

ARTICLE

On the Ethics of Withholding and Withdrawing Unwarranted Diagnoses

Bjørn Morten Hofmann^{1,2*}  and Marianne Lea^{3,4} 

¹Department for the Health Sciences, Norwegian University of Science and Technology (NTNU), Gjøvik, Norway

²Centre of Medical Ethics, University of Oslo, P.O. Box 1130, Blindern, N-0318 Oslo, Norway

³Department of Pharmacy, Section for Pharmacology and Pharmaceutical Biosciences, University of Oslo, Oslo, Norway

⁴Oslo Hospital Pharmacy, Hospital Pharmacies Enterprise, South-Eastern Norway, Oslo, Norway

*Corresponding author. Email: b.m.hofmann@medisin.uio.no

Abstract

The number of diagnoses and the number of persons having diagnoses have increased substantially, and studies indicate that diagnoses are given or upheld even if they are unwarranted, that is, that they do not satisfy professionally accepted diagnostic criteria. In this article, the authors investigate the ethics of withholding and withdrawing unwarranted diagnoses. First, they investigate ethical aspects that make it difficult to withhold and to withdraw such diagnoses. Second, they scrutinize whether there are psychological factors, both in persons/patients and healthcare professionals, making it difficult to withdraw and withhold unwarranted diagnoses. Lastly, they use recent elements of the withholding-versus-withdrawing treatment debate in medical ethics to investigate whether there are any differences between withholding and withdrawing treatment and withdrawing and withholding unwarranted diagnoses. The authors conclude that it is crucial to acknowledge and address all these issues to reduce and avoid unwarranted diagnoses.

Keywords: unwarranted diagnoses; withholding; withdrawing; psychological factors; withholding-versus-withdrawing treatment (WvWT) debate

Introduction

The number of diagnoses has increased substantially. In the 18th century, 2400 diseases were documented.¹ Today, the International Classification of Diseases (ICD 11) consists of approximately 55,000 unique codes for disease. Clearly, diagnoses are action-guiding for healthcare professionals, and they provide explanations and consolation to patients. Technological developments in a wide range of fields have vastly improved diagnostic capabilities. Evermore, conditions can be detected and predicted earlier than ever before.²

At the same time diagnoses have been expanded to phenomena that are less closely connected to pain and suffering than before.³ Examples include risk factors for disease (e.g., hypertension), indicators (e.g., prostate-specific antigen, PSA), precursors to disease (e.g., to cancers),^{4,5} and behaviors (e.g., ADHD). Accordingly, medicine is accused of overdiagnosing, that is, diagnosing conditions that never would develop to experienced symptoms, disease, or death,^{6,7} and for low-value diagnostics, that is, diagnoses that do not change the clinical pathway of patients or improve their health.^{8,9,10,11} The phenomenon of “diagnostic inflation” has been identified and scrutinized.^{12,13,14,15} There is also “diagnostic bending” analogous to “diagnostic creep”¹⁶ and “fake diagnosis”¹⁷ and unnecessary diagnoses due to excessive imaging.¹⁸ Furthermore, it has been stated that there is a “compulsion for diagnosis.”¹⁹ Moreover, reassessment, reevaluation, and re-diagnosis studies show that the criteria for diagnoses do not always

hold.^{20,21,22,23} Hence, there appears to be an increasing acknowledgement that *too many persons are given or hold diagnoses they should not have (according to current diagnostic criteria)*.

There have been several strong reactions and campaigns against too many diagnoses and associated treatments. The Choosing Wisely Campaign, Too Much Medicine (*British Medical Journal*), Smarter Medicine movement, Prudent Health Care, Slow Medicine, and Do Not Do (NICE) are a few examples.^{24,25} While most efforts are directed at reducing the number of diagnoses assigned to persons (i.e., withholding diagnoses), only a few efforts are directed towards removing diagnoses, (i.e., withdrawing diagnoses). Examples of initiatives to remove diagnoses are directed at: undiagnosing,^{26,27} dedesigning,^{28,29,30} diagnosis review,³¹ and replacing diagnoses with risk predictions.³²

However, it appears to be quite difficult both to withhold and withdraw diagnoses even if they are unwarranted. *By unwarranted diagnoses, we mean diagnoses that do not satisfy professionally accepted diagnostic criteria such as they appear in textbooks, disease manuals, or guidelines.* Accordingly, the main objective of this paper is to investigate the ethics of withholding and withdrawing unwarranted diagnoses. First, we investigate whether there are ethical aspects of diagnoses that make it difficult to withhold and to withdraw unwarranted diagnoses. Then we scrutinize whether there are psychological factors making it difficult to withdraw and to withhold such diagnoses. Lastly, we investigate if there are any differences between withholding and withdrawing treatment and withholding and withdrawing unwarranted diagnoses, using the withholding-versus-withdrawing treatment (WvWT) debate in medical ethics as a backdrop.

Does the Moral of Diagnoses Make it Difficult to Withhold or Withdraw Unwarranted Diagnoses?

Diagnoses have many functions with moral implications. For example, diagnoses have explanatory powers, as they can explain an unwanted situation to patients and their proxies.³³ This can give relief and decrease distress and anxiety, as diagnoses often reduce uncertainty. Additionally, diagnoses provide attention from healthcare professionals and give access to healthcare services. Morally, diagnoses direct actions in healthcare, for example, treatment, care, and palliation. Diagnoses can also assign social rights, such as sickness benefits, and freedom from social obligations such as work, attributed by sick leave.³⁴

On the personal level diagnoses influence a person's identity constructions, as they influence their self-conception³⁵ and life prospects.³⁶ The diagnostic moment can mark a boundary and divide a person's life into "before" and "after."³⁷ Diagnoses can also induce worries, anxiety, stigma, suffering, poorer self-related health, and discrimination.^{38,39,40} Relatedly, diagnoses imply status and prestige as some diagnosed are possessing higher prestige amongst healthcare professionals than others.⁴¹

According to the functions of diagnoses, there are many reasons both to give and remove diagnoses. **Table 1** provides an overview of the functions of diagnoses and possible consequences related to each function depending on whether the diagnosis is given or removed.

As can be seen from **Table 1**, there are positive and negative sides of both giving and removing diagnoses. The balance may be determined quite differently for different conditions in different individuals in different contexts. However, the (many good) moral effects can explain why it can be difficult to withhold diagnoses and why they are maintained even if they are unwarranted, for example, because they provide attention and care, access to (appreciated) healthcare services, explanations and (positive) identity, and freedom from social obligations. Hence, the morals of diagnoses may make it difficult both to withhold them and to withdraw them, even in cases where they are not warranted (or no longer warranted).

Do Psychological Mechanisms Make it Difficult to Withhold or Withdraw Unwarranted Diagnoses?

Both patients and healthcare professionals can be affected by psychological mechanisms regarding the withholding and withdrawing of diagnoses. Patients may have strong expectations to healthcare

Table 1. Possible Consequences Related to the Various Functions of Diagnoses Depending on Whether the Diagnosis Is Given or Removed

Functions of diagnoses	Consequences of giving / diagnosing	Consequences of removing / dedesigning
Epistemic (relief/weariness)	Explain an unwanted situation to the person and others	Potential epistemic weariness due to uncertainty
Attention and care	Warrants attention and care from healthcare professionals	Frees from (or deprives of) attention and care
Direct actions (diagnostics, treatment, palliation)	Access to healthcare services, treatment, palliation	Lost access to healthcare services, treatment, palliation
Assign social rights	Access to care and sickness benefits	Potential removal of access to care and sickness benefits
Influence people's identity constructions	Affect identity, perception of oneself, membership	Potential identity/membership uncertainty. Free from an unwanted (part of) identity
Free from social obligations such as work	Freeing from social obligations. Induce sick benefits	Reinforcing social obligations. Lose sick benefits
Induce or remove anxiety	Can induce and remove anxiety	Can remove and induce anxiety
Label, induce status or prestige	Can induce high/low status or prestige	Lose high/low status or prestige
Induce stigma and discrimination	Can give stigma and result in discrimination	Can free from stigma and discrimination
Psychological and existential effect	Burden and/or relief	Relief and/or burden

professionals and to the healthcare services, to provide them with diagnoses (and treatment) for their conditions. These expectations may bias the withholding of diagnoses.

Due to several effects that are well described in behavioral economics and psychology, it appears more problematic to take something away from people than it is to give them something. These are mechanisms that may bias the withdrawal of diagnoses. The *endowment effect* makes people evaluate things they have more highly than they would evaluate the same things if they did not have them, that is one can experience an emotional attachment.⁴² As diagnoses become identity and membership markers, it is not a simple matter to remove them. Moreover, *loss aversion* may also make people disvalue losing diagnoses.

Correspondingly, *anchoring effects* and *status quo bias (SQB)*, which may result from *aversion to change*, also make it difficult to change conceptions and behaviors.⁴³ *Extension bias*, the perception that more is better than little, can also hamper the withdrawal of diagnoses.⁴⁴ These three mechanisms may influence both patients and healthcare professionals and can oppose the withdrawal of diagnoses.

Ample diagnostic tools make it easier to give rather than to withhold (or remove) diagnoses, for example, due to *availability heuristics*.⁴⁵ Some mechanisms in healthcare professionals may play a role both in opposing withholding and withdrawing of diagnoses: *aversion asymmetry* according to which it is “worse to overlook than to overdo” diagnoses, *anticipated decision regret* according to which the fear of doing too little is greater than the fear of doing too much, and *aversion to risk* and *to ambiguity* according to which not giving or upholding diagnoses may introduce uncertainty.⁴⁶

The imperative of action, that is action is better than inaction, may hinder a healthcare professional's withholding of diagnoses.⁴⁷ This is also expressed in “better safe than sorry” attitudes in diagnostics and in proverbs in diagnostics, such as “scan because you can.”⁴⁸ Furthermore, the *focusing illusion* may play an important role, as healthcare professionals may focus too much on correct diagnosing and the

Table 2. Summary of Some Biases that Can Oppose the Withholding and the Withdrawing of Unwarranted Diagnoses

<i>Who the biases affect</i>	Withholding	Withdrawing
Person/patient	Expectations	Endowment effect Loss aversion Anchoring effect Status quo bias Extension bias
Healthcare professional	Aversion asymmetry Anticipated decision regret Aversion to risk/ambiguity Imperative of action “Better safe than sorry” Focusing illusion Prominence effect	Anchoring effect Status quo bias Extension bias Aversion asymmetry Anticipated decision regret Aversion to risk/ambiguity

corresponding treatment or procedure, rather than what matters for the patient.^{49,50} Related is the *prominence effect* according to which correct diagnosing and treatment become more important than the consequences or outcomes for the patient.⁵¹ Accordingly, there appears to be stronger drives towards setting than removing diagnoses.

Table 2 summarizes how some biases can hinder the withholding and the withdrawing of unwarranted diagnoses. These and many other biases influence priority setting.⁵² It is important to acknowledge that the biases can drive excessive diagnosing and make it difficult to disinvest, to de-implement procedures, and to remove unwarranted diagnostics.⁵³

In sum, there are psychological mechanisms both affecting healthcare professionals and patients that make it difficult both to withhold and to withdraw unwarranted diagnoses. This short review of biases may indicate that it is more difficult to withdraw than to withhold diagnoses. Let us therefore briefly investigate the WvWT debate in medical ethics. Are the ethical aspects that make healthcare professionals find it more difficult to withdraw than to withhold treatment relevant when withholding and withdrawing unwarranted diagnoses?

Withholding and Withdrawing Treatment versus Withholding and Withdrawing Unwarranted Diagnoses

While the so-called equivalence thesis (ET) claims that to withdraw treatment is morally equivalent to withhold treatment,⁵⁴ others have argued that there seem to be three crucial differences between withholding and withdrawing: autonomy, responsibility, and the status of the treatment.⁵⁵ This is known as the WvWT debate in medical ethics.⁵⁶ Let us briefly investigate its relevance for the withholding versus the withdrawing of unwarranted diagnoses.

First, autonomy can be compromised differently in cases of withdrawal and withholding treatment. As argued: “the autonomy of a patient can be compromised more by physicians withdrawing than withholding treatment, since to stop existing treatment that the patient has attached further activities and life paths to can be more intrusive than not to start new treatment options.”⁵⁷ Accordingly, the removal of a diagnosis that is not warranted may change the life plans of the patient, but it may not change their health status. If the patient wants to retain the diagnosis, and the physician wants to withdraw it, the patient’s autonomy is violated. However, the person cannot claim a diagnosis that is not medically warranted. Here the patient’s autonomy meets the professional competency (and autonomy). When the person wants a specific diagnosis that is not warranted, but the professional withholds it, the same situation occurs. Personal autonomy counters professional competency (and autonomy). Hence, the difference in autonomy that is identified in treatment does not seem to be so pronounced in diagnostics.

Table 3. Differences in Effects of Withholding Versus Withdrawing Treatment and Diagnoses, on Patient Autonomy, Professional Responsibility, and Change in Status of the Patient as Described in Note 55, Ursin (2019)⁶⁰

	Treatment		Diagnoses	
	Withhold	Withdraw	Withhold	Withdraw
Patient autonomy	Less compromised	More compromised	Personal autonomy counters professional competency and autonomy	Personal autonomy counters professional competency and autonomy
Professional responsibility	Not taking on a responsibility	Relinquish responsibility	Passive: Less professional/personal responsibility than when withdrawing a diagnosis	Active: More professional/personal responsibility than when withholding a potential diagnosis
Change in status of the patient	No change in treatment status	Change in treatment status	No change in diagnostic status	Change in diagnostic status

Moreover, the way and degree diagnoses affect the individual's identity construction, and/or become membership markers, affects how the patient's autonomy is influenced. When the diagnosis affects the identity positively, for example, if a diagnosis brings with it membership in a network or organization that becomes crucial to the individual's identity, withdrawing it can compromise patient autonomy more than withholding a hypothetical diagnosis. When the diagnosis involves an identity that has a negative connotation for the individual, both withholding and withdrawing the diagnosis will positively affect their autonomy.

According to the second argument for a difference between withholding and withdrawing treatment, professional responsibility is different in the two cases. To withdraw treatment is to relinquish responsibility that is established through a patient-physician relationship; the same is not paralleled in withholding treatment.⁵⁸ While the professional responsibility *not* to give a diagnosis that is not warranted basically is as strong as the responsibility to remove a diagnosis that is not warranted, healthcare professionals may feel themselves more obligated by an existing diagnostic status. Hence the professional responsibility may be perceived as greater when withdrawing than when withholding an unwarranted diagnosis.

Third, the status of the treatment is different in the two cases as "to continue ongoing treatment has another status for the patient than to embark on a new treatment."⁵⁹ The same appears to be the case for withholding and withdrawing diagnoses. When withholding a diagnosis, the status does not change for the patient. When withdrawing a diagnosis, the status changes (from having a diagnosis to not having it). Table 3 sums up the differences in effects of withholding and withdrawing treatment and diagnoses, on patient autonomy, professional responsibility, and change in status of the patient.

Discussion

The number of diagnoses and the number of persons having diagnoses have increased substantially. Unfortunately, not all of these diagnoses are warranted according to professional standards and criteria. Hence, it is an ethical challenge to give and uphold diagnoses that are not warranted. In this article, the ethics of withholding and withdrawing unwarranted diagnoses have been investigated through three approaches.

There seem to be many moral aspects of diagnoses that make it difficult to withhold and to withdraw diagnoses even if they are unwarranted. Additionally, there are psychological mechanisms, biases, both in patients and healthcare professionals, that can hamper both the withdrawal and the withholding of unwarranted diagnoses. A wise oncologist once said, "The hardest thing in medicine is to do nothing,"⁶¹

which may be an illustrative expression of this fact. However, our short analysis of the biases indicates that it is more difficult to withdraw than to withhold diagnoses.

There are certainly many challenges with the equivalence thesis and the WvWT debate.⁶² Here we have only applied one approach, and other approaches are warranted and welcome. Nonetheless, it does not seem obvious that the ET holds in the field of diagnoses, as we have pointed to some differences between withholding and withdrawing diagnoses. While the differences between withholding and withdrawing appear to be less pronounced in diagnosis than in treatment, our brief analysis of the WvWT debate indicate that it is ethically more challenging to withdraw than to withhold an unwarranted diagnosis.

In referring to the WvWT debate, we have adopted one of its inherent assumptions, that is, that patient autonomy is compromised both in withholding and withdrawal of treatment.⁶³ This stems from the fact that the WvWT debate has its origins in intensive care medicine. However, this assumption does not necessary hold for other settings, such as compulsory treatment in psychiatry where withdrawal of treatment can increase autonomy.

We have referred to professional standards when defining unwarranted diagnoses. There are, of course, debates about such standards, which develop over time. New knowledge and technology make some diagnoses obsolete.⁶⁴ There is also a wide range of diagnoses that are not correct, for example, due to false-positive test results, erroneous application of diagnostic criteria, over-detection, over-definition, and over-diagnosis. However, these are hard to detect and not (often) relevant to the situation of withholding or withdrawing unwarranted diagnoses. Accordingly, they are excluded by our clause referring to professional standards.

Conclusion

The objective of this study was to investigate the ethics of withholding and withdrawing unwarranted diagnoses. First, we found that the moral effects of diagnoses can explain why it can be difficult to withhold diagnoses and why they are kept even if they are unwarranted, for example, because they give attention and care, access to (appreciated) healthcare services, explanations and (positive) identity, and freedom from social obligations. Hence, the morals of diagnoses may make it difficult both to withhold them and to withdraw them, even in cases where they are not warranted. Second, we identified a range of biases both affecting healthcare professionals and patients that make it difficult both to withhold and to withdraw unwarranted diagnoses. Third, we used recent elements of the WvWT debate in medical ethics to identify some relevant differences between withholding and withdrawing treatment and withholding and withholding unwarranted diagnoses. Accordingly, we have identified a range of factors crucial to acknowledge and address in order to reduce and avoid unwarranted diagnoses.

Conflict of Interest. We certify that there is no actual or potential conflict of interest in relation to this manuscript, and there are no financial arrangements or arrangements with respect to the content of this viewpoint with any companies or organizations.

Funding Statement. No funding bodies had any role in study design, data analysis, decision to publish, or preparation of the manuscript.

Author Contributions. The first author had the idea of the article and made the first draft. Both authors have contributed substantially to the content of the article and to a number of revisions. The final version of the paper has been approved by both authors and both are guarantors of the article.

Data Availability Statement. All data are available in the paper.

Notes

1. De Sauvages F. *Nosologia Methodica Sistens Morborum Classes*. Amsterdam: Fratrum de Tourne; 1768/1968.
2. Hofmann B, Skolbekken JA. Surge in publications on early detection. *British Medical Journal* 2017;357:j2102. doi:10.1136/bmj.j2102 (published Online First: 10 May 2017).

3. Hofmann BM. Back to basics: overdiagnosis is about unwarranted diagnosis. *American Journal of Epidemiology* 2019;**188**(10):1812–17. doi:10.1093/aje/kwz148.
4. Esserman LJ, Thompson IM, Reid B, Nelson P, Ransohoff DF, Welch HG, *et al.* Addressing overdiagnosis and overtreatment in cancer: a prescription for change. *The Lancet Oncology* 2014;**15**(6):e234–42. doi:10.1016/s1470-2045(13)70598-9 (published Online First: 9 May 2014).
5. Esserman LJ, Varma M. Should we rename low risk cancers? *British Medical Journal* 2019;**364**:k4699. doi:10.1136/bmj.k4699.
6. Welch HG. *Less Medicine, More Health: 7 Assumptions That Drive Too Much Medical Care*. Boston, MA: Beacon Press; 2015.
7. Welch HG, Black WC. Overdiagnosis in cancer. *Journal of the National Cancer Institute* 2010;**102**(9):605–13. doi:10.1093/jnci/djq099 (published Online First: 24 April 2010).
8. Kjelle E, Andersen ER, Krokeide AM, Hofmann BM. Characterizing and quantifying low-value diagnostic imaging internationally: a scoping review. *BMC Medical Imaging* 2022;**22**:73.
9. Hofmann B. Too much of a good thing is wonderful? A conceptual analysis of excessive examinations and diagnostic futility in diagnostic radiology. *Medicine, Health care and Philosophy* 2010;**13**(2):139–48. doi:10.1007/s11019-010-9233-8.
10. Glasziou P, Moynihan R, Richards T, Godlee F. Too much medicine; too little care. *British Medical Journal* 2013;**347**:f4247. doi:10.1136/bmj.f4247.
11. Moynihan R. Too much medicine, not enough mirth. *British Medical Journal* 2012;**345**:e7116. doi:10.1136/bmj.e7116.
12. Batstra L, Frances A. Diagnostic inflation: causes and a suggested cure. *The Journal of Nervous and Mental Disease* 2012;**200**(6):474–79.
13. Fabiano F, Haslam N. Diagnostic inflation in the DSM: a meta-analysis of changes in the stringency of psychiatric diagnosis from DSM-III to DSM-5. *Clinical Psychology Review* 2020;**80**:101889.
14. Frances A. Diagnostic inflation can be bad for our patients' health. *Canadian Journal of Psychiatry. Revue canadienne de psychiatrie* 2013;**58**(10):567–9.
15. Kudlow P. The perils of diagnostic inflation. *Canadian Medical Association Journal. Journal de l'Association Medicale Canadienne* 2013;**185**(1):E25–6.
16. Doust J, Vandvik PO, Qaseem A, Mustafa RA, Horvath AR, Frances A, *et al.* Guidance for modifying the definition of diseases: a checklist. *JAMA Internal Medicine* 2017;**177**(7):1020–5.
17. Frances A. Saving normal: an insider's revolt against out-of-control psychiatric diagnosis, DSM-5, big pharma and the medicalization of ordinary life. *Psychotherapy in Australia* 2013;**19**(3):14–8.
18. Oren O, Kebebew E, Ioannidis JP. Curbing unnecessary and wasted diagnostic imaging. *JAMA* 2019;**321**(3):245–46.
19. Coon ER, Quinonez RA, Moyer VA, Schroeder AR. Overdiagnosis: how our compulsion for diagnosis may be harming children. *Pediatrics* 2014;**134**(5):1013–23.
20. Berg AT, Shinnar S, Levy SR, Testa FM, Smith-Rapaport S, Beckerman B. How well can epilepsy syndromes be identified at diagnosis? A reassessment 2 years after initial diagnosis. *Epilepsia* 2000;**41**(10):1269–75.
21. Glazer WM, Pino CD, Quinlan D. The reassessment of chronic patients previously diagnosed as schizophrenic. *Journal of Clinical Psychiatry* 1987;**48**(11):430–4.
22. Santelmann H, Franklin J, Bußhoff J, Baethge C. Diagnostic shift in patients diagnosed with schizoaffective disorder: a systematic review and meta-analysis of rediagnosis studies. *Bipolar Disorder* 2016;**18**(3):233–46. doi:10.1111/bdi.12388.
23. Aaron SD, Vandemheen KL, FitzGerald JM, Ainslie M, Gupta S, Lemièrre C, *et al.* Reevaluation of diagnosis in adults with physician-diagnosed asthma. *JAMA* 2017;**317**(3):269–79.
24. Giancotti M, Rotundo G, Mauro M. Choosing wisely for health: a context analysis through a systematic search of the published literature. *World Review of Business Research* 2019;**9**(1):20–47.
25. Expert Panel on effective ways of investing in Health (EXPH). *Defining value in "value-based healthcare"*. Geneva: European Commission, 2019.
26. Page A, Etherton-Ber C. Undiagnosing to prevent overprescribing. *Maturitas* 2019;**123**:67–72. doi:10.1016/j.maturitas.2019.02.010.

27. Lipworth BJ, Jabbal S. Un-diagnosing persistent adult asthma. *European Respiratory Journal* 2017;**50**(5):1701433. doi:10.1183/13993003.01433-2017.
28. Lea M, Hofmann BM. Dediagnosing - a novel framework for making people less ill. *European Journal of Internal Medicine* 2022;**95**:17–23. doi:10.1016/j.ejim.2021.07.011 (published Online First: 22 Aug 2021).
29. Moynihan R, Brodersen J, Heath I, Johansson M, Kuehlein T, Minué-Lorenzo S, et al. Reforming disease definitions: a new primary care led, people-centred approach. *BMJ Evidence-Based Medicine* 2019;**24**(5):170–3. doi:10.1136/bmjebm-2018-111148.
30. Marshall M. De-diagnosing disease The BMJ Opinion2019 [cited 7 June 2021]; available at <https://blogs.bmj.com/bmj/2019/05/02/martin-marshall-de-diagnosing-disease/> (last accessed 7 June 2021).
31. See note 29, Moynihan et al. 2019.
32. Vickers AJ, Basch E, Kattan MW. Against diagnosis. *Annals of Internal Medicine* 2008;**149**(3):200–3. doi:10.7326/0003-4819-149-3-200808050-00010 (published Online First: 6 Aug 2008).
33. Hofmann B. Acknowledging and addressing the many ethical aspects of disease. *Patient Education and Counseling* 2021. doi:10.1016/j.pec.2021.09.015.
34. See note 33, Hofmann 2021.
35. See note 33, Hofmann 2021.
36. Markussen S, Røed K. Bidrar medikalisering av ungdom til utstøtning fra skole og arbeidsliv? *Søkelys på arbeidslivet* 2020;**37**(4):219–37. doi:10.18261/issn.1504-7989-2020-04-01.
37. Fleischman S. I am ..., I have ..., I suffer from ...: A linguist reflects on the language of illness and disease. *Journal of Medical Humanities* 1999;**20**(1):3–32. doi:10.1023/A:1022918132461.
38. Van Brakel WH. Measuring health-related stigma—A literature review. *Psychology, Health & Medicine* 2006;**11**(3):307–34. doi:10.1080/13548500600595160.
39. Jørgensen P, Langhammer A, Krokstad S, Forsmo S. Is there an association between disease ignorance and self-rated health? The HUNT Study, a cross-sectional survey. *BMJ Open* 2014;**4**(5):e004962. doi:10.1136/bmjopen-2014-004962 (published Online First: 30 May 2014).
40. See note 33, Hofmann 2021.
41. Album D, Westin S. Do diseases have a prestige hierarchy? A survey among physicians and medical students. *Social Science & Medicine* 2008;**66**(1):182–8.
42. Hofmann B. Progress bias versus status quo bias in the ethics of emerging science and technology. *Bioethics* 2020;**34**(3):252–63. doi:10.1111/bioe.12622.
43. Hofmann B. Biases and imperatives in handling medical technology. *Health Policy and Technology* 2019;**8**(4):377–85. doi:10.1016/j.hlpt.2019.10.005.
44. See note 43, Hofmann 2019.
45. See note 43, Hofmann 2019.
46. See note 43, Hofmann 2019.
47. See note 43, Hofmann 2019.
48. Maskell G. Think before you scan. *British Medical Journal* 2018;**362**:k3754. doi:10.1136/bmj.k3754.
49. See note 43, Hofmann 2019.
50. See note 28, Lea, Hofmann 2022.
51. See note 43, Hofmann 2019.
52. Hofmann BM. Biases distorting priority setting. *Health Policy* 2020;**124**(1):52–60. doi:10.1016/j.healthpol.2019.11.010.
53. Hofmann B. Internal barriers to efficiency: why disinvestments are so difficult. Identifying and addressing internal barriers to disinvestment of health technologies. *Health Economics, Policy and Law* 2021;**16**:473–88.
54. Sandman L, Liliemark J. Withholding and withdrawing treatment for cost-effectiveness reasons: Are they ethically on par? *Bioethics* 2019;**33**(2):278–86. doi:10.1111/bioe.12545 (published Online First: 12 Dec 2018).
55. Ursin L. Withholding and withdrawing life-sustaining treatment: ethically equivalent? *The American Journal of Bioethics* 2019;**19**(3):10–20.

56. Ko DN, Blinderman CD. Withholding and withdrawing life-sustaining treatment (including artificial nutrition and hydration). In NI Cherny, M Fallon, S Kaasa, RK Portenoy, D Currow, eds. *Oxford Textbook of Palliative Medicine*. Oxford: Oxford University Press; 2015:323.
57. See note 55, Ursin 2019.
58. See note 55, Ursin 2019.
59. See note 55, Ursin 2019.
60. See note 55, Ursin 2019.
61. Demasi M. Too much medicine: is our obsession with prevention doing us more harm than good? [news.com.au.2015](https://www.news.com.au/lifestyle/health/health-problems/too-much-medicine-is-our-obsession-with-prevention-doing-us-more-harm-than-good/news-story/6ef61807e3f06c017848b2eb05124ffe); Available at <https://www.news.com.au/lifestyle/health/health-problems/too-much-medicine-is-our-obsession-with-prevention-doing-us-more-harm-than-good/news-story/6ef61807e3f06c017848b2eb05124ffe> (last accessed 12 Nov 2021).
62. Hofmann B. Categorical mistakes and moral biases in the withholding-versus-withdrawal debate. *The American Journal of Bioethics* 2019;**19**(3):29–31.
63. See note 55, Ursin 2019.
64. Easton JD, Johnston SC. Time to retire the concept of transient ischemic attack. *JAMA* 2022;**327**:813–4. doi:10.1001/jama.2022.0300.