

Possible solutions for more sustainable medicine use

One Health: Beyond LADME

Congreso Nacional SEFH



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“Primum non nocere”
First, do no harm!
- Hippocrates

Juramento Hipocratico

So why do medicines matter?

The prescription of a medicine is the most common intervention in healthcare used to diagnose, cure, treat and prevent disease

- Growing population
- More older people
- Technological advances
- “Pill for every ill” society
- Consumerism- waste increasing



Why does medicines spend in Spain matter?

- 565 Euros per head of population
- 14.6% of total health spending
- 1.56% of Gross Domestic Product (GDP)
- 26.6 BILLION Euros (not including hospital meds)



<https://data.oecd.org/healthres/pharmaceutical-spending.htm>

Why do you, as a pharmacist, matter?

- Pharmacists are highly trusted healthcare professionals- 2nd most trusted source of health advice after nurses (Edelman Trust Barometer, 2023)
- You deal with patients and prescribers- see both sides
- You can make a difference to the health of individual patients, the health of the population and the planet



One Health Breakthrough Partnership



www.ohbp.org



Steering Group
Organisations:



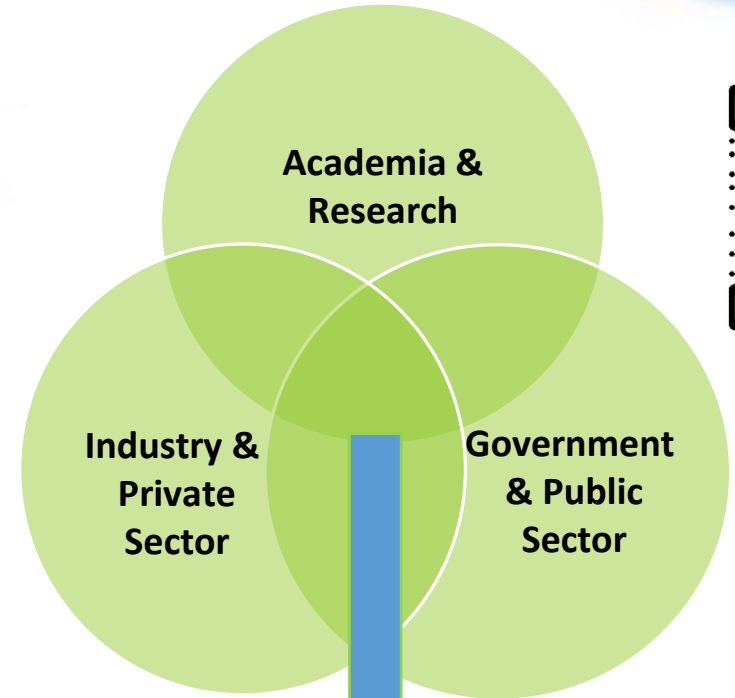
Support from



Scottish Government
Riaghaltas na h-Alba
gov.scot

Vision: *A non-toxic environment*

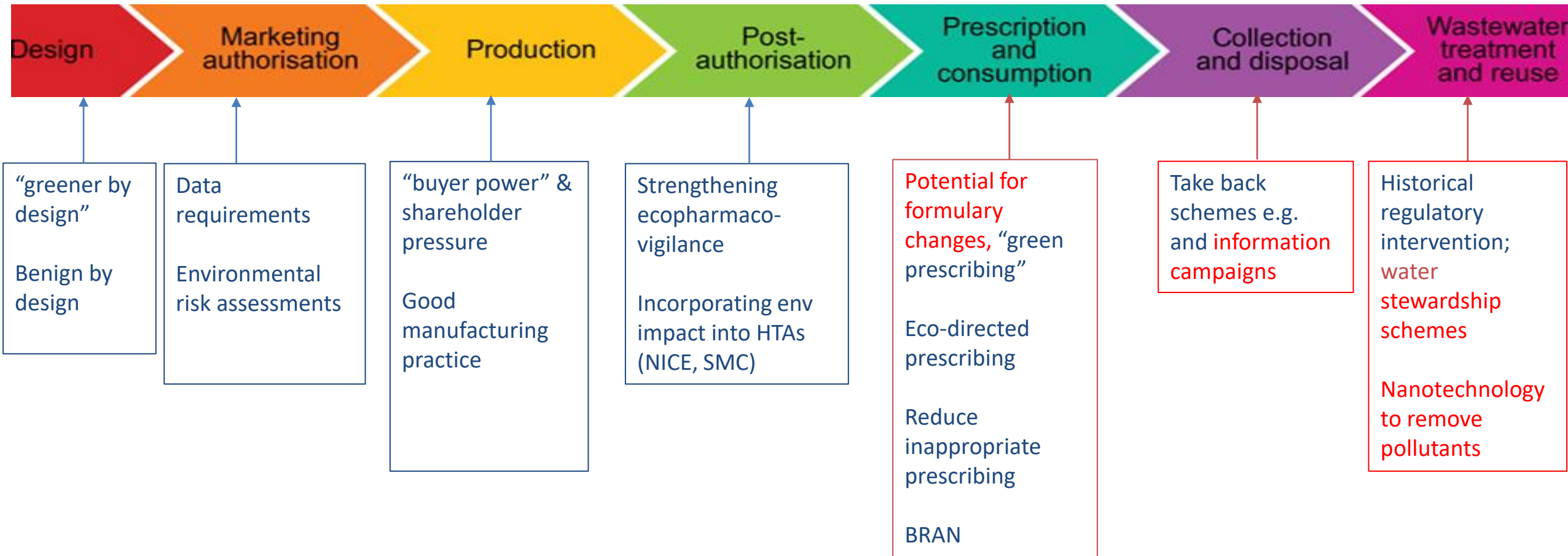
Mission: To reduce environmental impact of healthcare practices; influence policy; drive research & innovation



Cross-sector collaboration generating impact at the One Health interface

Pharmaceutical Life Cycle – Intervention Points

source OECD, 2019



Some examples of lifecycle interventions to reduce use, waste and emissions



Medical Research Council



“Developing frameworks for eco-directed sustainable prescribing: Towards reducing environmental pollution from healthcare practices”

Expected outcomes:

1. Introduce environmental impact indicators of medicines into the formulary process alongside clinical and cost effectiveness
2. Develop a decision-making framework for the formulary which can be further refined & built-on
3. Increase awareness amongst healthcare practitioners, prescribers, pharmacists & the public on the environmental impact of medicines



The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA



Scottish Water
Trusted to serve Scotland



UPPSALA UNIVERSITET



Public focus groups (Obj 1)

- Two focus groups held in Inverness, Scotland
- Six people attended one, three the other
- Common questions asked through semi-structured facilitation

Have you previously heard about pharmaceutical pollution in the water environment?

Do you consider pharmaceutical pollution in the water environment to be an important issue?

Do you think medicines can be prescribed in a more eco-friendly way?

Would you be willing to make a change in medication from a medicine with a potentially negative environmental effect, to one with a lower effect?

Would you discuss the environmental impact of a medicine with your healthcare prescriber, if this was important in your health choices and goals?

Public focus groups



- Participants were aware of some of the issues – especially wild water swimmers



- Further education was needed starting with school, and awareness through GP and pharmacy poster/displays



- Simple messaging and labelling systems on medicines packaging to alert about the environmental impact



- Participants felt prescribers need to spend more time with patients discussing treatment options



- Hesitancy in switching medicines to more environmentally friendly options, unless it was equally effective and safe



Prescriber focus groups

- Two focus groups held on MS Teams with NHS Scotland prescribers
- Common questions asked through semi-structured facilitation
- Interviews were digitally recorded & transcribed verbatim

How do you feel about pharmaceutical pollution in the water environment?

Do you have suggestions on how to present environmental impact data of medicines to inform prescribing?

Would you discuss the environmental impact of a medicine with a patient, if this was important in their health choices and goals?

How could medicines be prescribed in a more environmentally directed and sustainable way?

Do you think the environmental impact of medicines should be included in formularies, alongside the current criteria?

How could prescriber awareness and knowledge of this issue be raised?

Prescriber focus groups



- Need for prescriber education and awareness



- Willingness to act, but difficulty in making a meaningful impact as is complex issue



- Changes which could promote environmentally friendly prescribing practices



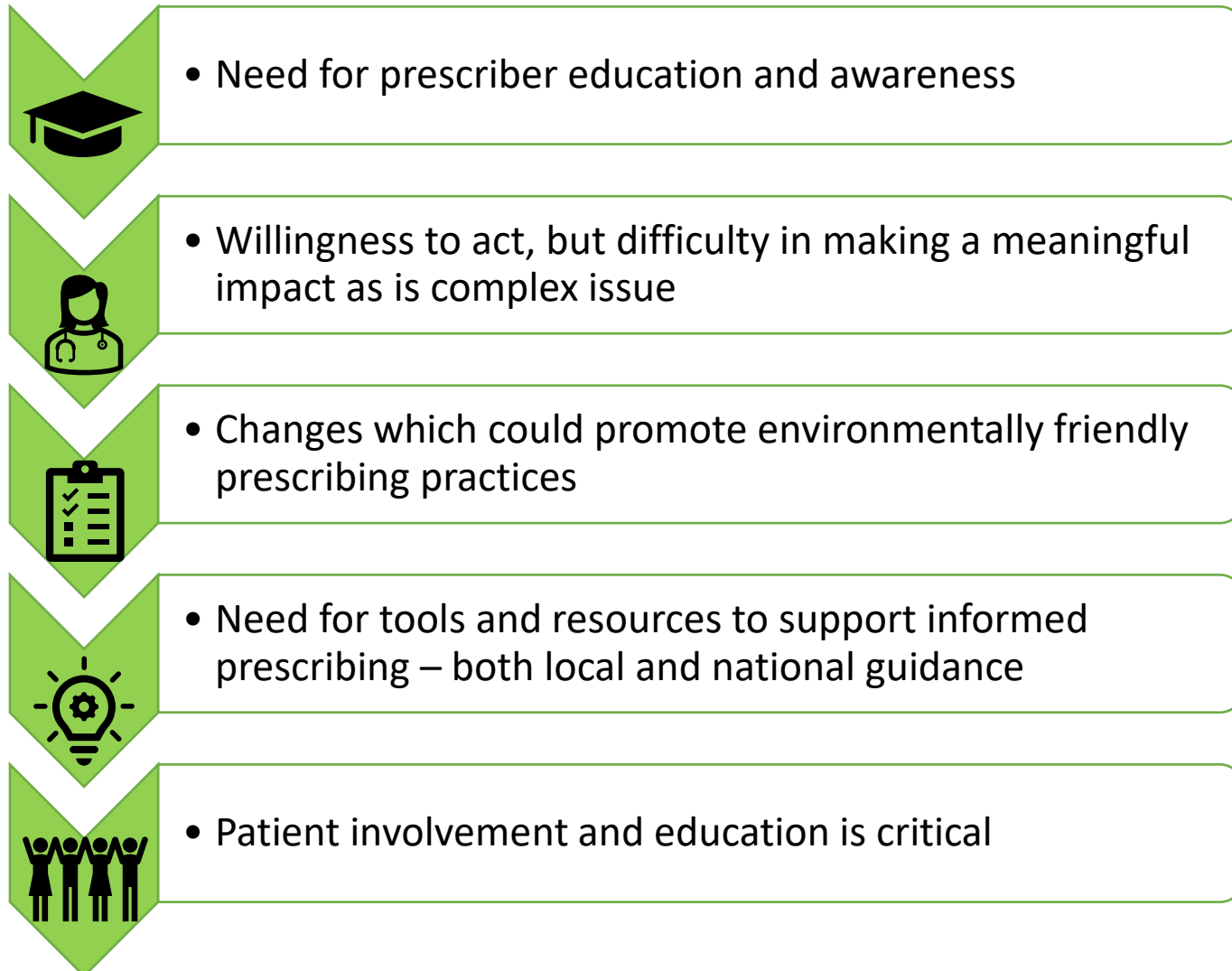
- Need for tools and resources to support informed prescribing – both local and national guidance



- Patient involvement and education is critical



Prescriber focus groups



- Conferences and webinars
- Incorporate into curriculum
- CPD courses and NESS modules
- Considering patient and population health
- Communication with stakeholders
- Short-term, smaller prescriptions
- Regular medicines review
- Promoting deprescribing
- Social prescribing and other options
- Electronic prescribing systems, BNF
- Decision tool to show alternatives
- Simple and accessible information
- Medicine adherence, waste
- Clear labelling and disposal instructions
- Conversations already being had

TOWARD ECO-DIRECTED PRESCRIBING

DISSEMINATION & NETWORKING
EVENT

ROYAL PHARMACEUTICAL
SOCIETY - 44 MELVILLE STREET
EDINBURGH EH3 7HF



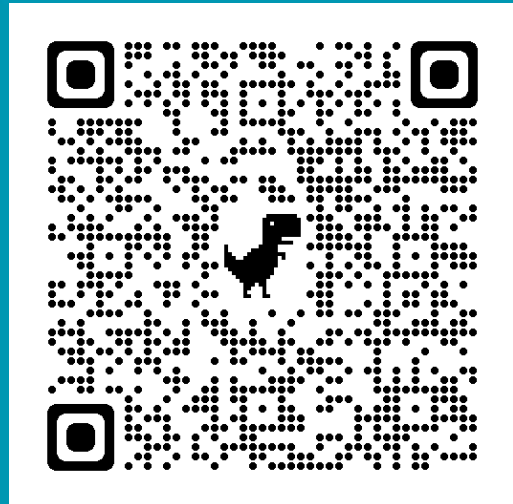
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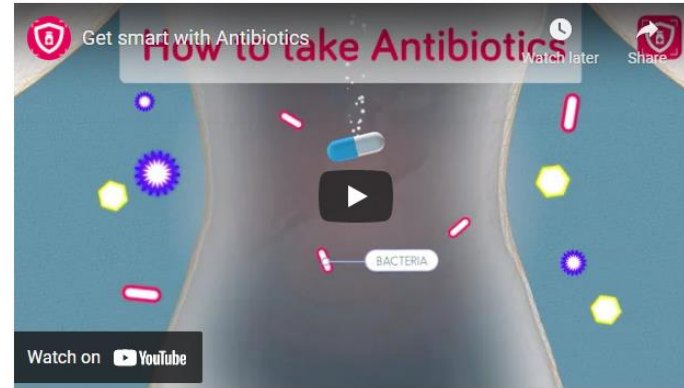


Medical
Research
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Nottingham





Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv



Assessing hospital impact on pharmaceutical levels in a rural 'source-to-sink' water system

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0 One Health, Water, and Pharmaceutical Pollution in Sco...
ONLINE WEBINAR

One Health, Water, and Pharmaceutical Pollution in Scotland

Watch on YouTube

SEA-G NEWSLETTER
Scottish Environmental Anaesthesia Group

Pharmaceuticals in the Environment: From tablets to toilets



BY SHARON PFLEGER AND LYDIA NIEMI
NHS HIGHLAND AND ENVIRONMENTAL RESEARCH INSTITUTE-
UNIVERSITY OF THE HIGHLANDS AND ISLANDS

HealthCare Without Harm

PHARMACEUTICAL RESIDUES IN HOSPITAL WASTEWATER

FIVE CASE STUDIES FROM EUROPEAN HOSPITALS



NHSScotland SUSTAINABILITY CONFERENCE 2021
"Delivering A Green, Just, Resilient Recovery"

Water stewardship in healthcare, making every drop count.
What is it, why should we do it and how?

Sharon Pflieger and Elise Cartmell

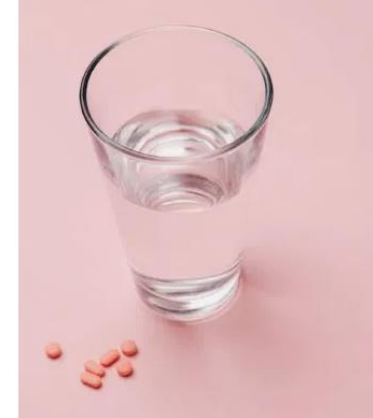
WATER STEWARDSHIP ALLIANCE FOR NHS Highland Scottish Water OHBP One Health Breakthrough Partnership



OHBP
One Health Breakthrough Partnership

One Health Breakthrough Partnership

The James Hutton Institute Hydro Nation International Centre



CASE STUDY
THE FIRST HOSPITAL IN THE WORLD TO ACHIEVE ALLIANCE FOR WATER STEWARDSHIP (AWS) CERTIFICATION

CAITHNESS GENERAL HOSPITAL

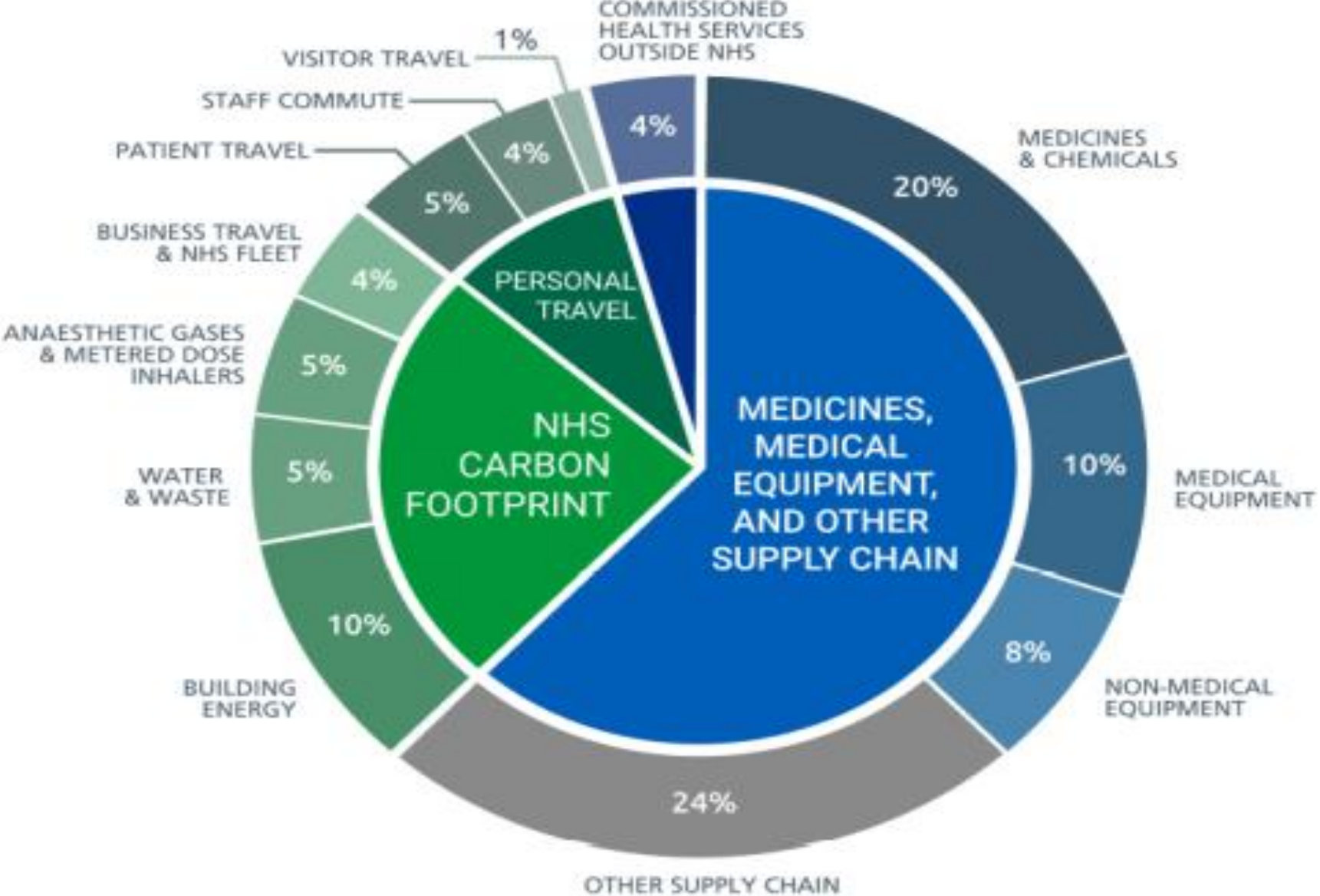
SCOTLAND, UK

APRIL 2021

How can you reduce the pharmaceutical footprint in healthcare and have more sustainable prescribing now?



NHS Scotland Climate Emergency and Sustainability Strategy

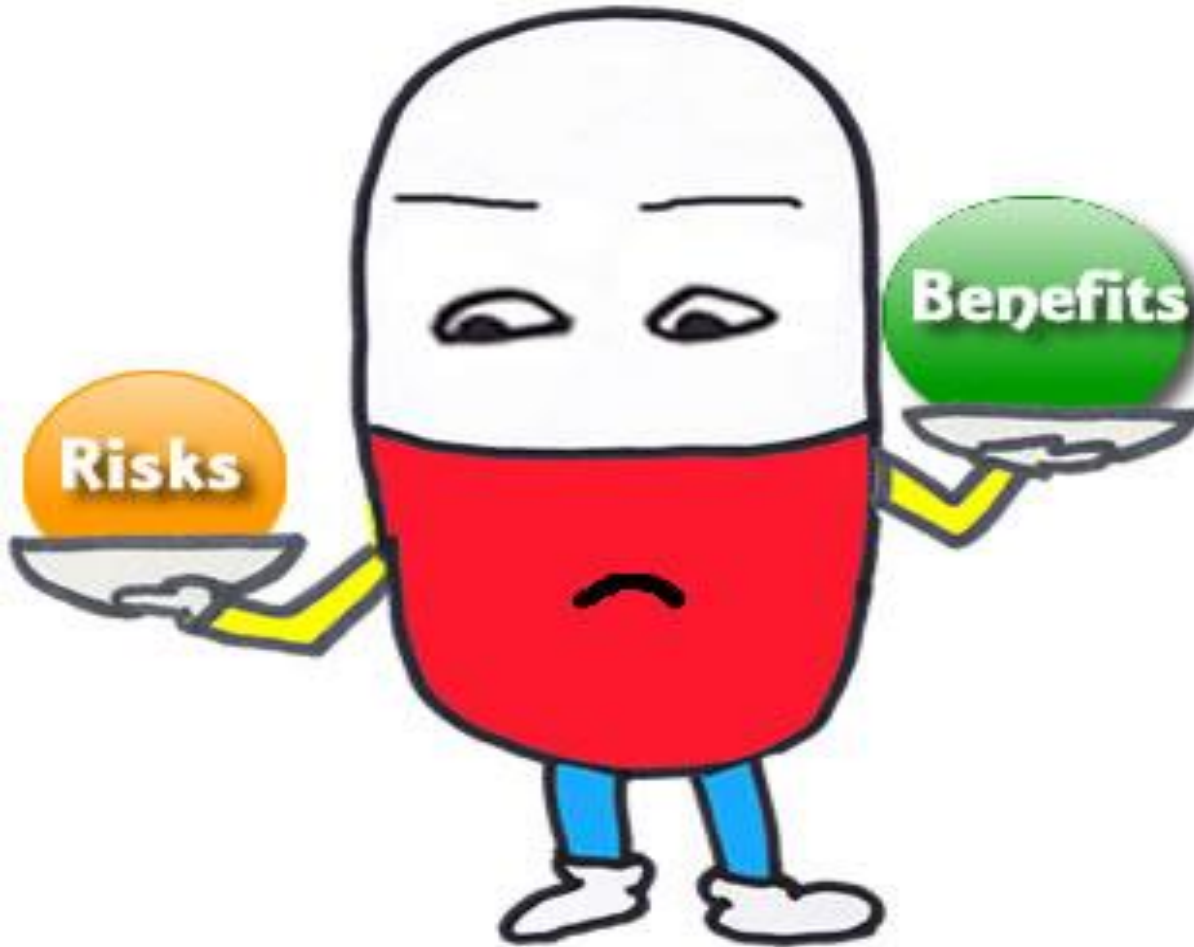


Tackling wasteful clinical care

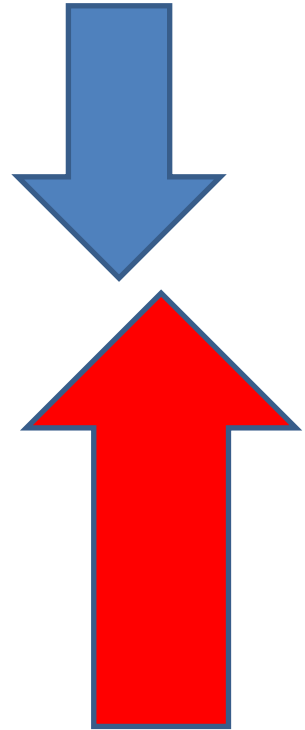
- 20% of care offers no value
- 1 in 10 patients is unnecessarily harmed at the point of care
- Over 10% of hospital expenditure used to correct preventable mistakes/ infections
- Overdiagnosis and testing, over treatment
- Non-adherence



50% of patients do not take their medicines as intended



- Clinical outcomes
- Morbidity
- Hospital admissions
- More interventions
- Carbon footprint
- Mortality
- Waste



MEDICINE WASTE IN SCOTLAND



1 in 10 medicines prescribed in Scotland are incinerated....



this costs approximately £700 per tonne to incinerate....



with a CO2 equivalence of 6000 car journeys around the world.



PHOTO COURTESY OF RUTH INNES, NHS HIGHLAND **3 MONTHS OF WASTE FROM 68 COMMUNITY PHARMACIES**



REALISTIC MEDICINE

WE CAN:



CHANGE OUR STYLE TO
SHARED DECISION MAKING

BUILD A **PERSONALISED**
APPROACH TO CARE



REDUCE HARM
AND WASTE



TACKLE **UNWARRANTED**
VARIATION IN PRACTICE
AND OUTCOMES

MANAGE RISK BETTER



BECOME **IMPROVERS**
AND **INNOVATORS**



Realistic Medicine: Doing the Right Thing

Chief Medical Officer for Scotland
Annual Report 2022-2023



Value Based Health and Care



NHS
SCOTLAND

Delivering Value Based Health and Care

A Vision for Scotland

The diagram consists of three overlapping circles. The top circle is purple and labeled 'People', containing an icon of a diverse group of people. The bottom-left circle is green and labeled 'Sustainability and Stewardship', containing an icon of people with a heart and leaves. The bottom-right circle is blue and labeled 'Equity', containing an icon of people with a scale. In the center where all three circles overlap is a lightbulb icon with a cross inside.

REALISTIC MEDICINE

Scottish Government
Riaghaltas na h-Alba



- **D**iagnosis- is it correct? **D**iagnostico
- **O**ptions- non-pharmacologic **O**pciones
- **P**atients- get them on side **P**acientes
- **E**vidence based- every time **E**videncia
- **D**eprescribe- whenever possible **D**eprescribir

BRAN

- B What are the benefits? **Beneficios**
- R What are the risks? **Riesgo**
- A What are the alternatives? **Alternativos**
- N What if we do nothing? **Nada**

Choosing Wisely UK

Academy of Medical Royal Colleges

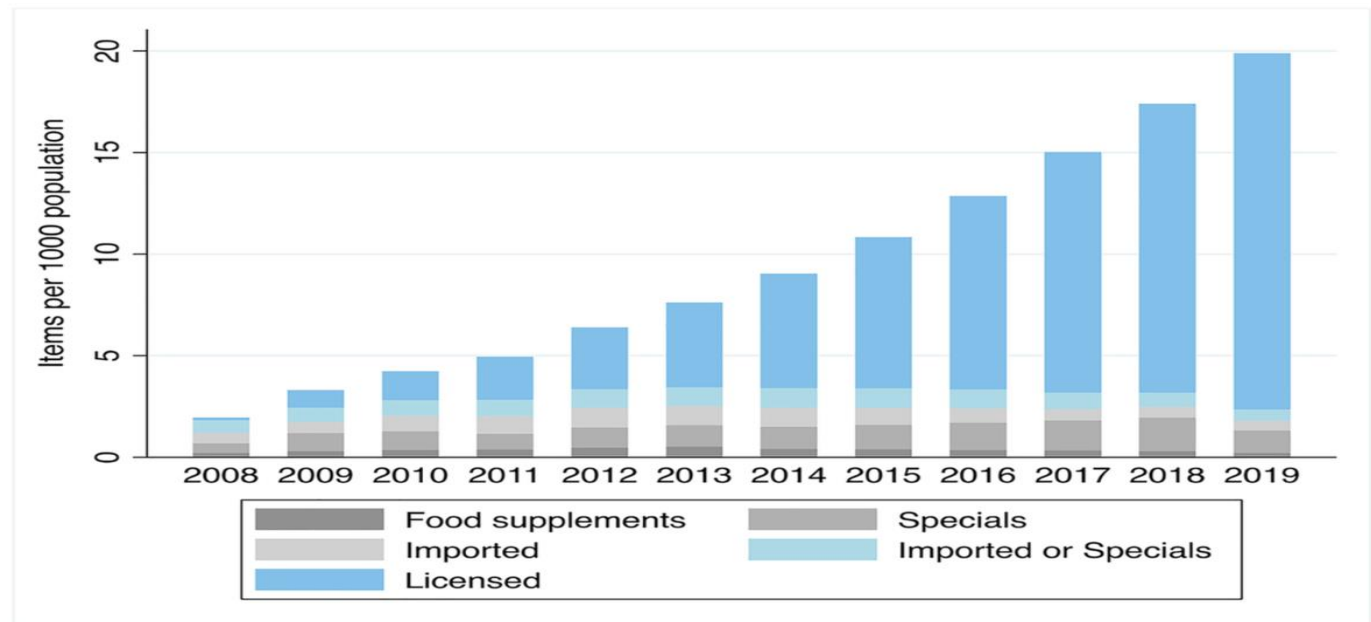
Promoting conversations with patients



Inappropriate prescribing- reducing variation and harm- melatonin

- Melatonin prescribing increased from **2.0 to 19.9** per 1000 people between 2008 and 2019.
- Prescriptions for licensed products increased from **6.5% to 88.2%**
- Spending on unlicensed products was £10 million and accounted for 23.3% of the total prescription cost in 2019.

Trends in melatonin prescriptions per 1000 people in primary care in England 2008-19 by licensed status of preparations





Formulation changes

- Green Theatre practice change
- Peri-operative use of paracetamol
- Change IV to tablet
- NHSS uses 12 tonnes tabs and 3 tonnes IV/yr
- IV is 43-64 more harmful in terms of CF
- With 70% switch- save **39 tCO₂e, £133k /yr**
- Even more with embedded carbon
- Reduced clinical waste
- Consider antibiotics etc too



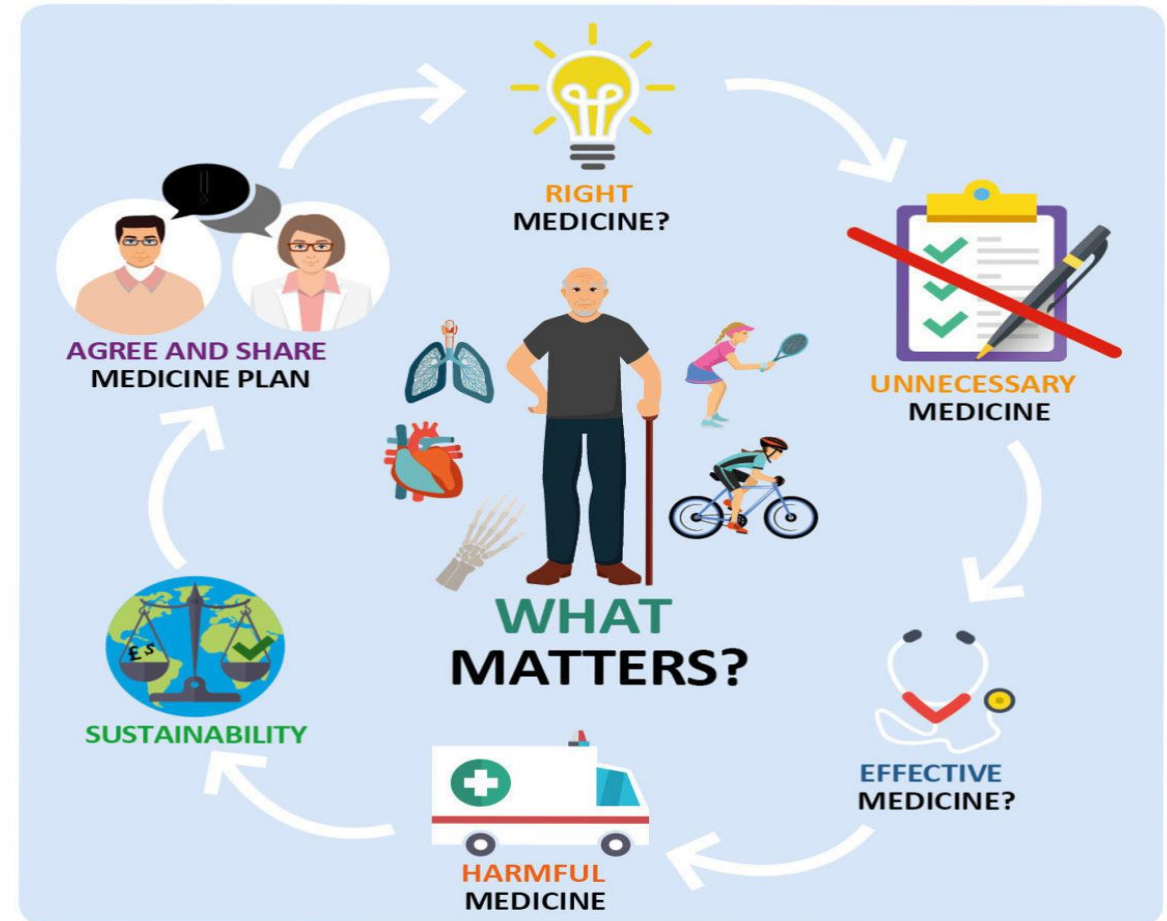
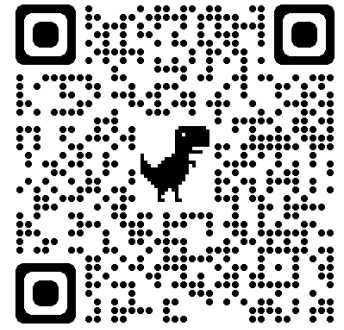
Think at every stage



- **Think before prescribing-** what are the patient's desired outcomes? BRAN
- *Starting medications is like the bliss of marriage and stopping them is like the agony of divorce.* - Doug Danforth (BMA paper on actions required)
- **Think whilst prescribing-** deferred prescription, min dose and amount, plan a review
- **Think after prescribing-** monitor, review, ask about adherence/ challenges

- Resources for patients and professionals
- Polypharmacy indicators
- Medicines sick day card
- 7 steps approach
- Meds review prep
- App
- NNT

7 STEPS TO APPROPRIATE POLYPHARMACY



What can you do professionally?



- Promote screening, vaccination, healthy lifestyles, prevention, good hygiene
- Consider social prescribing instead of a medicine
- Optimise medicines use- reduce un-necessary prescribing, do deprescribing (polypharmacy), deferred prescriptions, prevent stockpiling of medicines
- Use environmentally friendlier medicines e.g. use dry powder inhalers rather than metered dose inhalers with GHG propellants, use sevoflurane rather than desflurane as inhalational anaesthetic
- Educate patients about waste and safe disposal of unwanted medicines
- Advocate, be an activist, develop a local group
- Review your own practices, guidelines and policies



Summary

1. pharmaceutical pollution is a risk to the environment

2. evidence still being developed.....

3. you can optimise medicine use and maximise patient health



...BUT health (pharmacy) can and must **CHANGE** the climate and biodiversity crisis!