

American Dermatological Association

Why should the American Dermatological Association put forth a position statement on climate change?

In recent years, climate impacts have escalated, the body of evidence for detrimental effects on skin health, equity, and care delivery has grown substantially, and the concern among dermatologists is mounting, as demonstrated by responses to two surveys published in the *British Journal of Dermatology* and the *International Journal of Dermatology*. Not only does overwhelming scientific consensus on climate change and its impacts exist, national and international health agencies, prominent medical societies, and many scientific journals consider climate change to be the largest threat to public health this century. Herein, this policy statement reflects a robust position on and accounting of climate impacts on dermatologic disease, delivery of care, and disparities, and offers strategic opportunities to fulfill our duty to educate dermatologists and to reduce our professional carbon footprint. Moreover, the statement aligns well with the American Dermatological Association's mission and ethos to lead the discussion and development of solutions for problems in the area of dermatologic health care, research, and education by providing objective analyses and recommendations regarding the complex challenges faced by dermatology, which, in turn, will advance the care and treatment of patients with skin disease and support the society's aspiration to eliminate the destructive effects of social injustice and racial disparities on health. A comprehensive dermatology-specific policy statement on climate change from the ADA affords the opportunity to stand with the House of Medicine on this critically important issue. By engaging in climate advocacy, education, and action for dermatologists and their patients, the ADA, as the oldest dermatological society in the U.S., would join the ranks of prestigious medical societies nationally and internationally who recognize climate change as a fundamental threat to human health.

American Dermatological Association Policy Statement on Climate Change

Anthropogenic activity (of, relating to, or resulting from the influence of human beings on nature) – namely greenhouse gas emissions resulting from the combustion of fossil fuels – has warmed our planet, leading to the highest global temperatures measured in over 100,000 years and one of the largest public health crises we will face this century.¹⁻⁵

A rising burden of disease due to serious health consequences is occurring as a result of climate-related disruption to agricultural systems, shifts in the landscape of infectious diseases, and as direct and indirect consequences of severe storms, flooding, heat waves, drought, and wildfires.^{1,2,5-8} These changes disproportionately impact vulnerable and marginalized populations and lead to critical knock-on effects including damage to infrastructure, economic losses, food and water insecurity, political destabilization and conflict, which collectively drive mass population migration.^{1,2,5,8} The escalating impacts of climate change in a significantly warmer world are predicted to surpass critical ecological thresholds that would result in irreparable harm to planetary and human health.^{1,2,5-7}

The skin functions as the primary interface with our environment, and many dermatologic processes and diseases are climate sensitive.^{9,10} Dermatologists, themselves, live and practice in this rapidly changing environment. As such, climate impacts and government-level responses have direct impacts on dermatologists, our patients, and the practice of dermatology. Therefore, it is critical that the field has a “voice at the table,” advocating on dermatology-specific issues.

SPECIFICALLY:

Effects of Climate Change on Health and Disease

- Heat is associated with a rise in morbidity and mortality. Thermoregulation through sweat production and dilation of cutaneous vessels is a vital function of the skin.¹¹ When the capacity to dissipate heat is overwhelmed during high temperatures and/or high humidity, heat stroke may ensue. In the U.S., heat-related fatalities are the leading cause of death due to extreme weather events.^{12,13}
- Heat may exacerbate skin disease.
 - High temperatures, greater humidity, and increased sweating may induce a wide array of heat-associated dermatoses (miliaria, Grover’s disease, intertrigo, folliculitis, hidradenitis suppurativa), flare autoimmune and bullous skin diseases, increase the risk of superficial bacterial and fungal skin infections, and alter the cutaneous microbiome.^{9-12,14}
- Higher temperatures and altered precipitation patterns increase infectious diseases with dermatologic manifestations.
 - Expansion of geographic range and increased transmission of zoonotic infections and vector-borne diseases are increasingly observed.^{1,2,6,8,15}
 - Antimicrobial drug resistance is rising due to climate pressures.¹²
- Due to slow onset climate events and acute climate shocks, displacement and population migration of more than 1 billion people is predicted by 2050.¹⁶
 - Human migration shifts the endemicity and epidemiology of infectious diseases.
 - Overcrowding in shelters and camps and lack of access to water, sanitation, and hygiene increase the risk of ectoparasitic infestations and their associated secondary infections, which carry serious systemic sequelae.^{12,17}
 - Displacement and migration resulting from extreme weather events are associated with greater violence against women and girls, including physical and sexual assault, trafficking, and higher incidence of sexually transmitted infections.¹⁸
- Incidence of injuries and infections involving the skin increase.

- Cutaneous injuries, skin and soft tissue infections (SSTIs), and dermatitis are the most common health hazards diagnosed following flooding and severe storms, exceeding respiratory and diarrheal illnesses.^{12,19}
- Rising water temperatures increase the range, seasonality, and frequency of marine assaults and dermatoses including jellyfish stings, seabather's eruption, necrotizing SSTIs due to *Vibrio* spp, and cercarial dermatitis.^{9,10,19}
- Exposure to air pollution and wildfire smoke is associated with the exacerbation of skin disease
 - Atopic dermatitis, psoriasis, pemphigus, lupus, acne vulgaris, cutaneous malignancy, melasma, and photoaging are linked with pollution from fossil fuel combustion and/or wildfires.^{9,20-27}
- Longer and more severe pollen seasons exacerbate atopic diseases including atopic dermatitis.²⁷
- Cardiovascular, metabolic, and mental health comorbidities associated with autoinflammatory diseases of the skin are independently exacerbated by climate change and air pollution.^{7,8,28,29}
- Ultraviolet (UV) light has increased due to stratospheric ozone destruction caused by human-made chlorofluorocarbons.²⁶
 - Cutaneous carcinogenesis increases due to the synergistic effects of ultraviolet light, air pollution, and heat.²⁶

Climate Change and Impact on Society, Healthcare and Government Policy

- People of Color and those of lower socioeconomic status are disproportionately exposed to heat and pollution in the U.S.
 - Formerly redlined neighborhoods are now more likely to be urban heat islands and sited in proximity to highways, toxic waste sites, and industrial manufacturing.^{8,9,30}
- Insurers are withdrawing from highly exposed markets due to property losses and increasing climate risk, hindering the ability to adequately insure homes and medical practices.³¹
- As a result of climate impacts, healthcare resources are increasingly strained.^{5,32}
 - Extreme weather events damage critical infrastructure and disrupt medical supply chains leading to interruptions in access and delivery of medical care as well as associated economic losses.³²⁻³⁵
 - Climate change causes an increased burden of disease. By 2030, direct damage costs to health from climate impacts is estimated to rise to 2–4 billion USD annually.⁵
 - Collectively these impacts threaten the viability of health systems in the future.^{5,32,33}
- Without dermatology input, government policy decisions may be based on incomplete information.
 - Coral bleaching has been attributed to some chemical-based sunscreens.³⁶
 - Oxybenzone and octinoxate have demonstrated direct and indirect toxicity to corals. However, in vivo concentrations measured to date typically fall below toxic thresholds.
 - Climate science suggests the primary pressure on coral is due to rising ocean temperatures and acidification from increased atmospheric CO₂, yet local and state laws in many coastal regions have banned specific sunscreens.
 - Dermatologists must be informed of and involved in these discussions to appropriately advocate for patient health and safety.
- Healthcare contributes to greenhouse gas emissions, and regulatory compliance is increasingly linked to emissions reduction.
 - The healthcare sector is carbon-intensive, accounting for 10% of total greenhouse gas emissions in the U.S., while 25% of total global healthcare-related greenhouse gas emissions are attributed to the U.S. healthcare system alone.^{32,37}
 - Dermatology ranks second in plug-and-process load energy usage and generates a large amount of procedural waste.³⁸
 - The Centers for Medicare and Medicaid Services (CMS) has proposed a Decarbonization and Resilience Initiative to launch in 2026. This is designed to address climate change-related threats to health and health systems through collection, monitoring, and assessment of hospital-based greenhouse gas emissions and their effects on healthcare costs, quality, and outcomes.³⁹

- In 2023, the Joint Commission introduced a Sustainable Healthcare Certification which provides a common decarbonization framework for hospitals and health systems to establish priorities, set baselines, and measure and record reductions in emissions.⁴⁰
- These new programs mark the first time healthcare sustainability and decarbonization are linked with regulatory compliance and quality measures, heralding the increased recognition of both the healthcare industry's contributions to climate change and the impacts of climate change on health. Dermatologists should be involved in these discussions as they proceed, to ensure appropriate advocacy around dermatology-specific impacts of any proposed policy-based solutions.
- Dermatologists believe climate change should be a priority for the specialty.
 - Prior surveys highlight that the majority of dermatologists are concerned about the effects of climate change on skin disease and that dermatologists should engage in advocacy on climate-health issues.^{41,42}
 - As noted by respondents, the knowledge gaps around the dermatologic impacts of climate change underscore that current educational resources are insufficient to meet the climate literacy needs of dermatologists.^{41,42}

Beyond the moral imperative to address climate-induced health hazards and disparities, dermatology must stay vigilant to the mounting practice pressures in the face of growing climate impacts. Opportunities exist to educate dermatologists, reduce our professional carbon footprint, advocate for patients, improve the care of the populations we serve, and enhance dermatology's climate readiness.

In alignment with the society's stated mission which "recognizes, discusses and develops solutions for problems in the area of dermatologic health care, research and education," the far-reaching health and sectorial effects of climate change underscore the imperative for the American Dermatological Association (ADA) to bring its influence to bear in an effort to limit detrimental climate-related impacts on cutaneous disease incidence and severity, patient well-being, and care delivery by standing with the entire House of Medicine in advocating for innovative solutions to adapt to and mitigate the climate crisis. To this end, medical societies within dermatology should prioritize the creation of a committee, task force, or working group whose purpose is to gather, generate, and synthesize relevant climate-related scientific findings to render expert recommendations for appropriate climate action to assist dermatologists, their patients, policymakers, and the public in achieving meaningful measures toward climate adaptation, mitigation, and resilience. Therefore, the ADA shall prioritize the ongoing development of institutional mechanisms for responsiveness to cope with the rapidly evolving landscape of climate impacts.

SPECIFIC RECOMMENDATIONS INCLUDE:

1. Support the call for a 50% reduction in greenhouse gas emissions across the U.S. healthcare sector by 2030

The ADA acknowledges the significance of a commitment to carbon neutrality within dermatology to align with the IPCC's recommendations and U.S. Department of Health and Human Services' (HHS) goal for 50% reduction in greenhouse gas emissions across the U.S. healthcare sector by 2030. Critical steps include:

- Conducting a baseline assessment of the carbon footprint of dermatology and its subspecialties, essential for establishing carbon reduction benchmarks and outlining realistic paths towards sustainable delivery of dermatological care in a cost-effective manner.
- Creation of roadmaps, tool kits, and guidelines for dermatologists on sustainability and waste reduction in dermatologic care delivery, clinical study design, and laboratory research.
- Continuing to support responsible care delivery through telemedicine, which reduces travel-related emissions, advocacy for payor parity and continued innovation in digital platforms for dermatological care and use of artificial intelligence.

- Encouraging medical societies to reduce their own footprint, including audits of day-to-day operations, implementation of measures to deliver educational meetings that both benefit members and the environment, such as virtual attendance options, carbon offsets for members who attend in person, reductions in waste, energy and water use during meetings, and establishing incentives for sponsors, exhibitors and vendors to meet sustainability benchmarks.
- Advocating for continued reliance on virtual interviews by dermatology residency programs.
- Creating partnerships with pharmaceutical and cosmetic industries, medical supply vendors, and device manufacturers to establish responsible consumption and production standards, reduce wasteful product packaging, and minimize scope 3 emissions through the adoption of mandatory life cycle analyses of drug and skin care products, medical supplies, and devices to address the environmental impacts of manufacturing, usage, and disposal.

2. **Educate**

Dissemination of evidenced-based knowledge and information is critical for our mission as healthcare providers. Key areas to embed climate-health in education include:

- Development of clinical guidelines and best practices, training modules, and CME opportunities to assist dermatologists in knowledge acquisition regarding climate change and skin disease, assessment of environmental exposures, and effective communication of risk mitigation strategies to patients.
- Support for inclusion of climate change in residency curricula and board certification assessments.
- Dissemination of patient-focused educational materials on climate impacts on skin disease, recognition of individual vulnerability, risk reduction, and adaption to climate change.

3. **Advocate**

Both within the U.S. and globally, climate change accentuates health disparities. In support of the society's aspiration "to eliminate the destructive effects of social injustice and racial disparities on the health of our nation's people," the ADA will:

- Support commitments to [increase dermatologic services available to underserved populations](#).
- Support sound healthcare policies that reduce disparities in the delivery of health care and in climate-related health outcomes; and in collaboration with other physician organizations and relevant stakeholders, address systemic and institutional policies outside of health care that result in environmental injustice and lead to poor health outcomes.

4. **Research, Collect Data**

- Support research and data acquisition efforts on the diverse impacts of climate change on skin health, and routinely assess members' attitudes and needs regarding climate effects on care delivery. These could include:
- Development of climate-related reporting criteria to satisfy Merit-Based Incentive Payment System (MIPS) quality-improvement measures.
- Anticipation of how future reporting requirements for hospital-based greenhouse gas emissions and outcome measures under CMS's episode-based alternative payment models may affect the delivery of inpatient dermatological care.
- Development of dermatology-specific learning modules and frameworks for obtaining environmental histories from patients, assessing climate-related SDOH, and linking secondary ICD-10 codes to visits to reflect environmental determinants of skin health, thereby codifying climate impacts into trackable insurance datasets.
- Conducting regular surveys of dermatologists regarding perceived impacts, personal/practice needs, and attitudes around climate change.
- Fostering mentorship in the emerging field of climate and health by connecting dermatologists interested in this topic with experienced researchers to facilitate innovative studies.

- Increased funding earmarked for climate-related research within dermatology.

5. Advocate and Engage Externally

Within the House of Medicine, the ADA should lead on matters of climate change and health with respect to the impacts on skin disease through the following avenues:

- Apply for membership in the Medical Society Consortium for Climate and Health.
- Sign the White House/HHS Health Sector Climate Pledge committing to emissions reduction and climate resilience goals.
- ADA will maintain its status as a Network Organization with the National Academy of Medicine's Action Collaborative on Decarbonizing the U.S. Health Sector (Climate Collaborative), a public-private partnership of leaders from across the health sector committed to addressing environmental impact and strengthening sustainability and resilience.
- Advocate for climate change to be a legislative priority in dermatology to ensure that legislators, public health officials, and local and state medical societies are equipped with evidence-based knowledge regarding the environmental impacts affecting both skin health and access to dermatologic care.
- Collaborate with other national and international dermatological medical societies in efforts to mitigate the effects of climate change on global skin health.
- Foster multidisciplinary collaboration within the House of Medicine and with governmental and non-governmental organizations with mutual interests, including the Centers for Disease Control and Prevention, HHS, World Health Organization, patient advocacy groups, and funding entities.

References

1. Romanello M, Napoli CD, Green C, et al. The 2023 report of the Lancet Countdown on health and climate change: the imperative for a health-centered response in a world facing irreversible harms. *Lancet*. 2023;402(10419):2346-94. doi: 10.1016/S0140-6736(23)01859-7
2. United Nations Intergovernmental Panel on Climate Change. Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds)]. 2023. Geneva, Switzerland. doi: 10.59327/IPCC/AR6-9789291691647.001
3. Atwoli L, Baqui AH, Benfield T, et al. Call for Emergency Action to Limit Global Temperature Increases, Restore Biodiversity, and Protect Health. *N Engl J Med*. 2021;385(12):1134-7. doi: 10.1056/NEJMe2113200
4. Abbasi K, Ali P, Barbour V, et al. Time to Treat the Climate and Nature Crisis as One Indivisible Global Health Emergency. *JAMA*. 2023;330(20):1958–60. doi:10.1001/jama.2023.20840
5. World Health Organization. Fact Sheets: Climate Change. 2023. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health#>
6. Romanello M, Di Napoli C, Drummond P, et al. The 2022 report of the Lancet Countdown on Health and Climate Change: Health at the mercy of fossil fuels. *Lancet*. 2022;400(10363):1619-54. doi:10.1016/S0140-6736(22)01540-9
7. United Nations Intergovernmental Panel on Climate Change. *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Pörtner H-O, Roberts DC, Poloczanska ES, et al. (eds.)]. 2022. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi:10.1017/9781009325844
8. U.S. Global Change Research Program. Fifth National Climate Assessment [Crimmins AR, Avery CW, Easterling DR, et al. (eds.)]. Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023>
9. Belzer A, Parker ER. Climate Change, Skin Health, and Dermatologic Disease: A Guide for the Dermatologist. *Am J Clin Dermatol*. 2023;24(4):577–93. doi:10.1007/s40257-023-00770-y
10. Kaffenberger DH, Shetlar D, Norton SA, Rosenbach M. The effect of climate change on skin disease in North America. *J Am Acad Dermatol*. 2017;76(1):140-7. doi:10.1016/j.jaad.2016.08.014
11. Williams ML. Global warming, heat-related illnesses and the dermatologist. *Int J Womens Dermatol*. 2021;7(1):70-84. doi:10.1016/j.ijwd.2020.08.007
12. Parker ER, Mo J, Goodman RS. The dermatological manifestations of extreme weather events: A comprehensive review of skin disease and vulnerability. *J Clim Chang Health*. 2022;8:100162. doi:10.1016/j.joclim.2022.100162
13. National Weather Service. Weather Related Fatality and Injury Statistics. National Oceanic and Atmospheric Administration. 2023. <https://www.weather.gov/hazstat/>
14. Singh R, Fathy R, Kassamali B, et al. Increased ambient outdoor temperatures are associated with increased disease flaring in hidradenitis suppurativa. *Arch Dermatol Res*. 2023;316(1):49. doi: 10.1007/s00403-023-02759-3
15. Mora C, McKenzie T, Gaw IM, et al. Over half of known human pathogenic diseases can be aggravated by climate change. *Nat Clim Chang*. 2022;12(9):869-75. doi:10.1038/s41558-022-01426-1

16. Bellizzi S, Popescu C, Panu Napodano CM, et al. Global health, climate change and migration: The need for recognition of "climate refugees". *J Glob Health*. 2023 Mar 24;13:03011. doi: 10.7189/jogh.13.03011
17. Choi SH, Beer J, Charrow A. Climate change and the displaced person: how vectors and climate are changing the landscape of infectious diseases among displaced and migrant populations. *Int J Dermatol*. 2023;62(5):681-4. doi: 10.1111/ijd.16636
18. Logie CH, Toccalino D, MacKenzie F, et al. Associations between climate change-related factors and sexual health: A scoping review. *Glob Public Health*. 2024 Jan;19(1):2299718. doi: 10.1080/17441692.2023.2299718
19. Bandino J, Hang A, Norton S. The infectious and noninfectious dermatological consequences of flooding: A field manual for the responding provider. *Am J Clin Dermatol*. 2015;16(5):399–424. doi:10.1007/s40257-015-0138-4
20. Bush T. Potential adverse health consequences of climate change related to rheumatic diseases, *J Clim Chang Health*. 2021;3:100029. doi:10.1016/j.joclim.2021.100029
21. Araviiskaia E, Berardesca E, Bieber T, et al. The impact of airborne pollution on skin. *J Eur Acad Dermatol Venereol*. 2019;33(8):1496-505. doi:10.1111/jdv.15583
22. Fadadu RP, Grimes B, Jewell NP, et al. Association of Wildfire Air Pollution and Health Care Use for Atopic Dermatitis and Itch. *JAMA Dermatol*. 2021;157(6):658-66. doi:10.1001/jamadermatol.2021.0179
23. Hendricks AJ, Eichenfield LF, Shi VY. The impact of airborne pollution on atopic dermatitis: A review. *Br J Dermatol*. 2020;183(1):16-23. doi:10.1111/bjd.18781
24. Bellanato F, Adami G, Vaianti S, et al. Association between short term exposure to environmental air pollution and psoriasis flare. *JAMA Dermatol*. 2022;158:375-81. doi:10.1001/jamadermatol.2021.6019
25. El Haddad C, Gerbaka NE, Hallit S, et al. Association between exposure to ambient air pollution and occurrence of inflammatory acne in the adult population. *BMC Public Health* 2021;1664. doi:10.1186/s12889-021-11738-0
26. Parker ER. The influence of climate change on the incidence of skin cancer – a review of the evidence. *Int J Womens Dermatol*. 2021;7:17-27. doi:10.1016/j.ijwd.2020.07.003
27. Wang SP, Stefanovic N, Orfali RL, et al. Impact of climate change on atopic dermatitis: A review by the International Eczema Council. *Allergy*. 202;79(6):1455-69. doi: 10.1111/all.16007
28. Hojman L, Karsulovic C. Cardiovascular Disease-Associated Skin Conditions. *Vasc Health Risk Manag*. 2022;18:43-53. doi: 10.2147/VHRM.S343319
29. Kam S, Hwang BJ, Parker ER. The impact of climate change on atopic dermatitis and mental health comorbidities: a review of the literature and examination of intersectionality. *Int J Dermatol*. 2023;62(4):449-58. doi:10.1111/ijd.16557
30. Hoffman JS, Shandas V, Pendleton N. The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas. *Climate*. 2020; 8(1):12. doi:10.3390/cli8010012
31. Fellowes-Granda L. 4 Principles for Addressing Climate Risks in the Insurance Industry. The Center for American Progress. 2024. <https://www.americanprogress.org/article/4-principles-for-addressing-climate-risks-in-the-insurance-industry/>
32. Ways and Means Committee Democrats. Health Care and the Climate Crisis: Preparing America's Health Care Infrastructure. U.S. House of Representatives. 2022. <https://democrats-waysandmeans.house.gov/health-care-and-climate-crisis-preparing-americas-health-care-infrastructure>
33. Salas RN, Friend TH, Bernstein A, Jha AK. Adding a Climate Lens to Health Policy in the United States. *Health Aff (Millwood)*. 2020;39(12):2063-70. doi: 10.1377/hlthaff.2020.01352
34. Parker ER, Boos MD. Dermatology's call to emergency action on climate change. *Br J Dermatol*. 2022;187(5):782-3. doi:10.1111/bjd.21789
35. Salas RN, Shultz JM, Solomon CG. The Climate Crisis and Covid-19 - A Major Threat to the Pandemic Response. *N Engl J Med*. 2020;383(11):e70. doi: 10.1056/NEJMp2022011
36. Raffa RB, Pergolizzi JV, Taylor R, Kitzen JM. Sunscreen Bans: Coral Reefs and Skin Cancer. *J Clin Pharm Ther*. 2018;44(1):134-39. doi:10.1111/jcpt.12778
37. National Academy of Medicine. Key Actions to Reduce Greenhouse Gas Emissions by U.S. Hospitals and Health Systems. <https://nam.edu/programs/climate-change-and-human-health/action-collaborative-on-decarbonizing-the-u-s-health-sector/key-actions-to-reduce-greenhouse-gas-emissions-by-u-s-hospitals-and-health-systems/>
38. Fathy R, Nelson CA, Barbieri JS. Combating climate change in the clinic: Cost-effective strategies to decrease the carbon footprint of outpatient dermatologic practice. *Int J Womens Dermatol*. 2020;7(1):107-11. doi: 10.1016/j.ijwd.2020.05.015
39. Centers for Medicare and Medicaid Services, Transforming Episode Accountability Model (TEAM) Decarbonization and Resilience Initiative Fact Sheet. <https://www.cms.gov/team-decarbonization-and-resilience-initiative>
40. The Joint Commission. Hospital Certifications: Sustainable Healthcare. <https://www.jointcommission.org/what-we-offer/certification/certifications-by-setting/hospital-certifications/sustainable-healthcare-certification/>
41. Andersen LK, Coates SJ, Enbale W, et al. Climate change perception among dermatologists: an online survey of International Society of Dermatology members. *Int J Dermatol*. 2020 Sep;59(9):e322-e325. doi: 10.1111/ijd.14984
42. Mieczkowska K, Stringer T, Barbieri JS, et al. Surveying the attitudes of dermatologists regarding climate change. *Br J Dermatol*. 2022;186(4):748-50. doi:10.1111/bjd.20900