an action plan (5).

The current CDM programme supports two visits per year for patients with asthma, starting with the over 65 age group (5).

The following patients should be identified, and flagged for more frequent review:

- A history of near-fatal asthma requiring intubation and ventilation.
- Hospitalisation or emergency care for asthma in the previous 12 months.
- Not currently using ICS, or poor adherence with ICS.
- Currently using or recently stopped using OCS (this indicates the severity of recent events).
- A history of raised eosinophils.
- Over-use of SABAs, especially more than 1 canister/month.
- Lack of a written asthma action plan.
- History of psychiatric disease or psychosocial problems.
- Confirmed food allergy in a patient with asthma.

Table 4 Elements of a structured review.

<b>Assessment</b>	<b>Review Treatment</b>	<b>Patient education</b>
<ul style="list-style-type: none"> <li>• Symptom Review:               <ul style="list-style-type: none"> <li>- Daytime symptoms</li> <li>- Nocturnal symptoms/awakening</li> <li>- Limitations of activities</li> </ul> </li> <li>• Control status:               <ul style="list-style-type: none"> <li>- Need for reliever / rescue treatment</li> <li>- Acute attacks</li> <li>- May consider a validated scoring system such as the ACQ or ACT.</li> </ul> </li> <li>• Physical examination</li> <li>• Lung function (PEF or FEV<sub>1</sub>)</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance</li> <li>• Inhaler Technique</li> <li>• Smoking status</li> <li>• Trigger avoidance</li> <li>• Physical activity</li> <li>• Mental wellbeing</li> <li>• Weight management</li> <li>• Risk factors</li> <li>• Dietary advice</li> <li>• Vaccination</li> <li>• Illicit drug intake</li> <li>• Motivational support</li> <li>• Written action Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Drug treatment               <ul style="list-style-type: none"> <li>- Reliever vs Controller</li> <li>- Inhaler technique</li> </ul> </li> <li>• Monitoring control               <ul style="list-style-type: none"> <li>- Symptoms</li> <li>- Actions to take</li> <li>- When to seek medical help</li> </ul> </li> <li>• Managing triggers/risk factors</li> <li>• Managing co-morbid conditions e.g.:               <ul style="list-style-type: none"> <li>- Obesity</li> <li>- Osteoporosis</li> <li>- GORD</li> <li>- Rhinitis</li> <li>- Anxiety</li> <li>- Depression</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Patient Self-Management</li> <li>• Review</li> <li>• Update</li> <li>• Re-iterate during exacerbations</li> </ul>		

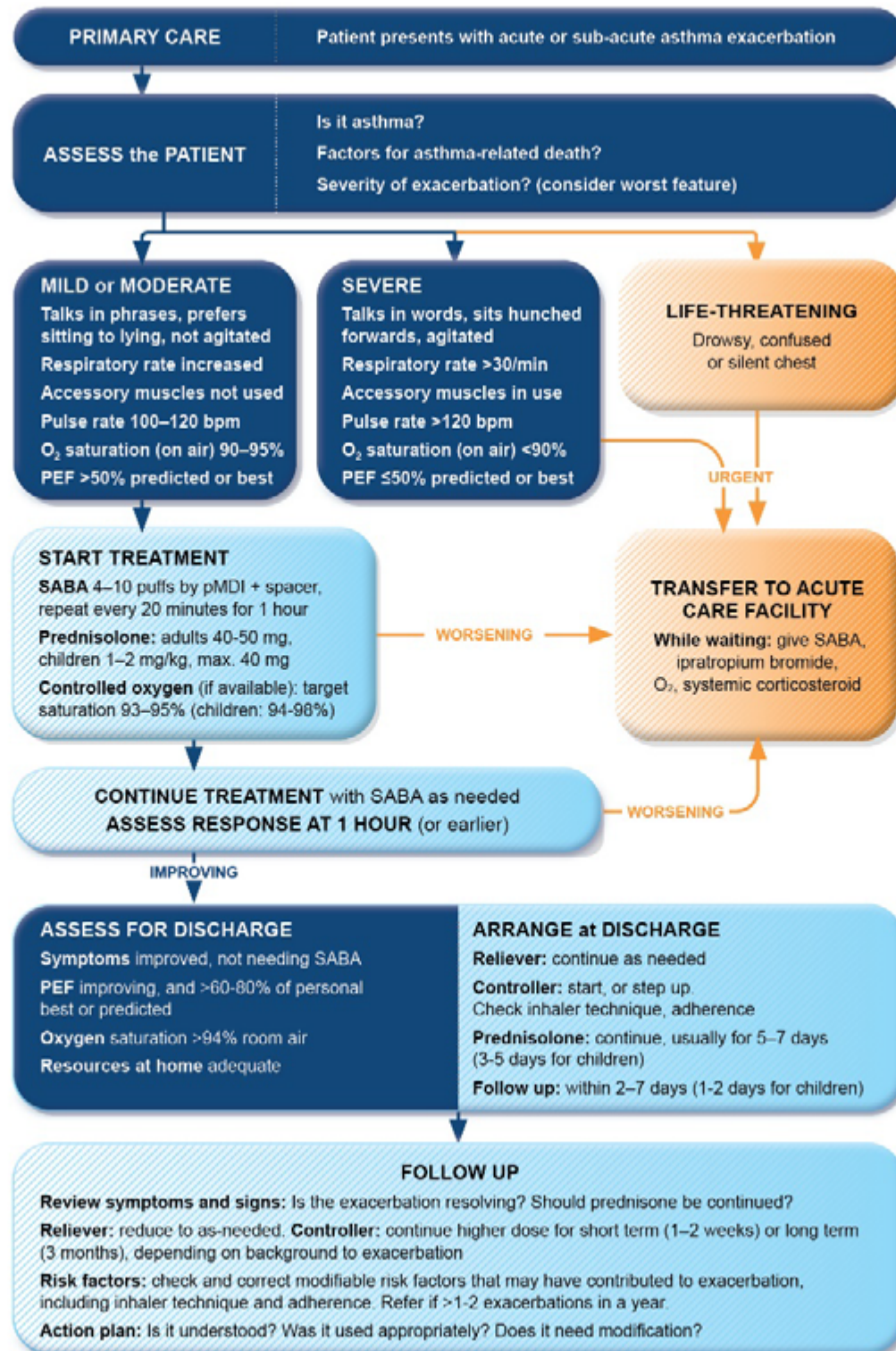


## 4.2.2 Management of Asthma attacks/flare ups/exacerbations in Primary Care

The majority of asthma patients will have their regular asthma management in GP led primary care and most patients with an asthma attack can be treated by the GP and managed at home according to the age-appropriate guidance (10). The GINA stepwise algorithms in Appendices 6-9 describe the management of asthma in primary care for adults. Similar guidance has been published by the [ICGP](#).

Fig 5 Primary care management of worsening asthma

### Primary care management of Asthma exacerbation (adults, adolescents, children 6–11 years)



Patients who present with acute asthma attacks in the community generally will be managed in GP practices and outside clinic hours by GP “Out Of Hours” services. GP “Out of Hours” services will continue to assess, treat and refer patients with asthma as appropriate. Out Of Hours services will use the national asthma guidelines for dealing with acute asthma in this setting. Centres will be made aware of the guidelines and the clinical director of each centre will be asked to ensure that all these guidelines are available and that all HCPs working in the GP “Out Of Hours” clinics in Irish general practice are familiar with such guidelines.

[The National Clinical Guidelines for the Management of an Acute Asthma Attack in Adults \(6\)](#) recommend that:

- GPs “Refer patients to hospital who display any features of acute severe or life threatening asthma”.
- Hospital clinicians “admit patients with any feature of a life threatening or near fatal attack.”

Furthermore, if the attack persists, the patient should be referred to the local ED/ AMU/EAMU with services for management and treatment of acute asthma, per National Clinical Programme for Asthma, acute management guidelines (6).

Figure 6 NCEC acute asthma management in GP and Primary Care

*Emergency treatment care bundles for management of acute adult asthma*

Adult Asthma Acute Management in General Practice and Primary Care out of hours settings	
<p><b>Assess and Record:</b> Peak expiratory flow; Symptoms and response to self-treatment; Heart and respiratory rates; Oxygen Saturation (by pulse oximetry, if available)</p> <p><b>Caution:</b> Patients with severe or life threatening attacks may not be distressed and may not have all the abnormalities listed below. The presence of any should alert the doctor</p> <p><b>Regard each emergency asthma consultation as for acute life threatening/severe asthma until it is shown otherwise</b></p>	
Date (of review): _____ Time: _____	Time Processed Nurse/Physician Initials/Comment
Give Oxygen via face mask if available, 40 – 60%	
<p><b>If Moderate asthma attack (PEF 50-75%):</b> Give <math>\beta_2</math> agonist via spacer up to 12 puffs (given one at a time and inhaled separately) at intervals of 15 - 30 minutes</p> <p><b>If Severe/ Life threatening (&lt; 50%):</b> Administer salbutamol 5mg or terbutaline 10mg via oxygen driven nebulizer</p> <p><b>If PEF 50-75% predicated/best:</b> Administer prednisolone 40 - 50mg orally or IV hydrocortisone 100mg</p> <p>All patients who received nebulized <math>\beta_2</math> agonist, require extended observation period</p>	
Assess response to treatment in 15 minutes post administration of $\beta_2$ agonist, continually observing symptoms	
<p><b>If NO response</b> arrange immediate admission to Hospital ED /AMU <b>Dial 112 OR 999</b></p> <p>Administer High Dose <math>\beta_2</math> agonist and ipratropium 0.5mg via nebulizer Stay with patient until ambulance arrives Send documentation assessment and referral to hospital Ensure patient is given high dose <math>\beta_2</math> agonist via oxygen driven nebulizer in ambulance</p>	
<p><b>If GOOD response</b>, the patient's symptoms improve Continue step up of usual treatment and continue course of oral prednisolone Ensure the patient has a prescription for <math>\beta_2</math> agonist and inhaled steroid (if not already on inhaled steroids) prior to discharge Commence PEF diary and encourage charting symptoms in the asthma management plan Check technique of use inhaler and peak flow meter Demonstrate inhaler technique and peak flow use to new patients and carers as appropriate. Arrange GP follow up within 2 working days</p>	

**Key Point:** Adults with severe and life-threatening asthma referred to hospital (ED or AMU/ AMAU) should immediately be managed according to the [National Clinical Guidelines \(6\)](#). Similar guidance has been published by the [ICGP \(5\)](#).

3 Asthma “exacerbations” are now called asthma attacks to highlight the severity and potential seriousness of the event

### 4.3 Level 2: Community Specialist Ambulatory Care Hubs

A key element of the Sláintecare vision is service re-design. Six new “Regional Health Areas” (RHA) will be established which will form the foundation for delivering care closer to home.



Fig 7 Map of RHA

---

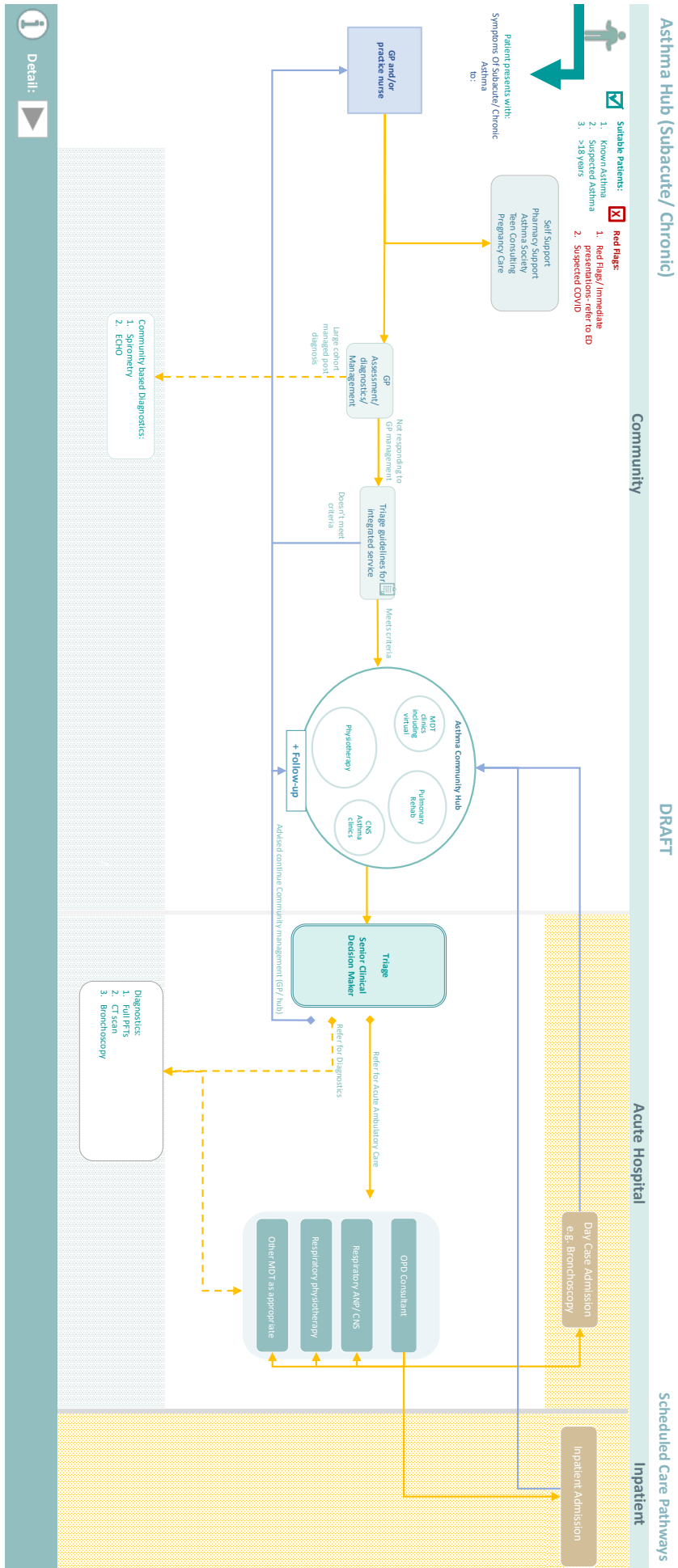
These RHAs are further broken down into 96 Community Healthcare Networks (CHNs), which provide a framework for the delivery of integrated care at the local level. CHNs are geographically-based units which serve an average population of 50,000 each. Specialist ambulatory care hubs for chronic disease are to be established, each serving approximately three CHNs or a population of approximately 150,000. An ambulatory care hub, which will be a clinical site identified outside of the hospital setting, will support access to diagnostics, specialist services and specialist opinions in order to support early intervention and specialist care within the community, with a particular focus on chronic disease prevention and management. Within a CHN, it is expected that there will be an estimated population of 11,000 people with a chronic disease while within the area served by each hub, there will be an estimated population of 34,000 people with a chronic disease.

The specialist ambulatory care hubs for chronic disease will be linked to local acute hospital sites. These hubs will provide specialist multidisciplinary teams and services that will support General Practices to provide a spectrum of care enabling people with chronic disease to be cared for in the community. Chronic disease specialist teams will be established in each hub and will take a multidisciplinary approach to the management of individuals with chronic disease (7).

The care provided at this level should be comprised of standard primary care chronic disease management with the addition of specialist support provided by a clinical nurse specialist (CNS) and a senior physiotherapist respiratory integrated care as well as a diagnostic service with spirometry from a senior physiologist, and a Pulmonary Rehabilitation team. Figure 8 shows the integrated referral system for adult asthma across the different levels of care. Further information is available in [the ICPCD Framework for chronic disease](#).



Figure 8 Scheduled care referral system for adult Asthma



## 4.4. Level 3 Acute specialist ambulatory care

Specialist ambulatory care (level 3) is ambulatory services that are Consultant Respiratory Physician led. They provide elements of chronic and acute management of respiratory diseases including asthma. Services included under Level 3 care may include but are not limited to:

- Consultant led asthma clinics.
- Bronchoscopy services.
- Pulmonary rehabilitation programmes.
- Nurse led asthma clinics.
- Physiotherapy led dysfunctional breathing clinics.
- Out Patient Department (OPD) reviews of asthma patients.
- Monoclonal antibody clinics for severe asthma patients.

### 4.4.1 Respiratory specialist outpatient service

Respiratory specialist review will be required for some patients following referral/attendance at the ED/AMU or following admission with an acute attack.

#### Reasons for Specialist Referral

- Uncertain diagnosis.
- History of severe life threatening asthma attack or frequent attendance at AMAU/ED.
- Patients with uncontrolled disease despite optimised treatment.
- Patients on Step 3, or greater, of the GINA guidelines, with asthma that is uncontrolled following optimisation of care by the GP.
- Suspected co-morbidity such as a component of heart failure, suspected malignancy, and co-existing COPD or bronchiectasis.
- New diagnosis in patients >65 years of age with multiple medical problems.
- Poor response to treatment despite level 2 specialist support in GP practices.
- Patients with Asthma that is poorly controlled in pregnancy.
- Patients receiving maintenance oral steroids or requiring treatment with immuno-suppressants or monoclonal antibodies should be under regular Specialist review.
- The need to confirm or rule out occupational asthma.
- Elite athletes who have to satisfy the requirements of the world anti-doping agency and the Olympic Committee Medical Commission.

Table 5 Reasons for Specialist Referral

## 4.5 Level 4 Hospital inpatient specialist care

### 4.5.1 Emergency Department Attendance for Flare Up/ Attack or Exacerbation

Clinicians in primary and secondary care should treat asthma attacks according to [NCEC guideline for asthma management 2015](#) (6). Similar guidance has been published by [ICGP](#). (5)

#### Management of Acute Adult Asthma in ED, AMU and in Hospital

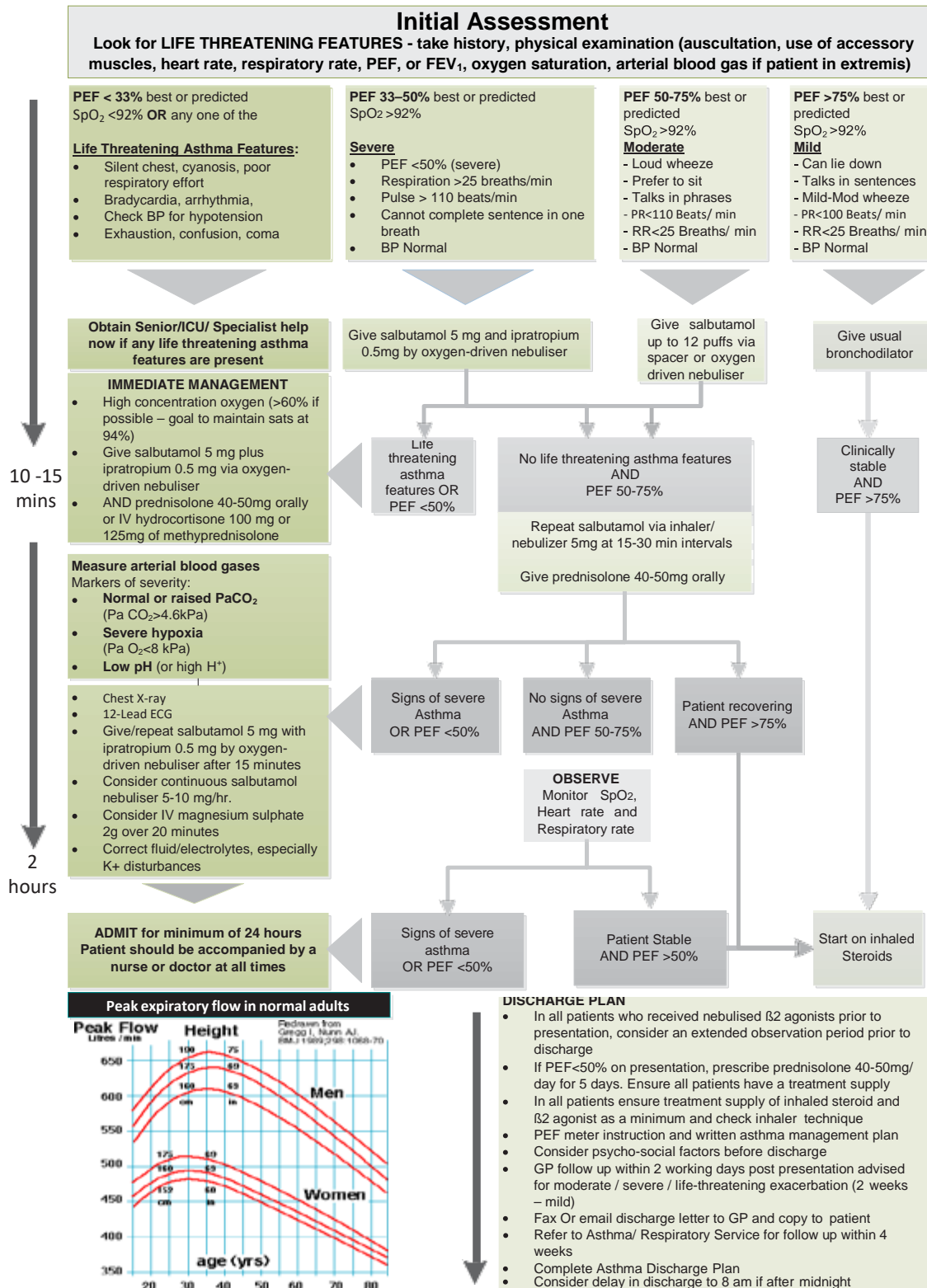


Fig 9 Management of acute asthma in ED, AMU and in hospital



- 
- Refer patients to hospital who display any features of acute severe or life threatening asthma.
  - Admit patients to hospital with any feature of a life threatening or near fatal attack. Admit patients to hospital with any feature of a severe attack persisting after initial treatment.
  - Admit patients to hospital whose peak flow is less than 75% best or predicted after initial treatment.

Patients whose peak flow is greater than 75% best or predicted one hour after initial treatment may be discharged from ED unless they meet any of the following criteria, whereby admission may be appropriate:

- Still have significant symptoms.
- Concerns about adherence.
- Living alone/socially isolated.
- Psychological problems.
- Physical disability or learning difficulties.
- Previous near-fatal asthma attack.
- Asthma attack despite adequate dose steroid tablets pre-presentation.
- Presentation at night.
- Pregnancy.

### **Referral/Admission to the Intensive Care Unit (ICU) for Acute Asthma**

Refer any patient:

- Requiring ventilator support.
- With acute severe or life threatening asthma, failing to respond to therapy, evidenced by:
  - Deteriorating Peak Expiratory Flow.
  - Persisting or worsening hypoxia.
  - Evidence of hypercapnia on ABG analysis.
  - Exhaustion, feeble respiration.
  - Drowsiness, confusion, altered conscious state.
  - Respiratory arrest.

All patients transferred to intensive care units should be accompanied by a doctor suitably equipped and skilled to intubate if necessary. Patients with acute asthma should not be sedated unless this is to allow anaesthetic or intensive care procedures. GINA also provides guidance on this area (Appendix 6-9).

---

## 4.5.2 Inpatient care

In-patient asthma care – within an acute hospital (Level of Service 4) – is a Consultant lead service providing guideline concordant care delivered by a multidisciplinary team (MDT) Appendix 3.

All patients admitted with asthma should be reviewed and assessed by a Consultant Physician with expertise in respiratory medicine and a team including respiratory nurse (Clinical Nurse Specialist or Advanced Nurse Practitioner) 4 or senior physiotherapist to:

- Clarify diagnosis.
- Review and optimise treatment plan and provide a written self-management plan.
- Rule out other potential differential respiratory diseases.
- To examine and assess potential risk factors and triggers compounding asthma presentation.

In addition, access to interdisciplinary services should be available during admission, including smoking cessation services, dietetics, social work, psychology, cardiology, geriatrics and other respective MDTs. Referrals to services including the HSE Chronic Disease Self-Management Programme Living Well in the community should also be considered as having clear referral pathways to community based services should may impact length of stay. For the vast majority of patients with mild to moderate asthma, the aim is to minimise the length of admission and reduce the chance of readmission.

It is important to define the 'at-risk' status of the patient so as to ensure appropriateness of follow up. The post-discharge follow up plan will be based on stratification of risk for readmission:

- Higher risk for readmission:  
Peak flow rate < 50% of baseline; homelessness; poor social circumstances and co-morbidities.
- Lower risk for readmission:  
Peak flow rate >50% of baseline; good social circumstances and no other illnesses.

---

4 This may vary across hospitals and depends on staffing levels

#### Level 4: Elements of hospital management may include

- Full pulmonary function tests and bronchodilator reversibility or airways hyper-reactivity measured by mannitol, histamine or methacholine challenge.
- Diagnostic bronchoscopy
  - For measurement of eosinophils and other measures of airway inflammation to guide therapy where appropriate and out rule an underlying pathology.
- CT Thorax (+/-Sinuses).
- Skin prick tests to assess common aeroallergens and/or measurement of specific IgEs for common or identified allergens.
- Bone densitometry (DEXA)
  - To treat and where possible prevent the complications of long term oral corticosteroids.
- Assessment of adherence to therapy may include;
  - Electronic monitoring, FeNO, measurement of serum theophylline and prednisolone and cortisol levels, pharmacy reconciliation.
- Patient education and health psychology
  - To improve adherence to prescribed therapies using patient when required.
- Assessment of upper airway disease potentially through ENT referral.
- Referral to Clinical Immunology services where necessary.
- Specialist Physiotherapy for exercise and pulmonary rehabilitation.
- Specialist Health psychology and/or Liaison psychiatry reviews.
- Specialist metabolic medicine and prevention, dietetics for osteoporosis management where needed.
- Assessment for GORD.
- Referral for assessment of co-associated diseases such as obstructive sleep apnoea.

Table 6 Elements of Hospital Management

Patients deemed to be a high risk for readmission should be reviewed at the earliest opportunity, preferably within 4 weeks of discharge.

### 4.5.3 Discharge from hospital

Discharge from hospital or the emergency department should be a planned, supervised event which includes self-management planning. It may safely take place as soon as clinical improvement is apparent. Prior to discharge, in-patients should receive written, personalised action plans, given by clinicians with expertise in asthma management. Prescribe inhalers only after the patient has received training in the use of the device and has demonstrated satisfactory technique. All people attending hospital with acute attacks of asthma should be reviewed by a clinician with particular expertise in asthma management, preferably within 30 days.

Asthma Discharge Checklist from ED and AMU	
Review each of the steps and incorporate into your discharge planning process for an Asthma Patient	
Date (of discharge): _____ Time _____	Time Processed Nurse/Physician Initials/Comments
Consider psycho-social factors in discharge and refer to MDT or agency if required	
Consider delay in discharge to 8am if after midnight	
If patient received nebulised $\beta_2$ agonists prior to presentation to ED/AMU consider an extended observation period (more than 4 hours) prior to discharge	
If PEF < 50% on presentation, prescribe oral prednisolone 40-50mg/day for 5 days	
Ensure prescription for oral (if required) and inhaled steroid $\beta_2$ agonist is supplied to patient on discharge (GMS patient go to GP for medical card prescription)	
Check inhaler technique	
Implement written asthma management plan and diary	
Purchase own PEF meter from Asthma Society of Ireland (ASI) or pharmacy	
Advise patient to arrange GP follow up for within 2 working days of presentation for moderate/ severe/ life-threatening asthma (within 2 weeks – mild)	
Fax or email discharge letter to GP Copy to Asthma nurse/respiratory service	
Physician Signature	Printed Name
Affix patient Label here	

Figure 10 Discharge bundle

## 5.0 Severe or ‘Difficult to Treat’ Asthma Specialist Service

A small proportion of patients (5 -10% of all asthmatics) have either ‘severe’ or ‘difficult to control’ asthma with on-going symptoms despite maximal medical therapy. They are a separate entity from the majority of asthmatics with mild to moderate disease and are more likely to be admitted to hospital and to access out of hours’ emergency services. They require systematic assessment and specialist care in a multi-disciplinary manner provided in a tertiary respiratory centre (13-16) (Level 4).

The benefits of systematic assessment include confirmation of the diagnosis, improved adherence with prescribed therapies, patient education, identification and treatment of co-morbidities or alternative diagnoses (i.e. distinguishing ‘difficult to control’ from severe asthma).

No gold standard diagnostic test exists for either ‘severe’ or ‘difficult to control’ asthma as the condition is more akin to a syndrome rather than a single disease entity. The most up to date definition is provided by an international consensus statement from the Innovative Medicines Initiative (14,17). Patients with truly severe refractory asthma can be defined and distinguished from patients with ‘difficult to control’ asthma.

The term **‘difficult to treat asthma’** is reserved for asthma that remains uncontrolled despite the prescription of high-intensity asthma treatment but in addition may include the following contributing factors:

- Poor adherence to prescribed therapy.
- Psychosocial factors.
- Dysfunctional breathing.
- Vocal cord dysfunction.
- Persistent environmental exposure to allergens or toxic substances.
- Untreated or under treated comorbidities such as chronic rhino-sinusitis, reflux disease or obstructive sleep apnoea syndrome.

The term **‘severe refractory asthma’** is reserved for patients with asthma in whom alternative diagnoses have been excluded; comorbidities have been treated; trigger factors have been removed and compliance with treatment has been checked, but still have poor asthma control, or frequent severe attacks, despite the prescription of high-dose inhaled treatment, or can only maintain adequate control when taking systemic steroids.

Table 7 Severe asthma service

### Patients fulfilling one of the following should be referred to a severe asthma centre Level 4:

- An attack of acute severe asthma which is life threatening within the last 10 years.
- Requirement for maintenance oral steroids.
- Two hospitalisations within the last 12 months in patients taking and adherent to high dose inhaled steroids.
- Fixed airflow obstruction, with a post bronchodilator FEV1 less than 70% of predicted normal.
- Referred as an adolescent transition patient from a paediatric severe asthma service.

### ‘Severe’ asthma service

- A stand-alone clinic with at least one Consultant Respiratory Physician with an interest in severe asthma.
- Capacity to review patients in a day unit or similar to provide expert care.
- Facilities to provide patients with high cost novel biological therapies that are currently in clinical trials.

# 6.0 Integrated Approach to Asthma Management

## 6.1 Core components

The optimal management of asthma requires an integrated approach across services for all levels of disease severity and as a patient's level of control and asthma severity fluctuates from stable to an acute attack and back to a stable level of disease, the care provided to the individual patient will need to follow an integrated care pathway which is clear and easy to navigate for the patient, family/ carers and HCPs (Figure 3).

The clinical management of asthma is described in GINA clinical guidelines which will be referred to throughout this document with particular elements included as figures and appendices (6-9). It should be noted that the guidelines are based upon the GINA 2021 strategy (9) which recommends a combined inhaler device consisting of an inhaled steroid with a long acting beta agonist (Budesonide/ Formoterol) as the preferred "as needed" or "prn" medication, particularly in patients not on maintenance ICS. Use of Budesonide/Formoterol in this manner is currently unlicensed in Ireland. The alternative of a ICS whenever a SABA is used is also recommended.

Care delivery to asthmatics will be delivered by different members of the MDT. The skills and expertise of the different MDT members will vary and their input and time commitment will also vary depending on the severity and complexity of the patient's illness (Appendix 2). Patients with asthma will require care in different contexts as their severity differs, and as their level of control fluctuates.

Support provided through MECC will include smoking cessation, asthma self-care and self-management advice (Appendix 1 & 2).

**Essential components of control-based management of asthma include accurate diagnosis, assessment of asthma control, treatment to achieve control, and monitoring response to maintain symptom control.**

**'Assess:** Document the patient's symptom control risk factors, check inhaler technique and adherence, and if uncontrolled consider allergic rhinitis, obesity or reflux as a differential diagnosis or triggering factor. Assess patient's capacity to self-manage.

**'Adjust:** Not just drug treatment, but also strategies (e.g., physical activity) and treatment of modifiable risk factors (e.g., smoking cessation, providing a written asthma action plan, weight reduction). Weight reduction guidance/ advice or referral for same.

**'Review response':** Every treatment change should be followed by a scheduled asthma review, e.g., after 2–3 months, carried out by someone with appropriate asthma expertise.

## 6.2. Prevention of Asthma and reduction of risk factors

Strategies to target the prevention of asthma and reduce the impact of the disease require effective action across the continuum of healthcare. The key strategies include those aimed at the general population (Primary Prevention) and those targeting those with symptoms suggestive of asthma (Secondary Prevention) and those with established disease (Tertiary Prevention). Healthy Ireland a Framework for Improved Health and Wellbeing and Healthy Ireland in the Health Services National Implementation Plan have provided a blue print on how prevention should be addressed (8). An essential element in addressing both primary and secondary prevention includes engaging health professionals in prevention activities as part of their routine clinical consultations to identify and reduce a patient's exposure to risk factors.

## Primary Prevention

Involves the elimination or reduction of modifiable risk factors in those who do not yet have asthma. It includes actions aimed at the general population and those known to be at high risk of developing the disease. Examples include reducing the uptake of smoking in the population especially in younger age groups, minimising exposure to environmental respiratory hazards and maintaining air quality. While there is little definitive evidence for an effective strategy for primary prevention of asthma, there is some evidence supporting reduced risk with breast feeding, pre-conceptual and maternal smoking cessation as well as clean environmental conditions. Tobacco smoke exposure has been associated with the development of persistent infant wheezing and prospective parents should be advised of this, and offered support to quit.

## Secondary Prevention

Involves early detection and intervention - support for at-risk population, i.e. smokers and people with chronic disease to quit smoking through the provision of evidence-based diagnosis and treatment and provision of smoking cessation programmes. Avoidance of active or passive exposure to tobacco smoke through smoking cessation. Avoidance of aeroallergens where there is clinical evidence of a sensitisation and a clear association between allergen exposure and symptoms. Medications to maintain asthma control have an important role because patients are often less sensitive to risk factors when their asthma is well controlled. Treatment of predisposing health factors such as rhinitis, reflux, depression etc. Further details in the ICGP Asthma Guideline – [Asthma Control in General Practice](#) (5).

## Tertiary prevention

Tertiary prevention - effective management of those with established disease to maximise quality of life together with reduction in morbidity and mortality. This includes smoking cessation, limiting exposure to second-hand smoke, dusts, fumes, gases and other risk factors, patient education and collaborative self-management Support, therapeutic monitoring, annual influenza vaccination, age appropriate pneumococcal vaccination, pharmacological treatment and therapeutic monitoring including inhaler technique and medication adherence.

Table 8 Prevention

This End to End MOC for asthma supports the paradigm shift from viewing smoking as a lifestyle issue, to smoking as an addiction, for which there are psychosocial and pharmacotherapy treatment options. Pre-conceptual and maternal smoking cessation can prevent and delay the development of airflow limitation, reduce its progression, and can have a substantial effect on subsequent child health.

The Integrated Care Programme envisions that all HCPs will implement “*Making Every Contact Count (MECC)*” for prevention i.e. they will discuss lifestyle risk factors with each patient and provide a brief intervention as appropriate (Appendix 1). MECC includes the five-step programme for quitting (Ask, Advise, Assess, Assist, and Arrange) (Appendix 10) which emphasises that tobacco dependence is a chronic disease, that relapse is common and reflects the chronic nature of dependence and addiction. Counselling delivered by physicians and other health professionals significantly increases quit rates over self-initiated strategies. Even a brief (3-minute) period of counselling to urge a smoker to quit results in smoking cessation rates of 5-10%.



### 6.3 Assessment, treatment and monitoring of Asthma

Making a definite diagnosis of asthma can be difficult. Asthma is a condition that can fluctuate from day to day and week to week. The majority of (but not all) asthma presents first in childhood so HCPs should be aware that respiratory symptoms occurring in an adult after a period of apparent good health may represent a recurrence of earlier asthma. Despite a preponderance of cases presenting first in childhood it is important to diagnose promptly those who develop the condition for the first time as an adult e.g. in women, the condition may develop for the first time around the time of the menopause.

Table 9 Early diagnosis and assessment

<b>The early diagnosis and assessment of asthma requires:</b>
<ul style="list-style-type: none"><li>• Assessment of symptoms.</li><li>• Severity evaluation: mild, moderate or severe.</li><li>• Objective measures of lung function<sup>5</sup><ul style="list-style-type: none"><li>- Peak Flow and /or spirometry.</li></ul></li><li>• Measurement of allergic status (IgE, .allergen specific IgE, skin prick tests).</li><li>• Measurement of eosinophils.</li><li>• Trial of treatment.</li><li>• Scheduled review.</li><li>• Specialist referral and additional investigations - where appropriate.</li><li>• Education to support guided self-management<sup>6</sup>.<ul style="list-style-type: none"><li>- When to increase their usual therapy.</li><li>- When to commence steroid tablets.</li><li>- When to seek urgent medical attention.</li></ul></li></ul>

Table 10 Diagnostic challenges

<b>Diagnostic Challenges (6)</b>
<ul style="list-style-type: none"><li>• Exercise induced bronchoconstriction (EIB) and athletes.</li><li>• Pregnant women.</li><li>• The elderly.</li><li>• Occupational and work aggravated asthma.</li><li>• Asthma-COPD overlap.</li><li>• Bronchiectasis.</li><li>• Difficult and / or severe refractory asthma.</li></ul>

Self-Management is essential to achieve and maintain asthma control, so guided self-management education and the use of written asthma management plans are integral to asthma management (6). Appendix 11

Guided written asthma management plans are designed to be completed (with the patient) by the GP, practice nurse, or nurse or Doctor in the hospital setting. A written asthma management plan is available in paper form to download from the [National Clinical Programme site](#) or [www.asthma.ie](http://www.asthma.ie).

<sup>5</sup> See Appendix 4

<sup>6</sup> My Asthma Action Plan – Appendix 11

## 6.4 Asthma control

Asthma control refers to the extent to which asthma clinically impacts the patient, or to what extent any detrimental impacts have been alleviated by treatment. Asthma control has two domains: symptom control and risk factor reduction to improve clinical outcomes.

The goal of asthma treatment is to achieve and maintain clinical control of the condition. This can be attained in the majority of patients with a pharmacologic intervention strategy developed between the patient/family and the doctor. A stepwise approach to asthma treatment is presented in by GINA in Appendices 6-9. In the chronic disease model the management of stable asthma it is envisaged that care will be primarily delivered in **Levels 0, 1 and 2** of the proposed model with access when required to ambulatory care and /or specialist care (Levels 3 and 4).

### 6.4.1 Assessing Asthma control

Every patient should be assessed to establish his/her level of asthma control. A simplified scheme for recognising well controlled, partly controlled and uncontrolled asthma in a week is shown below (see Table11) (6). As highlighted previously assessment of risk is essential in assessing Asthma control Table 11 outlines how to assess for these risk factors. Uncontrolled asthma may progress to the point of an acute attack and immediate steps to regain control are outlined in Appendices 6-9 which describe age appropriate management of asthma attacks.

Table 11 Assessment of Symptom Control and future risk

A. Level of asthma symptom control			
In the past 4 weeks, has the patient had:	Well controlled	Partly controlled	Uncontrolled
Daytime symptoms more than twice/week? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Any night waking due to asthma? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Reliever needed* more than twice/week? Yes <input type="checkbox"/> No <input type="checkbox"/>	None of these	1–2 of these	3–4 of these
Any activity limitation due to asthma? Yes <input type="checkbox"/> No <input type="checkbox"/>			
B. Risk factors for poor asthma outcomes			
Assess risk factors at diagnosis and periodically, at least every 1-2 years, particularly for patients experiencing exacerbations.			
Measure FEV1 at start of treatment, after 3–6 months of controller treatment to record personal best lung function, then periodically for ongoing risk assessment.			

Potentially modifiable independent risk factors for exacerbations include:

- Uncontrolled asthma symptoms (as above)
- ICS not prescribed; poor ICS adherence; incorrect inhaler technique
- High SABA use (with increased mortality if >1x200-dose canister/month)
- Low FEV<sub>1</sub>, especially if <60% predicted
- Major psychological or socioeconomic problems
- Exposures: smoking; allergen exposure if sensitized
- Comorbidities: obesity; rhino-sinusitis; confirmed food allergy
- Sputum or blood eosinophilia; elevated FENO in allergic adults
- Pregnancy

Other major independent risk factors for flare-ups (exacerbations) include:

- Ever being intubated or in intensive care for asthma
- Having 1 or more severe exacerbations in the last 12 months.

Risk factors for developing fixed airflow limitation include lack of ICS treatment; exposure to tobacco smoke, noxious chemicals or occupational exposures; low FEV<sub>1</sub>; chronic mucus hypersecretion; and sputum or blood eosinophilia

Risk factors for medication side-effects include:

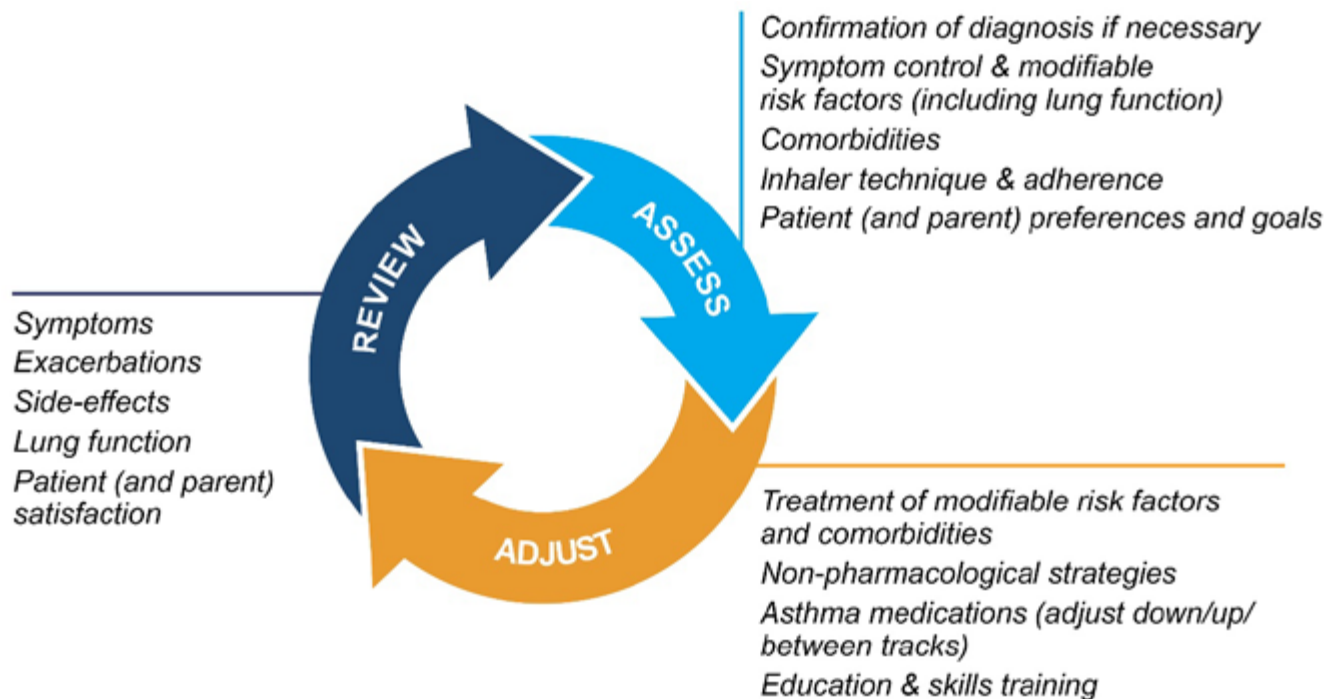
- *Systemic*: frequent OCS; long-term, high dose and/or potent ICS; also taking P450 inhibitors
- *Local*: high-dose or potent ICS; poor inhaler technique

## 6.4.2 Treating to achieve control

A stepwise approach to asthma treatment is presented in Appendices 6-9. Treatment is adjusted in a continuous cycle driven by changes in their asthma control status (9). This cycle is shown in Figure 11.

Figure 11. Personalised asthma management

### Personalized Asthma Management



Ref: GINA 2021, permission to use

## 6.4.3 Monitoring to maintain control

When asthma control has been achieved, on-going monitoring is essential to maintain control and to establish the lowest step and dose of treatment necessary, which maximises the safety of treatment and minimises cost. Asthma is a variable disease, and treatment has to be adjusted periodically in response to loss of control as indicated by worsening symptoms or the development of an exacerbation. Once asthma control has been gained for a sustained period of time it is important that patients be guided through stepping treatment back down to the lowest step. Asthma control should be monitored by the healthcare professional and also by the patient at regular intervals. Frequency of visits depends on initial clinical severity, and on patient's skills and confidence in playing a role in the on-going control of his/her asthma. Patients should be asked to demonstrate their inhaler technique at every visit, with correction and re-checking if it is inadequate.<sup>7</sup>

<sup>7</sup> The ASI has produced a set of checklists for each type of inhaler; inhaler technique videos available at [www.asthma.ie](http://www.asthma.ie)

---

## 7.0 Patient Education, Self-Management and Support

Education of patients to ensure effective self-management and empowerment is an integral and fundamental part of the End to End MOC for Asthma (9-11). Asthma management involves partnership and shared decision making between the patient and the relevant HCPs, with frequent revision and reinforcement. This is essential to achieve and maintain asthma control. The aim is to give patients, where possible, the skillset to assist them to gain control of their asthma, with guidance from HCPs working in all levels of service delivery.

Written asthma self-management plans should include (Appendix 11):

- The patient's usual medications.
- Information outlining how to recognise an exacerbation using peak flow and/or symptoms.
- A description of when and how an individual should increase their usual therapy so as to avoid or reduce the severity of an exacerbation.
- An outline of when and how they should decrease their usual therapy based on a specified period of good asthma control.
- A pathway outlining when they should consider commencing oral corticosteroids for an exacerbation.
- Advice as to when and how to access medical care if their symptoms fail to respond to therapy.

The plan requires regular discussion with the patient, review and adaptation. It should be developed at diagnosis with opportunities taken to review the plan when managing acute attacks or during hospital admissions. Self-management helps those with asthma become autonomous with the therapeutic, behavioural and environmental adjustments required to maximise control of their asthma and hopefully maximise their quality of life.

Evidence suggests that patients with strong self-management skills have fewer exacerbations, attendances at hospital, and unscheduled visits to their doctor (9).

### 7.1 Planned review

Patients should ideally be seen 1–3 months after starting treatment and every 3–12 months after that, except in pregnancy when they should be reviewed every 4–6 weeks. After an exacerbation, a review visit within 1 week should be scheduled. The frequency of review depends on the patient's initial level of control, their history of response to previous treatment, and both their ability and willingness to engage in Self-Management with an action plan.

### 7.2 Review following hospital admission for acute Asthma attacks

Patients should be followed up in the specialist service for at least 1 year post discharge. Beyond this time point many individuals are suitable to have their Asthma care transferred to the community, with subsequent hospital intervention only at times of clinical deterioration or at annual review for a subset.

---

### 7.3 Follow-up after an attack managed at home

Acute attacks often provide opportunities to review risk factors, treatment plans and what actions to take to prevent further attacks. Follow-up from an acute asthma attack should occur within 2-7 days (4). All patients should be followed up regularly by a health care provider trained in asthma care until their symptoms and lung function return to baseline.

- At follow up the following should be addressed;
- The patient understands of the cause of the exacerbation.
- Modifiable risk factors for exacerbations, e.g. smoking.
- Understanding of purposes of medications, and inhaler technique skills.
- Review and revise written asthma action plan.

Discuss medication use, as adherence with preventer inhalers and oral medications may fall to 50% within a week after discharge. Comprehensive post-discharge programs that include optimal controller management, inhaler technique assessments, self-monitoring, written asthma action plans using symptoms or peak flow and regular review have been shown to be cost-effective and are associated with significant improvements in asthma outcomes. Referral for expert advice should be considered for patients who have been hospitalised for asthma, or who re-present for acute asthma care.

The post-discharge follow up plan will be based on stratification of an individual patient's risk for readmission:

**Higher risk for readmission:**

Peak flow rate < 50%; homelessness; poor social circumstances and co-morbidities.

**Lower risk for readmission:**

Peak flow rate >50%; good social circumstances and no other illnesses.

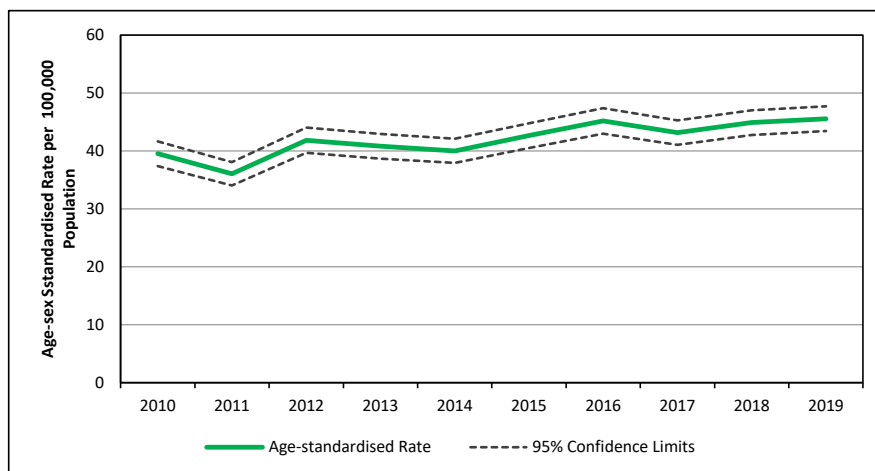


## 8.0 Asthma Epidemiology and Costs

Current estimates suggest that there are approximately 450,000 people with doctor-diagnosed asthma in Ireland (approx. 1 in 10 of population). Evidence suggests that the prevalence of asthma within the Irish population is rising; for example, one study reported that there was a 42% relative increase in the prevalence of asthma in Irish teenagers between 1998 and 2003 (18).

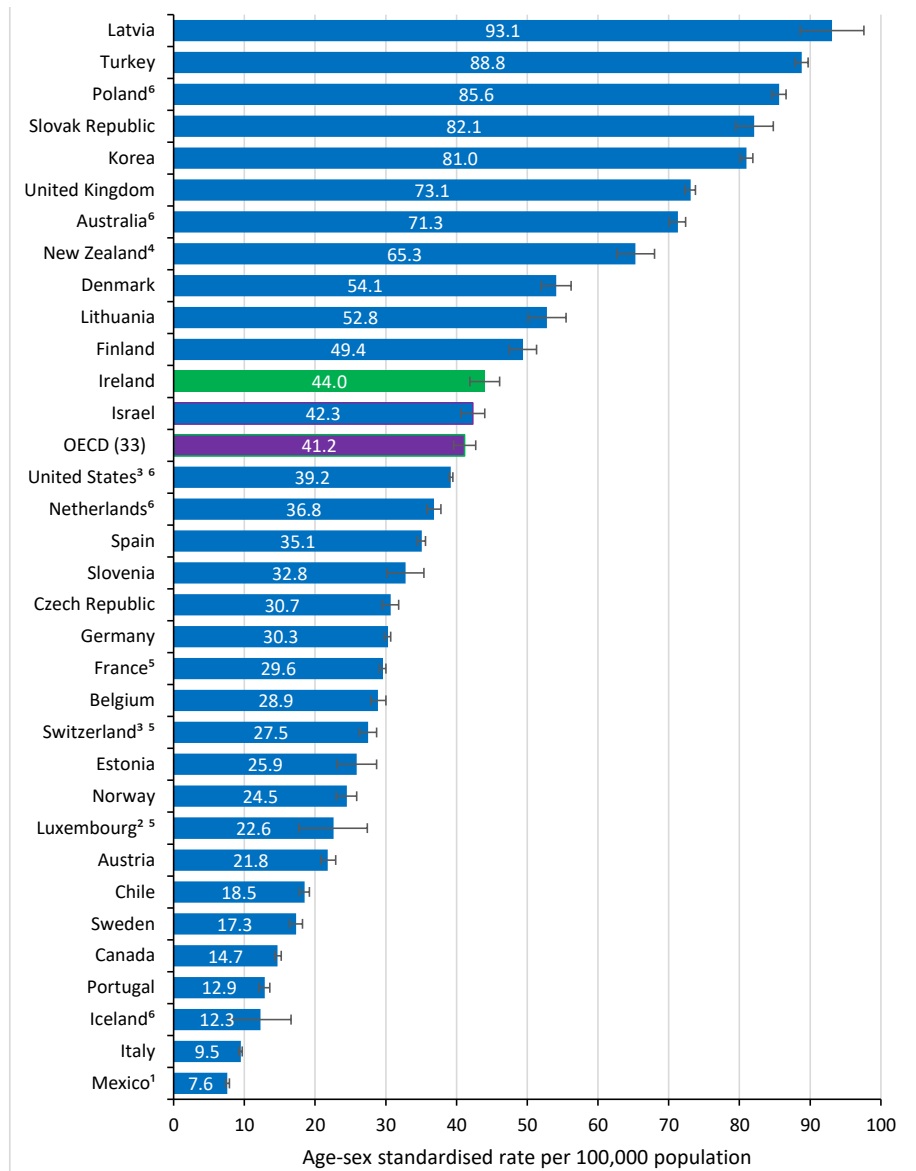
The age-sex standardised hospitalisation rate for asthma fluctuated over the period from 2010-2019, from a low of 36 per 100,000 populations in 2011 to a high of 45.5 hospitalisations per 100,000 populations in 2019. There has been a year-on-year increase in the rate of hospitalisations per 100,000 populations since 2017 (Figure 12a & 12b). During the three-year period from 2017-2019, the age-sex standardised hospitalisation rate by county of residence ranged from 25.2 hospitalisations per 100,000 populations in Kerry to 64.7 hospitalisations per 100,000 populations in Donegal, an almost three-fold variation. Although this variation appears substantial, it should be noted that the low absolute number of hospitalisations in many counties makes the rate sensitive to small changes in these numbers year-on-year. This caveat notwithstanding, the precise reasons for the variation seen between areas require further investigation. There are a number of potential explanations for the variation seen, both between Ireland and other countries, and between counties in Ireland, and it should not be concluded that higher or lower rates are a reflection on the quality of care provided in primary and community care settings. The reasons potentially include, but are not limited to, issues related to the quality of the data, differences in the prevalence of risk factors and chronic conditions in the population, the availability of services at primary and community care level, access to specific treatments, and the availability of hospital beds. All data is from the National Healthcare Quality Reporting System (NHQRS) 2020.

Figure 12a Age-sex standardised hospitalisation rates for asthma per 100,000 populations in Ireland, 2010 - 2019



Source: Hospital In-Patient Enquiry (HIPE)

Figure 12b Age-sex standardised hospitalisation rates for asthma per 100,000 population (15 years or older) for selected OECD countries, 2017 (or nearest year)



Source: OECD Health Statistics. Note: Differences in coding practices among countries and the definition of an admission may affect the comparability of data. Differences in disease classification systems, for example between ICD-9-CM and ICD-10-AM/ACHI, may also affect data comparability. 95% confidence intervals represented by I.

Asthma is a major public health problem in Ireland because up to 21.5% of children and 7-9.4% of adults have asthma (20). There are about 450,000 patients with asthma in Ireland, which has the 12th highest prevalence of asthma in the world. The majority of patients are managed solely in general practice, but it remains sub-optimally controlled for a substantial proportion of patients. The cost of asthma care in Ireland is over €500 million per annum. Asthma cannot be fully cured, but can be effectively managed with appropriate treatment. When asthma is controlled, there should be no more than occasional recurrence of symptoms and severe exacerbations should be rare. Relatively speaking, the number of patients dying each year from asthma are small (<75). The majority (>70%) of deaths occur in those aged over 70 years. The 5 year Standardisation mortality rate 2012-2016 for Ireland was 1.92 with a low of 1.67 in 2010-2014 (19). The number of day case hospitalisations for asthma increased from 1336 in 2009 to 2889 in 2016. In terms of inpatient hospitalisation, the age standardised rate in 2016 was 46 per 100,000 populations. 97% of hospitalisations were emergencies. Ireland's age standardised hospitalisation rate does not differ significantly from the OECD average. For further data on asthma in Ireland please see [Respiratory Health of the Nation 2018](#).

---

## 9.0 Guidance for Asthma during the COVID 19 pandemic

Sláintecare policy requires that services be focussed primarily in the community. The COVID-19 pandemic has emphasised the need to do this to an even greater extent than previously recognised. Care going forward will support the need for less congregated settings for older people or people with chronic disease as much as possible and that these groups are cared for in their own homes where and when feasible. Healthcare for these vulnerable cohorts should not be provided in the acute hospital setting where possible, if suitable alternatives can be made available. Hence, there is an even greater focus on the development of these services in a community setting.

It seems as if patients with asthma do not seem to be at a greatly increased risk of contracting COVID 19. The best way to avoid complications of COVID 19 is to have well controlled asthma, receive the COVID vaccine and implement the other advice from Public Health and the HSE. Advise patients with asthma to continue to take their prescribed asthma medications, particularly inhaled corticosteroids (ICS) and oral corticosteroids (OCS) if prescribed. Patients on biologic medication should not stop taking it. Make sure all patients have a written action plan. The NCP Respiratory collaborated on a number of guidelines relating to asthma during COVID 19 including [Guidance on the clinical management of COVID 19 in COPD and asthma](#), and [Guidance on setting up virtual pulmonary rehabilitation for asthma and COPD during the COVID 19 pandemic](#). The NCP Respiratory also collaborated and endorsed advice published on the [asthma website](#).

---

## 10.0 Implementation Plan

To realise the benefits in health and economic terms at individual patient, health service and societal level, full implementation of the Model of Care within a ten-year time frame is needed. The approach acknowledges the challenge of providing effective, comprehensive asthma management. Implementation of the Model of Care should be in parallel with a sustained effort to address the rise in chronic disease through cross-government and cross-sectoral policies and initiatives, meaningful legislative change and societal factors while also investing in enhanced health service delivery to provide the right care in the right place at the right time, with resourcing tailored and targeted to higher risk areas of deprivation and health inequalities. Health services support individual level actions, but to succeed at tackling asthma at a population level, these services must be underpinned by strong government policy to address the environmental, social and commercial determinants of asthma at population level. It is essential that the Model of Care is implemented in synergy with other disease specific Models of Care to address other chronic disease and complications.

The implementation of the **Enhanced Community Care project** which is underpinned by Sláintecare principles, will contribute to the successful implementation of this Model of Care. This will include:

Specialist chronic disease teams trained and resourced to carry out the following:

- Early identification of risk, brief intervention and signposting for prevention.
- Early diagnosis.
- Case finding with initial management and referral to treatment services.
- Integrated care planning and chronic disease management.
- Self-Management support.

It will include ambulatory care hub pathways and timely access for individuals:

- High quality asthma management services in enhanced Primary care (level 3) as part of Community Specialist Teams for Chronic Disease Management for adults.
- Specialist multi-disciplinary care (Level 3 & 4) for those with severe and complex asthma.

The Implementation Process for the Model of Care will be underpinned by a detailed logic model and implementation plan (Appendix 12 & 13) and effective change management approach to ensure sustainability. It will leverage synergies in areas such as ICT, telemedicine, chronic disease management and prevention across all health service development and clinical services design, including development of an effective integrated electronic medical record. It will require strong leadership, stakeholder commitment, and system and staff capacity, an accepted model of care along with a clear communicated implementation plan, especially in the new Covid19 environment. Given the scale of change and service development required prioritisation will be required.

## 11.0 References

1. Department of Health. Sláintecare Implementation Strategy [Internet]. 2018. Available from: <https://www.gov.ie/en/campaigns/slaintecare-implementation-strategy/>
2. Department of Health, Sláintecare. National framework and principles for the design of models of care. Dublin, Department of Health; 2019.
3. Health Service Executive. Living well with a chronic condition: framework for self-management support. Dublin, HSE; 2017.
4. Health Service Executive. Chronic disease management programme [Internet]. Dublin: HSE;2019[updated July 2020; cited 2020 August 10]. Available from: <https://www.hse.ie/eng/about/who/gmscontracts/2019agreement/chronic-disease-management-programme/>
5. Nolan, D, Murphy D, Asthma - diagnosis, assessment and management in General Practice quick reference guide. ICGP
6. Department of Health. Management of an Acute Asthma Attack in Adults National Clinical Guideline No. 14. November 2015. ISSN 2009-6259. 2015.
7. HSE Integrated Framework for the prevention and management of Chronic Disease 2020
8. Healthy Ireland a Framework for Improved Health and Wellbeing 2013 - 2025. 2013.
9. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention [Internet]. . Available from: <https://ginasthma.org/2021-gina-report-global-strategy-for-asthma-management-and-prevention/> Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2021. Available from: [www.ginasthma.org](http://www.ginasthma.org)
10. BTS/SIGN British Guideline on the Management of Asthma July 2019. [www.brit-thoracic.org.uk](http://www.brit-thoracic.org.uk)
11. Global Initiative for Asthma. Global Strategy for Asthma Management and prevention 2018 Update. 2018.
12. Aaron et al Reevaluation of Diagnosis in Adults with Physician-Diagnosed Asthma. JAMA 2017 317(3):269-279
13. Manning P, Nolan D. Asthma Control in General Practice 2018.
14. McDonald VM, Vertigan A, Gibson P. How to set up a severe asthma service. Respirology. 2011;16:900–11.
15. Ninan T, Ryan D. Criteria for a specialist paediatric asthma clinic. Primary Care Respiratory Journal. 12 (2).
16. Chung KF, Wenzel SE, Brozek JL, Bush A, Castro M, Sterk PJ, et al. International ERS/ATS guidelines on definition, evaluation and treatment of severe asthma. European Respiratory Journal [Internet]. 2014 Feb 1 [cited 2018 Oct 30]; 43(2):343–73. Available from: <http://erj.ersjournals.com/cgi/doi/10.1183/09031936.00202013>
17. Bel EH, Sousa A, Fleming L, Bush A, Chung KF, Versnel J, et al. Diagnosis and definition of severe refractory asthma: an international consensus statement from the Innovative Medicine Initiative (IMI). Thorax [Internet]. 2011 Oct 1 [cited 2018 Nov 8]; 66(10):910–7. Available from: <http://thorax.bmj.com/cgi/doi/10.1136/thx.2010.153643>
18. Manning PJ, Goodman P, O’Sullivan A, Clancy L. Rising prevalence of asthma but declining wheeze in teenagers (1995-2003): ISAAC protocol. Ir Med J 2007; 100:614-615.
19. Irish Thoracic Society Health of the Nation 2018 <https://irishthoracicsociety.com/wp-content/uploads/2018/12/RESP-Health-LATEST19.12.pdf>

## 12.0 Appendices

# Appendix 1 Making Every Contact Count

### Making Every Contact Count

The Making Every Contact Count (MECC) programme is a key action in supporting the implementation of *Healthy Ireland, a National Framework for Improved Health and Wellbeing*. MECC is about health professionals using their routine consultations to empower and support people to make healthier choices to achieve positive long-term behaviour change.



The lifestyle risk factors which are the focus of attention in the MECC Programme include tobacco, alcohol, physical activity and obesity. The model for MECC is presented as a pyramid with each level representing an intervention of increasing intensity with the low intensity interventions at the bottom of the pyramid and the specialised services at the top. Implementing the *Making Every Contact Count* approach seeks to begin the process at the basic level of **brief advice and brief intervention**. In practice this will mean that all health professionals and healthcare assistants will be trained to a level that enables them to conduct a brief intervention with their patients when appropriate. It is envisaged that **extended brief intervention** will be conducted by health professionals with greater capacity to carry out this more lengthy intervention, because of their specialist role or due to the specific service that they work in. This intervention should be delivered to patients requiring more intensive support in their behaviour change efforts and/or who may be self-managing an existing chronic disease such as ASTHMA.

The **specialist services** are delivered by practitioners who use specialised or advanced approaches to support patients to change behaviour. These services include smoking cessation and dietetic services, along with services delivered by staff with in-depth counselling skills in the wider arena of supporting people to change.

To implement Making Every Contact Count within all sectors of the health service, actions need to happen in four key areas:

Organisational level which will involve a culture and environment that supports continuous health improvement and has systems in place to embed MECC in all services and divisions.

Staff engagement, learning, training and skills development is crucial to the integration of MECC within the health service.

Patient empowerment is essential if they are to engage with their health professional about making a behaviour change.

Partnership working with key external affiliates such as Higher Educational Institutes; Professional Associations and Health Professionals not employed within the HSE is central to the success of MECC.



## Appendix 2 Self-Management Support

Self-management support is defined as the systematic provision of education and supportive interventions, to increase patients' skills and confidence in managing their health problems, including regular assessment of progress and problems, goal setting, and problem-solving support (Adapted from Institute of Medicine, 2003).

Self-Management support is about helping people to learn more about their condition, to set goals, problem solve and make plans to live a healthier life. It is not a one off but is an on-going part of the care of a long-term health condition.

'Living well with a Chronic Condition: Framework for Self-Management Support (2017)' was developed under the leadership of Dr. Orlaith O'Reilly, the National Clinical Advisor and Programme Group Lead, Chronic Disease. This framework provides an overview of the need for Self-Management Support. It sets out how the HSE, working in partnership with key stakeholders, intends to implement Self-Management support for four major chronic conditions: COPD, Asthma, Diabetes and Cardiovascular Disease.

<https://www.hse.ie/eng/health/hl/selfmanagement/hse-self-management-support-final-document1.pdf>

HSE Self-Management Support: For more information on the Self-Management Support Programme in the HSE, go to [www.hse.ie/selfmanagementsupport](http://www.hse.ie/selfmanagementsupport)

### **Living Well, a Programme for Adults with Long-term Health Conditions:**

Living well is a work stream of the HSE Self-Management Support Programme. It is a free group Self-Management programme for adults with long-term health conditions. The programme supports people to develop the skills, which help them to live well with their long-term health condition. The HSE Living Well programme has proven to be effective in helping people to manage their health conditions better. Further information and details on how to refer or to register can be found at [www.hse.ie/livingwell](http://www.hse.ie/livingwell)

**Resources for People living with a Long-term Health Condition:** The Self-Management Support Co-coordinators in the HSE have produced a number of resources. These resources support people to live well with a long-term health condition. This web page also signposts to approved Self-Management resources <https://www.hse.ie/eng/health/hl/selfmanagement/resources-for-people-living-with-a-long-term-health-condition/>.

**Resources for Healthcare Professionals:** The Self-Management Support Co-coordinators in the HSE have produced a number of resources. These resources support healthcare professionals working with people living with long-term health conditions. <https://www.hse.ie/eng/health/hl/selfmanagement/resources-for-healthcare-professionals/>

## Appendix 3 Asthma Multidisciplinary Team

Appendix 3 Asthma Multidisciplinary Team	
<b>General Practitioner (GP)</b>	<p><b>Primary Care Level 1 and 2</b></p> <p>Key health professional for the majority of patients with Asthma. They provide assessment, diagnosis, treatment and on-going monitoring of patients with Asthma. Referral for specialist respiratory services when required.</p>
<b>Practice Nurse</b>	<p><b>Primary Care Level 1 and 2</b></p> <p>Works with GP, providing regular structured review, performs spirometry <sup>8</sup> for diagnosis, education, support and advice on life style changes including smoking cessation, provision of vaccination, instruction in inhaler technique and Self-Management.</p>
<b>Respiratory - Integrated Care Nurse (CNS)</b>	<p><b>Primary Care / Hospital (Level 2)</b></p> <p>Provides specialist support to general practice in review of asthma patients, providing direct clinical care, information, education and support<sup>9</sup>. Facilitates evidenced based diagnosis and management of patients with asthma, providing spirometry testing, assessment and advice on management, review of inhaler therapy and technique, supporting Self-Management, lifestyle changes including smoking cessation, exercise and breathing control techniques, oxygen assessment and supporting/providing symptom control management and provide or refer to the Pulmonary Rehabilitation Programme. Provides education with, patients, their families/carers and the wider MDT in, disease education evidenced based management the prevention of disease progression and Self-Management support. Provides an integrated link to secondary care specialist support.</p>
<b>Senior Physiotherapist – Integrated Care</b>	<p><b>Community Level 2</b></p> <p>Works within the community setting with the main focus to support the development of the Pulmonary Rehabilitation Programme in the community.</p> <p>Also provides spirometry testing, assessment and review of inhaler therapy and technique and education in Self-Management strategies. Focuses on developing patient knowledge and skills in airway clearance, breathing control and exercise.</p> <p>Provides education with, patients, their families/carers and the wider MDT in, disease education evidenced based management the prevention of disease progression and Self-Management support.</p> <p>Provides an integrated link to secondary care specialist support.</p>
<b>Community Pharmacist</b>	<p><b>Level 1 and 2</b></p> <p>Plays a role in helping asthma patients manage their disease. Provides information on medication and medication review, inhaler technique training together with an explanation of Self-Management plans if suitably skilled. They can also provide assistance in education in smoking cessation and general health and wellbeing.</p>

<sup>8</sup> 2 See eligibility criteria

<sup>9</sup> If suitably skilled

<b>Respiratory Clinical Nurse Specialist (CNSp)</b>	<p><b>Hospital based (Level 3 and 4)</b></p> <p>The hospital based respiratory nurse cares for patients and their families/carers with asthma by providing direct clinical care, information, education and support. Facilitates evidenced based diagnosis and management of patients with asthma, providing spirometry testing, assessment and advice on management, review of inhaler therapy and technique, supporting Self-Management, lifestyle changes including smoking cessation, exercise and breathing control techniques, oxygen assessment, and supporting/providing symptom control management and pulmonary rehabilitation programme. Provides education for patients, their families/carers and the wider MDT in, disease education evidenced based management the prevention of disease progression and Self-Management support.</p>
<b>Advanced Nurse Practitioner (ANP)</b>	<p><b>Hospital based (Level 4)</b></p> <p>Works autonomously to provide care for patients and their families/carers with asthma by providing direct clinical care, information, education and support. Provides nurse led clinics for asthma patients, facilitating evidenced based diagnosis and management and oxygen assessment clinics. Provides case management and support for the on-going care of specific patients in collaboration with GP, Consultants and the wider MDT. Provides education for patients, their families/carers and the wider MDT in, disease education evidenced based management the prevention of disease progression and Self-Management support.</p>
<b>Respiratory Physiotherapist</b>	<p><b>Hospital based (Level 3 and 4)</b></p> <p>The hospital based respiratory physiotherapist manages patients with asthma, and provides care through breathlessness management, use of NIV, exercise prescription, oxygen assessment, supporting Self-Management and airway clearance where applicable.</p>
<b>Clinical Specialist Physiotherapists</b>	<p><b>Hospital based Level 4</b></p> <p>Provides and interprets spirometry. Takes and interprets ABGs, prescribes LTOT and Ambulatory Oxygen.</p>
<b>Respiratory Physiologist</b>	<p><b>Hospital based Level 4</b></p> <p>Helps provide pulmonary function testing in both the hospital and community setting for the diagnosis of asthma Provides a resource and training for staff in the provision of quality assured community based spirometry testing.</p>
<b>Consultant Respiratory Physician</b>	<p><b>Hospital based (Level 3 and 4)</b></p> <p>Provides a point of reference for specialist advice and support on the management of asthma patients to members of the MDT looking after such patients in primary and secondary care. Responsible for the development of integrated care to encompass appropriate inpatient care including supervision of oxygen assessment and non-invasive ventilation. Supervises the provision of diagnostic facilities in the community as well as in hospital. Facilitates the development of Pulmonary Rehabilitation both in hospital and in the community. Provides support and advice to the secondary care and integrated care respiratory nurses and physiotherapist and cANP.</p>

<b>Hospital Pharmacist</b>	<p><b>Hospital based (Level 3 and 4)</b></p> <p>Provides and supports medicine reconciliation on admission, during the inpatient stay and discharge. Assists the nursing and medical team in providing medicine advice and the education and training of patients in the correct use of medications.</p>
<b>Dietitian</b>	<p><b>Secondary and community settings</b></p> <p>Assesses the individual's nutritional status and risk of malnutrition. Develops evidence based nutrition care plans based on the individual's need. Provides education for wider MDT, including nutrition screening tools. Provides advice regarding the use of therapeutic artificial nutrition support in line with best practice guidelines.</p>
<b>Administrative Support</b>	<p>Provides support to staff for administrative functions, including communicating with patients in specific service areas, but also across the continuum of services. The role supports the asthma team to maintain patient local registers, scheduling appointments and collecting /collating minimum data sets.</p>
<b>Psychologist</b>	<p>Provides support to clients, either in a group or in one to one sessions, with long term health conditions by validating the impact of their condition on their mental and physical wellbeing (a bidirectional relationship). Works with clients to foster a range of skills to assist them to self-manage their condition and in turn using these Self-Management skills helps clients to break their symptom cycle giving them confidence to positively impact their mental and physical wellbeing.</p>
<b>Smoking Cessation Team</b>	<p>Provides one to one or group sessions to support people through their quit smoking process, providing:</p> <ul style="list-style-type: none"> <li>• Assessment of quit history coping strategies.</li> <li>• Information on available drug treatments.</li> <li>• Measurement of carbon monoxide levels.</li> <li>• Advise on general health and wellbeing.</li> </ul>
<b>Occupational Therapist</b>	<p>Assesses occupational performance and functional status in the domains of self-care, productivity/ work and leisure. Provides intervention in discharge planning and Self-Management. Assesses for adaptive equipment needs.</p> <p>Community Setting: Assesses occupational performance and functional status in the domains of self-care, productivity/ work and leisure. Completes environmental assess through home assessment and prescribes adaptive equipment as needed. Provides intervention and education in Self-Management including activity management, vocational rehabilitation, anxiety and stress management, relaxation.</p>
<b>Speech and Language Therapist</b>	<p>Hospital based: Provides Nasendoscopic Evaluation of Laryngeal Function &amp; Fibre Optic Evaluation of Swallowing .Provides core diagnostic information to support 'difficult asthma' diagnosis and airway management. Senior /Clinical Specialist SLT Community Provides Voice, Swallowing and Oral Care therapy and technique and education in Self-Management strategies. Provides education with, patients, their families/carers and the wider MDT in, disease education evidenced based management the prevention of disease progression and Self-Management support. Provides an integrated link to secondary care specialist support.</p>

## Appendix 4 Irish Clinical Resources

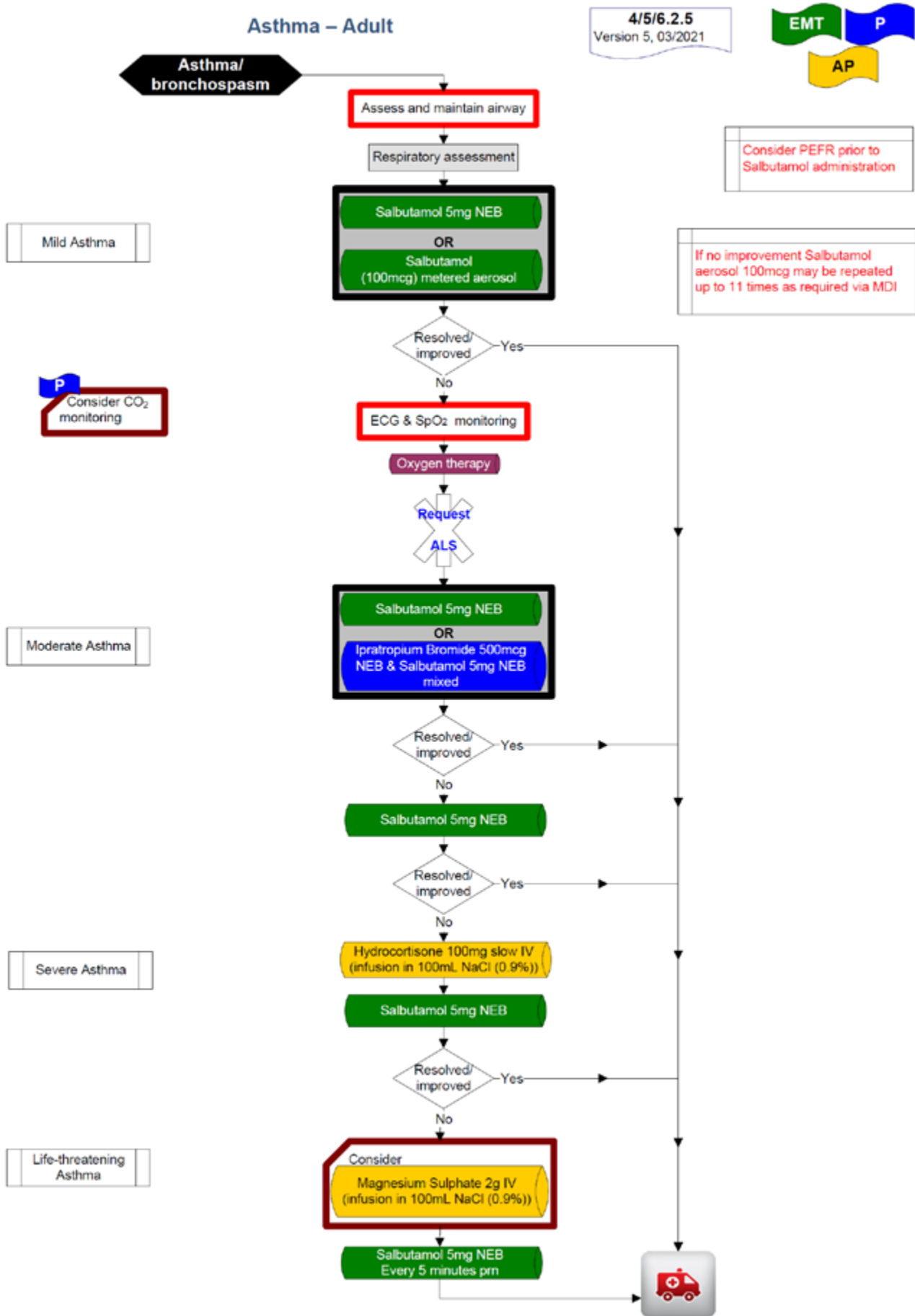
### [ICGP Asthma Control in General Practice 2020](#)

- Based on the Global Strategy for Asthma Management and Prevention 2019 (10).
- It provides recommendations for the diagnosis and management of asthma in patients aged 5 years and older, in the primary care setting.

### [The National Clinical Guideline for the Management of an Acute Asthma Attack in Adults 2015 \(5\)](#)

- The aim of this guideline is to assist health care professionals in all healthcare settings in assessing and making decisions on the management of acute asthma in adults and to assist policy makers and those planning acute services for adult asthma patients.
- The implementation of the guideline will support the provision of evidence-based and consistent care across the Irish healthcare services.
  - Asthma Cycle of Care GP Contract under < 6 year olds.
  - Asthma is included in the chronic disease programme which is being rolled out on an aged based manner, starting with the over 75s. This will offer a biannual review of asthma care to patients enrolled in the scheme.
- **Asthma eLearning module for health care professionals available on <https://www.hseland.ie>.** This module will provide you with a foundation for the diagnosis, assessment and treatment of asthma including supporting patients in Self-Management and action plans as well as inhaler therapies and adherence to medications.

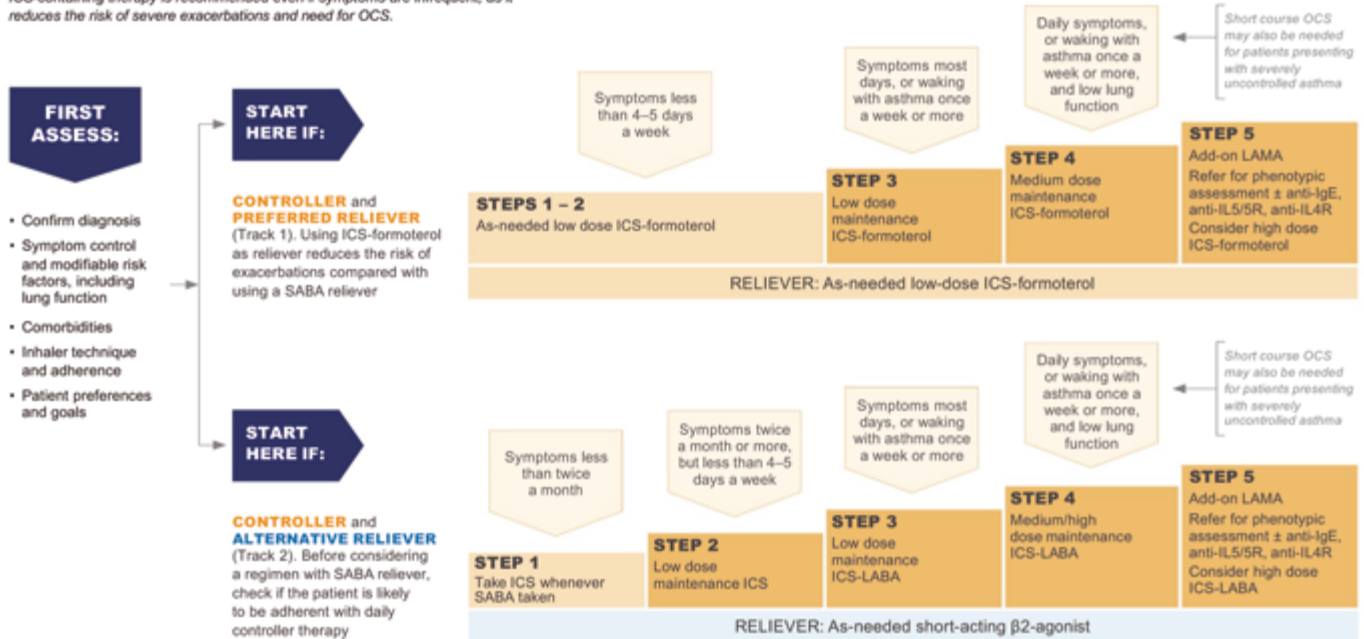
# Appendix 5 Pre-Hospital Emergency Care



# Appendix 6 GINA Guideline: Selecting Controller Treatment in Adults and Adolescents with a diagnosis of Asthma

## STARTING TREATMENT in adults and adolescents with a diagnosis of asthma

Track 1 is preferred if the patient is likely to be poorly adherent with daily controller. ICS-containing therapy is recommended even if symptoms are infrequent, as it reduces the risk of severe exacerbations and need for OCS.



Source: GINA 2021, Permission to use graphic provided by GINA

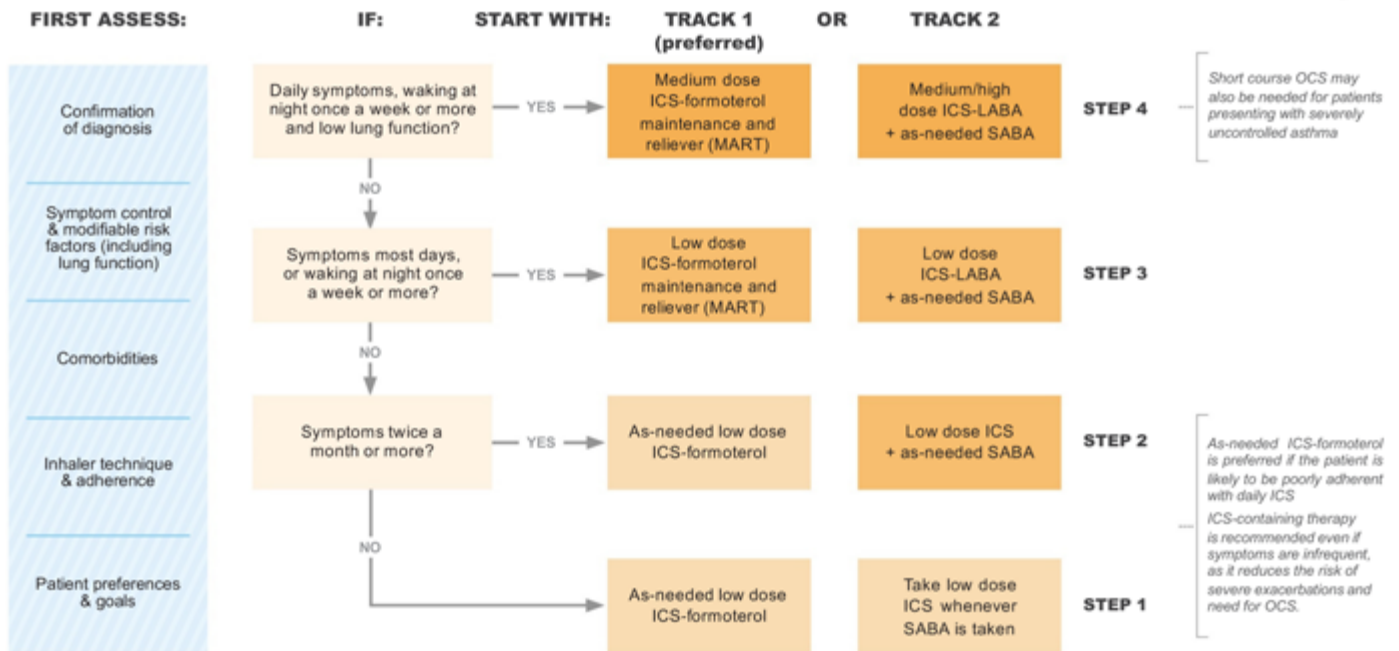


# Appendix 7 GINA Guideline: Selecting Controller Treatment in Adults and Adolescents with a Diagnosis of Asthma



## STARTING TREATMENT

in adults and adolescents 12+ years with a diagnosis of asthma



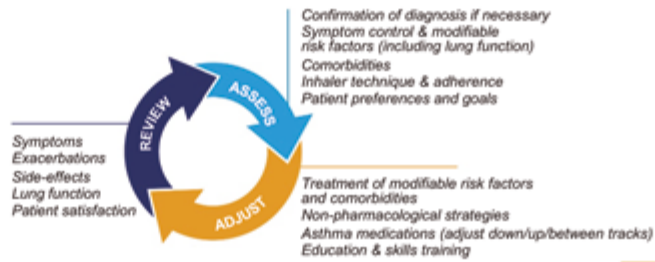
Source GINA 2021, permission to use provided by GINA

# Appendix 8 GINA Guideline: Personalised Management for Adults and Adolescents 12+ Years

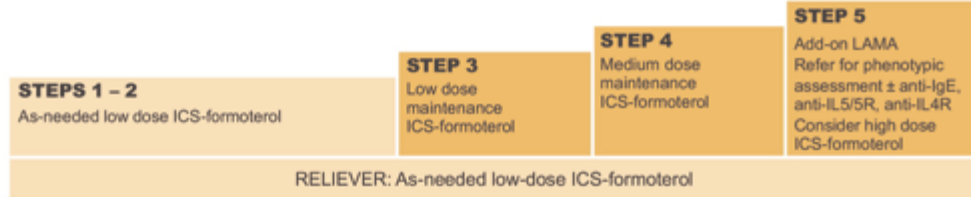


## Adults & adolescents 12+ years

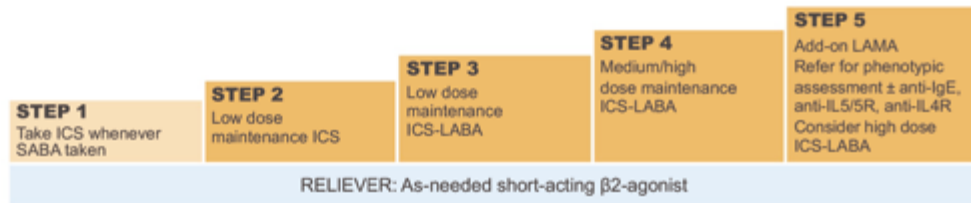
**Personalized asthma management**  
Assess, Adjust, Review  
for individual patient needs



**CONTROLLER and PREFERRED RELIEVER**  
(Track 1). Using ICS-formoterol as reliever reduces the risk of exacerbations compared with using a SABA reliever



**CONTROLLER and ALTERNATIVE RELIEVER**  
(Track 2). Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller



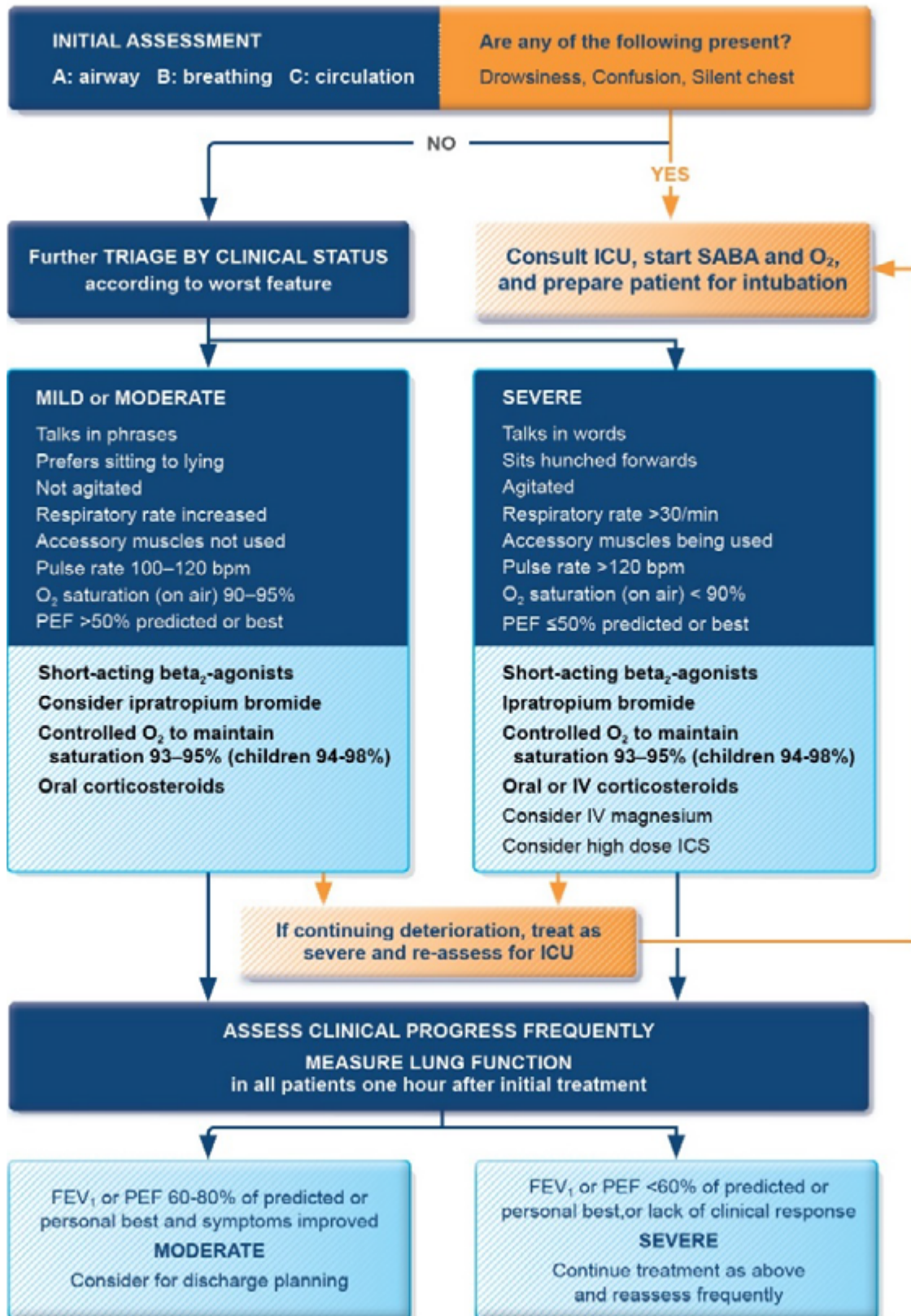
Other controller options for either track

Low dose ICS whenever SABA taken, or daily LTRA, or add HDM SLIT	Medium dose ICS, or add LTRA, or add HDM SLIT	Add LAMA or LTRA or HDM SLIT, or switch to high dose ICS	Add azithromycin (adults) or LTRA; add low dose OCS but consider side-effects
--	---	--	---

Source: GINA 2021, permission to use provide by GINA

# Appendix 9 Management in ED

## Emergency department management acute asthma (adults, adolescents, children 6–11 years)



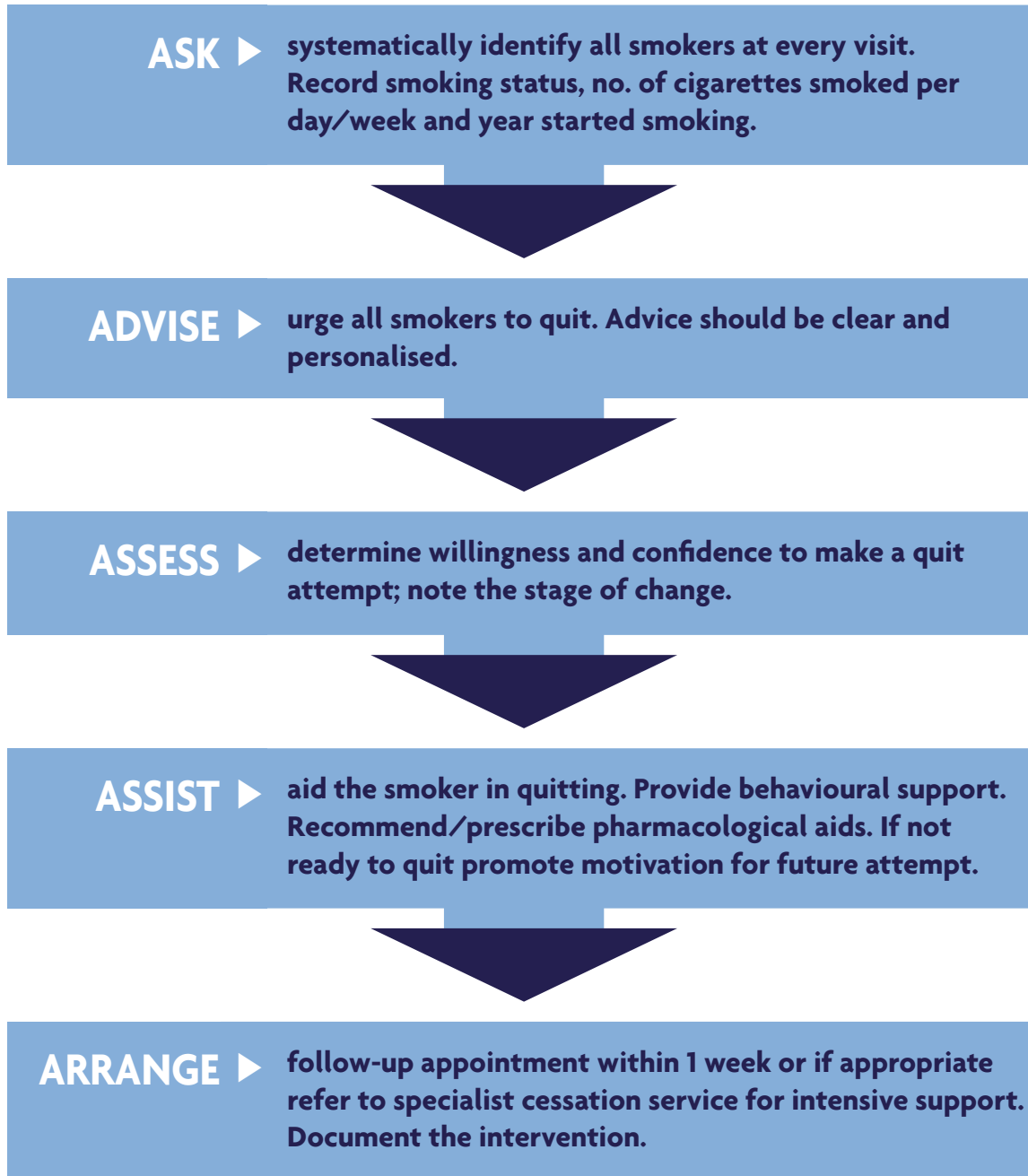
Source GINA 2021, permission to use provided by GINA

# Appendix 10 The 5 A's Framework for Smoking Cessation

## 4. Brief Intervention for Smoking Cessation

### Framework for Brief Intervention for Smoking Cessation

### The 5 As



Adapted from Fiore MC, Jaén CR, Baker TB, et al. *Treating Tobacco Use and Dependence: 2008 Update. Quick Reference Guide for Clinicians*. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service. April 2009.

Source: <https://www.hse.ie/eng/about/who/tobaccocontrol/news/briefreport.pdf>

# Appendix 11 Asthma Self Management Plan

## MY ASTHMA MEDICINE

### My daily controller medication

My controller inhaler is  Colour

My other controller medication is  Colour

My nasal treatment is

My allergy treatment is

### Why do I need controller medication?

My controller medication benefits my lungs by reducing inflammation, swelling and mucus.

I need to take my controller every day even when I am well.

### My reliever medications

My reliever inhaler is  Colour

### Why do I need reliever medication?

- My reliever works quickly to make breathing easier by opening up my airway.
- I will always carry my reliever inhaler with me.

My personal best peak flow (if over 6 years of age) is

### My asthma triggers are:

<input type="text"/>
<input type="text"/>
<input type="text"/>

## MAKE YOUR ASTHMA ACTION PLAN WORK FOR YOU

- Put your Asthma Action Plan where you and your family can easily find it.
- Save a photo of your Asthma Action Plan on your phone or keep a copy in your bag or car.
- Share a copy of your Asthma Action Plan with family members, friends and care-givers.
- Check your Asthma Action Plan regularly.
- Always bring your Asthma Action Plan with you to healthcare appointments and Emergency Department visits.

Remember to attend for an asthma review at least once a year and have your inhaler technique checked.

## YOU CAN HELP YOUR ASTHMA BY:

- Staying active and taking exercise for at least 20 minutes each day
- Maintaining a healthy weight
- Quitting smoking and avoiding smoky environments. For help to quit smoking call the QUITline on 1800 201 203 or visit [www.quit.ie](http://www.quit.ie)



[hse.ie/eng/health/hl/living/asthma](http://hse.ie/eng/health/hl/living/asthma)

Asthma Adviceline **1800 44 54 64**

Call Monday – Friday 9am – 5pm to arrange an appointment to speak to an Asthma Nurse Specialist

Email [reception@asthma.ie](mailto:reception@asthma.ie)

[asthma.ie](http://asthma.ie)



## MY ASTHMA ACTION PLAN

Date

Name

Next of kin

Next of kin's contact number

Emergency contact number

(for example GP or out-of-hours Doctor)

An Asthma Action Plan is your personal guide to manage your asthma when it gets out of control.

It will help you to recognise asthma symptoms:

**COUGH WHEEZE CHEST TIGHTNESS**  
**SHORTNESS OF BREATH**

And provide you with information on what action to take.

This Asthma Action Plan is yours, so use it, don't lose it!

[asthma.ie](http://asthma.ie)

## GREEN ZONE

### Everyday asthma care

### ASSESSMENT

#### My asthma is controlled:

- I have no cough, wheeze, shortness of breath or chest tightness
- I can exercise without asthma symptoms
- My asthma symptoms do not wake me at night
- I do not need to take days off school, college or work
- I use my reliever inhaler twice a week or less (over the age of 6 years)
- I use my reliever inhaler once a week or less (under the age 6 years)

My peak flow is between  and   
(80 – 100%) of my personal best

### ACTION

#### Controller inhaler

When my asthma is controlled I take my controller medication everyday.

Name  Colour

Number of puffs in the morning  Number of puffs at night

I always rinse my mouth after I take my controller inhaler.

#### Reliever inhaler

I take my reliever inhaler if I wheeze, cough, have chest tightness or I am finding it difficult to breathe.

Name  Colour

Number of puffs

- I should always carry my reliever inhaler.
- I take two puffs of my reliever inhaler before exercise if needed.

When I am well, I also take my other medication.

I always use a spacer with my inhaler if I have one

## ORANGE ZONE

### When I am feeling unwell

### ASSESSMENT

- My asthma symptoms include one or all of the following: cough, wheeze, shortness of breath or chest tightness
- I have symptoms with exercise
- My asthma symptoms wake me at night
- I need to take days off school, college or work due to asthma symptoms
- I am taking my reliever inhaler more than twice a week (over the age of 6 years)
- I am taking my reliever inhaler more than once a week (under the age of 6 years)
- My peak flow is dropping
- I feel like I have a cold or flu

### ACTION

#### Controller inhaler

When I am feeling unwell I take my medication like this.

Name  Colour

Number of puffs in the morning  Number of puffs at night

#### Reliever inhaler

Name  Colour

Number of puffs

- If I am not improving and I have been prescribed Prednisolone tablets (steroid tablets) to keep at home, I should start taking them. **Yes** / **No**
- If I continue to feel unwell and I am not improving, or I am concerned, I contact the GP/ Nurse/ out-of-hours Doctor/Emergency Department.

I always use a spacer with my inhaler if I have one

## RED ZONE

### When I am having an asthma attack

### ASSESSMENT

- My asthma symptoms are getting worse and I have increased: cough, wheeze, shortness of breath or chest tightness
- My reliever inhaler gives little or no relief
- I find it difficult to talk or walk
- I find it difficult to breathe
- I have blue lips or fingernails
- My peak flow is dropping further
- The attack came on suddenly
- I am breathing fast and using my tummy and neck muscles

### ACTION

**THIS IS AN EMERGENCY – ACT NOW**  
**Follow the 5 steps below. If you are worried or not improving at any stage, CALL 999/112**

- Stay calm. Sit up straight – do not lie down.
- Take slow steady breaths.
- Take one puff of your reliever inhaler (blue) every minute. Use a spacer if available.
  - People **over 6 years** can take up to **10 puffs** in 10 minutes
  - Children **under 6 years** can take up to **6 puffs** in 10 minutes
- Call 112 or 999** if your symptoms do not improve after 10 minutes
- Repeat **step 3** if an ambulance has not arrived in 10 minutes

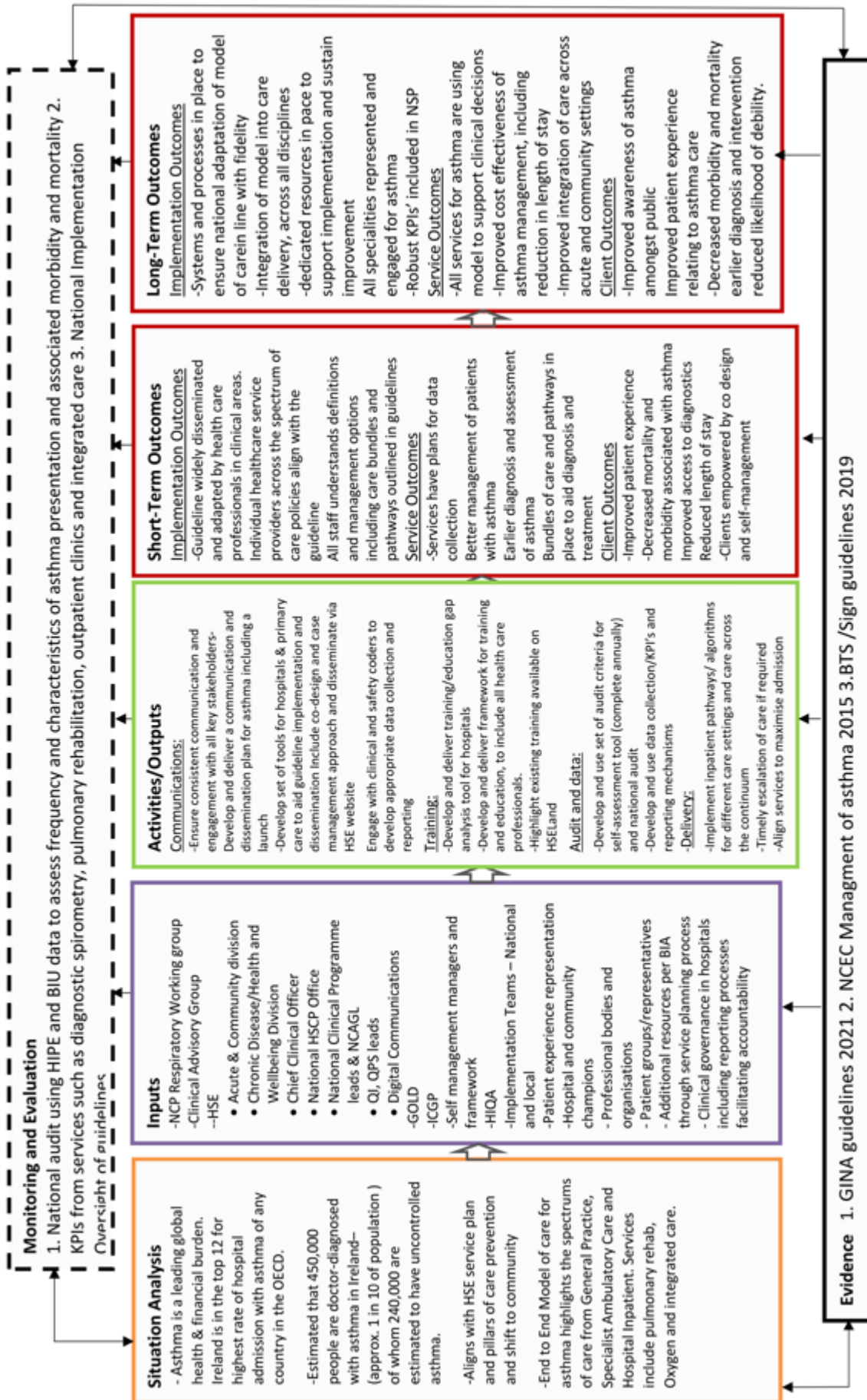
It is safe to take additional puffs of your blue inhaler during an acute asthma attack.

I always use a spacer with my inhaler if I have one



# Appendix 12 Logic Model

## Logic Model for End to End Model of care for asthma



# Appendix 13 Implementation Plan

Implementation Plan for End to End Model of Care for asthma					
Plan	Facilitators to Implementation	Actions/interventions/task to implement recommendations	Leads responsible for delivery of the action	Timeframe for completion	
Medication management guided by GINA guidelines in a stepwise approach for adults.					
Year 1					
Year 2					
Year 3					
Expected Outcome and Verification					
Best Practice Recommendation 1	<ul style="list-style-type: none"> <li>Medical Doctors involved in the care of people with asthma</li> <li>GPs &amp; Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>Nurse Prescribers</li> <li>Pharmacists</li> </ul>	<ul style="list-style-type: none"> <li>Dissemination of the Model of care for asthma</li> </ul>	<ul style="list-style-type: none"> <li>GP&amp;e Medical Doctors involved in the care of people with asthma</li> <li>Nurse Prescribers</li> </ul>	<ul style="list-style-type: none"> <li>Outcomes</li> <li>1. Consultation with stakeholders and dissemination of asthma model of care to improve awareness &amp; knowledge</li> <li>Verification:</li> <li>1.NCP oversight in place to see implementation and KPIs, 2.Records of disseminated activities</li> </ul>	
Best Practice Recommendation 2	<ul style="list-style-type: none"> <li>Technique and adherence should be checked at every clinical appointment.</li> <li>Inhaler -E-learning module on inhalers for start on HSE and in Chronic Respiratory Disease Module</li> </ul>	<ul style="list-style-type: none"> <li>Increase awareness among healthcare professionals in relation to their role in demonstrating and assessing inhaler technique</li> <li>Inhaler technique videos on hseland points</li> <li>Continuous Professional Development</li> <li>Provision of consideration to initiatives such as Inhaler technique Check HSE's Living Well with a Chronic Condition Support for Self Management Support for Self</li> <li>Medical Doctors involved in the care of people with asthma</li> <li>Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>Pharmacists</li> </ul>	<ul style="list-style-type: none"> <li>Dissemination of the Model of care for asthma</li> <li>Provision of access for pharmacists to an inhaler technique education module.</li> <li>In the acute setting, Respiratory Nurses and Physiotherapists to ensure patients can use their inhaler properly through supervised inhaler use. In the community, Community Pharmacists to demonstrate inhaler technique when a patient is prescribed a new inhaler. Where in place, Respiratory Integrated Care Clinical Nurse Specialists to educate Practice Nurses on how to demonstrate inhaler technique to patients</li> <li>Create awareness of the availability of inhaler technique videos on Asthma Society website, also available on eLearning module in HSE's Living Well with a Chronic Condition Support for Self Management Support for Self</li> <li>Pharmaceutical companies should be encouraged to supply placebo inhaler devices to assist with demonstrations to patients</li> <li>Consider expanding 'inhaler technique Check' initiative to all hospitals</li> </ul>	<ul style="list-style-type: none"> <li>HSE</li> <li>Community Pharmacists</li> <li>GP &amp; Medical Doctors involved in the care of people with asthma</li> <li>Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>Practice Nurses</li> <li>Asthma Society Ireland</li> <li>Irish Institute of Pharmacy</li> <li>Pharmaceutical Society of Ireland</li> <li>Irish Association of Respiratory Scientists</li> <li>Pharmaceutical companies</li> </ul>	<ul style="list-style-type: none"> <li>Outcomes</li> <li>1. Consultation with stakeholders and dissemination of Model of care for asthma</li> <li>2. Awareness raising in relation to the role of healthcare professionals in demonstrating and assessing inhaler technique</li> <li>3. Engage with Irish Institute of Pharmacy on developing inhaler technique module for pharmacists which can be accessed through IICP website. Next steps to be confirmed following engagement. Verification</li> <li>Staff training records available for audit</li> </ul>
Best Practice Recommendation 3	<ul style="list-style-type: none"> <li>The determination of smoking status, delivery of a brief intervention, prescription for stop smoking medications and referral to intensive stop smoking support services should be considered standard for the prevention and treatment/management of asthma</li> </ul>	<ul style="list-style-type: none"> <li>All healthcare professionals</li> <li>HSE's Making Every Contact Count Initiative</li> <li>HIOJA Health Technology Assessment of Smoking Cessation Interventions</li> <li>HSE QUILT Team</li> <li>Tobacco Cessation Support Programme</li> <li>ASI</li> <li>Asthma Advice line</li> </ul>	<ul style="list-style-type: none"> <li>Dissemination of the model of care for asthma</li> </ul>	<ul style="list-style-type: none"> <li>Department of Health</li> <li>HSE</li> <li>All healthcare professionals</li> <li>ASI</li> </ul>	<ul style="list-style-type: none"> <li>Outcomes</li> <li>1. Consultation with stakeholders and dissemination of model of care for asthma</li> <li>2. Awareness raising around importance of smoking cessation and the role of the healthcare professional</li> </ul>



Plan	Facilitators to implementation	Actions/interventions/task to implement recommendations	Leads responsible for delivery of the action	Timeframe for completion	Expected Outcome and Verification
Monitoring of Spirometry Diagnosis and stability of asthma needs not be tracked by spirometry at the time of clinical review.					
Best Practice Recommendation 4 Quality assured spirometry should be provided with the ability for results to be accessed routinely from primary and secondary care.	<ul style="list-style-type: none"> <li>GPs &amp; Medical Doctors involved in the care of people with asthma</li> <li>Respiratory Nurses</li> <li>Practice Nurses</li> <li>Spirometry Training Course provided by the British Association of Respiratory Scientists</li> </ul>	<ul style="list-style-type: none"> <li>Increase awareness of performing spirometry on asthma patients at appropriate time intervals.</li> <li>Training Courses for healthcare professionals</li> <li>Dissemination of the model of care for asthma. The ECC project includes new posts for physiotherapists to provide a direct GP access spirometry service. This will improve access to spirometry for GPs across the country.</li> </ul>	<ul style="list-style-type: none"> <li>Hospital/Hospital Group Management</li> <li>All healthcare professionals providing care to people with asthma</li> <li>British Association of Respiratory Scientists</li> </ul>	1 2	<p>Outcomes</p> <ol style="list-style-type: none"> <li>Consultation with stakeholders and dissemination of model of care</li> <li>Awareness raising training for HCP</li> <li>Verification of HCP projects based on training</li> </ol>
Respiratory Health Professionals Care for asthma should be delivered by a multidisciplinary team primarily involving respiratory physiotherapists and CNSPs in a breathless clinic					
Best Practice Recommendation 5 Operate Specialised Breathlessness Clinics for asthma patients including Medical, Nursing and Physiotherapy. Breathing re-education core component of this clinic.	<ol style="list-style-type: none"> <li>ensure pt. in medically optimized</li> <li>check objective measures as baseline (i.e. PEF and PFR and control pause time)</li> <li>check inhaler technique and if a problem look at respiratory function and cognitive function</li> <li>categorise the cause of breathlessness (physical, psychological, emotional) and adapt the approach accordingly (i.e. if emotional start off slow with progressive muscle relaxation, positions of ease and work up into breathing during sitting and in walking; chemical (i.e. ...)</li> <li>nasal hygiene (sinusitis/rhinitis - sinus issues etc. ...)</li> <li>manual assessment of respiratory function</li> <li>stretching secondary of muscles of respiration</li> <li>breathing pattern re-education, Butekyo technique</li> <li>non-pharma management of cough and wheeze.</li> <li>increasing physical activity via ucha.b.</li> </ol>	<ul style="list-style-type: none"> <li>ECC project will increase the number of specialist respiratory physiotherapist and nurses, as well as integrated respiratory consultants to provide specialist care.</li> <li>Training awareness role of physiotherapist, NP and CNSPs in the community</li> <li>Establishment of physiotherapist &amp; CNSP led clinics, community hubs and a acute setting for breathlessness in asthma</li> <li>Formal courses and training require for physiotherapists to teach breathing re-education.</li> </ul>	<ul style="list-style-type: none"> <li>GPs &amp; Respiratory Consultants</li> <li>Physiotherapists</li> <li>Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>Hospital/Hospital Group and CHD Management</li> <li>CNSP</li> <li>Nurse Managers</li> </ul>	1 2	<p>Outcomes</p> <ol style="list-style-type: none"> <li>Consultation with stakeholders and dissemination of model of care for asthma</li> <li>Awareness raising</li> </ol>
Pathways, Bundles and Checklists for Managing Acute Exacerbation It is recommended that an admission and discharge bundle be applied to all patients admitted acutely with an exacerbation of asthma					
Best Practice Recommendation 6 Pathways, Bundles and Checklists for Managing Acute Exacerbation should be used in all settings in line with the model of care & NICE guideline for asthma.	<ul style="list-style-type: none"> <li>Bundles developed by the National Clinical Programme for Respiratory</li> <li>Awareness raising exercise</li> <li>Dissemination of materials to Medical Doctors involved in the care of people with asthma</li> <li>Medical Doctors involved in the care of people with asthma</li> <li>Respiratory nurses</li> <li>Respiratory Physiotherapists</li> <li>Asthma Clinical Advisory Group</li> </ul>	<ul style="list-style-type: none"> <li>Increase awareness through dissemination of materials relating to pathways, bundles and checklists and promotion of the value of implementing the materials. Materials to be circulated electronically so no large scale printing or postage costs incurred.</li> </ul>	<ul style="list-style-type: none"> <li>Medical Doctors involved in the care of people with asthma</li> <li>Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>Hospital/Hospital Group Management</li> <li>Critical Care Nurses</li> </ul>	1 2	<p>Outcomes</p> <ol style="list-style-type: none"> <li>Consultation with stakeholders and dissemination of model of care for asthma</li> <li>Awareness raising</li> <li>Verification of pathways available and in use in hospitals and primary care</li> </ol>
Self-Management Support It is recommended that a self management support plan is provided to all patients diagnosed with asthma					
Best Practice Recommendation 7 HCP have a responsibility to ensure that everyone with asthma has personalised advice to enable them to optimise how they self-manage their condition. Specific skills training needed to be able to commit to the concept and practice of self-management e.g. communicating with HCPs, problem solving, goal setting, action planning etc.	<ul style="list-style-type: none"> <li>Referring people to CDSMP (Chronic Disease self management programmes) to help develop these skills.</li> <li>asthma information</li> <li>inhaler skills</li> <li>adherence</li> <li>written asthma action plan</li> <li>monitoring of symptoms and/or peak flow</li> <li>regular medication review</li> </ul>	<ul style="list-style-type: none"> <li>Increase awareness through dissemination of materials relating to SMS and promotion of the value of implementing the materials. Materials to be circulated electronically so no large scale printing or postage costs incurred.</li> <li>Self management interventions should be structured but personalised and they may need to be multi-component, with motivational goals and support to assist patients to positively adapt their health interventions.</li> </ul>	<ul style="list-style-type: none"> <li>Medical Doctors involved in the care of people with asthma</li> <li>Respiratory Nurses</li> <li>Respiratory Physiotherapists</li> <li>SMS Coordination</li> <li>ASI</li> </ul>	1 2	<p>Outcomes</p> <ol style="list-style-type: none"> <li>Consultation with stakeholders and dissemination of model of care for asthma</li> <li>Awareness raising</li> <li>Verification of pathways available and in use in hospitals and primary care</li> </ol>

---

## 13.0 Acknowledgements

In addition to the contribution of the current Working Group and the Clinical Advisory Group for the National Clinical Programme for Respiratory, support from the following individuals is gratefully appreciated:

- Dr Orlaith O'Reilly, National Clinical Advisor and Programme Group Lead for Chronic Disease. This Model of Care document was developed under the direction and guidance of Dr O'Reilly. Dr O'Reilly's commitment to the National Clinical Programme for Respiratory is deeply appreciated.
- Dr Maire O'Connor, Public Health Specialist, Department of Public Health, HSE.
- Dr Miriam Owens, Public Health Specialist, Department of Public Health, HSE.
- Dr Dermot Nolan, ICGP Rep and previous member of working group.
- Dr David Mullane, Consultant Paediatrician, Cork University Hospital.
- Patricia Davis, Nurse Planner (interim), National Clinical Programme for Respiratory and Respiratory Integrated Care Clinical Nurse Specialist previous working group member.
- Patricia McQuillan, Professional Development Co-ordinator for Practice Nurses, HSE previous working group member.
- Geraldine Nolan, Respiratory Physiologist, SVUH Dublin, previous working group member.
- Eimir Hurley, BSc (Pharm) MBIostat, HRB (SPHeRE) PhD Scholar in Population Health & Health Service Research, Centre for Health Policy and Management, Trinity College Dublin.
- Professor Martyn Partridge, Professor of Medicine and Patient Centred Care, Imperial College London.
- Damien Peelo and Bernie Murphy, Sarah O Connor (CEO) Asthma Support Ireland.
- Dr Nawar D Bakerly, Consultant Respiratory Physician, Clinical Lead for Integrated ASTHMA Services, Salford, and the University of Manchester, United Kingdom.
- June Roberts, Consultant Nurse and Assistant Director of Nursing, Salford Royal NHS Foundation Trust, Salford Royal Foundation Trust, NHS Northwest, United Kingdom .
- Dr Marcus Butler, Consultant Respiratory Physician, St Vincent's University Hospital, Dublin.
- GINA for permission and assistance with resources for the document.

## Membership of The Clinical Advisory Group 2021

- Professor Stephen Lane - Chair, Consultant Respiratory Physician, Tallaght Hospital
- Dr Desmond Murphy – National Clinical Programme Lead, Consultant Respiratory Physician, Cork University Hospital
- Dr Brian Canavan, - Consultant Respiratory Physician, St Luke's General Hospital, Kilkenny
- Dr John Connaughton - Consultant Respiratory Physician, Midland Regional Hospital
- Professor Liam Cormican - Consultant Respiratory Physician, Connolly Hospital Blanchardstown
- Dr David Curran - Consultant Respiratory Physician, Mercy University Hospital, Cork
- Dr Amani El Gammal, Consultant Respiratory Physician, Naas General Hospital
- Dr Katherine Finan - Consultant Respiratory Physician, Sligo Regional Hospital
- Dr Susan Foley - Consultant Respiratory Physician, Waterford Regional Hospital
- Professor James Hayes - Consultant Respiratory Physician, Cavan General Hospital
- Professor Vera Keatings - Consultant Respiratory Physician, Letterkenny University Hospital

- 
- Professor Eddie Moloney - Consultant Respiratory Physician, Tallaght Hospital
  - Dr Aidan O'Brien - Consultant Respiratory Physician, University Hospital Limerick
  - Dr Dermot O'Callaghan - Consultant Respiratory Physician, Mater Misericordiae University Hospital
  - Dr Rory O'Donnell - Consultant Respiratory Physician, St. James's Hospital
  - Dr Robert Rutherford - Consultant Respiratory Physician, University Hospital Galway
  - Dr Mark Sheehy, Consultant Respiratory Physician, Midland Regional Hospital Mullingar
  - Dr Basil Elnazir, Consultant Respiratory Physician, Tallaght University Hospital
  - Dr David Mullane, Consultant Paediatric Respiratory Physician, Cork University Hospital
  - Professor Anthony O Regan Consultant Respiratory Physician, Galway University Hospital
  - Dr Desmond Cox, Consultant Respiratory Physician, Our Lady's Children's Hospital Crumlin
  - Dr Dorothy O Connor, Consultant Respiratory Physician, Tallaght University Hospital
  - Dr Dorothy Ryan, Consultant Respiratory Physician, Beaumont hospital,
  - Dr Marcus Butler, Consultant Respiratory Physician,
  - Professor Richard Costello, Consultant Respiratory Physician, Beaumont
  - Professor Sean Gaine, Consultant Respiratory Physician, Mater
  - Professor Terry O Connor, Consultant Respiratory Physician, mercy hospital Cork
  - Professor Ross Morgan , Consultant Respiratory Physician, Beaumont
  - Dr Mike Harrison, Consultant Respiratory Physician, Galway University Hospital
  - Dr Marcus Kennedy, Consultant Respiratory Physician, Cork University Hospital
  - Dr Sarah O Beirne, Consultant Respiratory Physician, St Vincent's University Hospital
  - Professor Conor Burke Consultant Respiratory Physician, Blanchardstown
  - Dr Brian Kent, Consultant Respiratory Physician, St James hospital
  - Dr Matshediso Makoka, Consultant Respiratory Physician, Mayo University Hospital
  - Dr Stanley Miller Consultant Respiratory Physician Mater Misericordiae University Hospital, Dublin and Our Lady's Hospital, Navan

Final Approval Date:06/11/21

<b>Title of Guidance Development Group:</b>	NCP Respiratory
<b>Approved by:</b>	HSE Chief Clinical Officer (CCO Clinical Forum) Dr Siobhan Ni Bhriain, National Lead Integrated Care Dr Orlaith O Reilly, National Clinical Advisory Group Lead for the Prevention and Management of Chronic Disease Clinical Advisory Group NCP Respiratory
<b>Unique Identifier Number:</b>	<b>CDI023/2021</b>
<b>Version Number:</b>	Version 1
<b>Publication Date:</b>	12/01/22
<b>Date for Revision:</b>	12/01/24
<b>Electronic Location:</b>	<a href="https://www.hse.ie/eng/about/who/cspd/ncps/asthma/resources/">https://www.hse.ie/eng/about/who/cspd/ncps/asthma/resources/</a>

