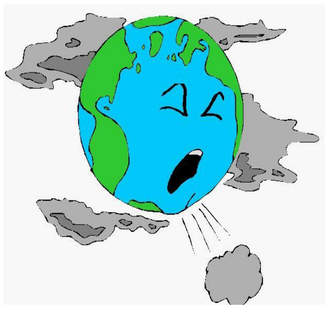
Paddling upstream to prevent pharma harm

A taste of the 21st century environment.



There is increasing evidence of human environmental impact with 60% of ecosystems already degraded or used unsustainably and 33% of soil is moderately to highly degraded due to erosion, nutrient depletion, acidification, salinization, compaction and chemical pollution

Medicines taking and environmental impact

The prescription of a medicine is the most common intervention in the NHS and the use of medicines is increasing every year with 104 Million prescription items dispensed in the community in 2016/17 in NHS Scotland at a cost of £1.3 Billion

We have a growing population with many more older people who are like multiple medicines for their many conditions (multimorbid polypharmacy).

Technological advances mean a number of previously untreatable conditions have become treatable and previously terminal conditions have become manageable.

We have a medicalising culture with a 'pill for every ill' e.g. medication for obesity in place of exercise and healthy diet, melatonin for sleep problems instead of good sleep hygiene.

Medicines waste has a number of causes and represents up to 3% of medicines supplied with estimates of ~ £30 million per year in NHS Scotland (1,2). Whilst all NHS Boards in Scotland support return of medicines to community pharmacy for safe disposal it is recognised some are disposed of into the water system.

In addition to this direct waste there is the additional burden of metabolites excreted from the human body entering the water system (3).

Every time a patient takes a medicine orally, 30-90% of the dose is excreted as an active substance in their urine and that active metabolite enters the waste water system (4).

Waste water treatment systems are not currently designed to remove pharmaceutical molecules from the water. As a result more than 600 pharmaceuticals and their metabolites have been found in the environment worldwide (5).

These metabolites enter the environment (through water, soil, sludge, and organisms) at all stages of their life cycle (production, consumption and improper disposal) and can end up in drinking water, and accumulate in fish, livestock and vegetables (3)

So what are we doing about it in NHS Highland?

We have embarked on a **multifaceted public health approach** to reduce the volume and impact of medicines in the environment:

- Formed a **collaboration with key public partners**
- Public messages on how to **properly dispose** of unwanted medicines to community pharmacies and dispensing doctors- not to flush them!
- **Joint medicines formulary** for prescribing with guidelines linked to formulary- starting to look at the **environmental impact** and carbon footprint as well as clinical and cost effectiveness.
- **Educating prescribers** on the potential impact of certain medicines on the environment to help them to make **considered prescribing choices**.
- Public messages about **valuing medicines** and **shared decision making-** medicines may not be the answer- Realistic Medicines!
- Antimicrobial management guidelines for prudent prescribing and **prevention of resistance.**
- Development of a **research programme** to look at antimicrobial resistance in water and natural biodegradation of molecules.

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References

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2. A review of Pharmaceutical Care of Patients in the Community in Scotland. Scot Gov, Edinburgh. 2013.
3. Anette Küster, Nicole Adler Pharmaceuticals in the environment: scientific evidence of risks and its regulation 13 October 2014.DOI:10.1098/rstb.2013.0587 Philosophical Transactions of the Royal Society of Biological Sciences
4. Study on the environmental risks of medicinal products, Final Report prepared for Executive Agency for Health and Consumers
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