



## Karen G. Hirsch, MD

Professor of Neurology and Neurological Sciences (Adult Neurology)

### CLINICAL OFFICE (PRIMARY)

- **Stanford Neurocritical Care Program**  
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Stanford, CA 94304  
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### ACADEMIC CONTACT INFORMATION

- **Administrative Contact**  
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## Bio

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### CLINICAL FOCUS

- Stroke
- Traumatic Brain Injury
- Cardiac Arrest
- Coma
- Brain Death
- Hypoxic ischemic Brain Injury
- Neurocritical Care

### ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Adult Neurology
- Member, Cardiovascular Institute
- Member, Wu Tsai Neurosciences Institute

### ADMINISTRATIVE APPOINTMENTS

- Division Chief, Neurocritical Care, Stanford University, Department of Neurology, (2018- present)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board of Directors, Neurocritical Care Society (2019 - 2023)
- Emergency Cardiovascular Care Committee, American Heart Association (2019 - 2023)
- Task Force Member, Adult Life Support, International Liaison Committee on Resuscitation (ILCOR) (2020 - present)

### PROFESSIONAL EDUCATION

- Board Certification: Neurocritical Care, American Board of Psychiatry and Neurology (2021)
- Board Certification: Neurology, American Board of Psychiatry and Neurology (2010)
- Fellowship: UCSF Dept of Neurology (2012) CA

- Residency, Johns Hopkins University , Neurology (2010)
- Internship, Stanford University , Internal Medicine (2007)
- MD, Stanford University (2006)
- Board Certification: Neurocritical Care, United Council for Neurologic Subspecialties (2013)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Karen G. Hirsch cares for critically ill patients with neurologic disorders in the intensive care unit. Dr. Hirsch's research focuses on using continuous and discrete multi-modal data to develop phenotypes and identify signatures of treatment responsiveness in patients with coma after cardiac arrest. She is the Co-PI of PRECICECAP (PRrecision Care In Cardiac ArrEst - ICECAP, NINDS R01 NS119825-01). The research team works closely with collaborators in data science at Stanford and with industry partners to apply machine learning analyses to complex multi-modal ICU data. Dr. Hirsch also studies neuro-imaging in post-cardiac arrest coma and traumatic brain injury, and with colleagues in Cardiac Anesthesia and Cardiothoracic Surgery, Dr. Hirsch studies neurologic outcomes in patients on mechanical circulatory support including ECMO.

Along with colleagues in Biomedical Ethics, Dr. Hirsch studies brain death, organ donation, and neuroethics. She is the Co-PI of BCI-DEF (Brain Computer Interfaces and Disability: Developing an Inclusive Ethical Framework, NIMH 1R01MH130518-01) which is a BRAIN Initiative funded study that is qualitatively evaluating end user perspectives about the benefits, risks, and ethical challenges of Brain Computer Interfaces for patients with acute stroke or traumatic brain injury.

Dr. Hirsch is broadly interested in improving neurologic outcomes after acute severe brain injury, identifying early phenotypes to guide precision medicine in neurocritical care, and exploring ethical issues in neurocritical care and novel neurotechnology. Dr. Hirsch greatly appreciates the importance of team science and collaboration.

### CLINICAL TRIALS

- Brain Oxygen Optimization in Severe TBI, Phase 3, Recruiting

## Teaching

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### COURSES

#### 2025-26

- Modern Ethical Challenges in Neuroscience and Organ Transplantation: HUMBIO 171E (Spr)
- Shades of Grey Between Life and Death: Neuro-Ethics Across the Pacific: OSPGEN 45 (Sum)

#### 2024-25

- Modern Ethical Challenges in Neuroscience and Organ Transplantation: HUMBIO 171E (Spr)

#### 2023-24

- Modern Ethical Challenges in Neuroscience and Organ Transplantation: HUMBIO 171E (Spr)
- Shades of Grey Between Life and Death: Neuro-Ethics Across the Pacific: OSPGEN 45 (Sum)

#### 2022-23

- Modern Ethical Challenges in Neuroscience and Organ Transplantation: HUMBIO 171E, MED 142 (Spr)

## Publications

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### PUBLICATIONS

- **SPECTROGRAM-BASED TRANSFER LEARNING FOR ELECTROCARDIOGRAM (ECG) ARTIFACT DETECTION IN THE ICU**  
Okeke, T., Moyer, E., Hirsch, K., May, T., He, Z., Tam, J., Faiver, L., Moberg, R., Elmer, J.  
LIPPINCOTT WILLIAMS & WILKINS.2026
- **Traumatic brain injury (TBI) triage tool for low-risk patients: standardizing TBI care at a Level 1 trauma center.** *Trauma surgery & acute care open*  
Villarreal, J. A., Anderson, M., Gallegos, K., Harris, O., Hirsch, K., Lumba-Brown, A., Ravi, S., Seifert, K., Spain, D., Staudenmayer, K., Threlkeld, Z., Forrester, J. D.  
2025; 10 (4): e001892
- **Advanced Life Support: 2025 International Liaison Committee on Resuscitation Consensus on Science With Treatment Recommendations** *RESUSCITATION*  
Drennan, I. R., Berg, K. M., Bottiger, B. W., Chia, Y., Couper, K., Crowley, C., D'arrigo, S., Deakin, C. D., Fernando, S. M., Garg, R., Granfeldt, A., Grunau, B., Hirsch, et al  
2025; 215: 110806
- **Advanced Life Support: 2025 International Liaison Committee on Resuscitation Consensus on Science With Treatment Recommendations** *CIRCULATION*  
Drennan, I. R., Berg, K. M., Bottiger, B. W., Woon Chia, Y., Couper, K., Crowley, C., D'Arrigo, S., Deakin, C. D., Fernando, S. M., Garg, R., Granfeldt, A., Grunau, B., Hirsch, et al  
2025; 152 (16): S72-S115
- **Part 11: Post-Cardiac Arrest Care: 2025 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Hirsch, K. G., Amorim, E., Coppler, P. J., Drennan, I. R., Elliott, A., Gordon, A., Jentzer, J. C., Johnson, N. J., Moskowitz, A., Mumma, B. E., Presciutti, A. M., Rodriguez, A. J., Yen, et al  
2025; 152 (16): S673-S718
- **Part 1: Executive Summary: 2025 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Del Rios, M., Bartos, J. A., Panchal, A. R., Atkins, D. L., Cabanas, J. G., Cao, D., Dainty, K. N., Dezfulian, C., Donoghue, A. J., Drennan, I. R., Elmer, J., Hirsch, K. G., Idris, et al  
2025; 152 (16): S284-S312
- **Recovery Potential in Patients After Cardiac Arrest Who Die After Limitations or Withdrawal of Life Support.** *JAMA network open*  
Elmer, J., Coppler, P. J., Ratay, C., Steinberg, A., DiFiore-Sprouse, S., Case, N., Fischhoff, B., De-Arteaga, M., Cariou, A., Rabinstein, A. A., Rossetti, A. O., Doshi, A. A., Molyneaux, et al  
2025; 8 (3): e251714
- **Correction: Common Data Elements for Disorders of Consciousness: Recommendations from the Working Group on Neuroimaging.** *Neurocritical care*  
Edlow, B. L., Boerwinkle, V. L., Annen, J., Boly, M., Gosseries, O., Laureys, S., Mukherjee, P., Puybasset, L., Stevens, R. D., Threlkeld, Z. D., Newcombe, V. F., Fernandez-Espejo, D.  
2024
- **Wolf Creek XVII Part 8: Neuroprotection.** *Resuscitation plus*  
Hirsch, K. G., Tamura, T., Ristagno, G., Sekhon, M. S.  
2024; 17: 100556
- **2023 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces** *RESUSCITATION*  
Berg, K. M., Bray, J. E., Ng, K., Liley, H. G., Greif, R., Carlson, J. N., Morley, P. T., Drennan, I. R., Smyth, M., Scholefield, B. R., Weiner, G. M., Cheng, A., Djarv, et al  
2024; 195: 109992
- **Almanac - Retrieval-Augmented Language Models for Clinical Medicine.** *NEJM AI*

- Zakka, C., Shad, R., Chaurasia, A., Dalal, A. R., Kim, J. L., Moor, M., Fong, R., Phillips, C., Alexander, K., Ashley, E., Boyd, J., Boyd, K., Hirsch, et al 2024; 1 (2)
- **Critical Care Management of Patients After Cardiac Arrest: A Scientific Statement from the American Heart Association and Neurocritical Care Society.** *Neurocritical care*  
Hirsch, K. G., Abella, B. S., Amorim, E., Bader, M. K., Barletta, J. F., Berg, K., Callaway, C. W., Friberg, H., Gilmore, E. J., Greer, D. M., Kern, K. B., Livesay, S., May, et al  
2023
  - **Inpatient Neurology Deaths and Factors Associated With Discharge to Hospice.** *The Neurohospitalist*  
Dujari, S., Wei, J., Kraler, L., Goyal, T., Bernier, E., Schwartz, N., Hirsch, K., Gold, C. A.  
2023; 13 (4): 337-344
  - **Society of Critical Care Medicine Clinical Practice Guidelines for Rapid Sequence Intubation in the Critically Ill Adult Patient.** *Critical care medicine*  
Acquisto, N. M., Mosier, J. M., Bittner, E. A., Patanwala, A. E., Hirsch, K. G., Hargwood, P., Oropello, J. M., Bodkin, R. P., Groth, C. M., Kaucher, K. A., Slampak-Cindric, A. A., Manno, E. M., Mayer, et al  
2023; 51 (10): 1411-1430
  - **Society of Critical Care Medicine Clinical Practice Guidelines for Rapid Sequence Intubation in the Critically Ill Adult Patient: Executive Summary.** *Critical care medicine*  
Acquisto, N. M., Mosier, J. M., Bittner, E. A., Patanwala, A. E., Hirsch, K. G., Hargwood, P., Oropello, J. M., Bodkin, R. P., Groth, C. M., Kaucher, K. A., Slampak-Cindric, A. A., Manno, E. M., Mayer, et al  
2023; 51 (10): 1407-1410
  - **Recommendations from the Working Group on Neuroimaging.** *Neurocritical care*  
Edlow, B. L., Boerwinkle, V. L., Annen, J., Boly, M., Gosseries, O., Laureys, S., Mukherjee, P., Puybasset, L., Stevens, R. D., Threlkeld, Z. D., Newcombe, V. F., Fernandez-Espejo, D., and the Curing Coma Campaign and its Contributing Members, et al  
2023
  - **Inpatient Neurology Deaths and Factors Associated With Discharge to Hospice** *NEUROHOSPITALIST*  
Dujari, S., Wei, J., Kraler, L., Goyal, T., Bernier, E., Schwartz, N., Hirsch, K., Gold, C. A. A.  
2023
  - **Almanac: Retrieval-Augmented Language Models for Clinical Medicine.** *Research square*  
Zakka, C., Chaurasia, A., Shad, R., Dalal, A. R., Kim, J. L., Moor, M., Alexander, K., Ashley, E., Boyd, J., Boyd, K., Hirsch, K., Langlotz, C., Nelson, et al  
2023
  - **Expanding beyond ischemic stroke: a qualitative MRI score that facilitates outcome prediction in patients with hypoxic ischemic brain injury.** *Resuscitation*  
Beekman, R., Hirsch, K. G.  
2023: 109800
  - **Brain imaging after cardiac arrest.** *Current opinion in critical care*  
Beekman, R., Hirsch, K. G.  
2023
  - **2022 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces** *CIRCULATION*  
Wyckoff, M. H., Greif, R., Morley, P. T., Ng, K., Olasveengen, T. M., Singletary, E. M., Soar, J., Cheng, A., Drennan, I. R., Liley, H. G., Scholefield, B. R., Smyth, M. A., Welsford, et al  
2022; 146 (25): E483-E557
  - **2022 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces** *RESUSCITATION*  
Wyckoff, M. H., Greif, R., Morley, P. T., Ng, K., Olasveengen, T. M., Singletary, E. M., Soar, J., Cheng, A., Drennan, I. R., Liley, H. G., Scholefield, B. R., Smyth, M. A., Welsford, et al  
2022; 181: 208-288

- **Collateral status, hyperglycemia, and functional outcome after acute ischemic stroke.** *BMC neurology*  
Arteaga, D. F., Ulep, R., Kumar, K. K., Southerland, A. M., Conaway, M. R., Faber, J., Wintermark, M., Joyner, D., Sharashidze, V., Hirsch, K., Giurgiutiu, D., Hannawi, Y., Aziz, et al  
2022; 22 (1): 408
- **Effect of Rapid Response EEG on Anti-Seizure Medication Usage**  
Kurup, D., Davey, Z., Hoang, P., Wu, C., Werbaneth, K., Shah, V., Hirsch, K. G., Govindarajan, P., Meador, K. J.  
WILEY.2022: S88-S89
- **Correction to: Proceedings of the Second Curing Coma Campaign NIH Symposium: Challenging the Future of Research for Coma and Disorders of Consciousness.** *Neurocritical care*  
Mainali, S., Aiyagari, V., Alexander, S., Bodien, Y., Boerwinkle, V., Boly, M., Brown, E., Brown, J., Claassen, J., Edlow, B. L., Fink, E. L., Fins, J. J., Foreman, et al  
2022
- **Proceedings of the Second Curing Coma Campaign NIH Symposium: Challenging the Future of Research for Coma and Disorders of Consciousness.** *Neurocritical care*  
Mainali, S., Aiyagari, V., Alexander, S., Bodien, Y., Boerwinkle, V., Boly, M., Brown, E., Brown, J., Claassen, J., Edlow, B. L., Fink, E. L., Fins, J. J., Foreman, et al  
2022
- **Moving towards precision medicine in post-cardiac arrest care: Using cerebrovascular autoregulation to individualize blood pressure.** *Resuscitation*  
Rivera Lara, L., Genevieve Hirsch, K.  
2022
- **Prognostication of ICU Patients by Providers with and without Neurocritical Care Training.** *Neurocritical care*  
Finley Caulfield, A., Mlynash, M., Eyngorn, I., Lansberg, M. G., Afjei, A., Venkatasubramanian, C., Buckwalter, M. S., Hirsch, K. G.  
2022
- **Prediction of good neurological outcome in comatose survivors of cardiac arrest: a systematic review.** *Intensive care medicine*  
Sandroni, C., D'Arrigo, S., Cacciola, S., Hoedemaekers, C. W., Westhall, E., Kamps, M. J., Taccone, F. S., Poole, D., Meijer, F. J., Antonelli, M., Hirsch, K. G., Soar, J., Nolan, et al  
2022
- **Precision Care in Cardiac Arrest: ICECAP (PRECICECAP) Study Protocol and Informatics Approach.** *Neurocritical care*  
Elmer, J., He, Z., May, T., Osborn, E., Moberg, R., Kemp, S., Stover, J., Moyer, E., Geocadin, R. G., Hirsch, K. G., PRECICECAP Study Team  
2022
- **2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams; First Aid Task Forces; and the COVID-19 Working Group** *CIRCULATION*  
Wyckoff, M. H., Singletary, E. M., Soar, J., Olasveengen, T. M., Greif, R., Liley, H. G., Zideman, D., Bhanji, F., Andersen, L. W., Avis, S. R., Aziz, K., Bendall, J. C., Berry, et al  
2022; 145 (9): E645-E721
- **Effect of rapid EEG on anti-seizure medication usage.** *Epileptic disorders : international epilepsy journal with videotape*  
Kurup, D., Davey, Z., Hoang, P., Wu, C., Werbaneth, K., Shah, V., Hirsch, K. G., Govindarajan, P., Meador, K. J.  
2022; 24 (5): 1-7
- **2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams; First Aid Task Forces; and the COVID-19 Working Group** *RESUSCITATION*  
Wyckoff, M. H., Singletary, E. M., Soar, J., Olasveengen, T. M., Greif, R., Liley, H. G., Zideman, D., Bhanji, F., Andersen, L. W., Avis, S. R., Aziz, K., Bendall, J. C., Berry, et al  
2021; 169: 229-311
- **Incidence of Cardiac Interventions and Associated Cardiac Arrest Outcomes in Patients with Nonshockable Initial Rhythms and No ST Elevation Post Resuscitation.** *Resuscitation*  
Harhash, A. A., May, T., Hsu, C., Seder, D. B., Dankiewicz, J., Agarwal, S., Patel, N., McPherson, J., Riker, R., Soreide, E., Hirsch, K. G., Stammer, P., Dupont, et al

2021

- **Beyond the 'Good' in Good Neurologic Outcome: Recovery as a Critical Link in the Chain of Survival after Cardiac Arrest.** *Resuscitation*  
Vogelsong, M. A., Hirsch, K. G.  
2021
- **Proceedings of the First Curing Coma Campaign NIH Symposium: Challenging the Future of Research for Coma and Disorders of Consciousness.** *Neurocritical care*  
Claassen, J., Akbari, Y., Alexander, S., Bader, M. K., Bell, K., Bleck, T. P., Boly, M., Brown, J., Chou, S. H., Diringier, M. N., Edlow, B. L., Foreman, B., Giacino, et al  
2021; 35 (Suppl 1): 4-23
- **Risk Stratification Among Survivors of Cardiac Arrest Considered for Coronary Angiography.** *Journal of the American College of Cardiology*  
Harhash, A. A., May, T. L., Hsu, C., Agarwal, S., Seder, D. B., Mooney, M. R., Patel, N., McPherson, J., McMullan, P., Riker, R., Soreide, E., Hirsch, K. G., Stammet, et al  
2021; 77 (4): 360–71
- **Influence of sex on survival, neurologic outcomes, and neurodiagnostic testing after out-of-hospital cardiac arrest.** *Resuscitation*  
Vogelsong, M. A., May, T., Agarwal, S., Cronberg, T., Dankiewicz, J., Dupont, A., Friberg, H., Hand, R., McPherson, J., Mlynash, M., Mooney, M., Nielsen, N., O'Riordan, et al  
2021
- **Part 3: Adult Basic and Advanced Life Support 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Panchal, A. R., Bartos, J. A., Cabanas, J. G., Donnino, M. W., Drennan, I. R., Hirsch, K. G., Kudenchuk, P. J., Kurz, M. C., Lavonas, E. J., Morley, P. T., O'Neil, B. J., Peberdy, M., Rittenberger, et al  
2020; 142: S366–S468
- **The association of partial pressures of oxygen and carbon dioxide with neurological outcome after out-of-hospital cardiac arrest: an explorative International Cardiac Arrest Registry 2.0 study.** *Scandinavian journal of trauma, resuscitation and emergency medicine*  
Ebner, F., Riker, R. R., Haxhija, Z., Seder, D. B., May, T. L., Ullen, S., Stammet, P., Hirsch, K., Forsberg, S., Dupont, A., Friberg, H., McPherson, J. A., Soreide, et al  
2020; 28 (1): 67
- **Prognostic value of diffusion-weighted MRI for post-cardiac arrest coma.** *Neurology*  
Hirsch, K. G., Fischbein, N., Mlynash, M., Kemp, S., Bammer, R., Eyngorn, I., Tong, J., Moseley, M., Venkatasubramanian, C., Caulfield, A. F., Albers, G.  
2020
- **A Standardized Checklist Improves the Transfer of Stroke Patients from the Neurocritical Care Unit to Hospital Ward.** *The Neurohospitalist*  
Murray, N. M., Joshi, A. N., Kronfeld, K., Hobbs, K., Bernier, E., Hirsch, K. G., Gold, C. A.  
2020; 10 (2): 100-108
- **A Standardized Checklist Improves the Transfer of Stroke Patients from the Neurocritical Care Unit to Hospital Ward** *NEUROHOSPITALIST*  
Murray, N. M., Joshi, A. N., Kronfeld, K., Hobbs, K., Bernier, E., Hirsch, K. G., Gold, C. A.  
2020; 10 (2): 100–108
- **Global Survey of Outcomes of Neurocritical Care Patients: Analysis of the PRINCE Study Part 2** *NEUROCRITICAL CARE*  
Rao, C., Suarez, J., Martin, R. H., Bauza, C., Georgiadis, A., Calvillo, E., Hemphill, J., Sung, G., Oddo, M., Taccone, F., LeRoux, P. D., Domeniconi, G., Alberto Computaro, et al  
2020; 32 (1): 88–103
- **Will We Ever Make Headway in Severe Traumatic Brain Injury Treatment Trials?** *JAMA neurology*  
Murray, N. M., Threlkeld, Z. D., Hirsch, K. G.  
2020
- **Unsupervised learning of early post-arrest brain injury phenotypes.** *Resuscitation*  
Elmer, J. n., Coppler, P. J., May, T. L., Hirsch, K. n., Faro, J. n., Solanki, P. n., Brown, M. n., Puyana, J. S., Rittenberger, J. C., Callaway, C. W.  
2020
- **Early Head Computed Tomography Abnormalities Associated with Elevated Intracranial Pressure in Severe Traumatic Brain Injury.** *Journal of neuroimaging : official journal of the American Society of Neuroimaging*

- Murray, N. M., Wolman, D. N., Mlynash, M. n., Threlkeld, Z. D., Christensen, S. n., Heit, J. J., Harris, O. A., Hirsch, K. G.  
2020
- **Guidelines for the Acute Treatment of Cerebral Edema in Neurocritical Care Patients.** *Neurocritical care*  
Cook, A. M., Morgan Jones, G. n., Hawryluk, G. W., Mailloux, P. n., McLaughlin, D. n., Papangelou, A. n., Samuel, S. n., Tokumaru, S. n., Venkatasubramanian, C. n., Zacko, C. n., Zimmermann, L. L., Hirsch, K. n., Shutter, et al  
2020
  - **2019 American Heart Association Focused Update on Systems of Care: Dispatcher-Assisted Cardiopulmonary Resuscitation and Cardiac Arrest Centers An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Panchal, A. R., Berg, K. M., Cabanas, J. G., Kurz, M. C., Link, M. S., Del Rios, M., Hirsch, K. G., Chan, P. S., Hazinski, M., Morley, P. T., Donnino, M. W., Kudenchuk, P. J.  
2019; 140 (24): E895–E903
  - **2019 American Heart Association Focused Update on Advanced Cardiovascular Life Support Use of Advanced Airways, Vasopressors, and Extracorporeal Cardiopulmonary Resuscitation During Cardiac Arrest An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Panchal, A. R., Berg, K. M., Hirsch, K. G., Kudenchuk, P. J., Del Rios, M., Cabanas, J. G., Link, M. S., Kurz, M. C., Chan, P. S., Morley, P. T., Hazinski, M., Donnino, M. W.  
2019; 140 (24): E881–E894
  - **Functional outcomes associated with varying levels of targeted temperature management after out-of-hospital cardiac arrest - An INTCAR2 registry analysis.** *Resuscitation*  
Johnsson, J., Wahlstrom, J., Dankiewicz, J., Annborn, M., Agarwal, S., Dupont, A., Forsberg, S., Friberg, H., Hand, R., Hirsch, K. G., May, T., McPherson, J. A., Mooney, et al  
2019
  - **Correction to: Variability in functional outcome and treatment practices by treatment center after out-of-hospital cardiac arrest: analysis of International Cardiac Arrest Registry.** *Intensive care medicine*  
May, T. L., Lary, C. W., Riker, R. R., Friberg, H., Patel, N., Soreide, E., McPherson, J. A., Unden, J., Hand, R., Sunde, K., Stammet, P., Rubertsson, S., Belohlvaek, et al  
2019
  - **Early withdrawal of life support after resuscitation from cardiac arrest is common and may result in additional deaths** *RESUSCITATION*  
Teresa, M. L., Robin, R., Richard, R. R., Hans, F., Nainesh, P., Eldar, S., Robert, H., Pascal, S., Allison, D., Karen, H. G., Sachin, A., Michael, W. J., Josef, et al  
2019; 139: 308–13
  - **Translating Protective Hypothermia During Cardiac Arrest Into Clinical Practice** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*  
Hirsch, K. G., Callaway, C. W.  
2019; 321 (17): 1673–75
  - **Variability in functional outcome and treatment practices by treatment center after out-of-hospital cardiac arrest: analysis of International Cardiac Arrest Registry** *INTENSIVE CARE MEDICINE*  
May, T. L., Lary, C. W., Riker, R. R., Friberg, H., Patel, N., Soreide, E., McPherson, J. A., Unden, J., Hand, R., Sunde, K., Stammet, P., Rubertsson, S., Belohlvaek, et al  
2019; 45 (5): 637–46
  - **Variability in functional outcome and treatment practices by treatment center after out-of-hospital cardiac arrest: analysis of International Cardiac Arrest Registry.** *Intensive care medicine*  
May, T. L., Lary, C. W., Riker, R. R., Friberg, H., Patel, N., Soreide, E., McPherson, J. A., Unden, J., Hand, R., Sunde, K., Stammet, P., Rubertsson, S., Belohlvaek, et al  
2019
  - **Early withdrawal of life support after resuscitation from cardiac arrest is common and may result in additional deaths.** *Resuscitation*  
May, T. L., Ruthazer, R., Riker, R. R., Friberg, H., Patel, N., Soreide, E., Hand, R., Stammet, P., Dupont, A., Hirsch, K. G., Agarwal, S., Wanscher, M. J., Dankiewicz, et al  
2019
  - **Translating Protective Hypothermia During Cardiac Arrest Into Clinical Practice.** *JAMA*

- Hirsch, K. G., Callaway, C. W.  
2019; 321 (17): 1673–75
- **The Prognostic Value of Quantitative Diffusion-Weighted MRI after Pediatric Cardiopulmonary Arrest.** *Resuscitation*  
Yacoub, M., Birchansky, B., Mlynash, M., Berg, M., Knight, L., Hirsch, K. G., Su, F., Revive Initiative at Stanford Childrens Health  
2018
  - **2018 American Heart Association Focused Update on Advanced Cardiovascular Life Support Use of Antiarrhythmic Drugs During and Immediately After Cardiac Arrest: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care** *CIRCULATION*  
Panchal, A. R., Berg, K. M., Kudenchuk, P. J., Del Rios, M., Hirsch, K. G., Link, M. S., Kurz, M. C., Chan, P. S., Cabanas, J. G., Morley, P. T., Hazinski, M., Donnino, M. W.  
2018; 138 (23): E740–E749
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