semFYC documents

WHAT TO DO AND NOT TO DO for PLANETARY HEALTH

DO NOT DO planetary health

Nº 45

semFYC
Sociedad Española de Medicina de Familia y Comunitaria

WHAT TO DO AND NOT TO DO
for PLANETARY HEALTH

semFYC
Sociedad Española de Medicina de Familia y Comunitaria

Diputació, 320
08009 Barcelona
www.semfyc.es

Coordination and editorial management:

Congresos y ediciones semFYC
Carrer del Pi, 11, 2.ª planta, of. 13
08002 Barcelona
ediciones@semfyc.es

Design: Falcó

ISBN: 978-84-127199-4-9
Legal deposit: B-11198-2022

Printed in Spain

WHAT TO DO AND NOT TO DO for PLANETARY HEALTH

Coordinators

Anna Fernández Ortiz
María del Campo Giménez

Members

Cristina Almécija Pérez
María del Campo Giménez
Anna Fernández Ortiz
Julián García Sáez
Inés Marcos Romero
Miriam Navarro Beltrá
Anna Rodríguez Ferré
Montserrat Royo Vidal
Marian Sintes Marco

Grupo de Trabajo de Salud Planetaria de la semFYC

semFYC
Sociedad Española de Medicina de Familia y Comunitaria

Table of Contents

Introduction

Perhaps you think that planetary health "isn't for me" because you have too many things to think about during medical consultations or because you think it's something outside your control. But surely, you're already doing more than you think or after having reviewed these recommendations you'll be inspired, because it's easier than it seems.

What is planetary health?

This topic concerns human health in the environment where we live.

We know that climate change affects our health directly and indirectly. Increased temperatures, poor air quality, water pollution, and more have been related to communicable diseases, but also to non-communicable diseases (cardiovascular and respiratory diseases, mental health and more).

As specialists in Family and Community Medicine, we cannot ignore any factor that affects people's health. Nor can we ignore the climate emergency. It is our duty to respond to the healthcare challenge posed by climate change.

What to do and not to do

We here at the Planetary Health Working Group hope that this highly practical guide will make it possible for you to apply these recommendations in your daily work: in the routine at your healthcare center or doctor's office, when you evaluate your patients, when recommending activities to prevent issues and promote health, when writing prescriptions, in the activities with your community, and more.

The time has arrived to include the perspective of planetary health in your daily work, because there is no PLANet B!

1 Conduct a proper environmental health clinical review

Julián García Sáez

A structured clinical review based on environmental health questions is not a typical practice in our daily work, although it is crucial if we want to address the environmental determinants in a complete and global manner.

It is important to conduct the clinical review in a structured manner. For that purpose, we can use two tools: the environmental clinical history and the green leaf review (table 1).

Table 1. Comparison between environmental clinical history and green leaf review

	Environmental clinical history	Green leaf review
Intended for	Population with detected risk factors or environmentally related diseases	Healthy population
Purpose	Diagnosis/treatment of the "environmental malady"	Screening
Required skill level	Intermediate-high	Basic
Scenario	Medical, pediatric, or nursing consultation	Pre-conception, pre-natal or well-baby check-up
Approach	Specific prevention. Care and specific assistance	Primary and secondary prevention
Duration	Highly variable (from 20 to 120 minutes)	< 6 minutes
Complexity	Medium-high	Simple

Source: Ortega García JA, Ferrís i Tortajada J. Hoja verde exploratoria. [Internet.] Unidad de Salud Medioambiental Pediátrica, Murcia, Spain; 2012. Available at: https://pehsu.org/wp/.

The Green Leaf

This is an especially useful tool in Primary Care (PC) to detect or screen for environmental risks. It allows us to detect and inform our patients about reducing and eliminating the main environmental risks that affect them.

In special populations, like pediatric populations, pregnant women, and breastfeeding women, it is of utmost importance to detect and minimize the risks for optimal fetal development and child rearing, contributing to the creation of healthier environments for childhood[1,2].

It is essential to include both parents in the consultation, not only due to biological importance, but also due to the possibility of passively introducing environmental toxins to the family unit. Furthermore, it helps to complement the green leaf by providing information and resolving dissenting opinions[2].

The green leaf is conducted as part of a clinical consultation, preferably during a face-to-face interview with the patient.

This interview lasts approximately 5-7 minutes, varying based on exposures to which the patients are subject, and the brief or intensive health tips applied.

Completing the green leaf is also a moment to train on basic and preventive aspects, as such it should be framed within a motivational interview[2].

The green leaf includes the following sections[2,3]:

- Socio-economic level, socio-demographic variables: age, race, etc.
- Obstetric-reproductive history.
- Ionizing radiation (radiological examinations).
- Pharmaceutical (including parapharmacy, homeopathy and vitamin supplements).
- Exposures at the workplace, during leisure activities or hobbies with a chemical risk (e.g., painting, developing photos, mechanical work).
- Tobacco, alcohol, and other drugs.
- Characteristics of the home (e.g., type of kitchen, water-heating system, heating system and so on).
- Exposure to pesticides inside and outside the home (e.g., if there is a yard or garden).
- Perception of environmental risk at the home and/or in the community.

Bibliography

1. López Fernández MT, Pastor Torres E, Sánchez Sauco MF, Ferrís i Tortajada J, Ortega García JA. Environmental health nursing. Experience in a pediatric environmental health specialty unit. Enferm Clin. 2009;19:43-7. DOI: 10.1016/j.enfcli.2008.10.007.
2. Ortega García JA, Sánchez Sauco MF, Jaimes Vega DC, Pernas Barahona A. Hoja verde. Creando ambientes más saludables durante el embarazo y lactancia materna. Unidad de Salud Medioambiental Pediátrica. Murcia, Spain; 2013. Available at: http://www.pehsu.org/wp and at: http://www.redsambi.org/.
3. Ortega García JA, Ferrís I, Tortajada J. Hoja verde exploratoria. Unidad de Salud Medioambiental Pediátrica, Murcia, Spain; 2012. Available at: https://pehsu.org/wp/.

2 Take into consideration that poor air quality is a cause of disease and exacerbation in chronic cardiorespiratory diseases

Marian Sintes Marco, Inés Marcos Romero

In 2021, the World Health Organization published its *Air Quality Guidelines*, which recommends reducing the levels of the main pollutants present in the atmosphere: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. The guidelines have reviewed several published studies which observe a linear relationship between atmospheric pollutants and the burden of non-communicable diseases (NCD), such as cardiovascular and respiratory diseases, and lung cancer.

Improved air quality, based on the decreased quantity of these pollutants, could lead to reducing premature mortality related to atmospheric contamination by half. At the same time, this improvement of air quality is one of the goals that we need to achieve in order to fight against climate change[1].

Governmental data collection and knowledge about the quality of the air that we breathe are priorities in order to care for patients' health. Are there air quality measurement stations near the population we treat? Does the information arrive in an easy and understandable manner so that we can consider air quality as the cause of worsening of the health of our quote?[2].

Atmospheric pollution in our cities comes from vehicle traffic, climate control in buildings, industrial activities, and the provision of services. All these activities use fossil fuels.

Understand the causes and implement solutions that will favor communities that are resilient to climate change and protect patients' health.

¿How can we at healthcare centers contribute to improving air quality?

– Proximity is one of the keys to reducing polluting emissions. Healthcare centers and doctor's offices are typically closer to people than major hospitals, which shortens travel time.

- A healthy healthcare environment through simple urban planning can prioritize access by foot, bike or vehicles adapted for reduced mobility. Access for private combustion vehicles, with some exceptions, should be reduced.
- Healthcare centers and doctor's offices should ensure that they are efficient from the energy point of view[3].

In the consultation

- Recommend that patients walk or ride a bike, use public transportation or carpool, all of which help to decrease pollutants.
- "Prescribe" websites and apps that provide information about air quality:
  - Websites: the website of the Ministry for the Ecological Transition (sig.mapama.gob.es/calidad-aire/) and those developed by certain autonomous communities (Basque Country, Valencian Community, Catalonia and more) as well as municipal governments, like Madrid. Also: aqicn.org and IQAir.com.
  - Apps: AireCat, AirQuality-AirCare, IQAir AirVisual, AirMatters, among others.
- In times with high atmospheric pollution, vulnerable individuals are advised not to do intense exercise outdoor while the population in general should reduce it. Changing normal journeys is not advised4.

Bibliography

1. World Health Organization. WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. [Internet.] 2021. Available at: https://apps.who.int/iris/handle/10665/345329. License: CC BY-NC-SA 3.0 IGO.
2. Sanz Alduán A, Navazo Lafuente M. Metabolismo urbano, energía y movilidad: los retos del urbanismo en el declive de la era del petróleo. Ciudad y Territorio, Estudios Territoriales XLIV. [Internet.] Madrid: Ministerio de Fomento, 2012. Available at: http://www.gea21.com/wp-content/uploads/2020/01/Metabolismo-urbano- energ%C3%ADa-y-movilidad.pdf.
3. World Health Organization & Health Care Without Harm. Healthy Hospitals – Healthy Planet – Healthy People. Addressing climate change in health care settings. [Internet.] Available at: https://www.who.int/docs/default-source/climate- change/healthy-hospitals-healthy-planet-healthy-people.pdf?sfvrsn=8b337cee_1.
4. Agència de Salut Pública de Catalunya (ASPCAT). Recomanacions amb nivells elevats de contaminació. [Internet.] Available at: https://canalsalut.gencat.cat/ca/salut-a-z/c/contaminacio-atmosferica/Recomanacions-per-a-la-ciutadania/Recomanacions-quan-hi-ha-nivells-elevats-de-contaminacio/.

3 Don't limit yourself to recommending that patients "eat a bit of everything"

Montserrat Royo Vidal, Julián García Sáez

We can change our impact on the environment and our health through the way we eat. Pollution, climate change and its consequences (increased global temperatures, the spread of diseases, the spread of pests, ecosystem change, decreased biodiversity and the lack of food availability and increased food prices) are our new challenges.

The current industrial production and consumption system is not sustainable for the planet or for human beings. There are increasingly more denatured products, available all year long, from around the world. We should prioritize healthy and sustainable foods over producing food in large amounts.

To achieve it, there are different frameworks to approach the issue: legislation, recommendations for the population from public health agencies, spreading the message through mass media and social media, and so on.

But our role as Family and Community Healthcare professionals is also essential: we have to provide nutritional re-education for people during our consultations and in the community.

We should raise awareness and suggest that people follow the EAT-Lancet Commission's "Planetary Health Diet", which is nothing more than an optimal diet for human beings that is respectful to the planet, adapted to the needs and characteristics of each of our communities. Not only must we give importance to the nutritional values of food, we must also be aware of its origin, the way it is produced, the lack of toxic elements, mode of transportation and distances traveled, waste generated, packaging, social and environmental costs, and so on.

¿Qué aconsejamos? (figura 1)

1. A plant-based diet, with a variety of fruits, vegetables, nuts, legumes... For example, the flexitarian, vegetarian or vegan diet.
2. Avoiding processed and ultraprocessed products.
3. Plants as a quality protein source and a healthy alternative to animal sourced protein: legumes, nuts, and seeds.

Figure 1. The planetary health plate

Source: The EAT-Lancet Commission on Food, Planet, Health. The Planetary Health Diet, 2019. Available at: https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you/

4. Food produced through traditional ecological, sustainable, natural, or organic methods that respect the natural cycle of each species and allow the soil to rest.
5. Food from small local organic producers, ensuring a low impact through transportation and a local, high-quality economy.
6. Seasonal food: inform patients about the seasonal calendars for fruits, vegetables and even fish. That way we encourage local production, prevent forced growing, and the use of cold chambers and importation.
7. Go shopping at the local market and/or directly from producers in the area, avoiding large stores and imported foods.
8. Avoid producing waste: choose food without packaging, in bulk, using our own bags and containers.
9. Don't throw food away: plan and store food correctly.
10. If you shop at the supermarket: read and understand labels, keep the origin in mind, avoiding products that come from far away, and choose the most sustainable packages.
11. In the case of eating fish, choose seasonal fish from a nearby catch area that uses a sustainable fishing method (skewer, drift net, fish traps, non-industrial longline, rod, etc.).
12. Eat less meat. If you decide to eat animal products, choose producers that are in line with the previous points.
13. Adapt the suggestions to each person in a flexible manner, according to the local geography, socio-economic context, culinary traditions, and personal preferences.

In summary, an original Mediterranean diet, based on local plants, rich in legumes, with few animal products, where the food is purchased in the local market according to availability and season, without packaged or ultraprocessed products and without plastic.

Our community and social advocacy work is involved in all these tasks, since we need to know our local goods and those from our community to be able to help a healthy circular economy that is responsible towards the health of people and the planet.

Project ideas for your center

- Informative pamphlet about healthy eating for people.
- Create a community garden.
- Raise awareness about the importance of the planetary diet through activities for our community.
- Change the vending machines in our center for locally sourced, healthy organic products for users and professionals.
- Offer information on the planetary diet to schools and restaurants in the area.

Bibliography

- Ortega-García JA. Llamando a la Tierra... Llamando a la Tierra... Una aproximación al modelo de la Salud Medioambiental. (Primera ed., Vol. 1). Ortega JA & Asociación Ecología y Salud; 2021.
- Pérez-Jiménez F. The future of diet: what will be eating? Clin Investig Arterioscler. 2022;S0214-9168(22)00002-X. DOI: 10.1016/j.arteri.2021.12.003.
- Pérez-Martínez P, Gómez-Huelgas R, Pérez-Jiménez F. Is the planetary health diet the solution for mitigating noncommunicable diseases? Rev Clin Esp. 2020;220(9):573-5. DOI: 10.1016/j.rce.2019.12.004
- Pérez-Martínez P, Gómez-Huelgas R, Pérez-Jiménez F. Healthy planetary diet: do we have to rethink the recommendations based on the Mediterranean diet? Clin Investig Arterioscler. 2019;31(5):218-21. DOI: 10.1016/j.arteri.2019.09.001
- Willett W, Rockström J, Loken B, Springmann M, Lang T, Vermeulen S, et al. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019;393(10170):447-92. DOI: 10.1016/S0140-6736(18)31788-4

4 Combine the prescription for physical exercise with spending time in nature

Montserrat Royo Vidal

Green spaces, like forests and parks, and blue spaces, like the sea, contribute to improving human health[1]. Our evolution has happened thanks to the places where we have survived, that's why it's logical to think that we are adapted and optimized for life in nature. But as we have created increasingly more advanced technology, our lifestyle has changed drastically towards sedentary habits. This is a decisive factor in non-communicable diseases (NCD), such as cardiovascular diseases, obesity, high blood pressure, dyslipidemia, and diabetes.

As family and community doctors we recommend that patients do physical exercise because we know that it is key to preventing NCD and to promoting health, it has a low economic cost and an optimal safety profile. But we should also give recommendations about "where" to do it since this is also fundamental for health[2].

In 2019, the journal *The Lancet* published a study[3] which estimated that the city of Florida could avoid 400 premature deaths a year if it increased its green spaces by 30%. Not only have forests and wild spaces been associated with health, but also green spaces in urban environments.

Combining the prescription for physical exercise with spending time in nature is key in order to pool our effort to conserve the health of people and the planet. Understanding that our natural environments are a source of health will convince our society to protect them.

Countries like Japan, with its "forest bathing" or shinrin-yoku, which consists of immersing oneself in a forest environment are an easy prescription for all patients, as they use this health-nature connection as a tool in preventive medicine in healthcare policy and, in turn, provide value to their natural landscapes[4].

We can also find this model in countries like Norway, where the hospitals have created facilities in the Friluftssykehuset forest, and in Scotland, where doctors can prescribe time in nature to their patients.

Spain has a wealth of natural spaces, so it should be easy to combine nature and exercise.

How to prescribe physical exercise with an eye on planetary health

- Encourage your patients to do activity and/or physical activity in natural environments, whether in a park, in the forest or on the beach.
- Prescribe "forest bathing": calm walks in the most natural environment possible, without distractions, in silence, lasting approximately 2 hours, breathing consciously, and observing every detail in your surroundings (smell, shape, moisture, sound and so on).
- Whenever possible, encourage patients to go walking or by bike.

Collaborate with your community

- Create greenways with the participation of your community and local authorities. Identify the potential spots to carry out this activity.
- Promote activities to raise awareness and protect the natural environment.
- Promote or create family activities in the outdoor spaces around your center.

Influence at the political level[5]

- Promote a sustainable city model with architecture aimed at planetary health. Cities should be designed to promote physical activity and residents' health, ensuring green spaces, which in turn provide benefits to people, ensure biodiversity and environmental health.
- Advocate for the construction of gardens, urban parks, and islands of green where your community has access to nature.
- Encourage your local government to build bike lines to be able to go biking safely.
- Provide advice so that urban planning for different neighborhoods, towns and cities can meet these characteristics.

Bibliografía

1. Amoly E, Dadvand P, Forns J, López-Vicente M, Basagaña X, Julvez J, et al. Green and blue spaces and behavioral development in Barcelona schoolchildren: the BREATHE project. Environ Health Perspect. 2014;122(12):1351-8. DOI: 10.1289/ehp.1408215.
2. Pagès AB, Peñuelas J, Clarà J, Llusià J, Campillo F, Maneja R. How should forests be characterized in regard to human health? Evidence from existing literature. Int J Environ Res Public Health. 2020;17(3):1-15. DOI: 10.3390/ijerph17031027
3. Kondo MC, Mueller N, Locke DH, Roman LA, Rojas-Rueda D, Schinasi L, et al. Health Impact Assessment of Philadelphia's 2025 Tree Canopy Cover Goals. Lancet Planet Health. 2020;4(4):E149-E157. DOI: 10.1016/S2542-5196(20)30058-9.
4. Park BJ, Tsunetsugu Y, Kasetani T, Kagawa T, Miyazaki Y. The physiological effects of Shinrin-yoku (taking in the forest atmosphere or forest bathing): evidence from field experiments in 24 forests across Japan. Environ Health Prev Med. 2010 Jan;15(1):18-26. DOI: 10.1007/s12199-009-0086-9.
5. ISGlobal. Institut de Salut Global Barcelona. 5 claus per ciutats més saludables. [Internet.] 2018. Available at: https://www.isglobal.org/ca/ciudadesquequeremos#espacios-verdes.

5 Don't prescribe pMDI inhalers if there is a better option available

Anna Fernández Ortiz, María del Campo Giménez

All drugs have an impact on the environment including the carbon footprint from production, storage, packaging, transportation, and waste management[1].

But inhalers have another added factor: the propellant of the pressurized Metered Dose Inhalers (pMDI), made up of hydrofluorocarbons (HFC), which have a more powerful greenhouse gas effect[1] than CO_2.

In Spain, pMDIs represent around 50% of the total bronchodilators used1, which is equivalent to 400,000 tons[2] of CO_2. Hence the importance of trying to minimize the use of these types of pMDI inhalers in favor of systems that do not use greenhouse gases, such as Dry Powder Inhalers (DPI) and Soft Mist Inhalers (SMI).

Calculations show that the change from a pMDI system to a DPI or SMI system, while keeping the same active principal ingredient, involves a 95-98% carbon footprint reduction per inhaler1.

For example, among the short-acting beta-antagonist drugs, an application of salbutamol in a pMDI device is equal to 60.4 g CO_2 eq; considering that up to 8 applications can be used daily, this would be equal to 176.37 kg CO_2 eq annually, which is the same amount produced by a 978.5 km car trip[3].

Table 2 shows examples of carbon footprint reduction by comparing the active principal ingredients in different devices.

Prescription of inhalers

If the patient's characteristics allow it, we recommend prescribing a DPI and SMI, with a lower carbon footprint (up to 18 times smaller, in the case of DPI[4]). These devices are equally effective and cost-effective as pMDI[1].

These types of devices should always be prescribed considering the patient's characteristics and their inhaler preferences. As such it is useful to have support materials available to make decisions together[3-5].

If there are no alternatives to pMDI, it is important to remember that:

- the treatment should be done with the optimal dose,
- with the fewest number of devices,
- preferably using rechargeable devices,
- and with optimized treatment: pMDI devices are typically rescue inhalers and excessive use may signify poor control of the disease.

Table 2. Examples of carbon footprint reduction comparing the active principal ingredients in different devices[3,5]

Pharmacological group	Active principal ingredient	Type of device	CO_2 per application (g)	Annual CO_2 (kg)	Equivalence with the use of a car (km)
LABA	Formoterol	pMDI	130	94,9	526
		DPI	18,75	13,69	75,6
	Salmeterol	pMDI	130	189,8	1052,5
		DPI	18,75	13,69	75,6
LABA+ICS	Formoterol and beclomethasone	pMDI	163,5	119,36-238,71	660-1324
		DPI	18,75	13,69-27,38	75,6-151,3
ICS	Fluticasone	pMDI	101,75	74,28-297,11	412-1650
		DPI	18,75	13,69-2,38	75,6-151,3

DPI: Dry Powder Inhaler; ICS: Inhaled corticosteroids; LABA: Long-acting beta-adrenoceptor agonists; pMDI: pressurized Metered Dose Inhaler.

Bibliography

1. Villar Álvarez F, Díez Piña JM, Pinedo Sierra C, Salgado Aranda S, de Miguel Díez J. Posicionamiento y recomendaciones sobre cambio climático y salud respiratoria 2021. Rev Patol Respir. 2020;23(4):141-6.
2. Organización Médica Colegial de España y Consejo General de Colegios Oficiales de Médicos. [Internet.] Alianza Médica contra el Cambio Climático (AMCC), 2022. Available at: https://www.cgcom.es/sites/main/files/files/2022-05/alianza_medica_amcc.pdf.
3. North & East. Devon Formulary and Referral. National Health Service. The environmental impact of inhalers. [Internet.] Available at: https://northeast.devonformularyguidance.nhs.uk/formulary/chapters/3.-respiratory/the-environmental-impact-of-inhalers.
4. Hillman T, Mortimer F, Hopkinson NS. Inhaled drugs and global warming: time to shift to dry powder inhalers. BMJ. 2013;346:f3359. DOI: 10.1136/bmj.f3359.
5. Smith J, Bansal A, Barron-Snowdon J, Keeley D, Wilkinson A. Greener Practice. How to Reduce the Carbon Footprint of Inhaler Prescribing. A Guide for Healthcare Professionals in the UK. [Internet.] Available at: https://www.greenerpractice.co.uk/greener-practice-guide-to-inhaler-prescribing.

6 Don't overprescribe antimicrobials or broad-spectrum antibiotics

Miriam Navarro Beltrá, Cristina Almécija Pérez

Prescribing antimicrobials, antibiotics in particular, forms part of our daily work. The accessibility of our healthcare level means that we are responsible for treating the most common infections. As such, we have the responsibility to prescribe medicines rationally.

The inappropriate use of antimicrobials not only has repercussions on human and veterinary health, due to the selection of resistant bacterial strains and increased antibiotic resistance, but also due to the exposure to communities of bacteria and ecosystems with large amounts of antimicrobial debris and degradation products.

The exposure of the environment to antimicrobials is a vicious cycle

Wastewater contamination is an important problem, given that the conventional water treatment plants are not able to completely eliminate antibiotic waste. As a result, both the sludge and the effluent obtained in these plants may contain antibiotics and return them to the environment, producing negative effects both for the biota (at different trophic levels) as well as for human health (due to the consumption of contaminated food or water). As such, this contributes to increased populations of antibiotic resistant bacteria and retains the selective pressure that causes the development and/or spread of resistance in different parts of the environment.

Additionally, antibiotic residue can alter the human microbiome and cause health problems: allergic reactions, chronic toxic effects after prolonged exposure and/or digestive system disorders.

The emerging problem of the appearance of antimicrobial waste and antibiotic resistance is a complex phenomenon that requires global approaches and efforts by governments and the other players involved.

Environmental pollution by antimicrobials must be reduced by regulating antimicrobial consumption and environmental risk assessment.

Our role is fundamental in order to reduce the impact of antimicrobial resistance and its environmental consequences, both locally and globally.

¿How can we reduce antimicrobial resistance during consultations?

- Prescribe antimicrobials based on the scientific evidence.
- Reduce antibiotic treatment time to the minimum effective time.
- Use species-specific antibiotics instead of broad-spectrum antibiotics.
- Make personalized prescriptions, based on identifying resistant bacteria.
- Understand local bacterial resistance to inform the prescription.

Bibliography

- Hernando-Amado S, Coque TM, Baquero F, Martínez JL. Defining and combating antibiotic resistance from One Health and Global Health perspectives. Nat Microbiol. 2019 Sep;4(9):1432-42. DOI: 10.1038/s41564-019-0503-9.
- Polianciuc SI, Gurzu AE, Kiss B, Tefan MG, Loghin F. Antibiotics in the environment: causes and consequences. Med Pharm Rep. 2020 Jul;93(3):231-40. DOI: 10.15386/ mpr-1742
- Verdú JR, Cortez V, Ortiz AJ, Lumaret JP, Lobo JM, Sánchez-Piñero F. Biomagnification and body distribution of ivermectin in dung beetles. Sci Rep. 2020 Jun 3;10(1):9073. DOI: 10.1038/s41598-020-66063-0.

7 Don't write prescriptions without taking the carbon footprint into account

Anna Rodríguez Ferré, Anna Fernández Ortiz

In a scenario where society at large is overly medicalized, with the subsequent increase in the consumption of medicine and the pharmaceutical cost that this entails, there is also the fact that the prescription of medicines is one of the largest contributors to the carbon footprint generated by the healthcare system, which is of special importance in PC[1,2].

The environmental impact of medicines occurs in all phases: production, storage, packaging, waste transportation and management[3], and it generates more CO_2 emissions than the automobile industry[4].

Therefore, in order to preserve, respect and also be committed to our planet's health, we should take measures to improve pharmaceutical prescriptions. It is essential to minimize the environmental impact of our prescriptions.

Recommendations for healthcare professionals[5-7]

- Know the carbon footprint of the drug that you will prescribe. When there are different suitable options for the patients, prescribing physicians and pharmacists should have the information to recommend the least harmful option for the environment.
- Know the current clinical presentations (number of tablets per box) to tailor the prescription to the duration of the treatment.
- Avoid excess prescriptions (repeated prescriptions, prescriptions for longer durations than necessary and so on), which leads to losses and accumulations of unused medicines. The European Union5 recommends that the pharmaceutical industry optimize the packaging of medicines so that it is possible to dispense the doses best suited to patients' needs.
- If the drug will be taken sporadically, confirm on the prescription that pick-ups from the pharmacy are not systematic, but rather according to need (limit the number of prescriptions/year).

- Regularly revise chronic treatments and remove prescriptions, when appropriate.
- Avoid "medicalization" and multiple pharmaceutical prescriptions.
- Understand the clinical practice guidelines to make reasonable prescriptions, based on the evidence and in line with the quality standards.
- Avoid prescribing drugs with a low intrinsic value.
- Encourage people to use medicines appropriately. Encourage them not to accumulate boxes of medicine at home.
- Check that patients are adhering to their treatment: estimates show that a considerable proportion of the medicines sold are not used.

Bibliography

1. Sustainable and environmentally friendly general practice. GPC England Policy Document. [Internet.] British Medical Association (BMA), 2020. Available at: https://www.bma.org.uk/media/2570/bma-sustainable-and-environmentally-friendly-general-practice-report-june-2020.pdf.
2. The NHS: carbon footprint. Faculty of Public Health Special Interest Group-Sustainable Development. [Internet.] Available at: https://www.fph.org.uk/media/3126/k9-fph-sig-nhs-carbon-footprint-final.pdf.
3. Villar Álvarez F, Díez Piña JM, Pinedo Sierra C, Salgado Aranda S, De Miguel Díez J. Posicionamiento y recomendaciones sobre cambio climático y salud respiratoria 2021. Rev Patol Respir. 2020;23(4):141-6.
4. Belkhir L, Elmeligi A. Carbon footprint of the global pharmaceutical industry and relative impact of its major players. J Clean Prod. [Internet.] 2019;214:185-94. https://doi.org/10.1016/j.jclepro.2018.11.204.
5. Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee. [Internet.] European Union Strategic Approach to Pharmaceuticals in the Environment. COM (2019) 128 final. 2019, 10. Available at: https://ec.europa.eu/environment/water/water-dangersub/pdf/strategic_approach_pharmaceuticals_env.PDF.
6. Executive Agency for Health and Consumers. Study on the environmental risks of medicinal products. [Internet.] BIO Intelligence Service; 2013. Available at: https://ec.europa.eu/health/system/files/2016-11/study_environment_0.pdf.
7. Xie Y, Breen L. Greening community pharmaceutical supply chain in UK: a cross boundary approach. Supply Chain Manag. 2012;17(1):40-53. Available at: https://doi.org/10.1108/13598541211212195.

8 Don't dispose of medicines in the trash, bring them to recycling stations

Cristina Almécija Pérez, María del Campo Giménez

In recent years it has been repeatedly shown that pharmaceutical products, both in their native form as well as their transformation products, are present in the environment and that some of them can be toxic for several organisms, and they can also accumulate in their tissues. In some cases, the toxicity of the degradation products is even higher than the drug's native form[1].

It is very difficult to determine the final destination compounds, as various factors influence this, such as the physical and chemical conditions of the surroundings, microbial diversity, pharmacokinetic properties (which can vary between the native form and transformation products), and more.

As prescribing physicians, we have the moral obligation to ensure that the pollution that results from our clinical activities is minimal. One way of preventing this medicinal waste from affecting the environment is by disposing of it in medicine collection points.

Medicine recycling points white-colored containers located in pharmacies, authorized by the Departments of the Environment of autonomous communities known as SIGRE Points[2].

These points were created based on collaboration between the pharmaceutical industry, pharmacies, and pharmaceutical distribution companies, with two purposes: on the one hand, to promote responsible use and prevent the accumulation of medicines at home, and on the other, to prevent medicinal waste and medicinal packages from ending up in trash or in the drainage system.

What recommendations can we give to our patients about recycling medicines?

- Recycle expired medicines and avoid the use of medicines in poor condition.
- Recycle medicines that are not needed in order to decrease the risk of inappropriate self-medication and encourage compliance with the prescribed treatments.
- Recycle empty medicine boxes and containers to reduce the accumulation of medicines at home.

Bibliography

1. Maculewicz J, Kowalska D, Świacka K, Toński M, Stepnowski P, Białk-Bielińska A, Dołżonek J. Transformation products of pharmaceuticals in the environment: Their fate, (eco) toxicity and bioaccumulation potential. Sci Total Environ. 2022;802:149916. DOI: 10.1016/j.scitotenv.2021.149916.
2. Memoria de sostenibilidad: Salud + Naturaleza. Nuestra apuesta para construir el futuro. [Internet.] 2020. Available at: www.sigre.es.

9 Reduce the carbon footprint of healthcare centers and doctor's offices

Anna Fernández Ortiz, Marian Sintes Marco

First of all, we need to know our center's carbon footprint and, based on that, we can design an improvement plan.

Calculate the carbon footprint

We need to know the miles traveled by vehicles, fossil fuel consumption, the emissions linked to climate control and refrigeration, and electricity usage[1]. There are a variety of online calculators to do it, including the one from the Spanish Ministry for the Ecological Transition (The organization's carbon footprint calculator, 2020. https://www.miteco.gob.es/es/cambio-climatico/temas/mitigacion-politicas-y-medidas/calculadoras.aspx).

Create an improvement plan[2-8]

Once we have identified the points to improve, we need to prioritize them and decide precisely what and how we will improve.

This could include:

- Reducing the energy needs of the healthcare center: improving the insulation and natural ventilation as well as climate control.
- Committing to energy efficiency when building new centers and improving current ones.
- Increasing the use of renewable energies by installing solar panels on healthcare centers.
- Decreasing emissions in transportation: promotion of emission-free trips (walking or by bike), public transportation and/or carpooling. Changing the current fleet to emission-free vehicles.
- Using environmentally respectful materials, such as biodegradable materials.
- Reducing the use of single-use utensils (e.g., the rational use of gloves).
- Increasing the use of reusable/sterilizable products.

- Decreasing waste: recycling, improvement in sourcing (e.g., reduced packaging, choice of recycled products, preference for local products).
- Reducing water usage (e.g., dual flush toilets, faucet aerators).
- Decreasing paper usage (e.g., two-sided printing, not printing unnecessary documents). Using recycled paper.
- Replacing vending machines with locally sourced, healthy, and sustainable products.
- Using and reusing second-hand furniture and/or computer equipment. If this is not possible, consider donating and/or properly disposing the equipment.

It is a good idea for each healthcare center and doctor's office to have a planetary health officer to coordinate the project.

Bibliography

1. Ministerio para la Transición Ecológica. Guía para el cálculo de la huella de carbono y para la elaboración de un plan de mejora de una organización. [Internet.] Madrid: Ministerio para la Transición Ecológica. Available at: https://www.miteco.gob.es/es/cambio-climatico/temas/mitigacion-politicas-y-medidas/guia_huella_carbono_tcm30-479093.pdf.
2. Blashki G, Butler CD, Brown S. Climate change and human health - What can GPs do? Aust Fam Physician. 2006;35(11):909-11.
3. Greener Practice. Reducing waste in Health Care. [Internet.] Available at: https://www.greenerpractice.co.uk/reducing-waste-in-health-care.
4. NHS England and NHS Improvement. Delivering a "Net Zero" National Health Service. [Internet.] 2020. Available at: https://www.england.nhs.uk/greener-nhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf.
5. Practice Greenhealth. Topics and Initiatives. [Internet.] Available at: https://practicegreenhealth.org/topics.
6. Sawyer M. Making primary care greener: the science and art of sustainable practice. Pulse. 2021;34:36.
7. Green Impact for Health Toolkit. [Internet.] Available at: https://www.greenimpact.org.uk/GIforHealth.
8. World Health Organization & Health Care Without Harm. Healthy Hospitals - Healthy Planet - Healthy People. Addressing climate change in health care settings. 10-21. [Internet.] Available at: https://www.who.int/docs/default-source/climate-change/healthy-hospitals-healthy-planet-healthy-people.pdf?sfvrsn=8b337cee_1.

10 Don't leave the activism that we can do ourselves in other people's hands

Miriam Navarro Beltrá

As healthcare professionals, we have a great responsibility when looking after the health of our patients and the entire population.

Human health is not independent from the health of the planet. It is closely linked to planetary health as well as the health of the other living beings that inhabit our planet. As healthcare professionals we should be aware of this, and we should not let opportunities pass us by to improve the structural conditions that determine our state of health and the health of the planet. This is especially true when we consider that the healthcare sector is the fifth most polluting sector globally in terms of carbon footprint1.

Any opportunity is appropriate for doing so: within our healthcare centers, when informing patients, when collaborating on scientific documents, when influencing governments, and so on.

There are certain examples of local and global activism that we have within our reach that we should not let pass by, trusting that "others will do it"[2,3]:

- Raise awareness in your healthcare center about planetary health and how this impacts our health.
- Demand that your center be more sustainable to reduce the carbon footprint of our healthcare system.
- Focus on aspects related to planetary health whenever it is associated with the reason for your patient's visit. This way you can inform your patients with a focus on planetary health.
- Give advice about preventive activities that have a lower environmental impact.
- Learn more about planetary health.
- Research topics related to the environment and health.
- Participate in guidelines, projects and initiatives related to improving planetary health.

- Influence local and global politics: legislation about the use of medicines, city planning, and so on.
- Encourage Medical Colleges and Scientific Societies to commit to planetary health.

As you can see, the field features numerous possibilities for action to protect the planet's health, and thus people's health as well, that go beyond our patients' visits. That's why we encourage you to join activities to protect and defend the environment, to enjoy them with those closest to you and even with your patients!

Bibliography

1. Health Care Without Harm. Health care's climate footprint. How the health sector contributes to the global climate crisis and opportunities for action. [Internet.] 2019. Available: https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf
2. Behera MT, Behera D, Satpathy SK. Planetary health and the role of community health workers. J Family Med Prim Care. 2020 Jul;9(7):3183-8. DOI: 10.4103/jfmpc.jfmpc_328_20.
3. Horton G, Magin P. Healthy patients, healthy planet. Green recommendations for GP health promotion. Aust Fam Physician. 2007;36(12):1006-8.

semFYC
Sociedad Española de Medicina
de Familia y Comunitaria