D8: A person-centred approach to safe and effective medicines use

International Forum on
QUALITY & SAFETY
in HEALTHCARE
COPENHAGEN

Adapting to a changing world: equity, sustainability and wellbeing for all

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BMJ

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Session D8
Medicines Optimisation – A change package to support Medicine Without Harm

Gill Smith, IHI Fellow and Faculty
Professor Mike Scott, Director Regional Medicines Optimisation Innovation Centre (MOIC)
Anita Hogg, Pharmacist and Lead, Regional Medicines Optimisation Innovation Centre (MOIC)

IHI International Forum
Copenhagen, May 2023

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Financial:

Gill Smith is Managing Director of Kaizen Kata

Non financial:

Gill Smith is a member of IHI Faculty

Mike Scott has no relevant financial or relevant nonfinancial relationships to disclose

Anita Hogg has no relevant financial or relevant nonfinancial relationships to disclose.

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After attending this session, attendees will be able to:

- Implement a person-centred medicines optimization approach to enhance patient safety and quality
- Access medicines safety practice/activities to support a systems approach to medicines safety – and take away tools for use in your own setting
- Develop a measurement plan to demonstrate the efficiency and effectiveness of the interventions

.

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Gill Smith
Managing Director, Kaizen Kata & IHI Fellow & Faculty
@kaizenkata

Professor Mike Scott
Director, Regional Medicines Optimisation Innovation Centre (MOIC) in Northern Ireland

Anita Hogg
Lead, Regional Medicines Optimisation Innovation Centre (MOIC) in Northern Ireland


moic
Medicines Optimisation Innovation Centre
Smarter Medicines Better Outcomes

Medicines Optimisation Innovation Centre (MOIC) Work Themes

EUROPEAN AHA REFERENCE SITE

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Smarter Medicines Better Outcomes

- Focus needs of NI population
- Accelerate adoption of innovation into practice to improve patient outcomes and experiences
- Build culture of partnership and collaboration
- Make meaningful contribution to NI economy

Vibrant centre of expertise with a proven track record

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MOIC Team

EUROPEAN AHA REFERENCE SITE

Prof Mike Scott
Director

Dr Glenda Fleming
Deputy Director

Anita Hogg
Lead

- Team of experts, including 7 Programme Managers trained to Doctoral level
- Clinical expertise throughout Northern Ireland
- Communications and administrative support

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Engage and collaborate

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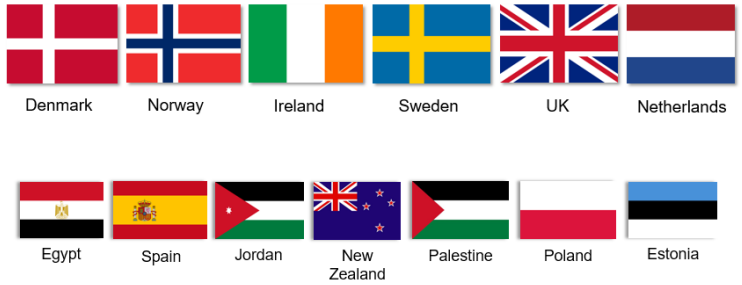

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International recognition

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silcc
Statement Implementation Learning Collaborative Centres

eahp

COMMONWEALTH PHARMACISTS ASSOCIATION

abpi
Bringing medicines to *life*

Polski Towarzystwo Farmacji Klinicznej
POLISH SOCIETY OF CLINICAL PHARMACY

EHAS

BUGANDO MEDICAL CENTRE
BMC
HURUMA NA UPENDO

CLUSTER SAÚDE DE GALICIA

Hi Health Innovation Hub Ireland

Polish Society of Clinical Pharmacy

Estonian Society of Hospital Pharmacists (ESHP)

SOCIEDAD ESPAÑOLA DE FARMACIA HOSPITALARIA

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The Smart & Healthy Ageing through People Engaging in Supportive Systems (SHAPES) Innovation Action intends to build, pilot and deploy a large-scale, EU-standardised open platform. The integration of a broad range of technological, organisational, clinical, educational and societal solutions seeks to facilitate long-term healthy and active ageing and the maintenance of a high-quality standard of life. Mediated by technology, in-home and local community environments interact with health and care (H&C) networks contributing to the reduction of H&C costs, hospitalisations and institutional care.

iSIMPATHY
making medication personal

Interreg
Northern Ireland - Ireland - Scotland
European Regional Development Fund

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Ensuring the best medication outcomes for patients

iSIMPATHY, (implementing Stimulating Innovation in the Management of Polypharmacy and Adherence Through the Years), a three year EU funded project in Northern Ireland, Scotland and the Republic of Ireland. The project aims to ensure the best and most sustainable use of medicines for patients by training pharmacists and other medical professionals to deliver medicine reviews and embedding a shared approach to managing multiple medicines.

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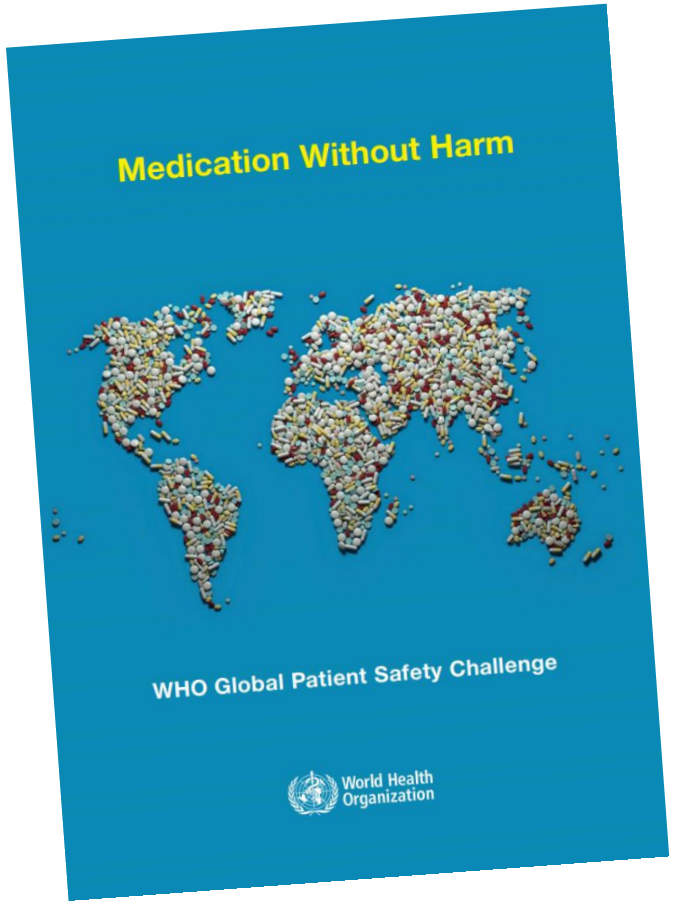
Background – the urgent need for action

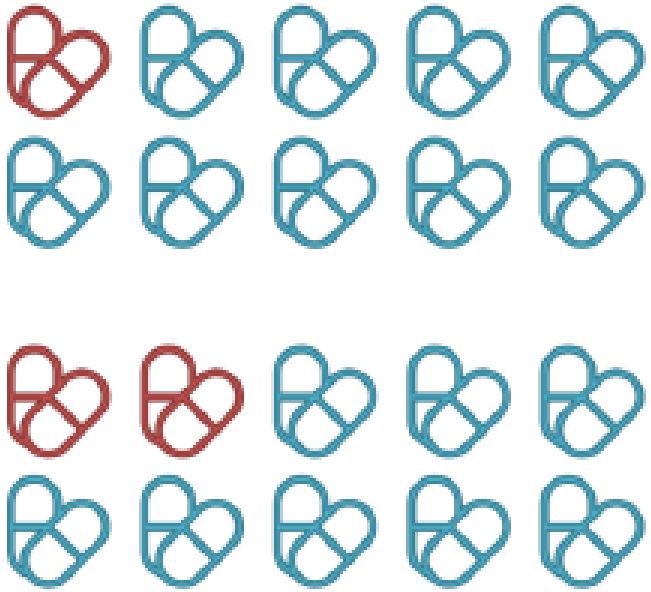
Medicines Safety: The Global Challenge (1)



- Unsafe medication practices and medication errors are a leading cause of **avoidable harm** in health care systems
- Globally, the cost of medication errors is estimated at US$ 42 billion annually

(Ref WHO 2017)

Medicines Safety: The Challenge (2)



As many as **one-in-10 hospitalizations** in OECD countries may be caused by a medication-related harm and…

One-in-five inpatients experience medication-related harms during hospitalization

Ref: OECD 2022

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The patient safety and quality of life impact of medicines safety


Patients
Living well
Avoidable re/admissions, disease progression,
mental health, ability to work, social impact…..

Antimicrobial Resistance

- 4.95 million deaths globally due to AMR in 2019
- All-age death rate highest in Western Sub-Saharan Africa (27.3/100,000) and lowest in Australasia (6.5/100,000)
- 1.5 million deaths caused by AMR lower respiratory tract infections
- By 2050 10 million/year could die from AMR infections

(Ref: Lancet 2022)

Antimicrobial Stewardship

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- Highly effective hospital AMS programs have **pharmacists** as co-/leader
- Five ways hospital pharmacists can be antibiotic aware
  1. Verify penicillin allergy
  2. Avoid duplicate anaerobic cover
  3. Review antibiotic therapy
  4. Avoid therapy of asymptomatic bacteruria
  5. Use the shortest antibiotic duration

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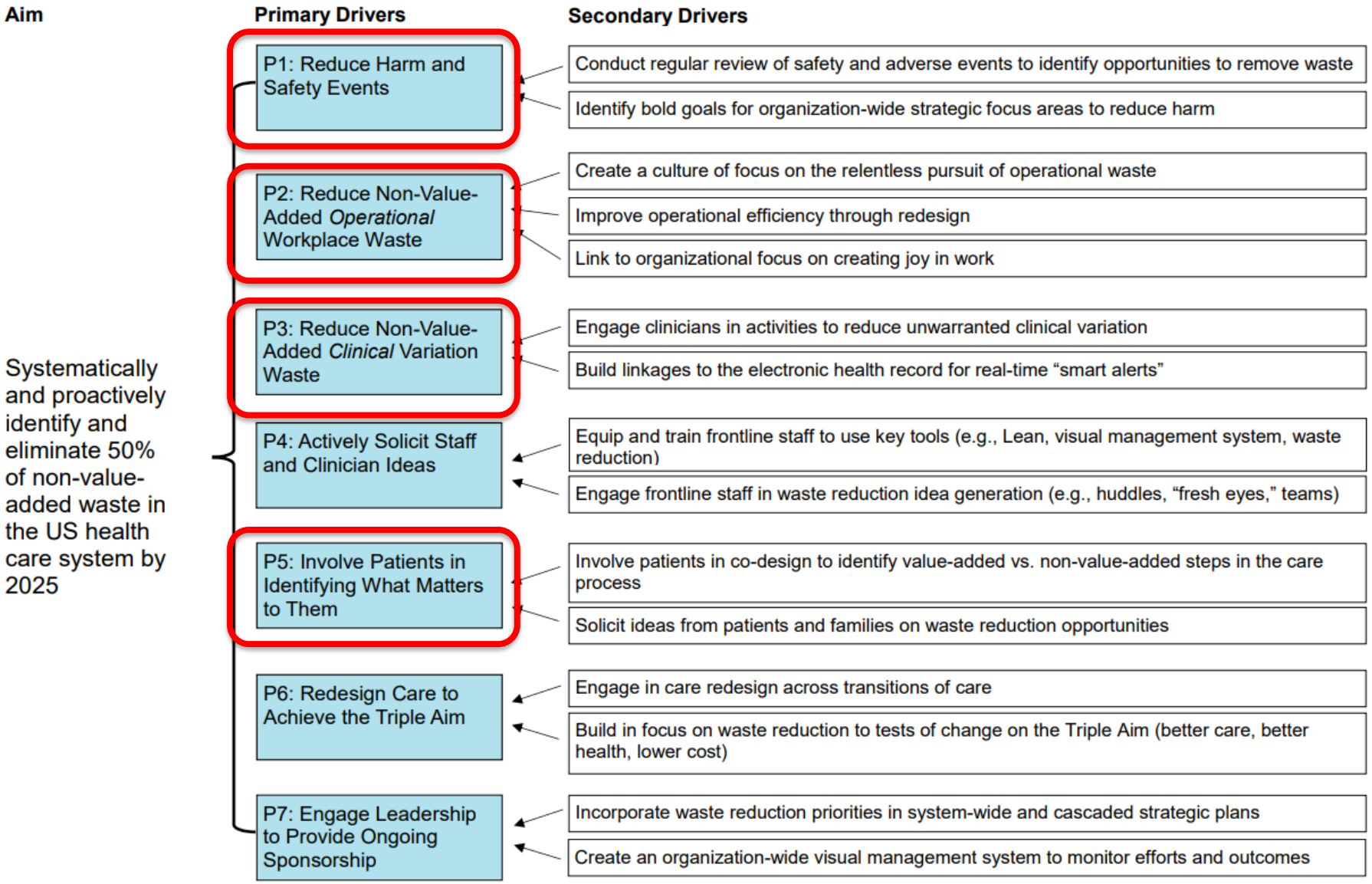
Waste and Environmental impact of medicines

A Driver Diagram to Systematically and Proactively Identify and Eliminate Non-Value-Added Waste in the US Health Care System by 2025



Trillion Dollar Cheque Book

IHI Leadership Alliance Waste Workgroup. "A Driver Diagram to Systematically and Proactively Identify and Eliminate Non-Value-Added Waste in the US Health Care System by 2025." Boston: Institute for Healthcare Improvement; 2019. (Available at www.ihi.org)

Medicine waste: medicine review, ordering, adherence….

Up to 90% of orally administered pharmaceuticals are excreted into wastewater as active substances in the faeces and urine of patients

https://noharm-europe.org/documents/pharmaceutical-residues-hospital-wastewater

In the UK alone 50million inhalers prescribed a year. The majority of those inhalers (approx. 70%) are pressurised Metered Dose Inhalers (pMDIs) containing propellants called hydrofluorocarbons (HFCs).

0.28kgCO2e

2.8kgCO2e

280kgCO2e

28kgCO2e

What is the whole life carbon equivalent emission of the most commonly prescribed inhaler in the UK?

These carbon emissions make up 25% General Practice prescribing footprint

28kgCO2e

Dry powder inhalers have now been developed reduce the carbon impact of use by 20-30

What are the other issues that should be considered here?

?

Patient training

Clinical preference

Public awareness

Costs

Procurement rules

Disposal

Recycling

Availability

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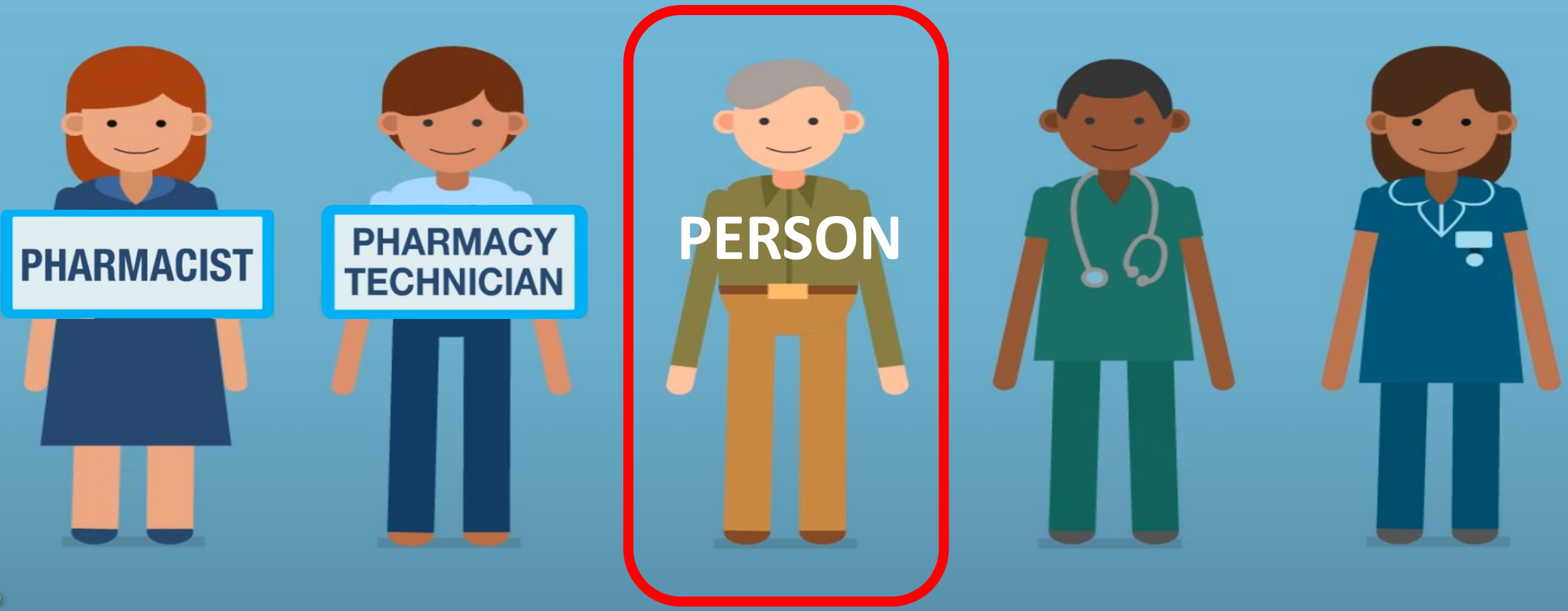
A complete package supporting the entire patient journey (whole system approach, multiple settings)

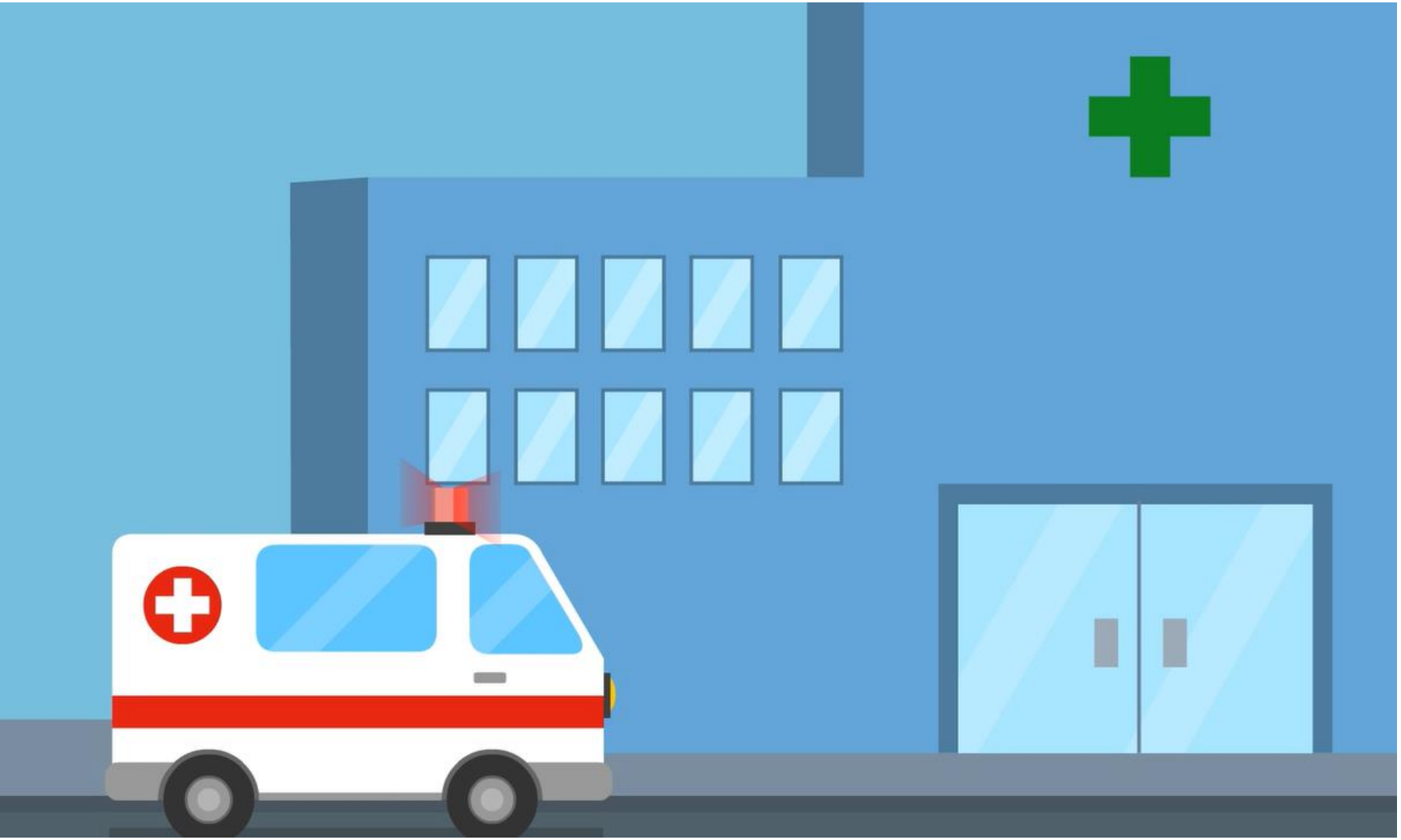
Anita Hogg

TEAM



In 2026 UK newly qualified pharmacists will be independent prescribers at registration

Hospital



- System redesign
- Interface
- LOS (2 days)
- Readmission NNT=12
- MAI

(Ref Scullin)

Post Discharge follow up

- High Level patient satisfaction
- 15.2% reduction in 90 day readmission rates
- 9.9% reduction in 30 day readmission rates
- Positive health economic benefit return in investment £51 per £1 spent at 50 days

(Ref Odeh 2021)

Out-patient

- Medicines optimisation clinic
- Reduced readmission rate & ED visits, improved QoL

(Ref Odeh 2020)

General practice

- Clinical pharmacist case management
- Reduced medicine related problems and improved MAI

(Ref Syafhan)

Intermediate care & Nursing Home

Consultant Care of the Elderly Pharmacist Network

15 specialist elderly care pharmacists

Nursing Homes

- Improved MAI
- 2.7 interventions made per patient
- Reduced ED attendances
- ROI £2.39-3

Intermediate Care

- Improved MAI
- 1122 interventions in 453 patients
- 42.9% patients phoned post discharge required one or more interventions
- ROI £2.35-4

(Refs: Miller, McKee)

Sweden, Ireland, Norway, Poland ….

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making medication personal

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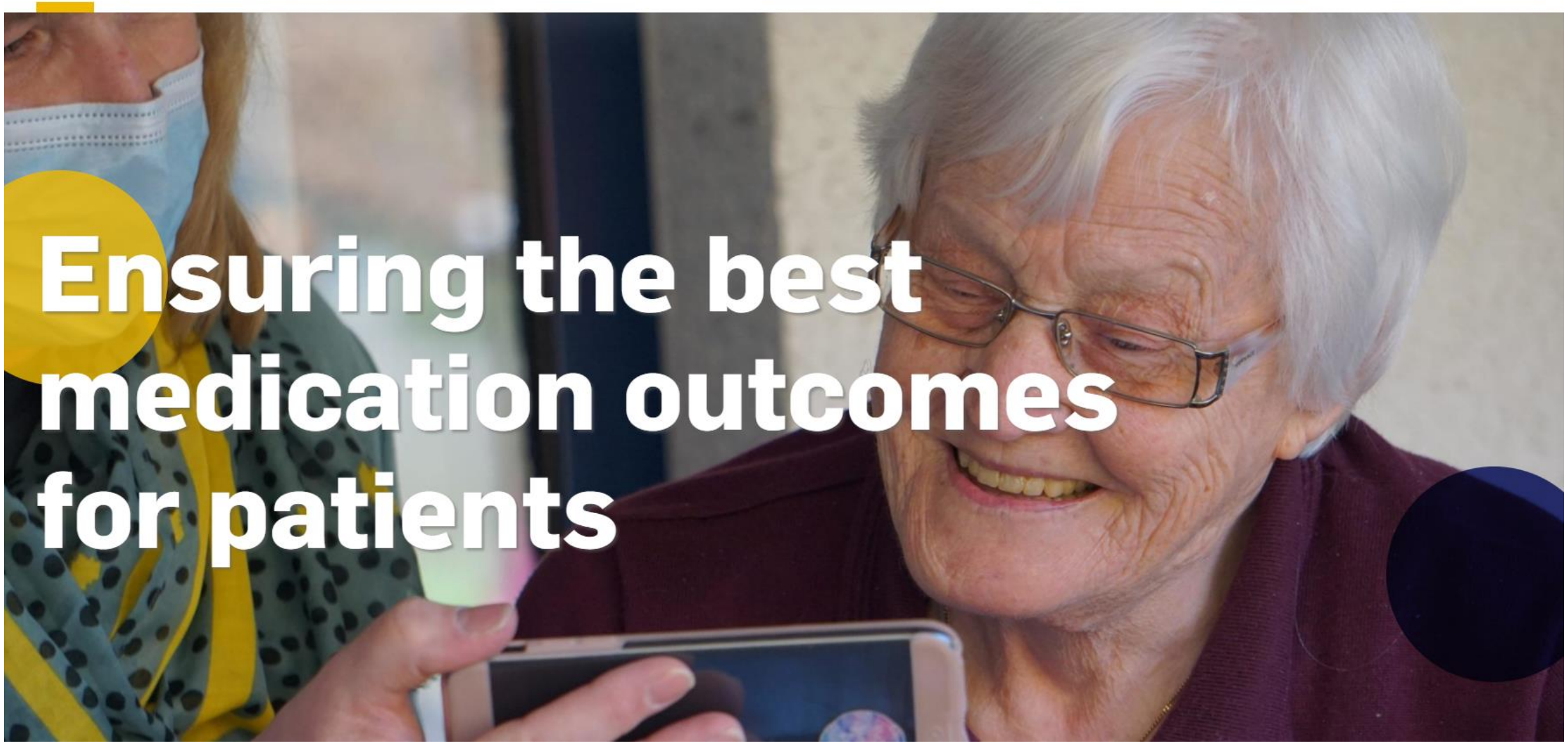


Ensuring the best medication outcomes for patients

7 STEPS TO APPROPRIATE POLYPHARMACY

Step 1: What matters to the patient

WMTY

Step 2: Identify essential drug therapy

Step 3: Does the patient take unnecessary drug therapy?

Step 4: Are therapeutic objectives being achieved?

Step 5: Is the patient at risk of ADRs or suffers actual ADRs?

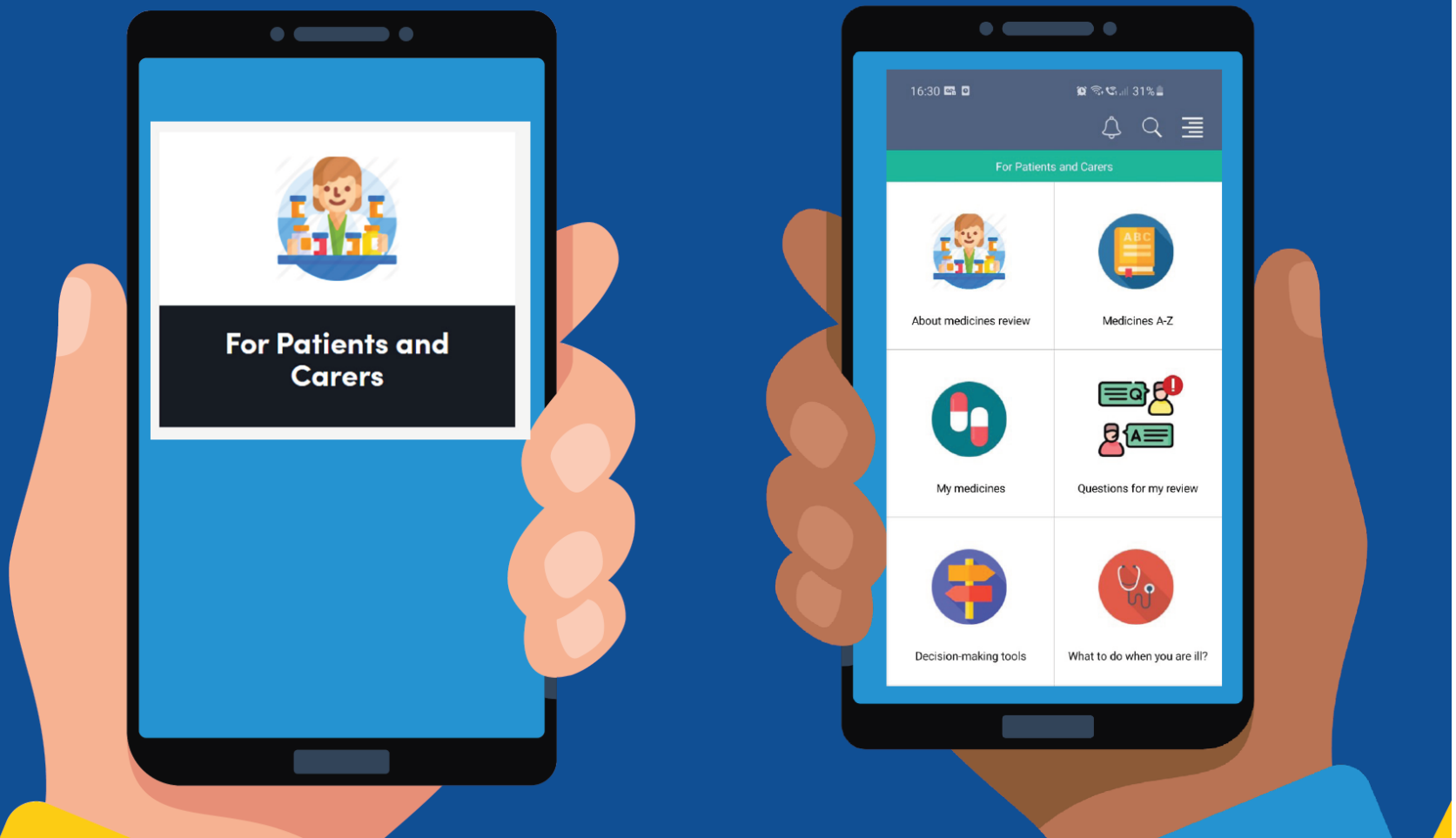
Step 6: Is drug therapy cost-effective?

Step 7: Is the patient willing and able to take drug therapy as intended?

Polypharmacy-Guidance-2018.pdf (scot.nhs.uk)

Supporting reviews with the Manage Medicines app

The Manage Medicines app is a key way to support the medicines reviews process. With easy to navigate toolkits for both professionals and patients or carers, the app also lets patients answer questions ahead of their reviews. As well as giving practitioners this information in advance, it helps patients get the most out of their medicines reviews. Look out for our short animation explaining the app and the PROMs (Patient Reported Outcomes Measures) questionnaire coming soon on our website and twitter.



Accredited online training

Modules:

ONE – Why should we address Polypharmacy

- Definition and dangers of Polypharmacy
- Medication Adherence
- Adverse Drug reactions
- Criteria for selection for Polypharmacy reviews
- Short introduction to the '7 step' medication review process

TWO – 7 Steps Methodology

- The 7 Step Medication review process
- Numbers Needed to Treat
- The 7 steps review process in practice
- High risk medicines combinations

THREE – Change Methodology and Numbers Needed to Treat

- Implementing Change Methodology,
- Case study example of the 7 steps in practice
- 'Understanding NNT's' - Numbers Needed to Treat

https://learn.nes.nhs.scot/59670

What patients say…

iSIMPATHY

No one has ever sat down with me and taken time to go through all my medicines with me

The review considered me as a whole person, not just my medical conditions
Seamus, 62 years

A wonderful person. It was the first time anyone had ever listened and understood what I was coping with and helped me in so many ways

It means so much to me to be involved in decision about my brother's care. He is non-verbal and I do everything for him

My review was not rushed and hugely beneficial to my care
Steven, 45 years

iSIMPATHY

Improved patient safety

82% interventions **clinically significant** including potentially preventing major organ failure, adverse drug reactions or incidents of similar clinical importance (Eadon)

Reduced waste

53% reviews reduction in number of medicines
91% reviews resulted in more appropriate medicines (MAI)
£120 patient/yr* saved on medicines expenditure per review, Scotland, €376 Ireland

*Additional savings expected eg preventable admissions to hospital

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The change package

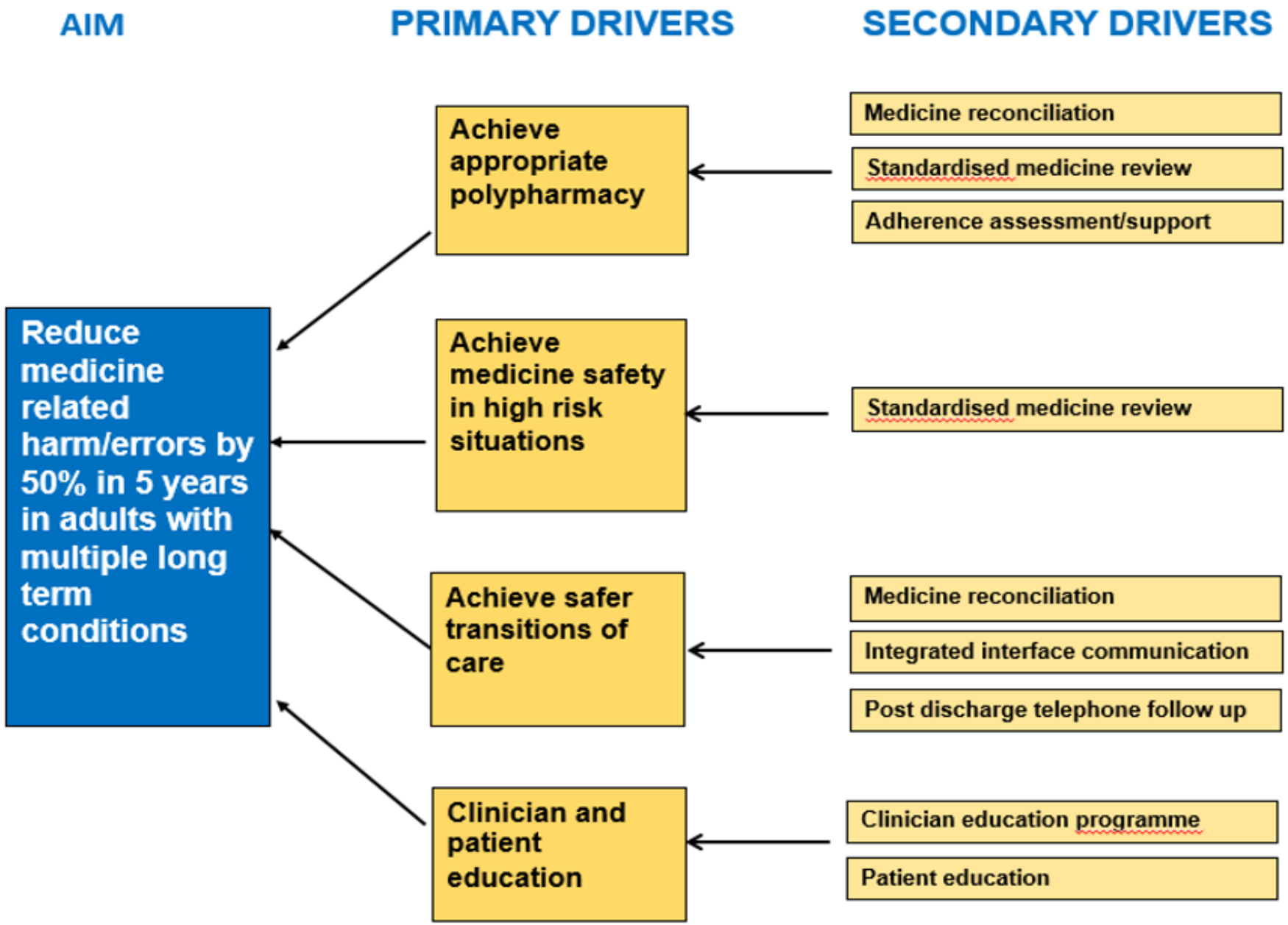
Gill Smith

Institute for Healthcare Improvement

Our approach:

- Has examined the methods and factors that best work to facilitate quality improvement (is evidence based)
- Provides a package (interventions) to make changes in the most effective way
- Is based on a theory of change, with an associated logic model
- Is underpinned by measurement

Driver Diagram



Linking Drivers, Interventions and Measures

PRIMARY DRIVERS	SECONDARY DRIVERS	Intervention	Process measures	Outcome measures	Balanci measur
Achieve appropriate poly-pharmacy	Medicine reconciliation	SOP applied at admission	95% completed within 48hr	Reduced LOS, readmission, ED attendance, GP/CP attendances, number of interventions Gd 4-6 & cost avoidance	Increased medicine lab, diagnosti costs
	Standardised medicine review	7 STEPS Medicine review	% compliance with 7 STEPS		
	Adherence assessment	Develop process to introduce PROMS pre & post medicine review	PROMS completed by x% patients	Improved adherence on PROMS	
Achieve medicine safety in high risk situations	Standardised medicine review	7 STEPS Medicine review	% compliance with 7 STEPS	Reduced LOS, readmission, ED attendance, GP/CP attendances, number of interventions Gd 4-6 & cost avoidance	
Achieve safer transitions of care	Medicine reconciliation	SOP applied at discharge	x% completed prior to discharge	Reduced LOS, readmission, ED attendance, GP/CP attendances, number of interventions Gd 4-6 & cost avoidance	
	Integrated interface communication	Reconciled discharge note on ECR	80% reconciled discharge note on ECR		
	Post discharge telephone follow up	SOP	x% discharge telephone follow up		
Clinician & patient education	Clinician education programme	Deliver education programme	80% clinicians educated	Increased knowledge and skills post education	
	Patient education	SOP applied prior to discharge	x% Patients educated	Reduced LOS, readmission, ED attendance, GP/CP attendances, number of interventions Gd 4-6 & cost avoidance	

Logic Model

Resources	Project will do /provide	Tangible results	Changes in knowledge, skills, attitudes	Changes in behaviours, policies, practice	Changes in broader conditions
Staff (pharmacy & clinical team)	Build change	Engage staff in medicine safety activities	Improve staff medicine review skills	Improved medicine adherence	More highly skilled pharmacy & clinical team
Learning collaborative	Introduce medicine safety activities and assessment	Build shared vision	Improve staff QI theory knowledge	Standardised medicine review	Improved resource utilisation
Appropriately resourced	Implement a person centred approach	Educational programme (clinician/patient)	Patient and clinician education	Post discharge follow up	Optimised skill mix
QI expertise	Opportunity for global network to reduce medicine related harm	Reduced medicine related harm	Reduced medicine related harm	Influence policy, legislation, industry	Patient empowerment
			Reduced medicine related waste		Improved patient safety

7 STEPS	Standardised medicine review tool published in the Polypharmacy Guidance: Realistic Prescribing	https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-Guidance-2018.pdf
PROMs	Patient reported outcome measures	https://managemeds.scot.nhs.uk/for-patients-and-carers/questions-for-my-review/
Eadon intervention scale	Tool to grade clinical interventions according to clinical significance to individual patient for example, Grade 4: intervention is clinically significant to patient and improves standard of care; Grade 6: potentially life-saving	https://academic.oup.com/ijpp/article-abstract/1/3/145/6138838
Medication Appropriateness Index (MAI)	A validated tool to assess the appropriateness of medicines. The evaluator rates each medicine appropriate, marginally appropriate or inappropriate across a range of criteria. Each criterion is assigned a weighted score. The tool has been adapted to reflect a person-centred approach and is currently being used as a measurement in the iSIMPATHY project	Hanlon, J.T., Schmader, K.E., Samsa, K.E., Weinberger, M., Uttech, K.M., Lewis, I.K., Cohen, H.J. & Feussner, J.R. (1992). A method for determining drug therapy appropriateness. *Journal of Clinical Epidemiology* 45 (10) 1045-1051.

Are you ready to take up the challenge?….

- How can you implement the change package to impact on your system, organisation and patients?

- Interested in connecting? Why not send us an expression of interest to:

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- McKee H, Miller R, Cuthbertson J, Scullin C, Scott M. EJPCH. Nursing Home Outreach Clinics show an improvement in patient safety and reduction in hospital admissions in residents with chronic conditions. 2016 vol 4 no 4

Some helpful resources

- **Model to Reduce Waste in Healthcare and Add Value, BMJ Open Quality (2022)** Model to reduce waste in healthcare and add value | BMJ Open Quality
- **Podcast - Saving the planet – reducing healthcare waste to improve environmental impact** Stream episode Gill Smith And Elaine Mead by National Elf Service podcast | Listen online for free on SoundCloud
- **OECD (2017), Tackling Wasteful Spending on Health, OECD Publishing, Paris :https://dx.doi.org/10.1787/9789264266414-en**

Some helpful resources

- **Delivering a Net Zero NHS** (2020), NHS England and Improvement https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf
- Bueno B, Leo JD, Macfie H. IHI Leadership Alliance. **Trillion Dollar Checkbook: Reduce Waste and Cost in the US Health Care System**. Boston: IHI, 2019 (available at www.ihi.org).
- Climate Ergonomics - embedding sustainability into everyday business.pdf

National Patient Safety
Improvement Programmes

NHS England

Medicines

Creating a context for improvement: learning from a national medicines safety initiative

James Innes & Ruth Dales

@NatPatSIP / #MedSIP

Future.nhs.uk/medicinessafetyimprovement/

Delivered by:
The Medication Safety Officer Network

TheAHSNNetwork

Led by:
NHS England

It’s great to be with you…

James Innes

Formerly Senior QI Advisor, NHS England

Improvement Director, NSFT

Improvement Advisor, IHI

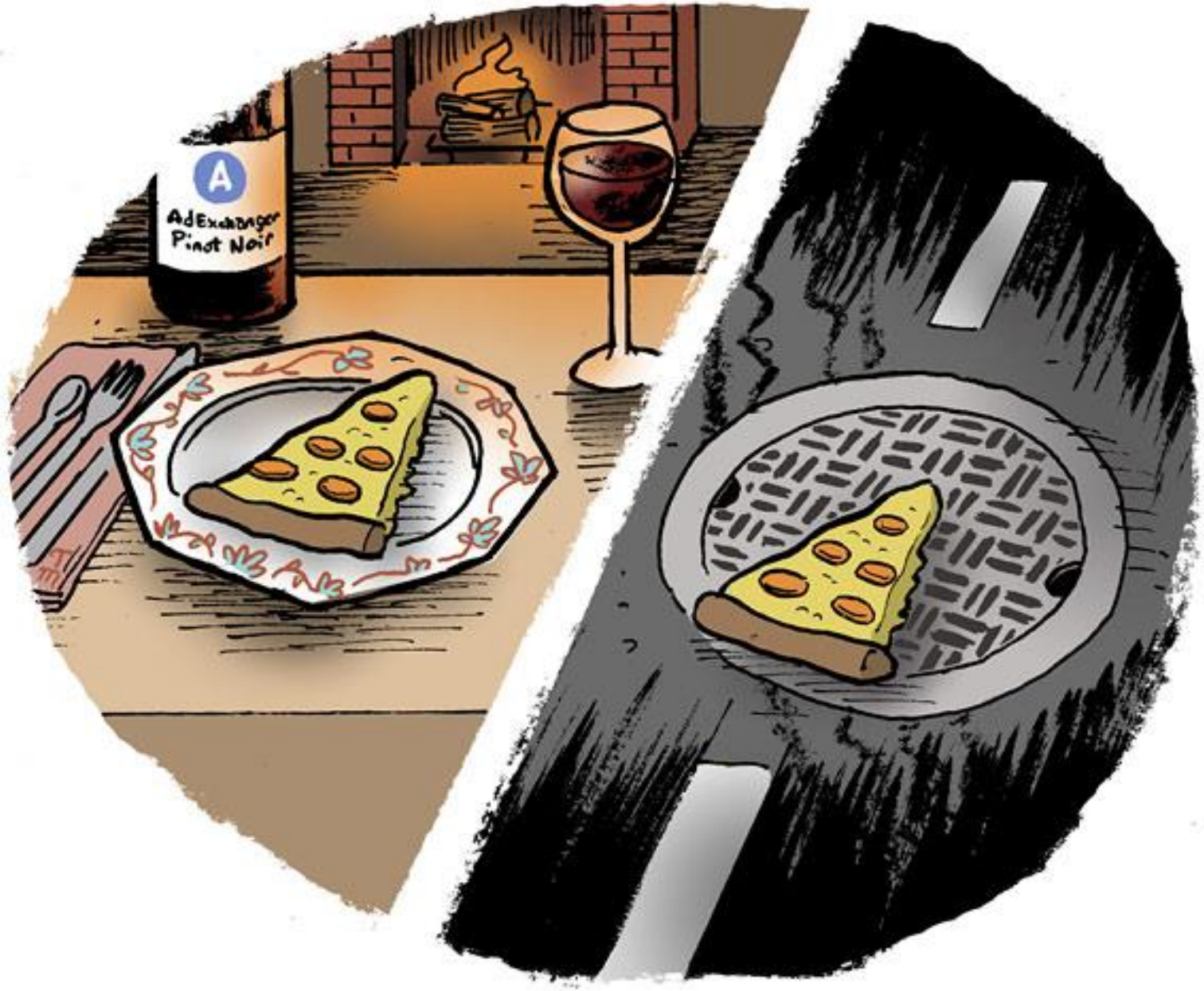
Ruth Dales

Senior Improvement Manager,

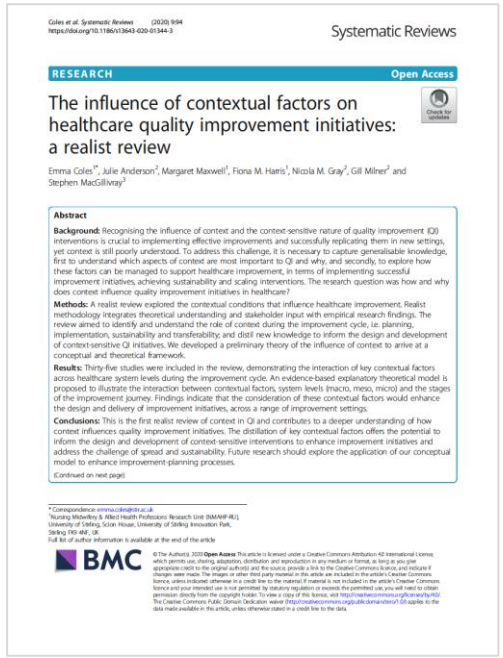
NHS England

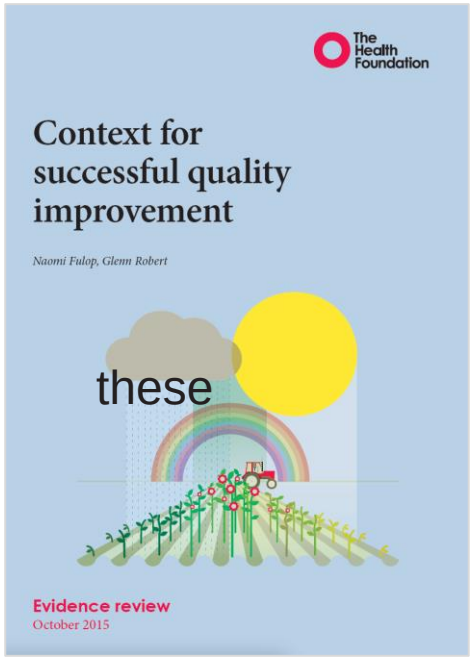
Plan

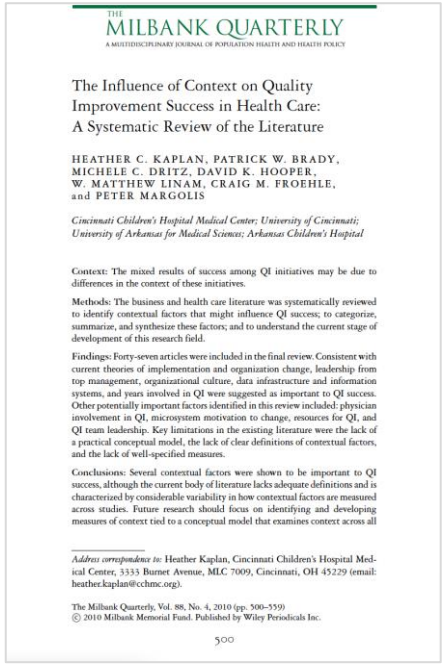
- Context, key literature and conceptual models
- National patient safety to reduce unsafe oral methotrexate prescribing
- Creating a context for improvement: key learning and next steps

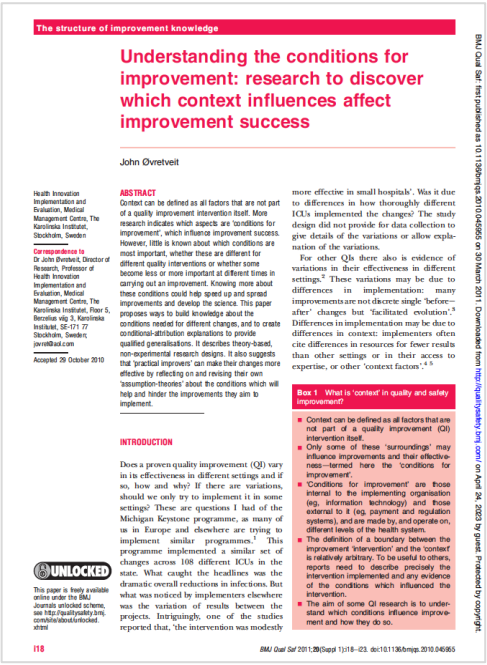

A
AdExchanger
Pinot Noir

A wealth of literature focused on context…









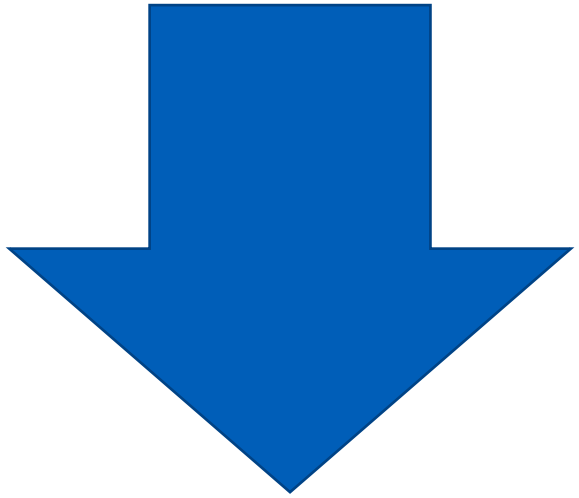
1. Coles et al (2020) The influence of contextual factors on healthcare quality improvement: a realist review
2. Fulop et al (2015) Context for successful quality improvement
3. Bate et al (2014) Perspectives on context
4. Kaplan et al (2010); The influence of context on quality improvement success in health care: a systematic review of literature
5. Ovretveit (2010) Understanding the conditions for improvement: research to discover which context influences affect improvement success

A definition of context

The ‘why’ and ‘when’ of change and concerns itself both with influence from the outer context (such as the prevailing economic, social, political environment) and influences internal to the focal organisation under study (for example, its resources, capabilities, structure, culture and politics).

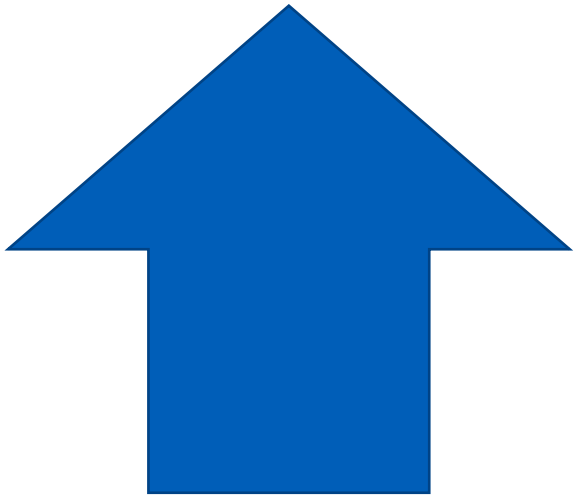
Pettigrew AM, Ferlie E, McKee L. Shaping strategic change: making change in large organizations: the case of the National Health Service. London: Sage, 1992.

Top Down or Bottom Up?



- Driven from the centre
- Often tackles strategic priorities
- May feel imposed
- Risk of reduced local engagement

- Driven locally based on local needs
- Higher likelihood of engagement
- Risk of a ‘thousand flowers blooming’



Creating a Receptive Context for Change-Pettigrew, Ferlie and McKee 1992

Environmental Pressure	Supportive organisational culture	Change agenda and its locale	Simplicity and clarity of goals
Cooperative inter-organisational networks	Managerial clinical relations	Key people leading change	Quality and coherence of policy

National Patient Safety
Improvement Programmes

NHS England

Medicines

Reducing National High Risk Oral Methotrexate Prescribing

@NatPatSIP / #MedSIP

Future.nhs.uk/medicinessafetyimprovement/

Delivered by:
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Medicines Safety Improvement in England

The Policy Research Unit in Economic Evaluation of Health and Care Interventions (EEPRU) identified that:

> There are an estimated 237 million ‘medication errors’ per year in health and care services in England, with 66 million of these potentially clinically significant.

> ‘Definitely avoidable’ adverse drug reactions collectively cost £98.5 million annually, contribute to 1700 deaths, and are directly responsible for, approximately 700 deaths per year in England.

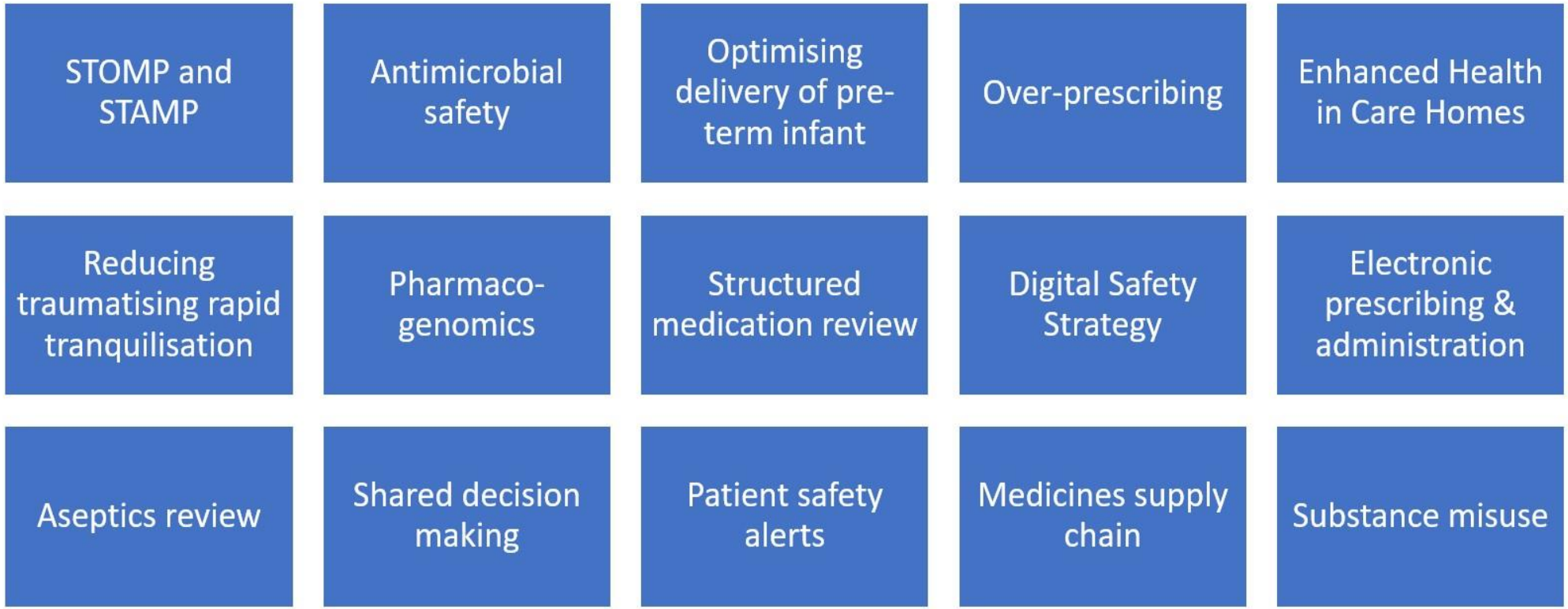
In response to the World Health Organisation’s (WHO’s) Global Challenge in 2017, a Short Life Working Group (SLWG) was set up, chaired by the Chief Pharmaceutical Officer for England which recommended the establishment of a medication error and safety programme. Thus the Medication Safety Programme (MSP) was established in 2018 in response to this.

In 2019 the MSP was aligned with National Patient Safety Strategy and became known as the Medicines Safety Improvement Programme (MedSIP).

https://www.england.nhs.uk/patient-safety/the-nhs-patient-safety-strategy/

Medicines Safety Improvement in England

The MedSIP recognises the contributions to medicines safety improvement from across NHS England:



Medicines Safety Improvement in England

MedSIP Board defines specific priority areas in which to focus improvement, with the aim:

To address the most important causes of severe harm associated with medicines, most of which have been known about for years but continue to challenge the health and care systems in England. The programme affects safety culture, safety systems and the high-risk medicines in common use.

Priority areas for 2020/21 – 2021/22 were:

> Drug administration in care homes

> Opioids for chronic non-cancer pain

> Prescribing of Methotrexate 10mg tablets to community patients

Two further topics were identified to be in the pipeline for development:

> Problematic polypharmacy

> Anticoagulation safety

Medicines Safety Improvement in England

NHS England Framework for involving patients in patient safety

> The framework is split into two parts:

- Part A: Involving patients in their own safety
- Part B: Patient safety partner (PSP) involvement in organisational safety

Wrt Methotrexate:

> Part A: = Shared decision-making ensures that individuals are supported by their clinician to make decisions that are right for them.

> Part B: Patient safety partners (PSP) contribute to the MedSIP Board priority setting process

https://www.england.nhs.uk/patient-safety/framework-for-involving-patients-in-patient-safety/

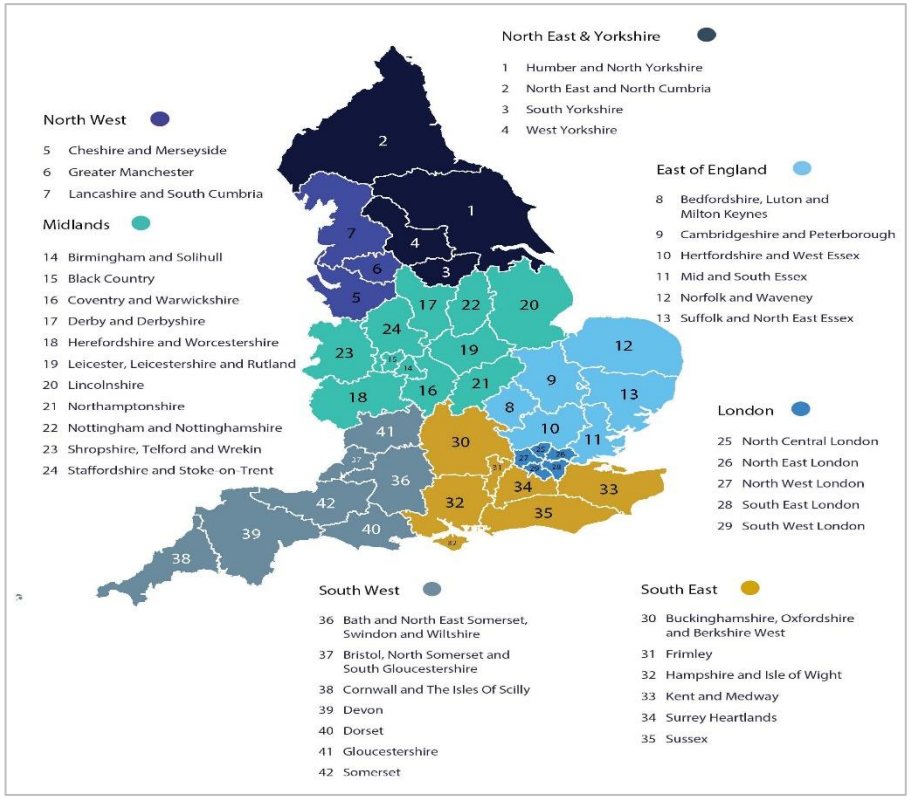
https://www.england.nhs.uk/personalisedcare/

Methotrexate

- Commonly prescribed medicine for treatment of rheumatoid arthritis, Crohn's disease and severe arthritis, with ≥ 1.7 million items issues in England during 20/21
- At least 25 deaths and 39 cases of severe harm related to accidental overdose.
- Resulted in 2 NPSA Patient Safety Alerts, and inclusion in NHS I 'Never Event's list. Range of strategies in place to reduce accidental overdose, including reducing co-prescription of 2.5mg and 10mg tablets, as they look incredibly similar, may be confused with each other, leading to accidental over or underdose.
- BNF states: *'To avoid error with low-dose methotrexate, it is recommended that only one strength of methotrexate tablet (usually 2.5mg) is prescribed and dispensed"*
- Retrospective cohort study by Mackenna et al[1] identified practice of co-prescribing methotrexate 2.5mg and 10mg widespread, with large variation between CCGs

How is Methotrexate Prescribed in England?

- Local oversight provided by 42 Integrated Care Systems (ICS) each covering population size ≈ 1.2 million people
- Prescribing takes place by ‘shared care agreements’ between hospital specialists and general practitioners
- Each ICS also has a prescribing support team in place as well as a range of prescribing data

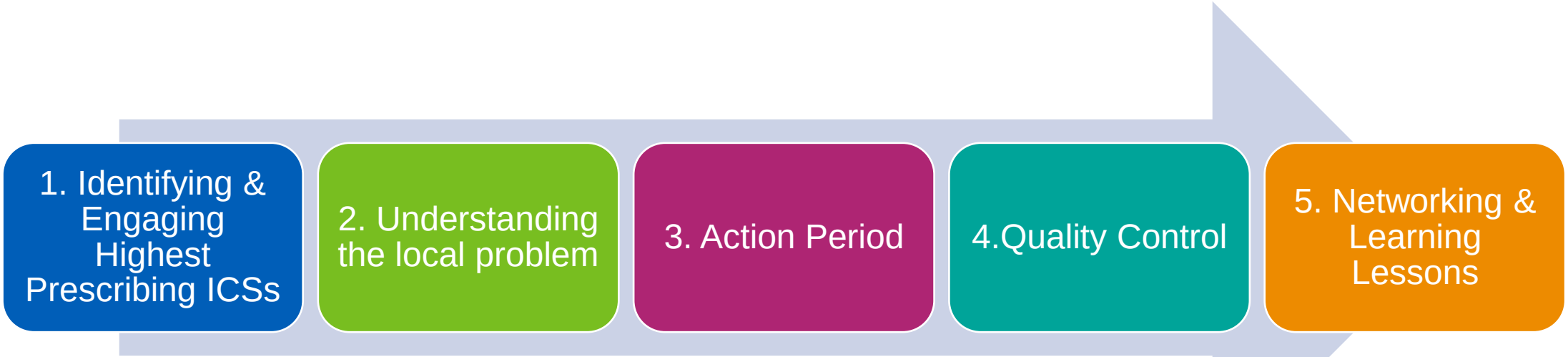


Aim of our work

"To reduce national variation in the prescription and supply of oral methotrexate 10mg tablets, for non-cancer treatment, by November 2021."

This was a centrally led intervention, where the national MEDSIP team provided coordination, coaching and improvement expertise to participating ICSs

Our 5 stage approach



- Use of Pareto charts to identify highest prescribing ICSs
- Engaging ICSs and inviting to take part in QI intervention

- Support ICSs to understand what was driving prescribing of methotrexate 10mg tablets
- Development of a strategy to tackle problem

- ICSs carry out their strategies, using time series data to understand the impact of their changes
- There were 8 simultaneous but independent QI efforts happening in 8 targeted ICSs, all under coaching & supervision of MedSIP team

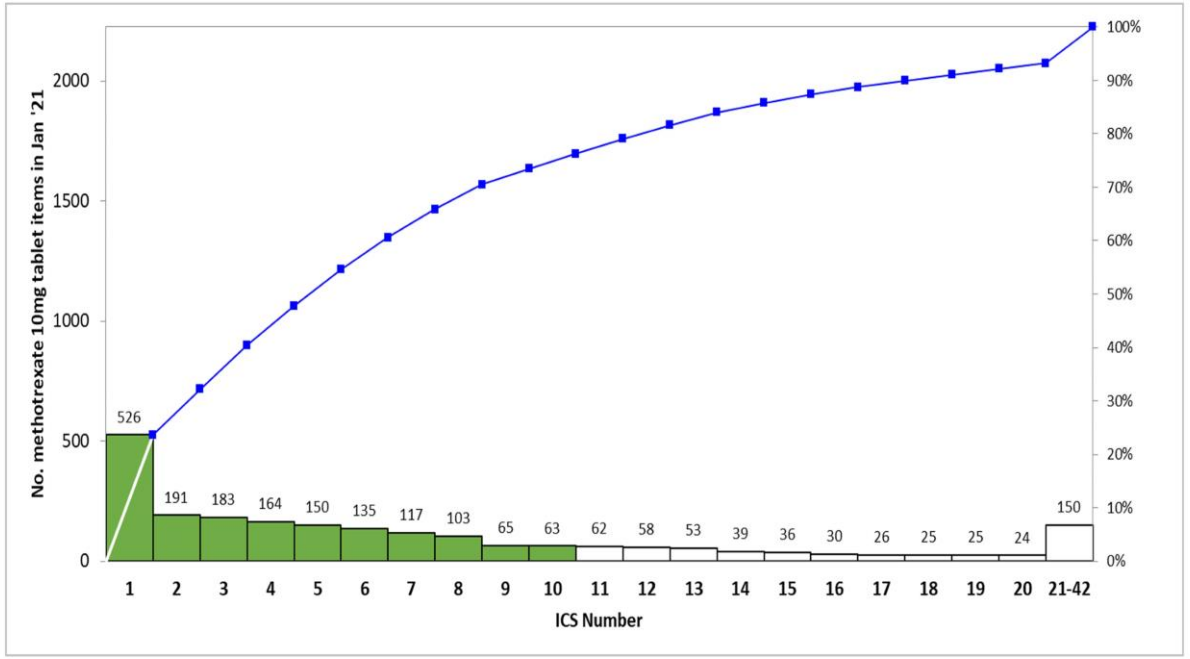
- Implementation of ‘standard work’ to sustain gains, based on local context
- Use of MOCHA framework

- Use of networking formal and informal networks to share intelligence and learning through initiative

1. Identifying & Engaging Highest Prescribing ICSs

- Pareto Principle almost true! 10/42 ICSs (23%) responsible for 76% of national prescribing
- Eight ICSs agreed to take part in stages 2-5 of the QI intervention.
- Two ICSs were unable to participate owing to operational pressures as a result of COVID vaccination programmes.

Pareto chart of number of items of methotrexate 10 mg tablets issued per ICS during January 2021



2. Understanding the Local Problem

Four common issues were identified as driving methotrexate 10mg tablet prescribing:

1) Prescribing was driven by specific localities (5/8 ICSs)

2) Prescribing was driven by hospital specialists (2/8 ICSs)

3) Prescribing was a result of historical practice that had gone unchallenged (8/8 ICSs)

4) Prescribing was driven by sub-populations of patients unwilling to convert to 2.5mg tablets owing to increased pill burden (3/8 ICSs)

3. Action Period

Table 1 Outcome, process and balance measures for the action period

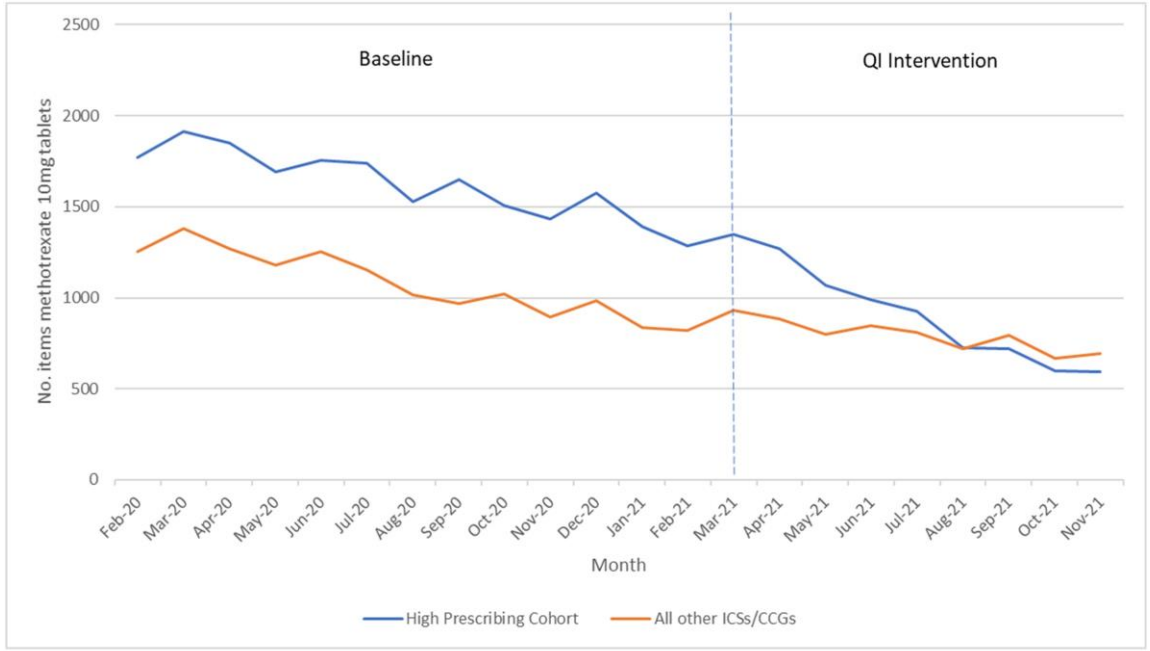
Measure type	Measure name	Operational definition	Analysis	Validity and reliability
Outcome measure	No. of items prescribed for methotrexate 10 mg tablets for high prescribing cohort versus all other ICSs/CCGs in England.	Data sourced from OpenPrescribing 'Methotrexate 10 mg tablets by all STPs or CCGs' and aggregated into respective cohorts.[20 25] ICS (STP) data used where the ICS focused on reducing methotrexate 10 mg tablet prescribing across all CCGs in their geographical footprint.[20] CCG data used where the ICS focused on reducing methotrexate 10 mg prescribing in specific CCGs in their geographical footprint.[25]	Line graph comparing ICSs/CCGs participating in QI intervention versus all other ICSs/CCGs Individual Moving Range (XmR) control chart for both cohorts.	OpenPrescribing uses prescribing data published by NHS Business Services Authority (NHSBSA) Prescription services. Data processes are internally audited and exceed 99.5% accuracy at all times. Accuracy data are published on NHSBSA website for transparency.[26] Well-established and managed processes to ensure reliability of data, with data collected and processed in the same manner from a single source, NHSBSA.
Process measure	No. of items prescribed for methotrexate 10 mg tablets for each individual ICS in high prescribing cohort	Data sourced from OpenPrescribing 'Methotrexate 10 mg tablets by all STPs or CCGs'. See previous for how data were selected based on ICS/CCG focus.	Time series analysis using an Individual Moving Range (XmR) control chart.	
Balancing measures	1. No. of patient safety incidents, resulting in harm, reported to National Reporting & Learning system (NRLS) following methotrexate 2.5 mg/10 mg tablet misadministration. 2. No. of patient safety incidents, related to methotrexate 2.5 mg/10 mg tablet misadministration in high prescribing cohort. 3. ICS reported patient experience of QI intervention in high prescribing cohort. 4. ICS reported staff experience of QI intervention in high prescribing cohort. 5. Total cost of methotrexate tablets for high prescribing cohort.	1. Methotrexate 2.5 mg/10 mg tablet misadministration safety incidents identified from free-text search of NRLS database for all incidents containing methotrexate.[27] Stratified by level of harm. 2. Methotrexate 2.5 mg/10 mg tablet misadministration safety incidents shared with MedSIP team from ICS/CCG leads involved in QI intervention. 3. Patient experience feedback shared with MedSIP team from ICS/CCG leads involved in QI intervention. 4. Staff experience feedback shared with MedSIP team from ICS/CCG leads involved in QI intervention. 5. Data sourced from OpenPrescribing 'Analyse' webpage, with prescribing of 'methotrexate 10 mg tablets' and 'methotrexate 2.5 mg tablets' highlighted by STP or ICS.[28]	1. Count of safety incidents, with accompanying themes. 2. Count of safety incidents, with accompanying themes. 3 and 4. Approach, based on Woods *et al*,[23] was used to gather and collate data. 5. Time series analysis using an Individual Moving Range (XmR) control chart.	1. Systems and processes in place to increase validity and reliability of patient safety incident reporting. NRLS is a systematic and nationally managed system. However, levels of reporting between different organisations can vary greatly, with reporting far greater in secondary care than primary care. 2. ICS staff may be aware of incidents or near misses that have not been reported through incident reporting systems. Information reported through this route not systematic and dependent on strength of networks and connections in ICSs. 3 and 4. ICS well placed to receive patient and staff experience as they led work locally. However, information reported through this route not systematic and dependent on strength of networks and connections in ICSs. 5. See previous for validity and reliability of OpenPrescribing data.

CCG, clinical commissioning groups; ICS, integrated care systems; QI, quality improvement; STP, Sustainability and Transformation Partnerships.

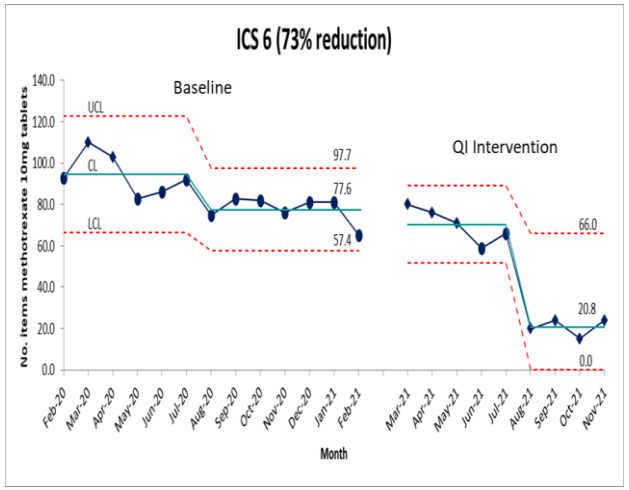
3. Action Period

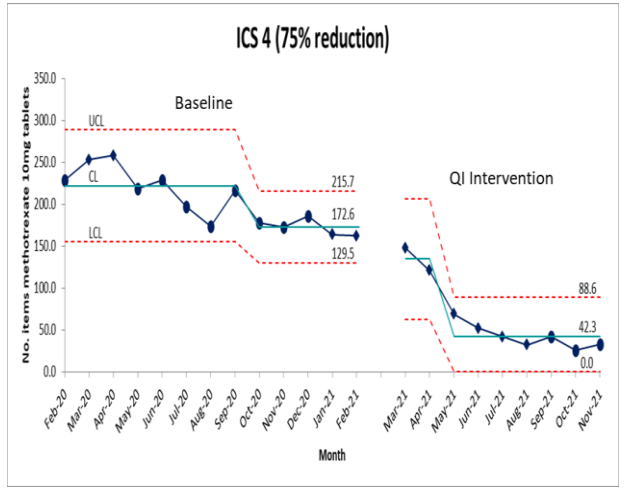
- Before the QI intervention started, a reduction in methotrexate 10mg tablet prescribing was already taking place, with both the high prescribing cohort and all other ICSs/CCGs reducing at approximately the same pace
- During the action period, the pace of reduction for the high prescribing cohort exceeded that of all other ICSs/CCGs
- The high prescribing cohort saw a 54% reduction in prescribing vs 23% for the remaining ICSs/CCGs

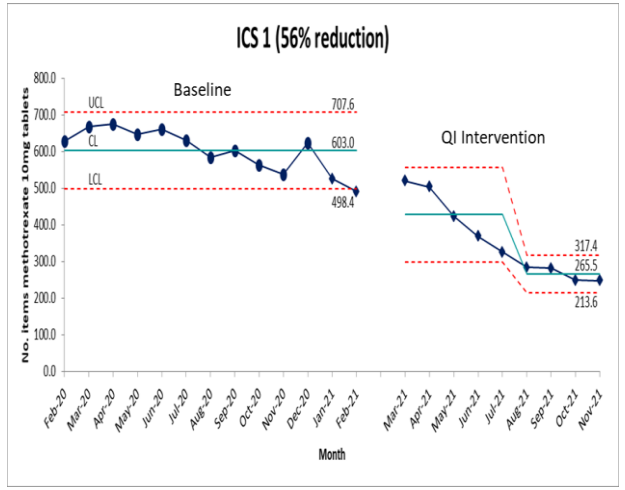
Line graph of methotrexate 10 mg tablet prescribing for high prescribing cohort versus all other ICSs/CCGs.

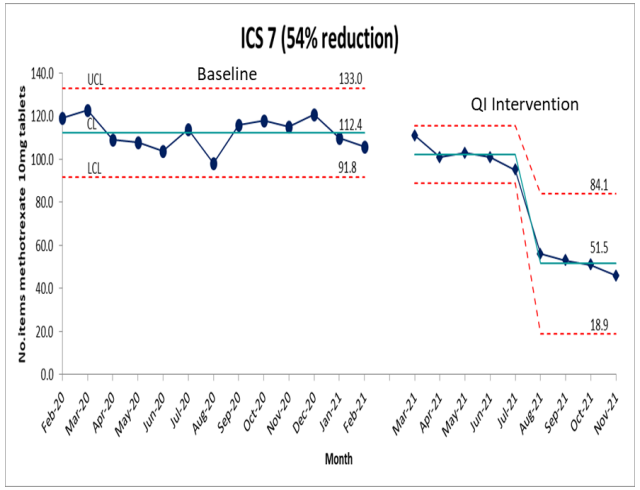


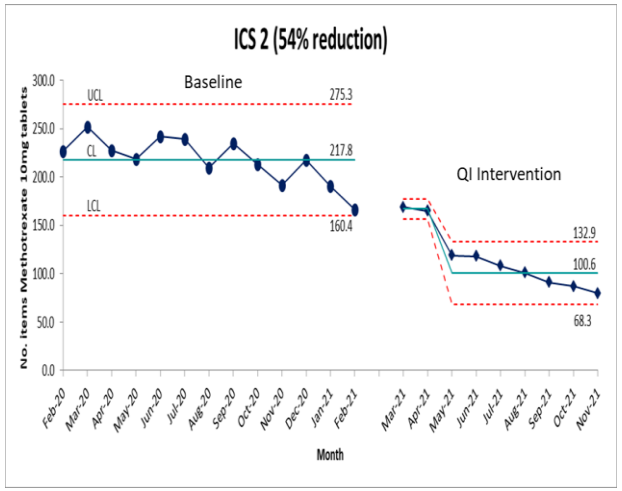
3. Action Period

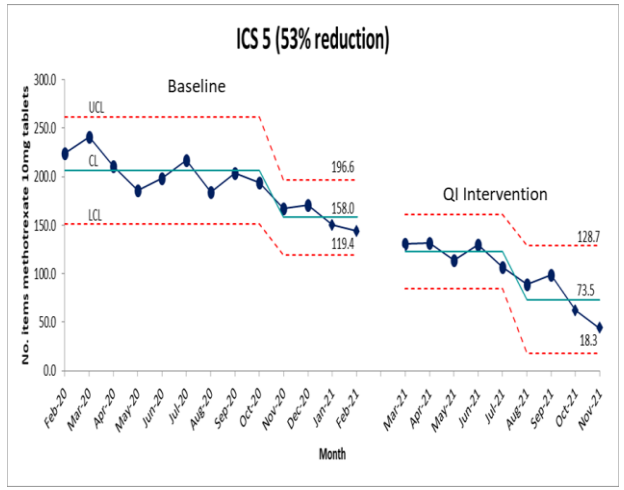


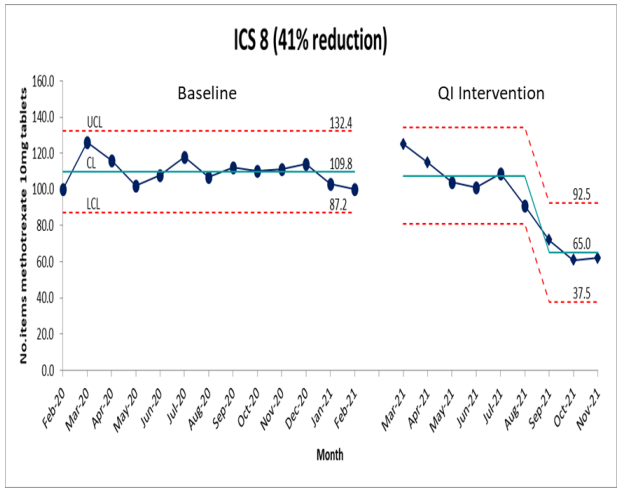


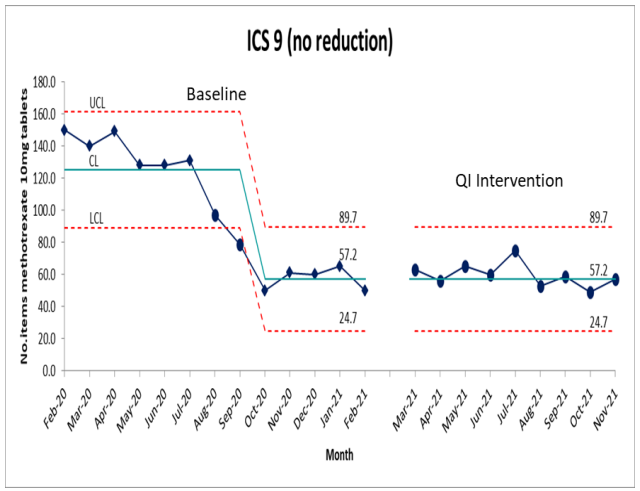












3. Action Period

- No safety incidents were reported to the English National Reports and Learning Service, although were made aware of 3 near misses where patients were switched to new strengths of tablets, but there was ineffective counselling. This information was rapidly shared across the network

- In general, the intervention was well received by patients. However, several ICSs identified small populations of patients unwilling to switch from 10mg to 2.5mg tablets, owing to increased tablet burden.

- This initiative had no impact on financial expenditure of methotrexate tablets in the high prescribing cohort

4. Quality Control

All ICSs made changes to their existing structures and processes to ensure that they were able to hold the gains:

- 7 ICSs created ‘position statements’ setting out methotrexate 10mg tablets should not be prescribed
- 6 ICSs created prescribing alerts on their electronic prescribing systems
- 3 ICSs made methotrecate 10mg tablets non-formulary of non-cancer use
- 1 ICS removed methotrexate 10mg tablets completely from the local hospital’s prescribing system
- Several ICSs created standardised methotrexate initiation letters from hospital specialists to GPs stating the dose of methotrexate to be prescribed in multiples of 2.5 mg tablets

5. Networking and Learning Lessons

One on one coaching was very useful to help bounce ideas to progress the work

Please continue with professional and supportive engagement and yet at the same time challenging us

Great help. As we have been working on this for a while and MedSIP support just fast tracked our work and aims

It's been useful to look at 10 CCGs rather than focusing on worst outlier which can have a negative approach

Giving benchmark reductions-helps to know how well we're heading in the right direction!

You helped us create a 'burning platform'…helped us say 'this is bigger than us'

Loved networking opportunities between CCGs to discuss progress/share tools/overcome barriers

This small forum from outside of our area is helpful to share ideas and experiences

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National Patient Safety
Improvement Programmes

NHS England

Medicines

Creating a context for improvement: key learning and next steps

@NatPatSIP / #MedSIP

Future.nhs.uk/medicinessafetyimprovement/

Delivered by:
The Medication Safety Officer Network

TheAHSNNetwork

Led by:
NHS England

Creating a Receptive Context for Change-Pettigrew, Ferlie and McKee 1992

Environmental Pressure	Supportive organisational culture	Fit between change agenda and its locale	Simplicity and clarity of goals
Cooperative inter-organisational networks	Managerial clinical relations	Key people leading change	Quality and coherence of policy

Our Learning (ICSs and MedSIP)

Environmental Pressure

- This was an already known area of risk and focus in England. Open access data already existed focused on methotrexate prescribing levels
- Direct intervention from the MedSIP team helped ICSs build momentum for change.

Cooperative inter-organisational networks

- There were already pre-established and well functioning networks within the ICSs
- ICSs stated that networking sessions between ICSs helped identify barriers and potential solutions to problems.

Our Learning (ICSs and MedSIP)

Supportive organisational culture

- ICSs identified coaching approach from the MedSIP team, together with the use of data was integral to understanding the problem and devising a strategy to reduce prescribing.
- Medicines optimisation teams embedded in every ICS were already used to undertaking this style of work

Managerial clinical relations

- The work unearthed variations in the maturity of relationships between managers and GPs and managers and hospital clinics.
- ICS managers stated that the lack of a national driver around this issue had been a barrier to engage and influence prescribers.

Our Learning (ICSs and MedSIP)

Fit between change agenda and its locale

- Every team had a slightly different context, which meant that a rigid change model would have been unsuitable
- ICSs shared that receiving coaching to help them better understand the problem, enabled them to adapt their improvement strategy so that it worked for their local context

Key people leading change

- Engaging medicines management teams embedded in the ICSs meant this was a team effort, rather than individual effort
- Utilising a sustainability approach further ensured that this work was focused on overall systems and processes rather than just individuals

Our Learning (ICSs and MedSIP)

Simplicity and clarity of goals

- The success of this work was aided by the fact that this was a discrete intervention, with a small population of patients taking 10mg tablets in every ICS.
- The immediate availability of data enabled ICSs absolute clarity on whether they were achieving their goals

Quality and coherence of policy

- A lack of national clarity had led some ICSs struggling to engage and influence prescribers
- In most ICSs, there wasn't explicit policy around this topic. As a result of this work, most ICSs created position statements to clarify the ICSs policy.

Now what?

- Learning from this work has been applied to the implementation of the Opioid Safety Improvement Programme:

  - Management of ‘chronic non-cancer pain’ requires ***personalised care*** and shared decision making at its core with patients requiring a mixture of ***biopsychosocial support*** so that they can live well with their pain.

  - Consideration of the problem from the perspective of the entire patient pathway is key:

    - simple interventions in isolation are minimally effective in reducing the burden of opioids
    - working in one part of the system often doesn't change the outcome,
    - ***A whole system approach is essential*** for scale and sustainability

Learning from the Methotrexate work:	Application to the Opioid safety Improvement programme
Creating a burning platform:	We have created and maintain a burning platform with the national and 7 English regional pharmacy leadership groups as well as the national Medication Safety Officers. Also creation of harm statements
Structured support to understand the problem: Systematic approach to improvement:	A framework for a Whole Systems Approach was designed which includes: **Quality Planning:** Encouraging the use of data as well as insights from local communities, service users and service providers/ commissioners in order to understand the problem and devise a strategy to reduce high-risk opioid prescribing. **Quality Improvement**: Encouraging the co-design of an improvement aim, potential changes that could be made as well as support to consider measurement for continuous improvement. **Quality Control**: Support for the system adopt the programme and consider how to design in sustainability form the start
Leveraging networks:	Leveraging networks of motivated stakeholders from across the local geographies that want to make changes to practice to improve pain management and opioid prescribing.
Learning between ICSs:	We are hosting quarterly national Action and Learning sessions; an opportunity for peer-to-peer coaching which helps us expose, consider and address problems that are mutually challenging then generate change ideas that teams can take back to their wider stakeholders as well as inform support requirements for the national programme. We also host informal weekly shared learning sessions for the 15 core teams
A lack of national drivers	We have worked with the pan departmental Dependence Forming Medicines Group and the Primary Care Team to ensure there are national policy drivers and financial incentives in place for primary care 2022/23- Combination of a national QI module in the QoF and incentivisation to focus SMRs on opioids and other dependence forming medicines (circa £50m).

NHS England

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