THE CHILD HEALTH INTEGRATED LEARNING & DELIVERY SYSTEM (CHILDS)

THE **CHILDS** FRAMEWORK FOR BETTER HEALTH AND CARE

A CHILDREN AND YOUNG PEOPLE'S HEALTH PARTNERSHIP (CYPHP) INITIATIVE,

HOSTED BY EVELINA LONDON.

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EXECUTIVE SUMMARY

INTRODUCTION

The **CHILDS** Framework is a simple and effective approach to care that uses population health management tools and methods to deliver targeted early intervention and integrated biopsychosocial care to children with long-term conditions and everyday child health problems.

This document outlines the building blocks for delivering better care to children, including:

1) A Clinical Model
2) Population Health Management Tools and Methods
3) A strengthened health system

We understand that every area, place and neighbourhood will have its own ways of working and unique structure. We have therefore developed this manual, not as a set of prescribed rules, but as a set of guidelines and principles that can be adapted according to each individual local context.

We have outlined the lessons we have learned through our experience introducing this framework in two London boroughs - Southwark and Lambeth – as well as the significant impact that we have achieved for children and young people in Southeast London as a result of the **CHILDS** Framework.

In the appendices, we have developed practical guides to support commissioners, GPs, paediatricians and other interested health professionals and researchers to establish a similar framework in their local area, including what is required from an operational perspective.

We hope that you find this document useful. **For any further enquiries, please visit the CYPHP website at www.cyphp.org**

CHILDS IMPACT: PERFORMANCE

Children are kept out of hospital, managed locally by neighbourhood child health teams delivering early intervention, health promotion, and integrated care in primary care networks.

Children Triaged =
- 45% Advice and Guidance
- 31% Integrated Child Health Clinic
- 9% Integrated Long term condition service
- 13% Specialist referral

In an exemplar PCN our service provides care for:
- **48%** of children 0-5yrs
- **25%** 6-11 years and
- **25%** 12 – 16 years

Savings achieved when **30-40%** population coverage is achieved

100% Of patients are supported with health promotion, education, and self-management information

Equity Children with the greatest needs get early intervention and the care they need through a data-driven approach to proportionate universalism.

Improved urgent and emergency health service use for children with everyday paediatric conditions:
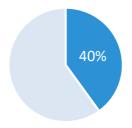- **13.8% reduction in ED contacts**
- **6.8% reduction in non-elective admissions**

Improved urgent and emergency health service use for children with long term conditions:
- **49% reduction in ED contacts**
- **45% reduction in non-elective admissions**

CHILDS IMPACT: PATIENT OUTCOMES

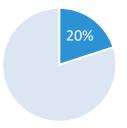## Serving children with challenging health and life conditions

40%

40% of children with asthma have **uncontrolled symptoms**

20%

20% of patients have moderate to severe **anxiety/depression**

20%

10-20% parents have **mental ill health/housing instability/food insecurity**

62% of our patients are among the **20%** most deprived groups nationally.

73% of our patients are from ethnic minority backgrounds

What do people say?

"Very personalised. I could ask lots of questions as there was enough allocated time, didn't feel rushed. Based in local community"

"Excellent communication with and advice from our link paediatrician. Reassurance for parents and clinicians"

60%

of children have *clinically measurable* health improvement. Severe asthma symptoms reduced from 52% to 28% of the cohort, and eczema from 76% to 22%.

And most children have significantly improved scores in the Children's Global Assessment Scale of psychological and social functioning, moving up 2-3 bands after our service.

OVERVIEW OF THE CHILDS FRAMEWORK

CHILDS is a framework of integrated clinical care supported by population health management to enable early intervention and care personalised to the needs of the child.
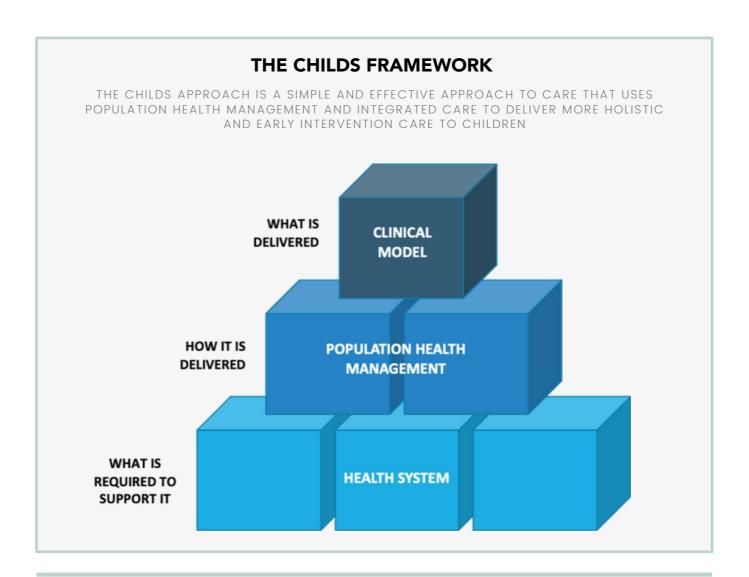
CHILDS provides the tools and methods to deliver proportionate universal care and reduce inequalities so that the children who are most in need of care, get the care they need.

CHILDS is a targeted and universal approach to care for children. It includes health promotion for all children, integrated care for children with general child health conditions, targeted risk management and proactive care for children with long-term conditions.

THE CLINICAL MODEL is **integrated care for physical and mental health** in the context of family, community, and social conditions.

CHILDS' POPULATION HEALTH MANAGEMENT tools and methods enable delivery of the clinical model to **achieve impact at individual and population levels.**

A STRENGTHENED HEALTH SYSTEM provides the foundation for the framework and enables **continuous learning** and **improved outcomes for children**.

THE CHILDS FRAMEWORK

THE CHILDS APPROACH IS A SIMPLE AND EFFECTIVE APPROACH TO CARE THAT USES POPULATION HEALTH MANAGEMENT AND INTEGRATED CARE TO DELIVER MORE HOLISTIC AND EARLY INTERVENTION CARE TO CHILDREN

WHAT IS DELIVERED — CLINICAL MODEL

HOW IT IS DELIVERED — POPULATION HEALTH MANAGEMENT

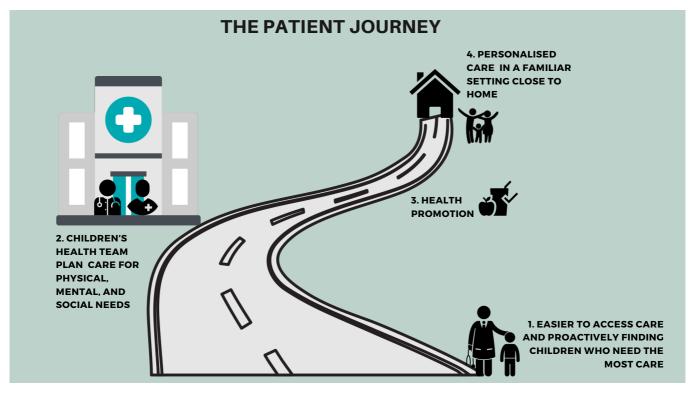WHAT IS REQUIRED TO SUPPORT IT — HEALTH SYSTEM

PATIENT'S JOURNEY OF CARE

The CHILDS framework seeks to deliver care to children and families that need it the most. Our aim is to reverse the "inverse care law" so that the children who most need care are prioritized. The CHILDS framework leverages data and advanced analytics to identify, and thereby enhance, access proportionate to need.

The CHILDS service teams then offer personalized care to children and families and also support them to move towards a more independent and informed self-managed approach to health. Families experience a higher sense of satisfaction in the service they have received and greater confidence in their ability to deal with their condition.

THE PATIENT JOURNEY

4. PERSONALISED CARE IN A FAMILIAR SETTING CLOSE TO HOME

3. HEALTH PROMOTION

2. CHILDREN'S HEALTH TEAM PLAN CARE FOR PHYSICAL, MENTAL, AND SOCIAL NEEDS

1. EASIER TO ACCESS CARE AND PROACTIVELY FINDING CHILDREN WHO NEED THE MOST CARE

1. ACCESS TO CARE: We invite children with long-term conditions in for early intervention and personalised care, using NHS data and advanced analytics to help identify children who may benefit. Children with any childhood condition or problems can of course also be referred via their GP or another health professional, and importantly parents can self-refer their children.

2. CARE PLANNING: We gain a deeper understanding of children's physical, mental, and social health needs so that we can tailor a personalised care package. Treatment is delivered by a multidisciplinary team, designed to meet the child and family's holistic needs.

3. HEALTH PROMOTION: Since prevention is better than cure, we include health promotion and supported self-management in each child's care. Families receive a health pack relevant to the specific condition of their child. This pack supports health and wellbeing, and signposts local resources.

4. PERSONALISED CARE: Ongoing personalised care is delivered in a familiar setting, such as GP centre, school, or youth centre. The CHILDS team continue to identify and respond to the needs of patients and populations.

BENEFITS OF THE CHILDS FRAMEWORK

THE APPROACH BRINGS A VARIETY OF BENEFITS

Building a more supportive, collaborative, and positive experience for all

PROACTIVE: we don't wait for children and their families to come to us – we go out to them

BETTER CONTROL: we empower families to take charge of their own care, and provide more responsive care so parents can self-refer to children's health team when they are worried

CARE CLOSE TO HOME: we bring together the right specialists for the child, based on their specific needs, providing care close to home

WHOLE CHILD APPROACH: we conduct a detailed assessment of each child's physical, mental, and social wellbeing needs

DATA AND RESEARCH-DRIVEN: we make care smarter through academic evaluation and continuous learning and improvement in real time

POPULATION HEALTH APPROACH: reduced health inequalities through using existing data to proactively identify children most in need and provide care early

PATIENTS

- Patients receive a higher standard of care;
- Care is provided closer to home;
- Patients see familiar people they can trust;
- Families are better able to manage their own conditions;
- More holistic and proactive care;
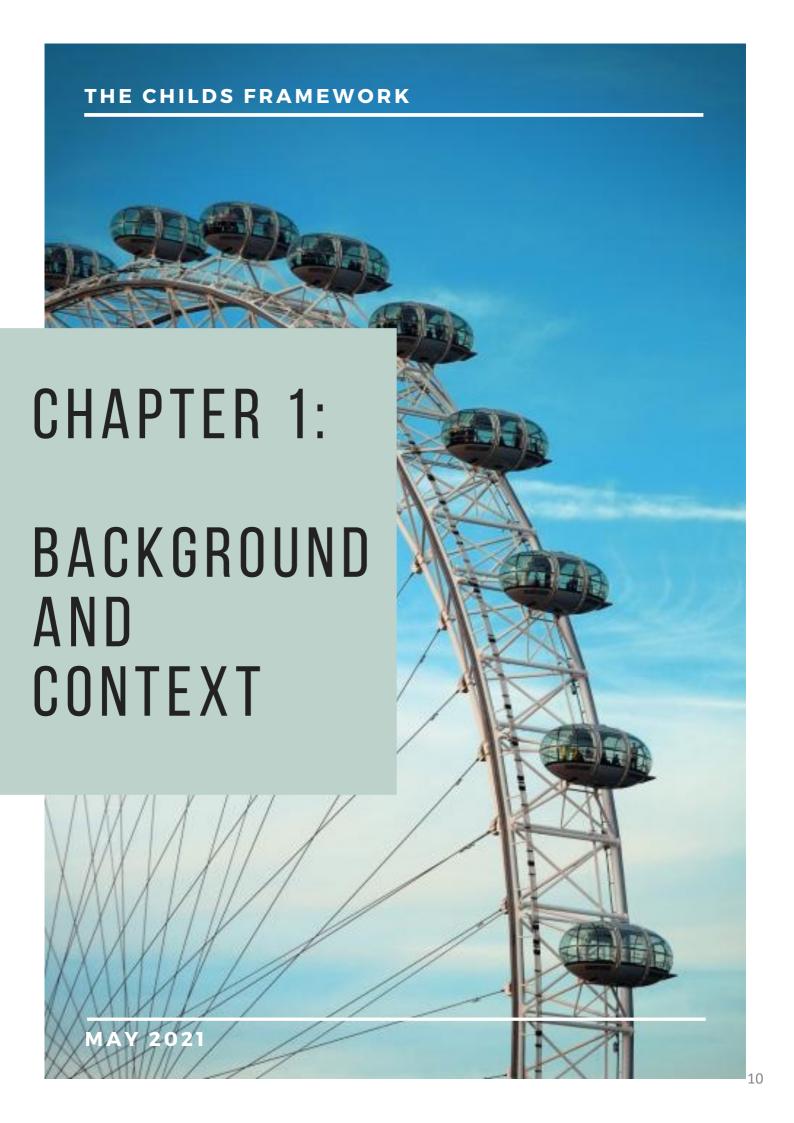- Children with long term conditions are better able to access support

CLINICIANS

- Clinicians deliver better care to patients;
- Every interaction counts;
- Fewer unnecessary patient consultations means more time for children who need care;
- Continuous learning and accreditation opportunities;
- More cohesive and multidisciplinary approach for all children;
- Closer working between primary care and hospitals;

THE SYSTEM

- Primary and secondary care teams work in partnership;
- Reduced demand on the system due to better targeted treatment;
- Continuous on-the-job and bespoke training for practitioners;
- A more local model of care;
- Multidisciplinary working;
- More collaborative and supportive working culture;
- Investment in proactive and preventive care.

CHAPTER 1:

BACKGROUND AND CONTEXT

THE CHILDS FRAMEWORK STORY

THIS FRAMEWORK WAS BORN OUT OF A COMMITMENT TO DELIVER BETTER, SMARTER CARE FOR CHILDREN AND THEIR FAMILIES.

OUR STORY

The **CHILDS** Framework was developed in 2013 by the Children and Young People's Health Partnership (CYPHP), a group of like-minded, experts committed to improving the health and wellbeing of children and young people. It was developed in collaboration with key stakeholders including children and young people, carers, front-line practitioners and health service commissioners.

Frustrated by the challenges confronting the UK health system for children, we wanted to develop a model of smarter care for children and their families that would help to overcome the systemic barriers. Our work is underpinned by a rights-based approach to child health, and a belief that children should receive holistic, preventative, and expert care that takes into consideration their environment, mental wellbeing, and physical condition.

Our model of care is different because it is data-led, which enables more personalised care, and uses science applied in everyday care for higher quality care and continuous learning. Children are seen by a dedicated team of multi-disciplinary child health specialists, with expertise in mental and physical health conditions.

This approach allows us to reduce health inequalities, because we use existing data to proactively target children for early intervention prevention and care. By improving health and healthcare at population level, we can ensure fair and equitable care for children with the highest needs, the ones who too often experience disproportionate disadvantage.

We've spent a decade developing and testing our CHILDS Framework approach. It is effective, delivers high quality care, reduces costs, and reduces inequalities. Our approach is underpinned by a clinical academic partnership, enabling continuous learning and improvement, helping to build the evidence base for child health.

THE CHALLENGES FOR CHILD HEALTH

If the UK were among the best in Europe, up to 5 children's lives could be saved each day.

Around one in three children is living in poverty, and this number is increasing.

Children with physical health conditions often have hidden emotional problems too, which can affect their school and home life.

The UK has among the highest child mortality rate in Western Europe.

Improving outcomes requires a combined approach including high quality care that responds to children's health needs, enabled through a strong health system, surrounded by a fairer, more equal society, and healthier environment for children.

Poverty causes ill health and prevents children from reaching their full potential in life.

Poverty means illness is more likely while care is often less likely.

Healthcare must incorporate a holistic approach to child health, understanding that poverty affects all aspects of a child's health and life chances.

One in eight children suffers from mental health conditions; around 25% if they have a co-existing physical health condition. Yet 75% of children with mental health problems are not being treated, and healthcare traditionally divides physical and mental health.

Healthcare must offer a biopsychosocial approach to care.

Sources: Marmot report 2020, Child Poverty Action Group, Taylor-Robinson 2019 BMJ , Wolfe 2013 Lancet,

THE STATE OF CHILD HEALTH

The UK has some of the most concerning child health outcomes among high income countries. Too many children suffer from poverty, emotional trauma, mental health problems, and avoidable physical ill health. There is an undeniable interdependence between these issues, which results in them reinforcing one another. It doesn't have to be this way.

There are some important barriers to children getting the care that they need, which are complex and inter-related. These challenges cannot be resolved quickly, but it is important to create new approaches and ways of working to address these challenges head-on and create longer-term resolution. This is what the CHILDS Framework is seeking to do.
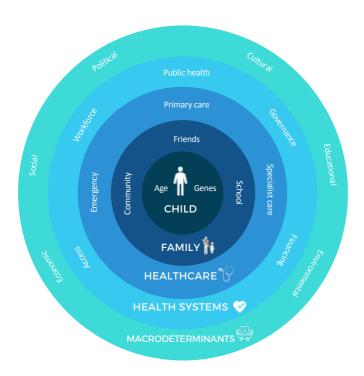
The key challenges include:

- Mental health, emotional trauma, poverty and other social issues are not adequately understood, prevented, or managed, in the health sector and beyond;

- Children's health problems are not prevented or caught early enough;

- There is a disconnect between primary and secondary care, physical and mental health and children's social care;

- Specialist care is usually offered far from home, in hospital;

- The health system is not structured to proactively identify and engage with patients to offer preventative care;

- Academic evaluation and data-driven continuous learning is not yet embedded into the system

THE CHILDS FRAMEWORK IS AN INNOVATIVE NEW WAY TO BUILD A BETTER HEALTH SYSTEM FOR CHILDREN, DELIVER BETTER CARE, AND IMPROVE OUTCOMES FOR THE LONG-TERM.

WORKING TOWARDS A COMMON AMBITION

ADDRESS THE DETERMINANTS OF CHILD HEALTH

Many different factors influence the health and wellbeing of an individual

OUR AMBITION

Our ambition is that children are kept healthy by addressing the whole ecosystem that affects health.

This means a comprehensive approach to securing and improving health. It means that families understand and are supported in proactively managing their own health, and a multi-disciplinary team of child health specialists to support them and provide care when needed.

This is achieved by a stronger health system and effective advocacy and connectivity to influence the macro-determinants that affect health and shape the health system.

THE CHILDS FRAMEWORK APPROACH

The CHILDS Framework approach works at all levels to achieve a better system that:
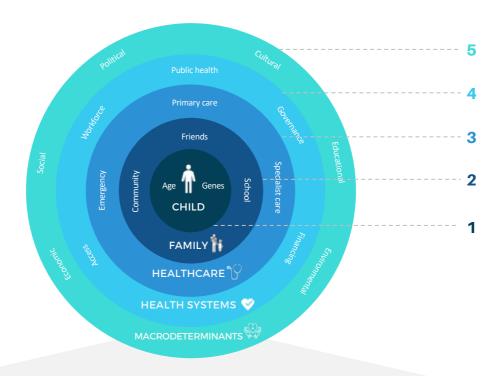
- **Reverses the 'inverse care law'** and gives proportionately greater access to health care for children that need it the most

- **Proactively seeks out children and their families** using a smart approach to data that already exists within the NHS information system;

- **Takes a holistic view** of the child, bringing together social, mental and physical conditions;

- **Strengthens the health system** that enables care delivery, including financing tools, technology, advanced analytics, workforce training, and shared governance mechanisms;

- Takes into account the wide range of **social, cultural and environmental factors** that influence a child's health and wellbeing, connecting and supporting across the system for a more holistic approach to health;

- **Raises the profile** of children, their health and wellbeing in the national consciousness and among policy-makers.

THE VISION FOR THIS FRAMEWORK

We want to create impact at every level
The Framework impacts the child and the entire eco-system

Political · Cultural · Public health · Primary care · Workforce · Governance · Friends · Educational · Social · Emergency · Community · Age · Genes · School · Specialist care · CHILD · Financing · Economic · Access · FAMILY · Environmental · HEALTHCARE · HEALTH SYSTEMS · MACRODETERMINANTS

5
4
3
2
1

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1 FOR CHILDREN AND YOUNG PEOPLE

Children and young people will have world-class integrated care for their everyday and common health needs delivered close to home. More children will benefit from early intervention, health promotion, and whole-child care for their physical and mental health, delivered in the context of family and community.

All children will benefit, but those who need the most support and care will benefit the most.

2 FAMILY AND COMMUNITY

The CHILDS Framework is comprehensive care for individual children and the population. It is proactive, preventive, and responsive to physical and mental health needs in the context of family and community. It fits within the existing system, drawing together the best parts and building a better more responsive service for families.

The Framework is designed to improve responsiveness for parents and carers and improve outcomes for all children.

3 HEALTHCARE

Child Health teams provide expert care for CYP in the community, as part of existing and evolving Primary Care Networks, Integrated Care Systems, and specialist networks. The Child Health Team is clinical, multi-disciplinary, and includes population health expertise and advanced analytics to design care that anticipates and responds to needs and continuously improves.
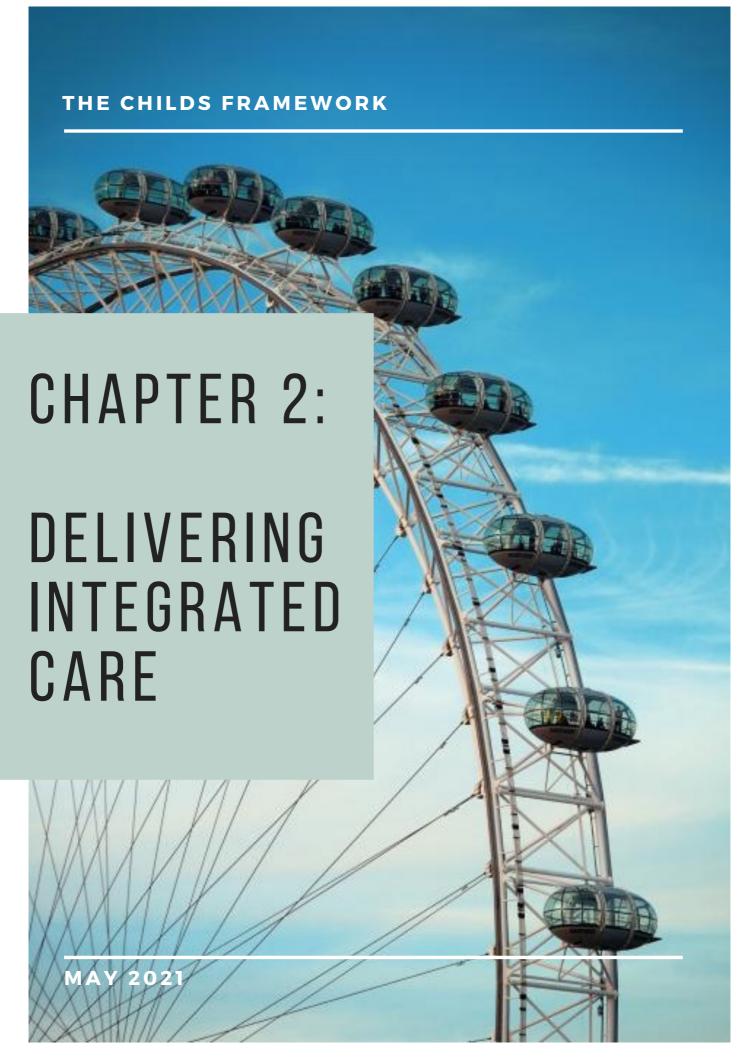
4 HEALTH SYSTEM

The CHILDS Framework tools, methods, and approach is designed to be applicable to a wide range of long-term conditions and risk factors, and to all everyday and common child health problems. Health outcomes and healthcare quality will improve, and the system will be more responsive to needs.

Other places and regions will be able to implement our Framework and model of care, using our "How to" guides.

5 WIDER SOCIETY

The CHILDS way of working promotes better connectivity across the sectors that determine and influence health.

Our practitioners and researchers are also effective advocates for better child health, using evidence to raise the profile of children's health.

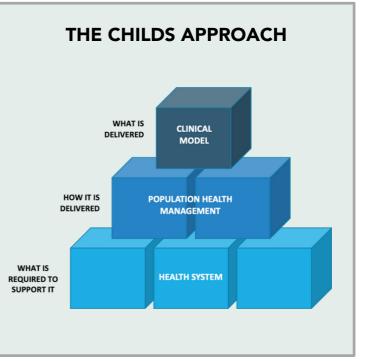# CHAPTER 2:

DELIVERING INTEGRATED CARE

CHILDREN'S INTEGRATED CARE

The CHILDS framework offers personalised, integrated care pathways for children with general child health conditions and targeted early intervention care for children with long-term conditions.

Our unique integrated care pathways are supported through population health management tools and methods, and a strengthened health system.

The results are that care can be tailored and targeted for children with the greatest needs, outcomes and care quality continuously improve, and children are healthier.

THE CHILDS APPROACH

WHAT IS DELIVERED — **CLINICAL MODEL**

HOW IT IS DELIVERED — **POPULATION HEALTH MANAGEMENT**

WHAT IS REQUIRED TO SUPPORT IT — **HEALTH SYSTEM**

OUR UNIQUE INTEGRATED CARE PATHWAYS ARE SUPPORTED THROUGH POPULATION HEALTH MANAGEMENT TOOLS AND METHODS, AND A STRENGTHENED HEALTH SYSTEM.

The CHILDS Framework for Better Health and Care enables expert integrated child health teams to offer world class care for children as close to home as possible and in familiar settings for families.

The Framework changes ways of working between hospitals, primary care, and child health specialists. Using data, advanced analytics, and technology our child health professionals can form a team around the child that responds to their needs. As a result, children are able to receive personalized expert care.

Child Health Clinics are held in primary and community settings close to home. Paediatricians and GPs work together to look after a child's health and wellbeing, and children's specialist nurses provide targeted early intervention and holistic care for children with long term conditions. The integrated child health team sits within a wider network of child health professionals.

The clinical model is enabled and supported within the CHILDS framework which includes population health management tools and methods, and a strengthened health system fit for purpose for children's needs.

The care model can be adapted according to the context and needs of the local population and health system. For example, it is equally appropriate for adolescents and young people and can be adapted for a variety of needs and requirements including learning difficulties and complex needs.

The ability for parents of children with long-term conditions to self-refer their child into the Child Health Team is also a highly valued by families.

Evaluation of impact has found that the responsiveness of this service leads to higher satisfaction among patients and families, improved health, healthcare quality, reduced acute service demand, and reduced inequalities in care.

CHILDREN'S INTEGRATED CARE PATHWAY

1 ACCESS	**2** PLAN	**3** PREVENT	**4** CARE
ENHANCED ACCESS TO CARE	**DATA FOR CARE PLANNING**	**HEALTH PROMOTION**	**PERSONALISED CARE**
• Understand population health needs, service use patterns, quality of care • Segmented healthcare offer, proportionate to need • Proactively identify children in need or at risk • Invite in for early intervention or self-refer	• Portal or for pre-assessing child's biopsychosocial health needs • MDT care planning • MDT learning about child health conditions and population health • Data for mapping population health need	• All families receive a health pack with education, self-management support, and signposting local resources. • Address social determinants of health by working with public health and local government	• Support and care delivered close to home • Personalised care tailored to the needs of individual children and families • System adjusted to meet needs at population level

1. ACCESS TO CARE
Children access care through one of the following routes:

a) General Integrated Care
Child with any general health concern or condition is referred into triage and multidisciplinary care planning meeting. For example, via one of three routes:

- A member of the primary care team wants advice or support with management of a patient;
- The integrated care specialist nurses refer a child for advice or care from the medical team;
- Referral from a Secondary Care Clinician for integrated care

b) Targeted Integrated Care
Children are proactively identified through an innovative population health approach using NHS data to identify anyone who may benefit from early intervention and targeted integrated care.

Pre-assessment for biopsychosocial needs is conducted via an invitation text message and/or letter, asking parents to visit the online portal or App.

c) Self-referral
Parents may also self-refer.

2. CARE PLANNING
Each child is discussed at weekly triage and multidisciplinary care planning meetings. Complex cases can be discussed with wider child health team members, and there is opportunity for bringing live clinical cases for discussion and general education around topics chosen by the group.

Care planning outcomes include:
- Advice to referring clinician
- Appointment with specialist nurses
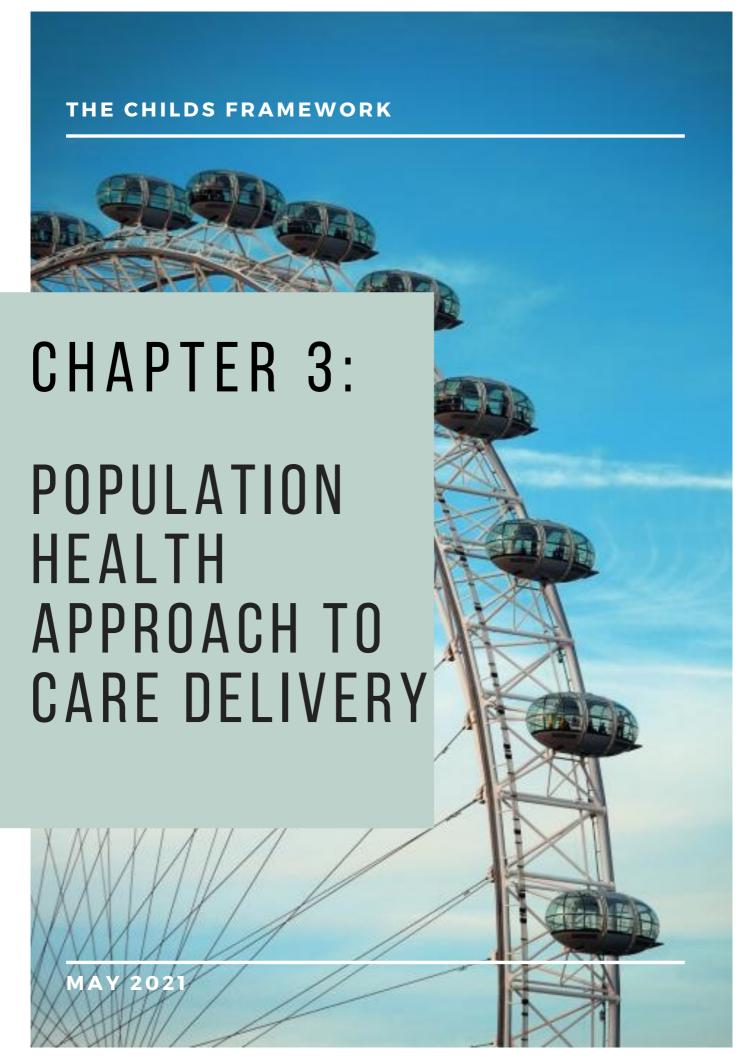- Appointment at a Child Health Clinic
- Referral to specialist team

3. PREVENTION AND HEALTH PROMOTION
Families receive a health pack for information and self-management support for health and wellbeing, and signposting local resources;

4. PERSONALISED CARE
Support and care delivered close to home, personalized to the needs of individual children and families,

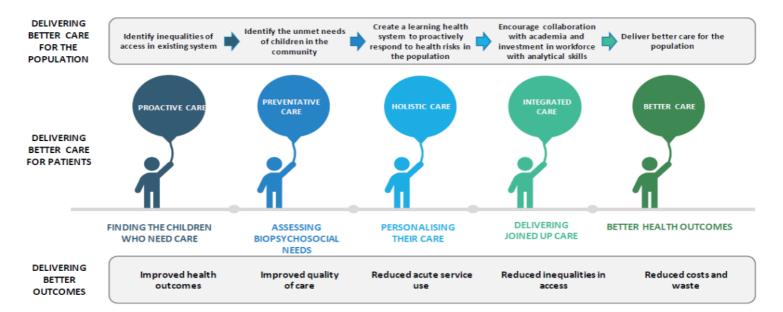# CHAPTER 3:

POPULATION HEALTH APPROACH TO CARE DELIVERY

POPULATION HEALTH MANAGEMENT

A FRAMEWORK FOR POPULATION HEALTH

Re-balancing care to provide a health service as well as a sickness service

DELIVERING BETTER CARE FOR THE POPULATION

Identify inequalities of access in existing system → Identify the unmet needs of children in the community → Create a learning health system to proactively respond to health risks in the population → Encourage collaboration with academia and investment in workforce with analytical skills → Deliver better care for the population

DELIVERING BETTER CARE FOR PATIENTS

PROACTIVE CARE	PREVENTATIVE CARE	HOLISTIC CARE	INTEGRATED CARE	BETTER CARE
FINDING THE CHILDREN WHO NEED CARE	ASSESSING BIOPSYCHOSOCIAL NEEDS	PERSONALISING THEIR CARE	DELIVERING JOINED UP CARE	BETTER HEALTH OUTCOMES

DELIVERING BETTER OUTCOMES

Improved health outcomes	Improved quality of care	Reduced acute service use	Reduced inequalities in access	Reduced costs and waste

WHAT IS POPULATION HEALTH MANAGEMENT (PHM)?

Population health management is about re-balancing care to provide both a 'health service' and a 'sickness service', using data to deliver early intervention and care to children who need it most.

PHM is the process of improving clinical and health outcomes using data to enhance care for patients and populations. It recognises that clinicians have a responsibility to their patients and to the community.

In order to be effective, the system must reach those who would benefit from care – not just those who are already in touch with the system, in order to anticipate and meet needs. PHM leverages existing data to understand the local population and their needs, and then to proactively reach out and engage with them.

PHM as part of a clinical team and active learning partnership enables all parts of the system to work together– to co-produce and deliver solutions, and to continuously improve outcomes.

UNDERSTANDING POPULATIONS

A core feature of PHM is the use of data and advanced analytics to understand and manage specific conditions and risks within a population. Data can be collected from electronic health records, pre-assessment health checks, disease registries and public health datasets.

The ability to identify at-risk individuals helps to reduce health inequalities by increasing access to care for those most in need of support.

ENGAGING IN NEW PARTNERSHIPS

Engaging with a strong and diverse group of partners is crucial to the success of any population health initiative.

A strong child health team of clinicians and population health professionals is needed to better coordinate and target services to meet needs. Close working with local authority public health and other community-based professionals and organisations helps to address social determinants of health, coordinate complementary services, and smooth transitions of care.

PHM helps prevent people from becoming patients.

POPULATION HEALTH MANAGEMENT

PHM is the platform for enabling integrated care. It is a data-driven approach that guides the planning, resource allocation and delivery of care to optimise care outcomes for each patient and to improve health for the population.

PHM enables proactive identification of need so that early intervention can be delivered, preventing illness and reducing acute healthcare needs. It means that care can be delivered fairly, so that patients who need the most care are the first to receive what they need.

PHM brings together big data and health care delivery. It requires advanced analytics, and technology, specialist clinical-population health knowledge, and a strengthened health system.

PHM means the system can be adjusted to meet health needs and system pressures. Clinical services can be dialed up when needs are high, and down when system capacity is low, Care can be directed more intensely to children who have higher needs, helping to reduce inequalities.

DELIVERING CLINICAL CARE USING POPULATION HEALTH MANAGEMENT

CLINICAL PATHWAY

1 ACCESS → **2 PLAN** → **3 PREVENT** → **4 CARE**

ENHANCED ACCESS TO CARE	DATA FOR CARE PLANNING	HEALTH PROMOTION	PERSONALISED CARE
• Understand population health needs, service use patterns, quality of care	• Portal or app for pre-assessing child's biopsychosocial health needs	• All families receive a health pack with education, self-management support, and signposting local resources.	• Support and care delivered close to home
• Segmented healthcare offer, proportionate to need	• MDT care planning	• Address social determinants of health by working with public health and local government	• Personalised care tailored to the needs of individual children and families
• Proactively identify children in need or at risk	• MDT learning about child health conditions and population health		• System adjusted to meet needs at population level
• Invite in for early intervention or self-refer	• Data for mapping population health need		

POPULATION HEALTH MANAGEMENT

Agree population coverage to reflect system capacity and health need	Adjust system to improve access for children with the most needs	What's going on with the non-responders? How often should we repeat the cycle?	Adjust triage threshold according to biopsychosocial needs and system pressures	Adjust system to reduce population inequalities	Each cycle adds to population knowledge and continuous improvement in quality of care

HEALTH SYSTEM

DATA & ANALYTICS	TECHNOLOGY	WORKFORCE	GOVERNANCE	FINANCE

POPULATION HEALTH MANAGEMENT

THE PHM APPROACH
Core Characteristics and Capabilities

DEFINE AND SEGMENT
Management of clinical interventions are based on a defined lists of people/ service users with specific needs or risks

COORDINATED
Staff from different organisations act as one team with a shared responsibility (and shared resources) to deliver an improvement goal for that population

PROACTIVE
The team systematically identify people with modifiable risk who need extra support and promote opportunistic health promotion

EVIDENCE-BASED
The team focuses on delivering what they know works, by targeting diagnostic gaps, care gaps, and supporting patient activation using evidence

EQUITABLE
A proportionate universal approach is taken to address the 'inverse care law' so that additional effort is directed to those with the biggest care gap

CO-PRODUCED
New ways of working emerge as the joint output of professionals collaborating; and by involving patients and families as part of the care team

ACHIEVING SYSTEM-LEVEL IMPACT
Population health strategies incorporate evidence-based practices and use science to achieve better quality for all and greater access to care especially for those who need it the most. By looking more broadly at social determinants that impede health and asking what can and should be done differently, health professionals are better able to identify the underlying causes of health problems and redesign care processes to support prevention and better care. Such an approach requires an outward-facing perspective that takes into account the impact of external factors such as poverty, housing, culture and ethnicity, and the environment.

MEASURING AND SUSTAINING IMPACT
Population health strategies need to be data-driven and tied to key performance indicators (KPIs) in order to judge their success in achieving health outcomes and containing or reducing costs. Measurement of performance indicators allows health systems to identify areas where partnerships need to be strengthened or redefined, clinical outcomes need to be improved and gaps in services still exist. KPIs should cover not only clinical outcomes, but also patient experience and financial outcomes. They should be clearly defined and tied to population health strategies, with the goal of helping the health system to shift from a purely reactive approach to a more balanced and proactive approach.

THE KEY MILESTONES IN INTRODUCING A PHM APPROACH

1 Identify the unmet needs of children in the community

2 Identify inequalities of access in existing system

3 Enable systems to collect and analyse data for early intervention and anticipatory care

4 Develop closer relationships between NHS, local authorities, community, and researchers for more holistic care

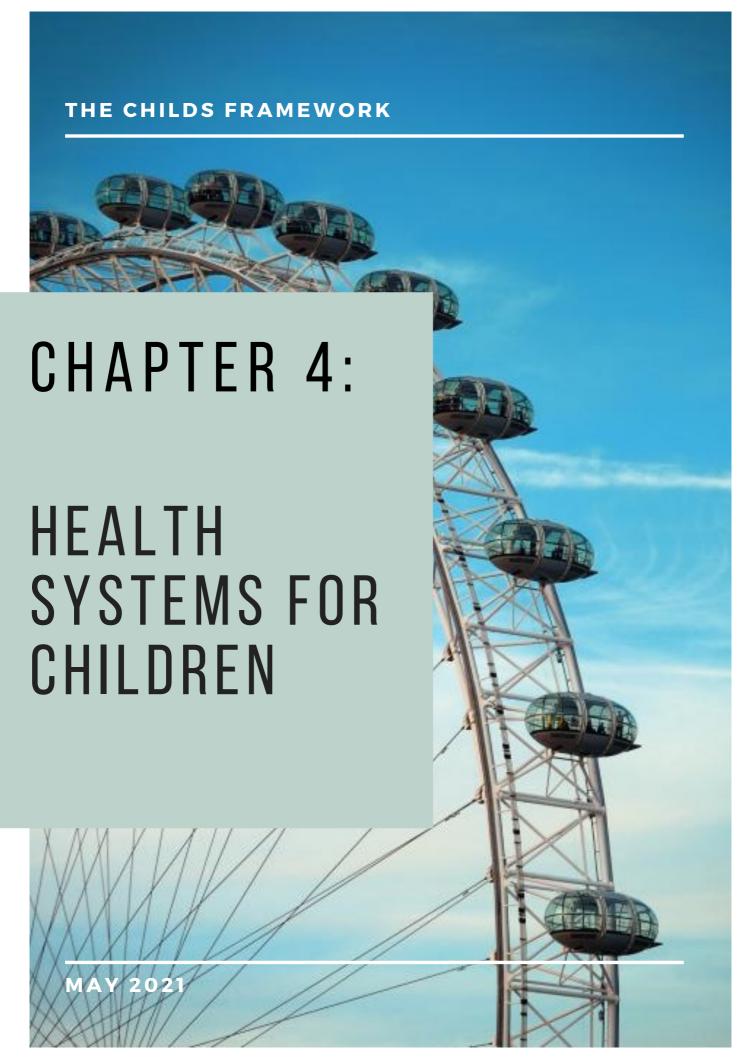**5** Develop pre-referral guidelines and decision support tools

6 Create a learning health system with health record systems making smarter use of routinely collected data

7 Forge collaboration with academia and encourage investment in analytical skills

CHAPTER 4:

HEALTH SYSTEMS FOR CHILDREN
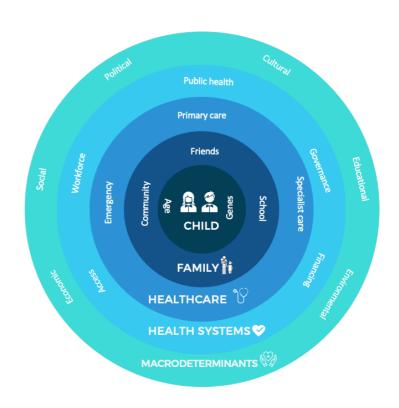
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DEFINING A 'HEALTH SYSTEM'

WHAT IS A HEALTH SYSTEM?

A health system is all the things that directly affect health, whose primary purpose is about health, and that are necessary for healthcare to be effective.

A health system includes data and analytics, technology, workforce, governance and leadership, and financing mechanisms; all the elements required for effective delivery of high quality healthcare.

A strong health system should meet the needs of patients and populations and deliver improved health.

Healthcare must be designed and delivered around the needs of children, irrespective of organizational boundaries, and delivered safely and conveniently for families.

BUILDING BLOCKS OF A HEALTH SYSTEM

ENABLING THE DELIVERY OF HIGH-QUALITY CARE

DATA & ANALYTICS	**Data and analytics** includes individual patient level data, healthcare administrative data, public health data, and research data. All these data sources are important for understanding health needs and delivering care that meets needs.
TECHNOLOGY	**Technology** includes inter-operable patient records, portals and apps that support meaningful and responsive communication between patients, families, and health professionals. It includes templates for routinely collecting data that supports continuous quality improvement.
WORKFORCE	**Workforce** means all the health team working together to meet the needs of the child, with the skills, knowledge, and attitudes needed for delivering top quality care for body and mind in the context of family and community.
GOVERNANCE	**Governance and leadership** is about working as a partnership to ensure that children's needs are paramount, and that their voices are heard and meaningfully shape the care they receive.
FINANCING	**Financing mechanisms** and commissioning processes are important to support and enable flexible models of care that meet needs of patients and populations.

BUILDING A HEALTH SYSTEM FOR CHILDREN

A CHILDS HEALTH SYSTEM

TEMPLATES, TOOLS, TEAMS, AND SYSTEMS

	KNOW THE POPULATION	KNOW THE PATIENTS	KNOW THE SYSTEM	DESIGN & DELIVER PERSONALIZED CARE	CONTINUOUS IMPROVEMENT
DATA & ANALYTICS	Linked data sets GP, hospital, public health, research	Individual level data on biopsychosocial needs	Data and insights for operational management and population health management	Data and insights presented in meaningful ways for clinical teams	Shared data for reporting, and continuous improvement
TECHNOLOGY	Advanced analytics and computing capability	Call recall system linked to online portal or app	Learning Health System to connect data and decision makers	Portal or App to send out health pack, and enable contact between families and team	Templates in clinical notes for routine quality measurement
WORKFORCE	Clinical, PHM, and research team analyse population health needs	Clinical team designs care package to meet child's holistic needs	Full child health team can adjust the system to meet needs and match system capacity	Health pack content and training for biopsychosocial care	Child health team with academic links and support
GOVERNANCE	Partnership for agreeing priorities and population coverage	Child health team linked to academic child health	Partnership that shares responsibility for patients & population	CYP multi-disciplinary team seamlessly working around the child	CYP clinical team delivers personalised care close to home
FINANCING	Financing tools for population health	Financing tools for promoting health	Flexible commissioning that adjusts to population coverage	Financing tools for multidisciplinary integrated care	Financing tools that can adjust to meet health needs

A WELL FUNCTIONING HEALTH SYSTEM RESPONDS IN A BALANCED WAY TO A POPULATION'S NEEDS AND EXPECTATIONS

RESPONDING TO POPULATION NEEDS AND EXPECTATIONS

A well functioning health system responds in a balanced way to a population's needs and expectations by:

- improving the health status of people and populations;
- identifying and proactively defending the population against the greatest health risks;
- protecting people against the financial consequences of ill-health; and,
- providing equitable access to people-centred care;
- making it possible for people to participate in decisions affecting their health and health system.

These outcomes can be achieved through consistent and sustainable support for the core building blocks that make up a health system: data & analytics, tools, technology, workforce and governance.

A LEARNING HEALTH SYSTEM

The concept of a "Learning Health System" is one where data is routinely collected in clinical practice, analysed and used to improve services in a continuous manner. This requires health record systems to be designed with the collection and sharing of data in mind, and investment in workforce with the appropriate skills to analyse the data and present data, insights, and evidence to decision-makers.

An advanced Learning Health System builds on these assets to include data from beyond the health system, connecting to a research component for continuous learning and building the evidence base.

New ways of working that connect data with decision-makers in a continuous virtuous circle of learning and improvement directed towards securing and enhancing health.

THE BENEFITS OF THIS APPROACH

A clinical-academic partnership plays a critical role in ensuring that research is translated into clinical practice and policy.

RELEVANCE — The research is directly relevant to health needs of patients and populations and system pressure.

PARTNERSHIP — A partnership structure allows solutions to be co-created by a team who are best-placed to provide a holistic approach.

PRACTICE AND POLICY — The research is immediately applicable to both clinical practice and policy.

REDUCES WASTE — Because the research is highly relevant and immediately applied, it reduces unnecessary waste of research investment.

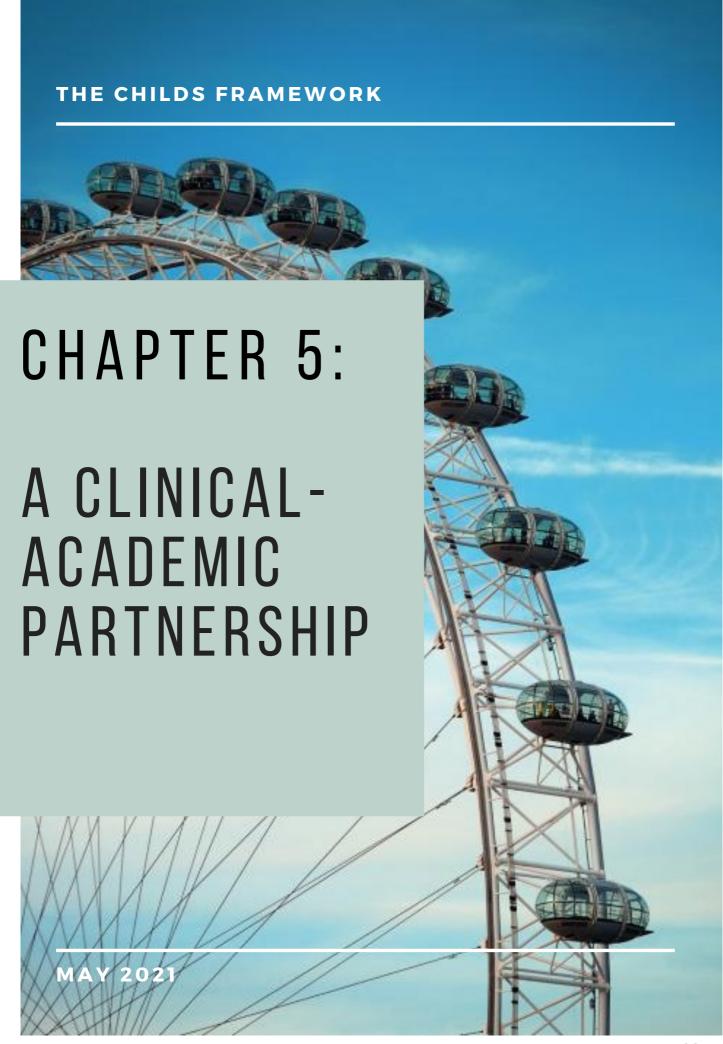## THE BENEFITS OF A LEARNING HEALTH SYSTEM

A LHS is to improve outcomes for a variety of clinical conditions and problems. It can operate at any scale – team, organization, and system. It's about creating and transferring knowledge to change behaviours and systems in order to improve outcomes.

A LEARNING HEALTH SYSTEM

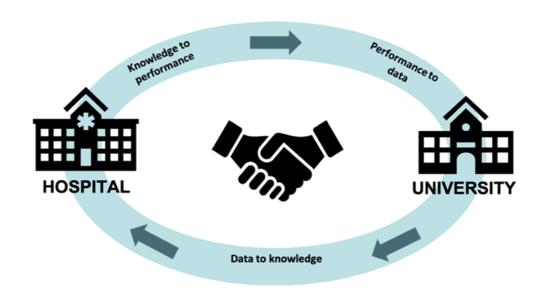Connecting data and knowledge to practice, for continuous learning and research

CHAPTER 5:

A CLINICAL-ACADEMIC PARTNERSHIP

A CLINICAL-ACADEMIC PARTNERSHIP

WORKING TOGETHER TO CLOSE THE RESEARCH GAP

Translating clinical data into knowledge and know-how

The **CHILDS** Framework was developed through a clinical-academic partnership that brought together clinicians, local authority and public health professionals, healthcare managers and commissioners, and academics – all working together focused on improving outcomes for children.

We agreed a way of working that brought the best of each group's strengths together. Our programme and ways of working encompassed a cycle of learning beginning from understanding the population, producing a comprehensive health needs assessment in the first phase of the programme, through co-design of evidence-based interventions, implementation of change, and evaluation.

The clinical academic partnership includes clinicians, managers, clinical analysts, clinical academics and researchers: qualitative, quantitative, health economists, and public health and health systems researchers transforming how we deliver child health services and build the evidence base for improving care.

Our work is evaluated through an innovative simultaneous dual service evaluation and cluster randomized control trial. This means we derive practical prompt data for NHS commissioners and providers to support decision-making, while at the same time building the evidence-base for children's healthcare.

As a result, the CHILDS Integrated Care Framework is commissioned locally and is spreading and scaling across Southeast London and positioned to become the leading evidence-based integrated care and population health model nationally. And through the research part of our partnership, we are contributing new knowledge to about children's healthcare.

Early service evaluation results suggest that our approach to data-driven integrated care and population child health improves the quality of care delivered to CYP and improves their physical and mental health and wellbeing. These results have been presented nationally and internationally.

The cluster randomised controlled trial is due to report in 2022.

CLINICAL-ACADEMIC PARTNERSHIP: EXAMPLES

EXAMPLE 1: CHILDS HEALTH CHECK
Proactive case finding approach through biopsychosocial assessment for tailoring care

	CLINICAL	ACADEMIC
UNDERSTAND	• Explain which indicators make sense clinically and why they are useful for assessment	• Interview families & review literature to understand the most important and valid indicators
CO-DESIGN	• Express the practical realities of assessment measures • Input into creating new measures	• Review evidence from reliable existing measures • Construct new measures that can reliably discriminate between healthy and unhealthy
IMPLEMENT	• Distribute Health Checks and use Health Checks to triage patients for care	• Link Health Check online portal to research databases (with consent) to build the evidence base
EVALUATE	• Develop templates for recording and understanding Health Check data, and measure service performance	• Analyse profile of patients coming through service to determine reach of service, equity of distribution, and assess trends and patterns of population health need

EXAMPLE 2: HEALTH PACKS
Booklets providing self-management and health promotion

	CLINICAL	ACADEMIC
UNDERSTAND	• Describe health promotion needs that would be amenable to incorporating in a clinical consultation	• Developing health promotion materials to respond to patients' needs and clinicians' insights with evidence of effectiveness
CO-DESIGN	• Provide with children and families, user-friendly and age-appropriate insights	• Provide novel evidence-based features using health psychology (e.g., symptom trackers, action planners)
IMPLEMENT	• Use Health Packs as part of clinical assessments/ care provided	• Evaluate families' understanding of Health Pack content and how it works in the real world
EVALUATE	• Provide feedback on how the packs have been used and received	• Analyse data to demonstrate the effectiveness of Health Packs in improving health

EXAMPLE 3: SYSTEMS RESPONDING TO NEED
Tools and methods for ensuring the health system matches and meets needs

	CLINICAL	ACADEMIC
UNDERSTAND	• Specify patient groups most likely to require clinical intervention	• Estimate number of patients in the population with condition or risk, and proportion likely to enter service
CO-DESIGN	• Develop system for determining patient eligibility and system priorities	• Develop systems to monitor the extent services are reaching patients most in need
IMPLEMENT	• Tailor triage process to be more responsive to vulnerable groups who may experience barriers in access to care	• Develop straetegies to focus engagement and to enhance reach proportionate to need
EVALUATE	• Record triage, assessment, and clinical management decisions in standardised formats to assess qualty of care	• Analyse clinical data on quality of care, to understand what informs better quality ofcare

THE BENEFITS OF A PARTNERSHIP

*When the interview findings are shared in our meetings, then we start thinking, okay, what do we do about it? And that's the partnership, because **you're getting a continuous flow of information between the two teams***

*Things come up, **they get funded for two years then they go away**, the whole point of our evaluation is to see whether it works in a robust fashion so that **hopefully if it does work it won't go away after two years***

OUR CLINICAL ACADEMIC TEAM ARE HIGHLY COMMITTED TO IMPROVING OUTCOMES THROUGH A SHARED APPROACH TO MORE EFFECTIVE APPLICATION OF EVIDENCE TO PRACTICE.

There are many benefits to taking a clinical-academic approach. Among the most important is that learning is embedded in practice and policy as a usual way of working. Unlike traditional research, which often sits in isolation until complete, testing in a clinical-academic research setting is achieved at scale with immediate relevance to clinicians and decision-makers.
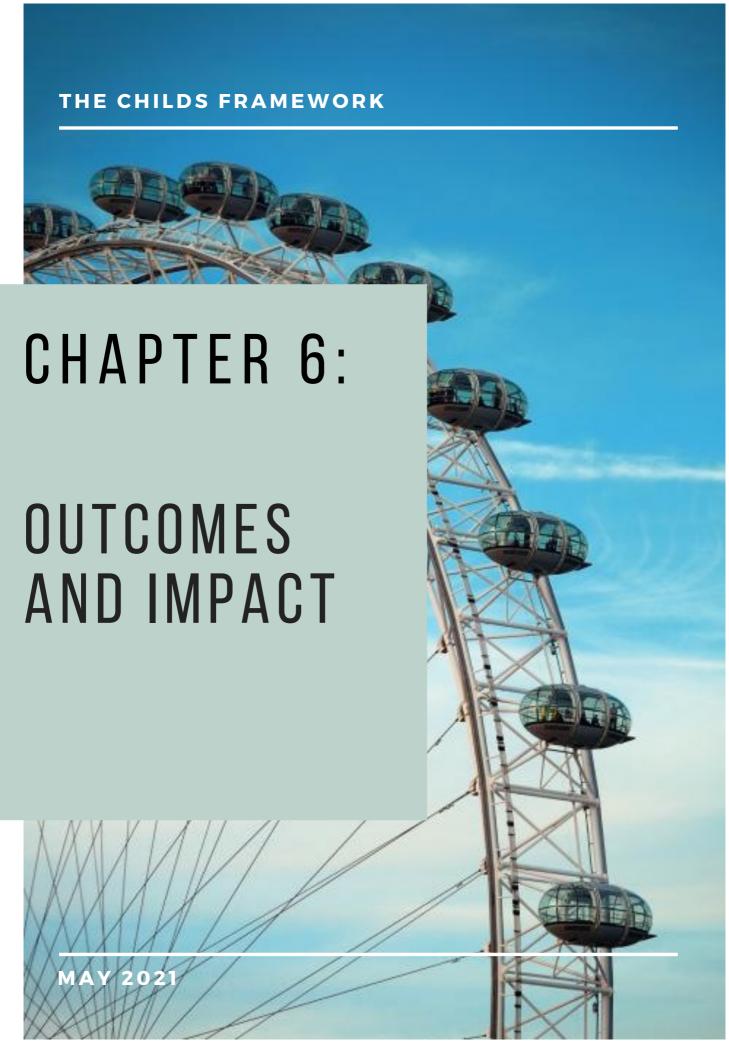
The continuous flow of information between clinicians and academics plays a critical role in improving quality of care and health outcomes. As a result, research is: (1) relevant to clinical practice, (2) focused on solving problems that matter to the patients and population, and (3) translated to improved care and better health.

The legacy effect of building a Clinical Academic Partnership mean that it is possible to continue to measure the impact of any new service or change, at scale.

This is because the team, technology, and methods are already in place to trial new approaches to healthcare delivery. The lessons learned can also be used to support the implementation of new services and interventions by understanding how they may experience similar barriers as previous programmes.

Finally, the use of population health tools and techniques means that it is possible to know how to reach relevant populations and adapt service implementation and delivery according to local context. The multidisciplinary and integrated approach to service design helps to tackle long-standing issues of health inequality and deprivation in a way that strengthens the entire health system and leads to better health outcomes for both patients and population.

CHAPTER 6:

OUTCOMES AND IMPACT

MAY 2021

THE CHILDS FRAMEWORK IMPACT

SUMMARY OF IMPACT

We have demonstrated important improvements in outcomes and quality of care

Health improvement

60% of children who have used our model have a *clinically measurable* health improvement

Reduction of health inequalities

Our population health management system delivers early intervention targeted to the children with the highest needs

Cost-effectiveness

Our model has proven to be cost-effective, with asthma care becoming cost neutral at <500 patients

At just 30% population coverage, our targeted approach prevents 40 non-elective admissions and 49 emergency department visits per year

20-25% of patients with a physical condition also have high to very high mental health needs, and many families have significant social stressors

Reduced service use

Personalised care

HEALTH IMPROVEMENT

Across conditions we have demonstrated significant improvement in clinical symptoms: for asthma, severe symptoms reduced from 52% to 28% of the population. At entry to the service, 76% of children with eczema have moderate or severe symptoms, reducing to only 22% with moderate symptoms at the time of discharge. Similarly, 66% of children with constipation had severe symptoms when they enter the service, but only 10% of children have any clinical need remaining at discharge. Using the Children Global Assessment (C-GAS) scale for psychological and social functioning, we know that most children have significantly improved C-GAS scores, moving up 2-3 bands in the score.

REDUCTION OF HEALTH INEQUALITIES

We deliver care proportionate to need, thereby reducing inequalities in access to care.

Our PHM tools allow us to scale up/down population coverage, delivering impact for children who need it most. The **CHILDS** Framework adopts the Marmot approach to proportionate universalism. Everyone's health improves, but the children who need most support get the most care.

We achieve population coverage by using data to identify and contact children with specific conditions or risk factors, providing health promotion to all, and care when needed.

For example, we achieve 30% population coverage with two sweeps of call-recall invitations, c50% of children have unmet needs and require clinical intervention.

IMPACT ON SERVICE USE AND COSTS
CHILDS Framework **targeted integrated care for children with long-term conditions**:
- Is cost effective at c500 patients per year
- At 30% population coverage for asthma results in 45 non-elective admissions avoided per 100 patients, and 49 ED attendances avoided per 100 patients.
- We can set the population coverage according to the level of need, and workforce capacity, and model impact at any level of population coverage.

CHILDS Framework **general integrated care for children with everyday paediatric conditions achieves:**
- 13% reduction in Emergency Department contacts
- 7% reduction in non-elective admissions

IMPACT ON HEALTHCARE QUALITY
Personalised care for physical health, mental health, and social needs improves quality of outcomes. Care quality is improved through training, education, and new ways of working. We know, for example, that the **CHILDS** approach meets a higher proportion of national standards than is the national average, for example with asthma care plans.

We also know through our detailed qualitative research that holistic care that addresses family needs is considered essential for positive family experiences of care, and for family-perceived improvements in health outcomes and service use.

ENHANCED KNOWLEDGE ABOUT HEALTH

We have the tools now to map need in the community before children come to hospital. We've learned that in the population, at entry to the **CHILDS** service, over half of children (52%) with asthma have uncontrolled symptoms; 65% of children with eczema had moderate or severe symptoms and 66% of children had severe symptoms of constipation measured using standardised tests. By measuring population need and system performance we can shape services to be more responsive. By understanding the level of unmet needs and co-producing solutions to problems, we can deliver personalized care, and continuously improve quality.

We know that approximately 40% of children in the community with asthma have uncontrolled symptoms, 20-25%% have high to very high mental health needs, 45% of children who have a physical health condition are in contact with social care. Over a third of their parents have physical and/or mental health conditions of their own.

Over a third of families report insecure housing, more than 10% have financial difficulties that affect family life, and over 5% of parents or carers report concerns about being able to provide sufficient food for their children.

We can use that data to deliver early intervention and ensure that we direct the system to meet needs proportionately.

Source: Satherley et al BMC Health Services Research, 2021

CHILDS IMPACT: PERFORMANCE

Children are kept out of hospital, managed locally by neighbourhood child health teams delivering early intervention, health promotion, and integrated care in primary care networks.

Children Triaged =

45% Advice and Guidance

31% Integrated Child Health Clinic

9% Integrated Long term condition service

13% Specialist referral

In an exemplar PCN our service provides care for:
- **48%** of children 0-5yrs
- **25%** 6-11 years and
- **25%** 12 – 16 years

Savings achieved when **30-40%** population coverage is achieved

100% Of patients are supported with health promotion, education, and self-management information

Equity Children with the greatest needs get early intervention and the care they need through a data-driven approach to proportionate universalism.

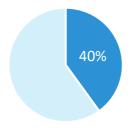Improved urgent and emergency health service use for children with everyday paediatric conditions:
- **13.8% reduction in ED contacts**
- **6.8% reduction in non-elective admissions**

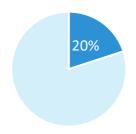Improved urgent and emergency health service use for children with long term conditions:
- **49% reduction in ED contacts**
- **45% reduction in non-elective admissions**
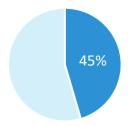
CHILDS IMPACT: PATIENT OUTCOMES

Serving children with challenging health and life conditions

40%

20%

45%

40% of children with asthma have **uncontrolled symptoms**

20% of patients have moderate to severe **anxiety/depression**

10-20% parents have **mental ill health/housing instability/food insecurity**

62% of our patients are among the **20%** most deprived groups nationally.

73% of our patients are from ethnic minority backgrounds

What do people say?

"Very personalised. I could ask lots of questions as there was enough allocated time, didn't feel rushed. Based in local community"

"Excellent communication with and advice from our link paediatrician. Reassurance for parents and clinicians"

60%

of children have *clinically measurable* health improvement. Severe asthma symptoms reduced from 52% to 28% of the cohort, and eczema from 76% to 22%.

And most children have significantly improved scores in the Children's Global Assessment Scale of psychological and social functioning, moving up 2-3 bands after our service.

CASE STUDY ONE

LOUISE'S STORY

BETTER COMMUNICATION BETWEEN PRIMARY AND SECONDARY CARE LED TO FASTER DIAGNOSIS AND BETTER HEALTH OUTCOMES FOR LOUISE

LOUISE'S HEALTH HISTORY
Louise was suffering from labial fusion; a condition that sometimes occurs as a result of a simple infection, such as vulvovaginitis.

REFERRAL TO CHILDS TEAM PAEDIATRICIAN
Her condition required a simple treatment with an estradiol gel. However, GPs professionals are unable to prescribe this gel to children in primary care. The CHILDS team paediatrician was able to see that Louise had been examined through the referral notes and felt happy with the diagnosis.
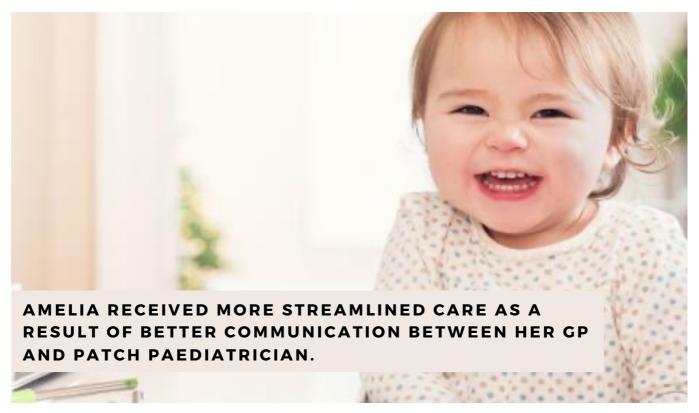
INTEGRATED CARE PLANNING
The CHILDS team paediatrician communicated back to the GP that they agreed with their diagnosis and provided a prescription for the estradiol gel via EMIS, within the primary care system. They also provided Louise with brochures on how to manage her condition.

LOUISE'S OUTCOMES
Louise and her family were able to receive treatment for her condition without further examinations or unnecessary trips to the hospital.

CASE STUDY TWO

AMELIA'S STORY

AMELIA RECEIVED MORE STREAMLINED CARE AS A RESULT OF BETTER COMMUNICATION BETWEEN HER GP AND PATCH PAEDIATRICIAN.

AMELIA'S HEALTH HISTORY
Amelia - a one year old child from Southwark - was brought into see her GP because she was experiencing signs of wheezing. Amelia had been experiencing these symptoms for a long time and there did not appear to be any obvious cause triggering the condition.

REFERRAL TO PATCH PAEDIATRIC
Concerned about Amelia's condition, the GP referred Amelia to a patch paediatrician using EMIS Remote. In the referral notes, she mentioned that Amelia was experiencing continuous trouble breathing and requested further review by a paediatrician.
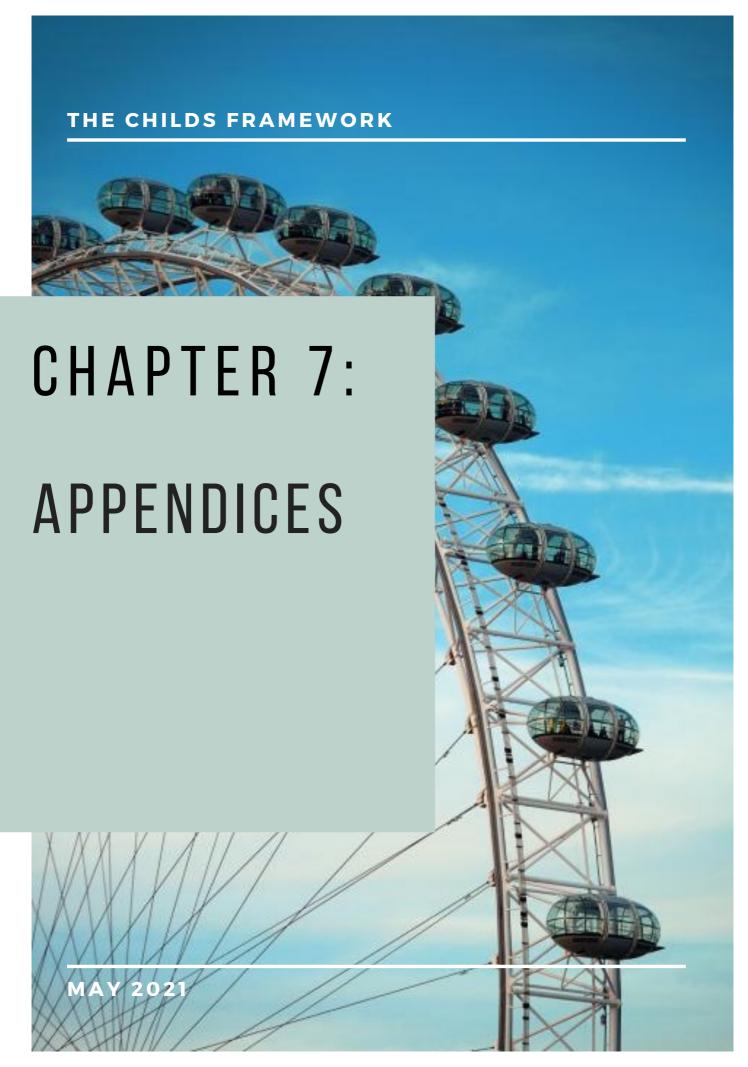
LIAISON WITH ALL PROFESSIONALS
The patch paediatrician requested more information from the GP - including a video of Amelia's wheeze - so that they could understand more about what could be causing Amelia's condition. The GP shared the video directly with the patch paediatric via EMIS remote.

INTEGRATED CARE PLANNING
The patch paediatrician was concerned that Amelia may have a fixed airway problem and forwarded the video onto a respiratory specialist in the ENT department. Within a week, the ENT team conducted a virtual review of Amelia and within two weeks, Amelia was booked in for an operation. In normal circumstances, Amelia may have had to wait up to six weeks to see a paediatrician and even longer to see a respiratory specialist.

AMELIA'S OUTCOMES
Amelia and her family were able to receive treatment faster and without unnecessary trips back and forth to GP and hospital

CHAPTER 7:

APPENDICES

THE CHILD HEALTH TEAM

WHAT IS THE CHILD HEALTH TEAM?

The Child Health Team is a multidisciplinary team of clinical and population health specialists who work together to bring a more joined-up approach to care for children and young people. Children and young people with long term and common childhood health conditions can be managed via the same clinical team within a primary care setting, enabling better, more timely care for children and their families. Clear principles guide care: families and young people are more in control of their lives; prevention and early intervention are essential; a child is seen as a whole person; health and social care work together; and care is planned ahead.

The **Clinical Team** includes children's specialist nurses, GPs, and paediatricians. The team practice biopsychosocial care, and is designed to align with health visitors, social workers, youth workers, and community health practitioners.

The **Population Health team** includes clinicians trained in population health, analysts, and PHM managers. They work closely with the clinical team supporting and enabling care.

The full child health team is designed to coordinate and align with the wider child health community and can work at PCN (Primary Care Network) level identifying local needs, priorities and children who need further support or more tailored care in their area.

The child health clinical and population health team work together to ensure the child has preventive care and is seen by the right person in a way that provides more joined up care for all. Only those who need specialist input are required to go to the hospital.

WHAT ATTRIBUTES DOES THE CHILD HEALTH TEAM REQUIRE?

WHAT ARE THEIR ROLES AND RESPONSIBILITIES?

The primary responsibilities of the Child Health Team are as follows:

Manage risk

• Identify, register and stratify the population according to patients likely to suffer adverse effects.

• Planning, implementing and evaluating evidence-based care interventions within the community setting
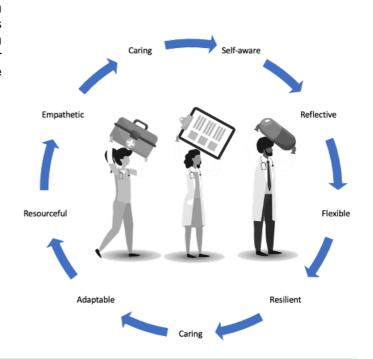
Promote health and self-management

• Provide guidance, education materials, care navigation and advice services aimed at patient activations.

• Empowering children and families to manage their own health.

• Deploy technology assisted to support

Early Intervention

• Promote prevention and early intervention strategies targeted at those with greatest need

• Use targeted health checks

• Deploy multi-disciplinary teams (MDTs), primary care, community-based and consultant-led services,

Admit only when needed

• Refer into specialist care

THE CLINICAL TEAM

WHAT SKILLS AND KNOWLEDGE ARE NEEDED FOR A CHILD HEALTH TEAM?

The Child Health Team must encompass a special set of skills, knowledge and awareness. Firstly, they must have a general knowledge of paediatrics and child health, including common childhood conditions and child development. In particular, they must have a strong understanding of long-term conditions and how mind-body, family, community, and social determinants affect children. The Child Health Team should also have an understanding of their local area, including an awareness of the local culture, the needs of the population and their ability to access and trust healthcare.

Delivering care for the 'whole child' means that the team must be aware of how biological, behavioral, sociocultural, economic, and ecological factors impact the health of their patients and their families.

Child Health professionals should keep abreast of locally available services and have the ability to work across professional and organisational boundaries to ensure the health and wellbeing of patients is maintained.

The table below outlines the types of skills that are required by members across the Child Health Team.

HOW DOES A CHILD HEALTH TEAM WORK?

Triage and care planning meetings of the multidisciplinary child health team take place regularly, eg once a week. During the meeting, every referred case is discussed and a path forward is recommended. The team is designed to complement and/or add to existing MDTs.

TRAINING AND EDUCATION FOR CHILD HEALTH TEAM PROFESSIONALS

Online and in person short courses and training materials, and detailed example role descriptions are available from the CHILDS team and King's Health Partners' Institute for Women and Children's Health.

Skills							
Clinical	Clinical assessment	Risk assessment	Psychosocial assessment	Delivering bio-psycho-social care	Health promotion	Disease prevention	Health education
Leadership	Problem solving	Critical thinking	Co-ordinating care	Advocacy	Coaching	Negotiation	Teaching
Analytical	Caseload management	Complex health needs	Population data	Prioritising, balancing individual & population needs	Patterns of service use across organisations	Using linked datasets to track population impact	Using linked datasets and research data to measure health gain
Technical	IT for integrated care	Using Apps and portals for patient encounters	EMIS Care Notes	Electronic Patient Records	Data management systems	Data presentation	Virtual consultation
Commun-ication	Active Listening	About poverty and social conditions	Motivational interviewing	Health promotion	Presenting complex data	Negotiating cross-organisational working	Across organisations and professions

THE POPULATION HEALTH TEAM

THE POPULATION HEALTH MANAGEMENT TEAM

We built a core PHM team led by a Consultant trained in paediatrics and population health and clinical academic, a senior NHS manager trained in PHM, and a senior NHS analyst – working closely with an academic child health research group with quantitative and qualitative skills.

PHM WAYS OF WORKING

The PHM team works alongside the clinical team, attending and contributing to clinical management, operational decision-making, and evaluation. The PHM team forms a link between clinical and academic teams, enhancing the work of each. The clinical team benefits from a more rigorous data-driven approach to care, use of evidence in practice, and evaluation of services. The academic team benefits from direct insights to clinical frontline care, the challenges of operational decision-making and strategic direction, helping them to design more relevant research and to translate research evidence into practice.

PHM EXPERTISE, TOOLS, AND METHODS

The principal expertise, tools, and methods needed to deliver population health management are:

- **Data** – linked primary and secondary care service use data to understand patient flows and patterns of use, primary care and public health data to understand prevalence of disease and risk factors
- **Advanced analytic capabilities and capacity** including statistics, epidemiology, and qualitative health service research methods

- **Population health and clinical expertise** – public health trained clinicians and managers
- **Strong management skills** for inter-sectoral and intra-sectoral working
- **Demand – capacity modelling tool** to support tailoring the health system to anticipate and meet population health needs and workforce capacity.

We built **a PHM tool** that allows us to track numbers of patients with a condition or risk, estimate the number of patients likely to be invited in for early intervention, predict the number likely to respond to a call-recall invitation, predict numbers likely to accept an invitation and meet the treatment threshold, respond to care, likelihood to consent to participate in evaluation and research.

Balancing this information with knowledge of how long patients remain on clinicians' case loads, workforce capacity, and other system pressures, enables nuanced demand-capacity planning such that services can be offered to as much of the population as is feasible, safe, and agreed by the partnership, to maximise coverage and health gain.

PHM TOOLS AND METHODS ARE BOTH GENERAL AND SPECIFIC FOR CHILD HEALTH.

Access to data is needed, sophisticated analytic capabilities, and expertise in population and clinical child health.

A demand—capacity modelling tool enables the system to scale up and down according to need and workforce capacity.

FINANCING

Aligning commissioning models to support integrated working are going to be essential in enabling population health delivery. As set out in the NHS Long Term Plan, local NHS organisations will increasingly focus on population health and local partnerships with local authority-funded services, through Integrated Care Systems. Currently as the system responds to the COVID-19 crisis, NHS contracts are being moved into block arrangements. As we now navigate towards integrated care systems (ICSs) there needs to be some thought on how joint commissioning will be managed.

Through our work in CHILDS we have come some way in the thinking around joint commissioning mechanisms with primary care and secondary care. This has involved our partner organisations working in partnership at all stages of the commissioning process, from the assessment of needs, to the planning and procuring of services, and the monitoring of outcomes.

We have worked with our partners on deciding how our services can best be delivered to meet the needs of local children and young people, who should provide the services and where, how the services will be paid for, and what outcomes will be expected. Bringing together local resources provides the scope for economies of scale and supports place-based integrated care.

Functioning requirements across sectors to deliver a PHM approach to care.

Level	Function
Primary care	**Infrastructure** - Dedicated Leadership support driving PHM and MDT working at neighbourhood level **Intelligence** The analysis and supply of patient level data to help identify and support the system to: - Identify variation in population health need - Identify populations at most of risk of adverse health and wellbeing outcomes **Implementation** Improving wellbeing at primary care level by - Collaborating with provider partners to deliver integrated models of care
Secondary care	**Infrastructure** - Leadership team supporting PHM delivery and MDT working - A framework for decision making and partnership working - Flexible clinical workforce to adapt to MDT working that can cross organisational boundaries **Intelligence** - Analytic capacity to develop data set links - Technology adaptations to support collection of biopyscosocial data **Implementation** - Planning and delivering broader preventative activity - Understanding the impact of interventions on workforce and plan accordingly - Integrating services and increasing collaboration
System	**Infrastructure** - A common understanding pf PHM delivery - A cross-sector leadership team driving PHM at system level - Prioritising the creation of interoperable systems to share data **Intelligence** Managing the strategic allocation and flow of resources across the system **Implementation** - Prioritising collaboration across organisational boundaries to standardise care - Carrying out commissioning of outcomes based care - Integrating services and increasing collaboration

GOVERNANCE

In order to succeed in delivering new integrated models of care to meet the needs of the populations we serve, we will need to think beyond our statutory and organisational borders.

The CHILDS framework has brought together partners from health, social care, and academia, with a shared purpose in achieving better outcomes for children and young people. We have done this by:

- Providing leadership and strategic oversight
- Having clear lines of accountability for strategy and delivery
- Proportionate and a streamlined structure focused on child health
- Partners engaged at board level and in delivery groups
- Holding the programme team and partner organisations to account for delivery, outcomes and money
- Smaller partnership group brining key skills and senior level influence
- Supported by focused executive support
- Having a citizen voice as a key role on the board

Forming system wide partnerships that focus on children and young people is key to achievement however it does not come without its complexities. Setting out a clear memorandum of understanding to document agreed principles and objectives will be critical in delivering a new way of working.

In forming the CHILDS partnership we developed a clear role and membership guide for the programme board and how we expected the programme board to operate. This has allowed us to deliver the programme of work to develop and test the CHILDS framework and to support its ongoing delivery and application to other conditions, risks, and populations

Below might be helpful thinking in setting up your own partnership board:

Purpose of the Partnership Board

❖ Assuring effective use of funding to deliver the objectives

❖ Holding the Programme team to account

❖ Holding Partner organisations to account

❖ Ensuring alignment between programme deliverables and other strategic initiatives

GUIDING PRINCIPLES FOR PARTNERSHIP WORKING

Behaviours

❖ Clear vision and commitment to a joint strategy

❖ Differences in organisations' culture and practice acknowledged and respected, with a shared commitment to child health paramount

❖ Adherence to agreed decision-making processes

Processes

❖ Clear need of the partnership

❖ Clear vision and strategy

❖ Roles and responsibilities of each partner are agreed and understood

❖ Process for managing risks associated with partnership working

❖ Clear decision making and accountability structures and processes

Performance measurement and management

❖ Defined outcomes for partnership activity

❖ Agreement to what success looks like and indictors for measuring progress

❖ Clearly defined outcomes, objectives, targets and milestones that are owned collectively.

❖ System development to monitor and report

Use of resources

❖ Identify budgets to monitor costs of partnership, integrate service, financial and workforce planning.

❖ Identify, allocate and monitor resources used to administer the partnership

❖ Access specific initiative funding models available for joint working between health and social care.

DATA AND ANALYTICS

The CHILDS approach relies on data and analytics for tailoring care according to needs, to continuously learn, improve, and report progress, and to add to the evidence base for children's health.

More specifically, there are two broad categories of data and analytics in the CHILDS framework: **Data for understanding health needs and system performance.** This is about using data for shaping the care response to each individual child, and to shape the system to meet needs at population level. **Data for understanding quality of care we are providing, how our service is performing, enabling continuous improvement, and research.** We use a range of data, both quantitative and qualitative for these purposes.

1. **Individual patient level data**. We use a patient portal or App for gathering information for pre-assessing biopsychosocial needs of children and families so that we can shape care accordingly. We use patient level measures, such as the Asthma Control Test and Health Related Quality of Life questionnaire, for measuring health impact and quality of care.

2. **Health service level data.** As an integrated service we look at waiting times, patient experience feedback, staff experience, and financial performance data. Data sets include:

   Primary care: Working together and using methods established for vaccination and screening, we identify children eligible for early intervention using agreed diagnostic codes. We also use de-identified data from primary care to link with secondary care data so that we can measure the impact of our services.

   Hospital: We identify eligible children from ED and outpatient lists. We use de-identified hospital activity data to link with de-identified primary care data to measure the impact of services.
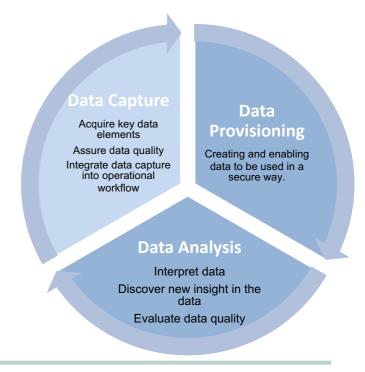
3. **Publicly available data.** Public health and demographic data is used to understand population level characteristics such as deprivation so we can tailor the system appropriately to meet needs.

4. **Research.** We capture data for research too. With ethical approval we use aggregate data (no patients can be identified individually), and with informed patient and/or parent consent we use identifiable data.

Data uses

1. **Personalised care.** Data is used by the multidisciplinary child health team to tailor a package of care designed to address the needs of the whole child – physical, mental, and social.
2. **Shaping the system.** Data is used to direct the health system more intensively towards areas of greater need, and to scale up or down services according to capacity.
3. **Continuous learning.** As part of our Learning Health System approach, the CHILDS framework enables continuous quality measurement and improvement.
4. **Research.** An important feature of our approach to using data, generating knowledge, and applying it to improve care, is the ability to produce generalisable knowledge that can be applied in other areas and contributes to increases the evidence base for child health.

Establishing data and analytics infrastructure

Building a successful, well-structured, joined up operational and analytical system involves wider invested partners including: Service Teams, Primary/Secondary & Social Care, GP Federations and Clinical Academic Evaluation Teams. Ultimately a Learning Health System should be the goal, but the key component parts for running a service using the CHILDS framework are set out here.

Data Capture
Acquire key data elements
Assure data quality
Integrate data capture into operational workflow

Data Provisioning
Creating and enabling data to be used in a secure way.

Data Analysis
Interpret data
Discover new insight in the data
Evaluate data quality

DATA AND ANALYTICS

Setting up the key component parts for data and analytics for the CHILDS framework

We developed and apply the CHILDS framework within a clinical academic partnership, as described elsewhere. This approach has additional benefits, but is not essential. Here we describe the key components of a data and analytics system for delivering integrated care for children using the CHILDS framework.

Purpose of data and analytics

For service delivery and reporting, the specific requirements are:

- To ensure a safe service
- Monitor capacity vs demand
- To monitor cost effectiveness
- To measure impact on health service use
- To highlight declining or improving patient outcomes to guide proactive clinical and PHM decisions
- Supporting PCNs and services to enable tailored patient care

Points to consider when setting up an operational and analytical system

Information governance

- Securing Data Sharing Agreement's (DSA's) between PCN (Primary Care Networks) and Hospitals

Approach

- Adopting the research approach of modern, open analytic methods and tools which ensures transparency, error checking, and re-use of analytical outputs

Communications and engagement

- Regular engagement, testing and action from Key Partners
- Communicating with patients to ensure real world outcome correlates to what we see in the datasets

Data quality assurance

- Building and integrating data systems to ensure data quality and integrity (the data is what you think it is), security (the data is safe, compliant with information governance requirements), and utility from the point of view of individual patients, front-line professionals, and partners.
- Programme and system analysts capable of supporting health service delivery and analysis, ideally linked to an academic health services research function.

Reporting

- Unambiguous key performance indicators (KPI's) alongside visible, regular reporting.
- Standardising data input templates ensuring simple automatic data downloads to measure activity and quality, and ensure clean datasets
- Using both qualitative and quantitative data helps us learn about how the system is performing and to see if we improve over time. For example, we use qualitative data to understand what matters most to our patients, families, and staff.
- An agile approach using qualitative, quantitive data and mixed methods is helpful to identify opportunity for improvements.
- Aligning KPI's to local and national guidance
- Using clearly defined questions which can be evolved to other specialist needs
- Maintaining capture of all clinical and non-clinical patient activity
- Are you good 'customers' of data analytics; do you know what questions to ask and how to recognise poor outputs?
- Does current available reporting methods meet the needs of the service
- What skills and tools do both your analytics teams need – they require similar skills, methods and tools to research?
- Dashboards to display clinical and operational data to support decision making.
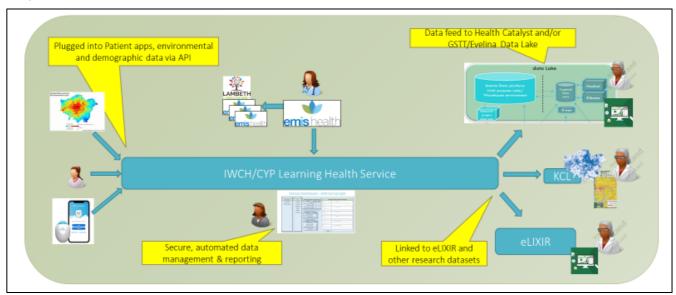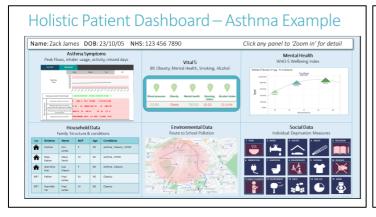
TECHNOLOGY

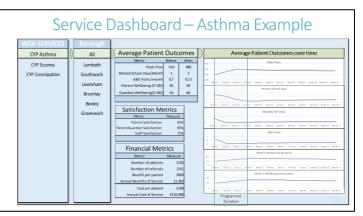**Technology needed to deliver the CHILDS framework includes:**

- Inter-operable patient records to enable clinicians to work across organizational boundaries
- Portals and apps to collect patient information that enables personalized care, and to respond to patients' needs for health promotion and supported self-management
- Portals and apps that support meaningful communication between patients, families, and health professionals.
- Templates that facilitate routinely collecting data for continuous quality measurement and improvement.
- The primary care and public health call-recall system that enables data-driven patient identification and invitation for early intervention and targeted support
- The essential technology should evolve to a Learning Health System that strengthens the connections between patients, parents/carers, clinicians, and researchers; enhances quality and quantity of data for patient care, system intelligence, and research; that enables continuous measurable improvements in care and health outcomes.

CHILDS Learning Health Service Technology
We connect a broad set of data into the service, and flow service data out to the local ecosystem for analysis to rapidly and continuously improve services
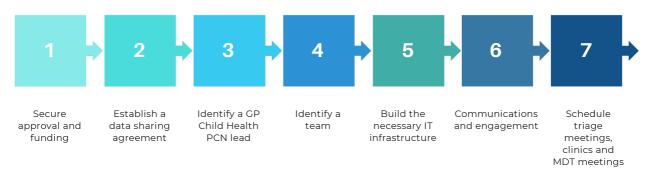

Holistic Patient Dashboard – Asthma Example

Service Dashboard – Asthma Example

- ➤ **Patient Engagement:** Condition-based apps improve patient engagement and empowerment

- ➤ **Holistic Care;** environmental data (e.g. pollution/route to school) enable a more rounded approach to care

- ➤ **Expansion of service** Data Automation enables us to expand service to more patients

- ➤ **Greater Insight** linking data (e.g. with eLIXIR) enables deeper, connected insights to improve care

- ➤ **Rapid research** Better integration with the KHP data ecosystem accelerates research

SETTING UP A PCN CHILD HEALTH SERVICE

SEVEN-STEP SET UP PROCESS

1	2	3	4	5	6	7
Secure approval and funding	Establish a data sharing agreement	Identify a GP Child Health PCN lead	Identify a team	Build the necessary IT infrastructure	Communications and engagement	Schedule triage meetings, clinics and MDT meetings

1. Secure approval and funding
The PCN Clinical Directors will reach out to practices within the PCN to ensure they are happy to go implement this way of working. These groups are also responsible for agreeing the mechanism for GP Child Health PCN lead time and funding.

2. Establish a data sharing agreement
In order to facilitate cross-organisational data sharing necessary for the triage, clinics and MDT meetings, each PCN must have the necessary Data Sharing Agreement (DSA) in place between the practices. Depending on whether or not they have existing agreements in place, some practices may wish to conduct a Data Privacy Impact Assessment (DPIA) to understand the risks associated with new methods of data sharing.

3. Identify a GP Child Health PCN Lead
A GP lead may be nominated by a PCN, Clinical Directors or self-nominated. This may require advertisement and formal appointments. The GP lead will be responsible for determining how the Child Health Team will be run and supporting the necessary governance, IT and workforce components.

4. Identify a team
The paediatric team from the hospital will identify a patch paediatrician and a patch PCN nurse to work with each PCN team according to location and geography. The PCN Clinical Director and GP Child Health PCN lead identify administration/ management support from the PCN to support the PCN Child Health team.

5. Build the necessary IT infrastructure
The GP Child Health PCN lead, patch paediatrician and patch PCN nurse must all have access to EMIS Remote or equivalent to allow cross-organisational working. Please note that there may be a cost associated with using EMIS remote.

6. Communications and engagement
The two-step process for referrals should be communicated to GPs and the wider primary care health team. It is the GP Child Health PCN lead's responsibility to communicate processes and dates of MDT meeting to the wider primary care meeting.

7. Schedule triage meetings, clinics and MDT meetings
Dates and times for the PCN Child Health weekly triage meeting should be agreed in advance. At least two clinic dates should also be agreed in advance of each triage meeting. If clinics will be held face-to-face, a clinic room will need to be booked. The clinics should ideally rotate across the practices. MDT meetings should be scheduled monthly or as decided via a virtual platform.

SERVICE SPECIFICATIONS

The service specification for the CHILDS framework delivery programme outlines the service and quality expected by the commissioning body. They are important in clearly defining the standards of care expected from organisations, and brings together the functions which contributes to the delivery of the CHILDS framework.

Our specifications sets out our ambitions to achieve the best possible outcomes for all children, young people and their families in Lambeth and Southwark.
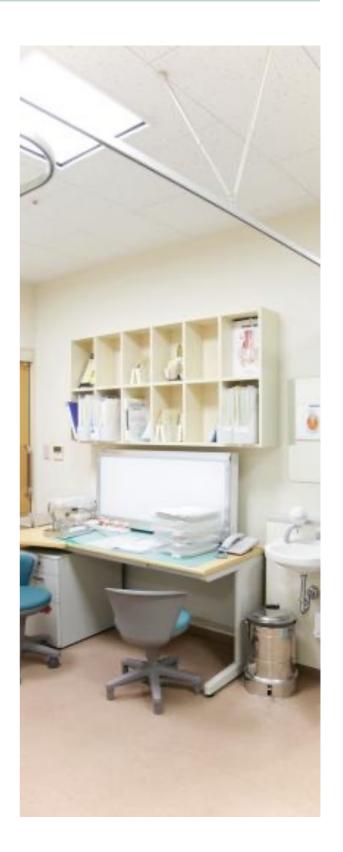
Prevention and Early Identification are the cornerstones to this service and are critical to reducing health inequalities. The child health team offer is fundamental to delivering prevention at scale outcomes through unique assessment, planning and leadership skills of Population Health Management to implement individual, family, community and public health interventions.

Our integrated child health team should be delivered flexibly based on risk or vulnerability, enabling a shift in focus for families who need more support and working in partnership to ensure holistic plans are in place to support families who are more vulnerable or need intensive help.
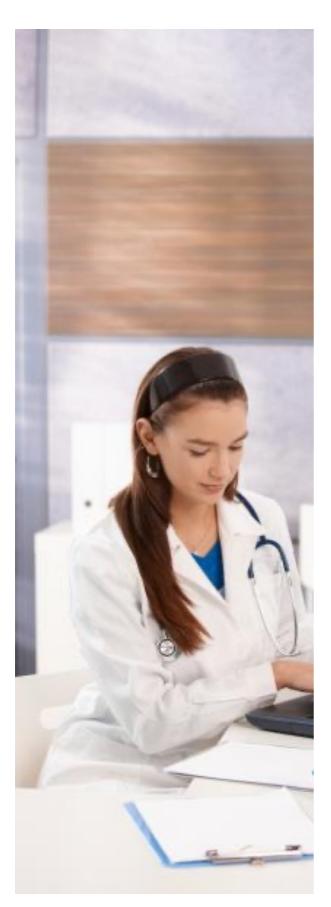
The specifications however have been written independently due to the nature of differing referral routes in, triage and acceptance criteria that differs between a targeted approach Vs generalised health care and delivery of care can be led by the independent teams.

Please contact us for further information:

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LESSONS LEARNED

PEOPLE HAVE TO KNOW ABOUT THE TEAM AND UNDERSTAND WHY IT IS BENEFICIAL

Effective communications are integral to the success of the PCN Child Health Team. As the person responsible for communicating new processes to the wider team, the GP Child Health PCN lead plays an important role in ensuring that all stakeholders are bought in to the new ways of working.

ENSURE THAT THERE IS MINIMAL BUREAUCRACY

The easiest way to encourage buy-in amongst stakeholders is to make the process as simple as possible. This means removing bureaucracy in the referral process so that GPs continue to refer patients using the new method. Administrative staff should be able to schedule clinics, meetings, and appointments with ease.

THE INITIATIVE NEEDS TO BE DRIVEN INTERNALLY

The PCN Child Health Team achieves multiple benefits for patients, clinicians and the system, However, for these benefits to be realised, the initiative must be driven internally by all members. Some ways of achieving greater buy in include:
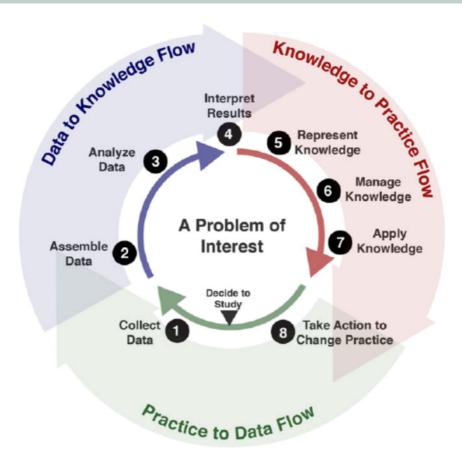
- Clearly communicating the vision and mission of the team
- Gathering commitment early on in the set-up process from important stakeholders
- Making the benefits obvious and accessible to everyone (i.e. accessibility to MDT meetings for education and training)
- Communicate key milestones and inspiring case studies

MYTH BUSTING

"It will create more work for me" The system is designed to improve and reduce workload, by ensuring children and families are more supported in self-care, and when necessary, seen at the right time, in the right place, by the right team. Better care results in reduced frequency of attendance and fewer consultations.

"It is too expensive" Proven cost savings are achieved by delivering better and more tailored care for patients, reducing unnecessary GP and hospital visits and preventing avoidable A&E visits.

THE CHILDS FRAMEWORK LEARNING HEALTH SYSTEM APPROACH

The **CHILDS** clinical-academic partnership approach is embedded in a Learning Health System in which "science, informatics, incentives, and culture are aligned for continuous improvement and innovation, with best practices seamlessly embedded in the delivery process, with patients and families as active participants in all elements, and new knowledge is captured as an integral by-product of the delivery experience".
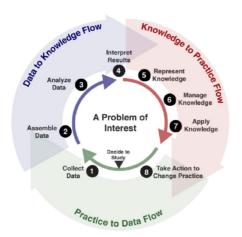
National Academy of Medicine

The CHILDS approach can be applied to a wide variety of conditions and problems and can operate at any scale from team to organisation to system. It takes Quality Improvement to the next level and embeds it in a continuous cycle of learning.

A LHS approach can:
• Improve patient outcomes and experience
• Provide better value healthcare
• Reduce unwarranted variation in outcomes
• Generate generalizable knowledge and evidence
• Optimise use of knowledge and evidence for decision-making
• Maximise the benefits of innovations

APPLYING THE CHILDS APPROACH

STEP BY STEP THROUGH THE CHILDS APPROACH

The LHS cycle can be applied to any condition or risk. The same steps are followed at the start of an initiative to improve outcomes, the cycle is repeated to evaluate outcomes, and if needed the cycle is followed again to further improve.

Agree the problem of interest

A partnership approach for shared priority setting helps ensure buy-in from the start.
Clinical academic partnership means that data and evidence inform decisions.

STEPS 1,2,3 Collect, Assemble, Analyse Data

Starting the process:	Evaluation:
A Health Needs Assessment includes data on health outcomes, trends, equity. Segmented population analysis helps identify subsets of patients or populations for specific interventions.	Running a dual simultaneous service and research evaluation provides real-time evidence for service managers and commissioners, while building a robust evidence base for clinical effectiveness, cost-effectiveness, and equity of outcomes.

STEPS 4,5,6 Interpret data, represent and manage knowledge

Starting the process:	Evaluation:
A gap analysis of current services and the health system, an evidence review on effective interventions, and recommendations for interventions supports decision-makers in priority setting.	Partnership approach to assessing whether the service is delivering satisfactorily. Using both service evaluation and research evaluation results ensures robust decision-making.

STEPS 7,8 Apply knowledge and take action to change practice

Starting the process:	Evaluation:
Co-producing an implementation plan for new evidence-based interventions. Where there is a lack of evidence, co-designing interventions using the best available evidence is key. Ensure all the health system components in place: • *Service model* • *Workforce* • *Data and analytics* • *Technology* • *Financing* • *Governance* Setting goals: Outcome measures • *Health: eg Asthma Control Test scores* • *Healthcare quality: eg adherence to guidelines* • *Healthcare use: eg reduced ED attendances*	Performance assessment and evaluation: Understanding the true effectiveness of interventions • *Health outcomes – validated measures of health* • *Health care quality – eg access to care* • *Health service use - inequalities* Has the service delivered the required improvement? If no, start back at step 1. If yes, agree a new problem of interest, and start at step 1

WHERE TO GO FOR MORE INFORMATION

CONTACT DETAILS

WEBSITE: WWW.CYPHP.ORG

SHORT COURSES

WORKSHOPS

INSTITUTE