

# The Collective Global Responsibility to Do No Harm: Ethics and Drug Resistance



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Photo: C. de Pedro (2006)

**30 mg/L ciprofloxacin**



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- The most extreme environments described on earth with respect to antibiotic resistance
- Harbours many previously unknown types of resistance genes
- Resistance often transferrable to pathogens





# naturenews

## India's drug problem

- Large emissions from drug manufacturing in many countries
- AMR spreads – needs to be managed globally
- Moral responsibility

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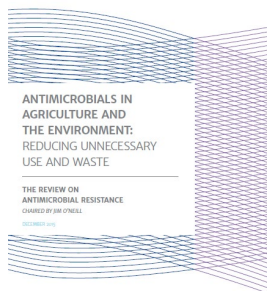
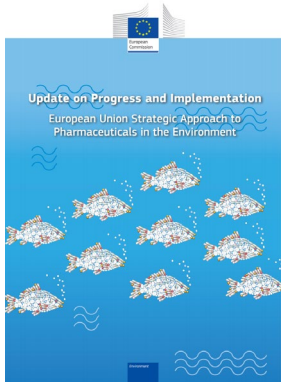
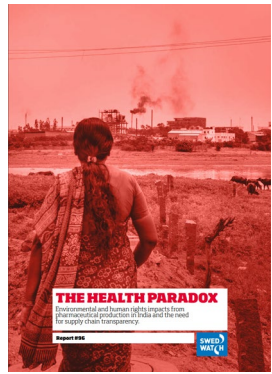
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# Thirty-three actor types with possibilities to contribute to the reduction of ar acturing



1. Research-based pharmaceutical companies
2. Generic pharmaceutical companies
3. Subcontracting pharmaceutical companies
4. Umbrella organisations/ collaborations between pharmaceutical companies
5. Owners of pharmaceutical companies
6. Waste water treatment plants (WWTPs)
7. Parallel importers
8. Producing country states
9. Environmental oversight agencies
10. Citizens of producer states
11. Citizen interest groups, environmental and human rights NGOs
12. Inter-governmental political forums (eg. G7)
13. United Nations agencies
14. Consumer country states
15. National Licensing agencies
16. Agencies committed to subsidizing decisions
17. Agencies committed to prescription policies
18. Public health agencies
19. Agencies committed to public procurement
20. Public hospitals and clinics
21. Regional government (county council) and their regional medical products committees
22. Central priority setting organisation for drug procurement
23. Privately funded and operated clinics and hospitals
24. Pharmacies
25. Insurance companies
26. Physicians and other health care professionals
27. Physician and other health care professional organisations
28. Patients/citizens of consumer country states
29. Patient organisations
30. Multinational governing bodies (e.g., the EU)
31. Agencies of multistate bodies (such as the European Medicines Agency)
32. Media
33. Scientific researchers and universities



MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE  
NOTIFICATION

New Delhi, the 23rd January, 2020

**D. Antibiotic Residues in the treated effluent of Bulk Drug and Formulation Industry and CEPT with membership of Bulk Drug and Formulation Units**  
Individual antibiotic residues will be equal to or less than the values given in the below table.

Parameter	Limiting value for concentration (µg/l)
i. Amikacin	6.40
ii. Amoxicillin	0.10
iii. Amphotericin B	0.01
iv. Ampicillin	0.10
v. Azithromycin	0.01
vi. Avilamycin	3.20
vii. Azithromycin	0.01

UN environment







### World-leading pharma companies commit to discharge limits for antibiotics

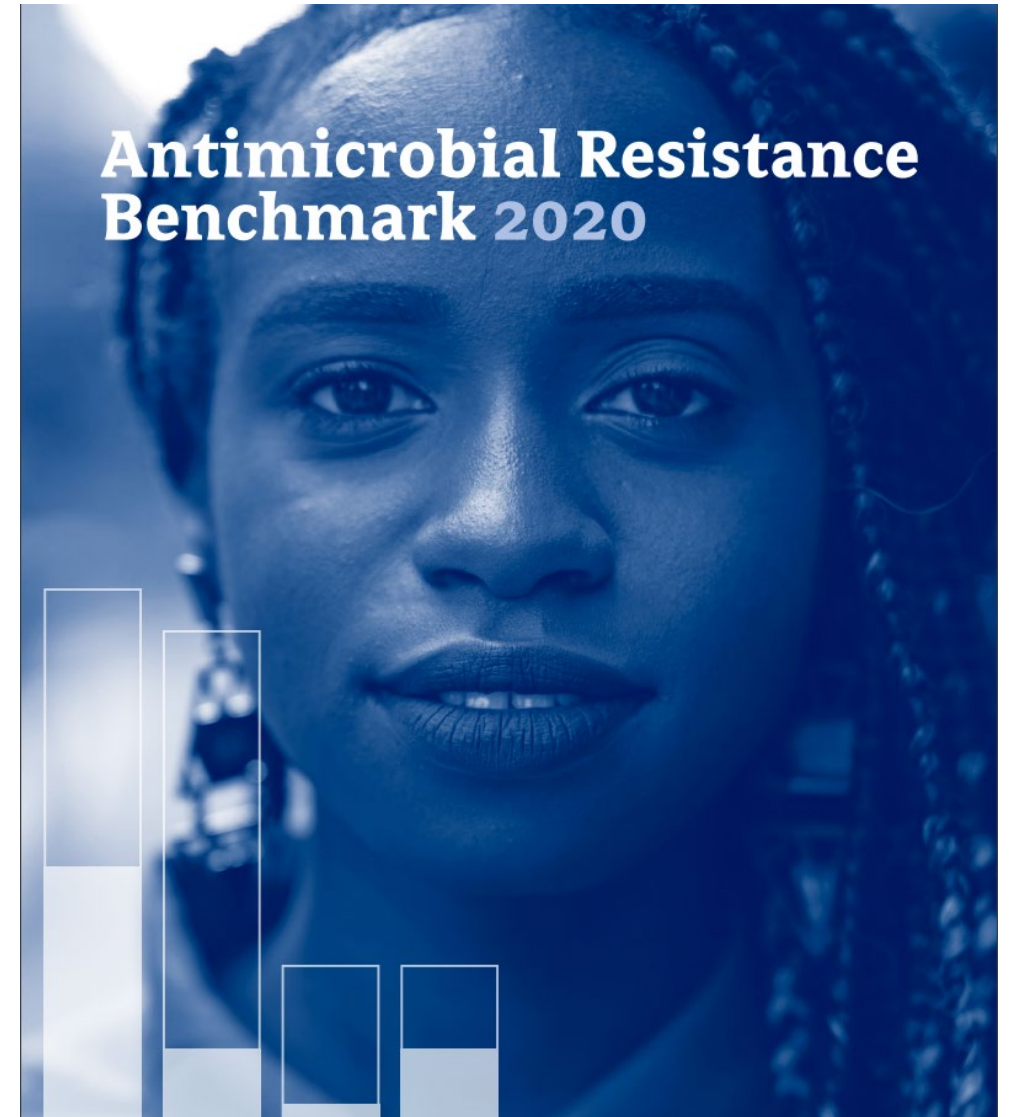
Publicerad 26 september 2018

vid Centrum för antibiotikaresistensforskning, CARE ->

At the United Nations General Assembly this week in New York, leading pharmaceutical industries committed voluntarily to apply discharge limits for antibiotics in their manufacturing chains [

- Still, None of the companies reveals where, and by whom, their active ingredients are made
- Still, None of the companies reveals how large emissions of antibiotics they have

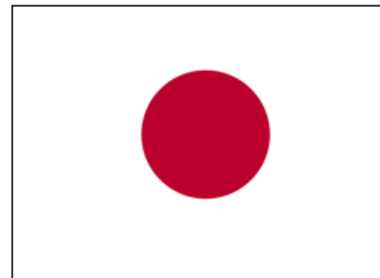
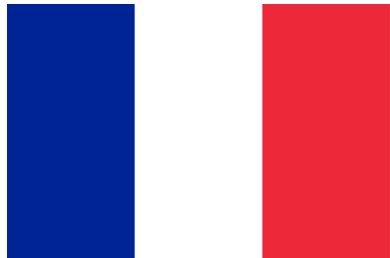
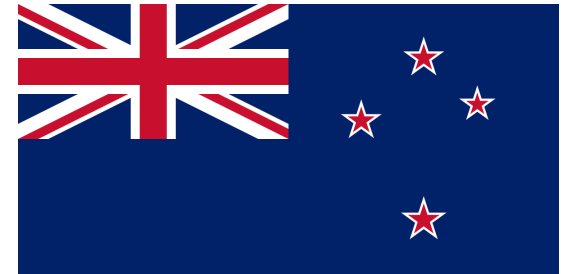
Voluntary actions by industry is NOT enough!





Incentivising actions from consumer countries:

- Demand transparency in production chains
- Procurement – award pollution control
- Subsidy-decisions – award pollution control
- GMP – amend pollution control



# Thank you for listening!

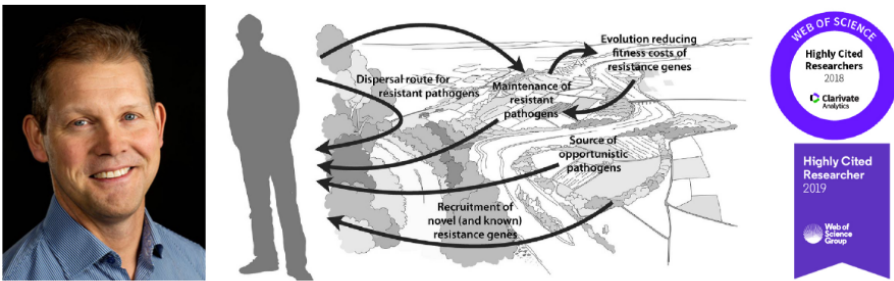
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### Research interests - Joakim Larsson group

The Larsson group is engaged in research on several aspects of antibiotic resistance, but has particular expertise in the environmental dimensions, spanning from a long-standing interest in pharmaceuticals in the environment. A core challenge is to understand the flow of resistance genes from the diverse environmental reservoir that over time are recruited into the human microbiota. How did the genes that are clinical problems today make their way into pathogens? What antibiotic resistance genes are likely to be discovered in pathogens in the future? What environments and conditions are driving the mobilization, transfer and fixation of different resistance factors? The group is also interested in exploring the role of environmental transmission routes of resistant pathogens, particularly via contaminated water. Some of the ongoing projects are aiming at using the resistance pattern of fecal bacteria in sewage as a proxy for the resistance situation in the local human population. Finally, the research group is interested in the translational aspects, i.e. how can the research results best be brought into effective policy? Larsson is also the director of the interdisciplinary [Centre for Antibiotic Resistance Research at University of Gothenburg - CARE](#).

Two postdoctoral positions available right now! »

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### Centre for Antibiotic Resistance Research, CARE

A global challenge

CARE - Centre for Antibiotic Resistance Research at University of Gothenburg - has a vision to limit mortality, morbidity and socioeconomic costs related to antibiotic resistance on a global scale through research. CARE offers diverse expertise representing six faculties and a broad network of stakeholders within the health care sector and beyond to generate state-of-the-art science with the intention to support rapid revision of policies and their implementation.

CARE Twitter News

Tweets by @CARE\_GU

CARE @CARE\_GU  
Two postdoctoral positions in molecular microbiology and antibiotic resistance available within the research group led by Professor Joakim Larsson. The deadline for applying is the 10th of January, 2020. [gu.se/english/about\\_...](#)

Postdoctora...  
gu.se

“This serious threat is no longer a prediction for the future, it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country”

“Without urgent, coordinated action by many stakeholders, the world is headed for a post-antibiotic era, in which common infections and minor injuries which have been treatable for decades can once again kill”

(World Health Organization 2014 regarding the global challenges with antibiotic resistance)



**ALF** VÄSTRA GÖTLAND

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