

24-Sep-2020
BMJ-2020-060628
A Pathway to Net Zero for Health Care

Dear Dr. Salas,

Thank you for sending us this paper and giving us the chance to consider your work. I'm sorry for the delay in getting back to you. We sent it out for external peer review and discussed it among the editors. We recognise this is an extremely thorough and important paper for our readership and we would like to publish it if you are willing to revise this in line with the comments from the reviewers and editors.

We would like to publish this quickly and wonder if you might be able to return the paper to us by Monday. I recognise this is a tight deadline but the reviews are very positive.

The reviewers' comments are at the end of this letter.

The editors' comments are listed below:

- *The tables are important but long, we may choose to make these online only.
- *I am waiting to hear back from our infographics editor about the figure and also whether he could work some of these tables into an infographic. I will keep you informed on this but feel it's best if you start work on the revision and we can liaise about the infographic/figure options as we go through the process.
- *Please make clear in the table why you have chosen to include these specialties and procedures - is it because these are the only ones where data are available or because these are the worst offenders?
- *We agree with one of the reviewers that as this is an analysis, it would be helpful to be more critical of this approach in places, considering some of the barriers to these proposed changes as you go along.

Please do let me know if you think returning this quickly to us is achievable. When submitting your revised manuscript please provide a point by point response to our comments and those of any reviewers. We also ask that you keep the revised manuscript within the word count of 1800-2000 words.

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I hope you will find the comments useful. Please don't hesitate to contact me if you wish to discuss this further.

Yours sincerely,

Dr Sophie Cook
Head of scholarly comment
scook@bmj.com

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Reviewer(s)' Comments to Author:

Reviewer: 1

Recommendation:

Comments:

This is a nicely conducted research and well written manuscript to propose a possible pathway towards net zero emission in health care facilities/services and, is primarily pertinent to high income countries or health care facilities in low-and middle-income countries located in big cities.

Major concern: While the specific areas or categories identified in the manuscript that could be targeted to attain net zero emission are clear, the manuscript could further benefit by detail explanation of various intervention measures within these categories, to clearly guide concerned stake holders and actors on how it can be done.

The authors could further explain the trade-off between environmental and health benefit vs. economic burden or issues with transition management when undertaking specific intervention under each category. For e.g.: the Swedish study on telemedicine clearly shows 40-70% reduction in carbon emission upon replacement of physical consultation with telemedicine appointment, making it a very strong yet a feasible solution. More discussion of evidence base or casual mechanism like these for each proposed category or intervention/solution would further explain, why it needs to be done and how it can be done and, is more likely to convince concerned authorities to adapt the proposed pathway. Having said that some of the points (such as green energy, proper management of food waste, energy sustainable building design) are covered in individual case study presented, solution like creating a culture that values sustainability remains poorly explained and doesn't show a casual mechanism, except for the proposition of chief sustainability officer. The authors could reduce information on the section-sources of carbon in health care setting (it has been widely discussed in available literatures) and use it to talk more about the proposed pathway, specifically.

Minor comment: It is likely to help, if authors could add a dedicated section and further explanations to emphasize the importance of preventive public health measures in reducing the burden of service seekers or patients in health care facilities, promoting healthy living and longevity.

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Reviewer: 2

Recommendation:

Comments:

This is an important paper, and should, be published ASAP. It is concise clear and will help Health systems understand how to best contribute to the resolution of the ecological emergency. It is also commendable in the approach suggested for health care systems in LMIC

There are minor issues which need clarification.

In table 1 renal should be 3.006 tons/PERSON /year
and M USD presumable means Million USD

In the reduce overtreatment section of innovative model of care table it says " track and incentive accepted over treatment" Surely not.

LINE 247 to 250 . this para needs clarifying

page 18 Box 2 Is there a conflict between this 57% quoted here and the 71% attributed to scope 3 in fig1 ?.

And a couple of further thoughts.

a) More could have been said about the potential of health care land for carbon sequestration. For instance tree planting and soil enhancement should take place in health care settings.

b) in line 240 reduction of poverty is rightly mentioned, but the Closing of the inequality gap is arguably even more important.

c) In advocating for local renewable energy generation , community ownership of same will provide further health benefits.

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Reviewer: 3

Recommendation:

Comments:

This paper 'A Pathway to Net Zero for Health Care' focuses on the fact that health care is an energy-intensive sector and a substantial contributor to global GHG emissions. It highlights that the sector has lagged in efforts to reduce emissions and aims to 'chart a course to Net Zero emissions in health care'. With only a decade left to reduce emissions to half the 2010 level, the paper is timely and much needed in drawing global attention to the emergency.

The paper is well constructed in how it 'describes efforts to date, recounts the benefits of Net Zero operations, reviews available strategies, and identifies knowledge gaps'. It does a very good job of updating readers' knowledge on how the health care sector contributes to GHG emissions and the range of health sector activities which need to be included in these calculations together with some interesting examples of carbon footprint estimations undertaken across these activities, a global comparison of health sector carbon footprints by country, and a potential set of solutions from within and outside the health sector. The need to include the health care sector in discussions on carbon footprint reductions was first highlighted more than a decade ago, and this paper demonstrates very well, how the evidence base and the framework for a strategy have been strengthened, clarified and made much more authoritative since that time.

The paper could, however, be more critical in its approach to the pathway it recommends. This is, after all, an Analysis paper, and therefore needs to be bolder and more analytical. What are the barriers to change, what lessons have been learnt thus far, and how could change be industrialised, building on that learning? How would an appropriate balance be achieved globally, taking account of all the countries ranging from Iceland to India, so that there is equity of access to health care worldwide, while the health sector overall rapidly achieves its share of the emissions reductions by 2030 and 2050? What process has begun to explore this? The paper could be more impactful if the descriptive components could be matched by a greater focus on how change may be achieved.

Lastly, the involvement of health care workers in discussions on climate action is disappointingly limited even in the UK. The recent history of climate action illustrates how important it is to democratise knowledge, action and involvement to reimagine a new world and push for rapid transformational change. This group of experts is requested to consider how knowledge sharing can be accelerated and how health care workers and the public could become partners in demanding and leading the scale of change required to address the climate emergency.

A minor observation is to recommend a spell check to ensure that words such as phacoemulsification are spelt correctly.

I am happy to recommend publication following revision.

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Reviewer: 4

Recommendation:

Comments:

This paper represents an excellent introduction to the issues, challenges and opportunities in net zero healthcare.

I have a few observations and suggestions. The diagram representing the breadth of Sc1,2,3 at the start is very heavy on sc3, it could highlight a little more detail under Sc1 particularly energy use, fuel use and anaesthetic gases.

The early part of the paper gives good coverage of developed world health systems, and highlights the difference with the carbon intensity of health care per capita with India. It is good to see some exploratory text looking at the different challenges in LMICs. The coverage here though is maybe a little short. The authors could possibly do more to highlight the global health inequalities driven by climate change and the disproportionate impact on LMICs and their Healthcare systems, Indeed coverage on adaptation is a little short. It is good to note the attention given to the need to integrate systemic action on energy supply and public health development in these countries and that this may sometimes come

from collaboration with non state actors. There are some excellent examples given where this has worked well.

Many major suppliers to developed world health systems will also supply to systems in LMICs. It maybe worth highlighting the broader leverage available to developed world healthcare providers to drive down sc3 emissions in suppliers and products also used in LMICs. An aligned approach could ensure that higher carbon products, such as high carbon anaesthetics and asthma medication are not just displaced from one national context to another.

The example given on pg19 lines 5-9 of the NHS use of food mastication seems out of place. There are many very good initiatives to reference, while food mastication is not really common practice. Maybe the authors could consider the 50m NHS investment in LED lighting, or the substantial recent NHS shift away from using Desflurane, backed by the NHS standard contract, NHS long term plan and close collaboration with the Association of Anaesthetists?

The authors may want to consider highlighting the lack of access to good quality national level data and carbon conversion factors in all national contexts. For example the sc3 conversion factors electricity grid factors readily available in the US and UK are not easily available in all countries. Similarly the availability of appropriately trained expertise on footprinting and delivery. These need to be purchased, putting LMICs and non state actors at a disadvantage in footprinting, targeting and tracking action.

Overall this is a valuable paper that sets the scene well with some very useful practical examples. I would be keen to see it published

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