aahpm PC-FACS

AMERICAN ACADEMY OF
HOSPICE AND PALLIATIVE MEDICINE

Check for updates

Feature Editor: Mellar P. Davis, MD, FCCP, FAAHPM

PC-FACS (**F**ast **A**rticle **C**ritical **S**ummaries for Clinicians in **P**alliative **C**are) *provides hospice and palliative care clinicians with concise summaries of the most important findings from more than 100 medical and scientific journals. If you have colleagues who would benefit from receiving PCFACS, please encourage them to join the AAHPM at* aahpm.org. *Comments from readers are welcomed at* pcfacs@aahpm.org.

Table of Contents

Rave Reviews

Summaries With Commentaries

Brain Hub Architecture and Biochemical Function in Patients with Fibromyalgia

Background. A critical component of brain network architecture is a robust hub structure, wherein hub regions facilitate information integration by occupying highly connected and functionally central roles in the network.[1,2] How is hub topology disrupted in patients with fibromyalgia?

Design and Participants. This study applied a brain network—based approach to examine hub topology in patients with fibromyalgia. Resting-state functional magnetic resonance imaging (fMRI) data from fibromyalgia patients and healthy controls (HCs) were analyzed using graph theoretical techniques to model connections between 264 brain regions. Statistical analyses included t-tests, 1-way ANOVA, Bonferroni correction, and Pearson correlations.

Results. Patients with fibromyalgia (n=40; mean±SD age 39±11 years) reported higher pain

(visual analog scale, $P<0.001$) and were more depressed and anxious ($P<0.001$) vs. HCs (n=46; 39±12). A small validation group (n=11) also were studied. In patients with fibromyalgia, the anterior insulae functioned as hubs and members of the rich club (a highly-interconnected nexus of hubs). Between patients with fibromyalgia and HCs, hubs that constituted the rich club were different. To determine if rich club membership was pain related, fibromyalgia patients were divided into age-matched tertiles based on pain level. In the resting state, rich club−comprising hubs varied with pain intensity: the posterior insula, primary somatosensory, and motor cortices belonged to the rich club only in patients with the highest pain. The eigenvector centrality (how connected a region is to other highly connected regions) of the posterior insula positively correlated with pain ($r>0.3$) and mediated the relationship between spectroscopy-assessed glutamate+glutamine within this structure and patients' pain reports. Right posterior insula glutamate+glutamine was different between pain tertiles and HCs ($F_{(3,62)}=4.37$). The high-pain group (vs. low-pain and HC) had higher glutamate+glutamine in the right posterior insula (mean±SD high=12.76±1.13, low=11.20±1.42, HC=10.97). All $P\leq0.05$.

Commentary. Cognitive function is mediated through a series of hubs that manage signals between the specialized areas of the brain. Using fMRI, Kaplan et al. documented significant differences in hub architecture and activity in patients with fibromyalgia. The finding was particularly evident in those reporting high levels of pain and did not seem to correlate with depression or anxiety. One hub, located in the posterior insula, was particularly active with increased levels of glutamate+glutamine in patients with high pain scores, suggesting a biochemical basis for the clinical findings. This study supports the hypothesis that chronic pain is of central origin and medications like pregabalin—a 2β calcium channel subunit ligand—reduce pain in patients with fibromyalgia via modulating glutamatergic activity, functional brain connectivity, and gray matter volume in the posterior insula.[3]

Bottom Line. Brain hub architecture and biochemical function are different in fibromyalgia patients, particularly those with high levels of pain.

Reviewer. Kenneth Cornetta, MD, Indiana University School of Medicine, Indianapolis, IN

Source. Kaplan CM, Schrepf A, Vatansever D, et al. Functional and neurochemical disruptions of brain hub topology in chronic pain. *Pain.* 2019;160(4):973-983.

References

1. van den Heuvel MP, Sporns O. Network hubs in the human brain. *Trends Cogn Sci.* 2013;17(12): 683-696.
2. Kabbara A, El Falou W, Khalil M, Wendling F, Hassan M. The dynamic functional core network of the human brain at rest. *Sci Rep.* 2017;7(1): 2936.
3. Puiu T, Kairys AE, Pauer L, et al. Alterations in gray matter volume are associated with reduced evoked-pain connectivity following acute pregabalin administration. *Arthritis Rheumatol.* 2016;68(6):1511-1521.

Communication Interventions for Discussing Patient Decisions on CPR and DNR

Background. Cardiopulmonary arrest occurs in almost 1/1000 hospitalization days.[1] What is the association between communication interventions and patient decisions and knowledge about cardiopulmonary resuscitation (CPR)?

Design and Participants. This PRISMA[2] meta-analysis investigated whether specific communication interventions to discuss code status alter patient decisions regarding do-not-resuscitate (DNR) code status and knowledge about CPR. PubMed, Embase, PsycINFO, and CINAHL were searched for randomized clinical trials focusing on interventions to facilitate code status discussions. The primary outcome was patient preference for CPR, and a secondary outcome was patient knowledge regarding life-sustaining measures (LSMs). Two independent reviewers extracted data and utilized the Cochrane Risk-of-Bias Tool. Data were pooled using fixed-effects modeling.

Results. Fifteen trials were included (1999-2018; 14 American): 15 (n=2,405) were included in the qualitative synthesis, 11 (n=1,463) for the quantitative synthesis of the primary endpoint, and 5 (n=652) for the secondary endpoint. Eight studies recruited hospitalized patients, 5 recruited outpatients, 1 investigated nursing facility residents, and 1 recruited hospitalized and outpatients. Eight studies used advanced diseases (life-expectancy <1 year) as inclusion criteria, while 7 had no illness-based criteria. Participants in 12 of the studies were mean age ≥60 years, and 6 studies only recruited patients >60 or >65. Interventions were associated with lower CPR preference (390/727 [53.6%] vs. 284/736 [39%]; RR=0.70; 95% CI=0.63-0.78; heterogeneity $I^2=81\%$, $P<.001$). When stratified by intervention type, studies using resuscitation videos as decision aids vs. other interventions showed a stronger decrease in CPR preference (RR=0.56; 95% CI=0.48-0.64 vs. 1.03; 95% CI=0.87-1.22; between-group heterogeneity $P<.001$). Also, interventions

were associated with better patient knowledge (standardized mean difference=0.55; 95% CI=0.39-0.71; I^2=54%, P=.07).

Commentary. Healthcare professionals and institutions alike are still striving to improve on current practice for communicating emotionally difficult information regarding CPR/DNR and other LSMs. Normalizing these conversations early in the treatment trajectory and utilizing methods or tools, such as decision aids, other validated tools, or videos similar to those found in the reviewed literature, that can improve understanding for the patients and their potential future decision makers is essential to the success of this effort. Lack of clear communication often leads to misunderstandings and confused goals of care at the end of life, which can increase moral distress and contribute to ethical dilemmas.

Bottom Line. This review summarized much of the familiar literature on code status communication using decision aids in a digestible way but particularly highlighted the benefit of video interventions regarding improved reported patient understanding and stronger decrease in preference for LSMs.

Reviewer. Jessica A. Moore, DHCE, Section of Integrated Ethics in Cancer Care, The University of Texas MD Anderson Cancer Center, Houston, TX

Source. Becker C, Lecheler L, Hochstrasser S, et al. Association of communication interventions to discuss code status with patient decisions for do-not-resuscitate orders: a systematic review and meta-analysis. *JAMA Netw Open.* 2019;2(6):e195033. https://doi.org/10.10 01/jamanetworkopen.2019.5033.

References

1. Overdyk FJ, Dowling O, Marino J, et al. Association of opioids and sedatives with increased risk of in-hospital cardiopulmonary arrest from an administrative database. *PLoS One.* 2016;11(2):e0150214. https://doi.org/10.1371/journal.pone.0150214.
2. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Int J Surg.* 2010;8(5):336-341.

Trends and Geriatric Falls and How to Reduce Them

Background. Falls in older adults are the third leading cause of chronic disability.[1] What are the mortality trends from geriatric falls, and can home-based exercise reduce falls?

Mortality Among Geriatric Adults

Design and Participants. This study reported mortality trends from falls for Americans aged ≥75 years (2000-2016). Deaths from falls (identified using International Statistical Classification of Diseases and Related Health Problems, Tenth Revision codes W00-W19) were extracted from the US National Vital Statistics System mortality files.

Results. Deaths from falls increased from 8,613 (2000) to 25,189 (2016). The crude mortality rate increased from 52 (95% CI=51-53) per 100,000 people to 122 (121-124). Age-adjusted mortality rates increased from 61 (59-63) per 100,000 men to 116 (114-119), and from 46 (45-48) per 100,000 women to 106 (104-108). In 2016, people aged 75-79 years experienced a rate of 42 deaths (41-44) per 100,000 vs. 591 (566-615) in people aged ≥95 years. The annual percentage change for adults aged ≥75 was 5.1% (5%-5.2%) and increased with age from 3.5% (3.3%-3.7%) in adults aged 75-79 to 6.4% (6.2%-6.7%) in those aged ≥95.

Effect of a Home-Based Exercise Program

Design and Participants. This 12-month, single-blind trial (2009-2018) assessed the effect of a home-based exercise program for fall prevention (FP) in adults aged ≥70 years who were referred to a FP clinic after an index fall (within 12 months). Participants received usual care (UC), consisting of geriatrician-led FP care, or UC plus home-based strength and balance retraining from a physical therapist (PT).

Results. Participants (intervention=172; UC=172) were mean age 82 (SD=6.1) years and 67% female. During a mean follow-up of 338 (SD=81) days, 236 falls occurred in intervention vs. 366 falls in UC. Estimated incidence rates of falls per person per year were 1.4 (95% CI=0.1-2.0) vs. 2.1 (0.1-3.2), respectively. The absolute difference in fall incidence was 0.74 (0.04-1.78; P=.006) per person per year and the incident rate ratio was 0.64 (0.46-0.90; P=.009). There were no adverse events.

Commentary. About one-third of older adults fall each year.[2] Falls are a common cause of morbidity, mortality, institutionalization, and functional decline. It is concerning that the first study summarized above showed that fall-related deaths among adults aged 75 and older almost tripled between 2000 and 2016, with the age-adjusted, fall-related mortality rates roughly doubling. Although some of the increase could be because of differences in reporting over time, the magnitude of the increase raises concern that these reported increases are real. Why falls are increasing is unclear, concerning, and should prompt further research. Given the increase in fatal falls among older adults, reducing falls is an important clinical and public health imperative. Clinicians—including palliative care clinicians—need to be aware of which fall prevention strategies are effective.

The second study adds to the body of literature that specific exercise interventions—in this case PT-guided balance and strength training in the

home—can reduce subsequent falls in older adults who have experienced a fall. Based on this and other studies, gait and balance training exercises should be recommended for older patients who fall or who are at a high risk for falling and should be part of a comprehensive strategy to reduce falls and fall-related injuries.

Bottom Line. Palliative care practitioners are likely to see an increasing number of patients with falls and fall-related injuries, and they should be aware that strength and balance training can reduce falls in older adults with a history of falling.

Reviewer. Bree Johnston, MD MPH, University of Arizona College of Medicine, Tucson, AZ

Sources. Hartholt KA, Lee R, Burns ER, van Beeck EF. Mortality from falls among US adults aged 75 years or older, 2000-2016. *JAMA.* 2019;321(21):2131-2133. Liu-Ambrose T, Davis JC, Best JR, et al. Effect of a home-based exercise program on subsequent falls among community-dwelling high-risk older adults after a fall: a randomized clinical trial. *JAMA.* 2019;321(21):2092-2100.

References

1. Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric syndromes: clinical, research, and policy implications of a core geriatric concept. *J Am Geriatr Soc.* 2007;55(5):780-791.
2. Florence, CS Bergen G, Atherly A, Burns E, Stevens J, Drake C. Medical costs of fatal and nonfatal falls in older adults. *J Am Geriatric Soc.* 2018;66(4):693-698.

Aggressive Care Near the End of Life for Cancer Patients in Medicare Accountable Care Organizations

Background. Cancer accounts for nearly 1 in 4 American deaths.[1] How does end-of-life aggressive care compare in cancer patients attributed to accountable care organizations (ACOs) vs. non-ACO patients?

Design and Participants. This cross-sectional observational study in 21 hospital referral regions (HRRs) compared aggressiveness of end-of-life care for cancer patients (who died 2013-2014) attributed to Medicare Shared Savings Programs vs. fee-for-service (FFS) beneficiaries not in an ACO. Whether end-of-life care utilization differences vary across markets that differ in ACO penetration also was examined. Outcome measures were: ≥1 last month of life intensive care unit (ICU) admissions, ≥2 last month of life hospitalizations, ≥2 last month of life emergency department visits, chemotherapy ≤2 weeks predeath, and no hospice enrollment or hospice enrollment ≤3 days predeath. Propensity score-matching, χ^2, and the Cochran-Armitage test were used.

Results. Prematched ACO patients (n=11,910, 46% female, 58% aged ≥80 vs. non-ACO [n=33,446, 47%,

58%]) were more likely to be non-Hispanic whites and less likely to receive both Medicare and Medicaid or to be long-term nursing home residents (all *P*<.001). Among 9,033 score-matched pairs, ACO-attributed beneficiaries had a higher ICU admission rate during the last month of life (38% vs. 34%; adjusted difference=+2.8%; 95% CI=1.0-4.6; *P*=.002) but fewer repeated hospitalizations (14.5% vs. 15.2%; −1.7%; CI=−3.1-−.3; *P*=.016). Other measures did not differ. Although the ICU admission rates tended to decrease as ACO-penetration rates increased (*P*<.01), ACO patients had higher ICU admission rates than non-ACO patients in both medium (+3.7%; CI=.6-6.8; *P*=.02) and high (+3.3%; CI=.7-5.9; *P*=.01) ACO-penetration HRRs.

Commentary. Cancer is one of the leading causes of death and the most common diagnosis for patients referred to hospice. Although ACOs have not been shown to decrease costs for patients early in their cancer course,[2] it is interesting to note that those enrolled in ACOs had a slightly lower rate of hospitalizations when compared to non-ACO patients. Could this be related to tighter control, better care coordination, or perhaps better education within the ACO group to try and limit avoidable hospital admissions? Once hospitalized, the ACO beneficiaries had slightly higher rates of ICU admissions, which could indicate less control once the patient is admitted to the hospital. The differences in the groups are very small and further studies are needed to determine the clinical significance of these findings. Education of cancer patients is essential to cut down on more aggressive care in the last days of life.

Bottom Line. Aggressive cancer care near the end of life differs slightly for ACO-attributed patients with fewer hospitalizations overall, though more ICU admissions were seen.

Reviewer. Alan R. Roth, DO FAAFP FAAHPM, MediSys Health Network, Jamaica, NY

Source. Kim H, Keating NL, Perloff JN, Hodgkin D, Liu X, Bishop CE. Aggressive care near the end of life for cancer patients in Medicare accountable care organizations. *J Am Geriatr Soc.* 2019;67(5):961-968.

References

1. American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society; 2018. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2018/cancer-facts-and-figures-2018.pdf. Accessed September 29, 2018.
2. Lam M, Figueroa J, Zheng J, Orav EJ, Jha AK. Spending among patients with cancer in the first

2 years of accountable care organization participation. *J Clin Oncol.* 2018;36(29):2955-2960.

Effect of Timing of Palliative Consultation for Children with a Fatal Illness

Background. Between 4% and 38% of children in need of specialty palliative care (PC) receive such services.[1-3] What factors predict earlier PC receipt in children with serious illness?

Design and Participants. This retrospective study characterized the timing of pediatric PC consultation relative to diagnosis in a cohort of decedents at a single Midwestern tertiary-academic children's hospital and determined what factors are associated with early and delayed PC. Patients diagnosed with a life-limiting disease who died at the hospital (2015-2017) after ≥1 inpatient palliative medicine consultation were identified. Multivariable Cox proportional hazards regression was used.

Results. Patients (n=180) were 61% male, 73% white, and 39% privately insured. Median age at diagnosis (27% acute event, 21% cardiovascular, 16% genetic) was <1 month (interquartile range [IQR]=0-77). Forty-four percent of patients met the criteria for automatic palliative referral. The median time to first PC consultation was 7 days after diagnosis (IQR=2-63), and the median duration between diagnosis and death was 50 days (IQR=7-210). Most patients were admitted to the hospital only once after diagnosis, and the median total hospital stay (across all admissions) was 41 days (IQR=8-112). On average, the earliest PC visit occurred after 46% of the time had elapsed between diagnosis and death. Overall, 35% and 29% of patients died in the neonatal and pediatric intensive care units, respectively. Versus cardiovascular diagnoses, pulmonary (hazard ratio [HR]=0.5; 95% CI=0.2-0.9; *P*=.015) and malignant (HR=0.5; 0.3-0.96; *P*=.036) diagnoses were associated with delay of earliest PC consultation. Private insurance (HR=1.7; 1.1-2.4; *P*=.014) and African American race (HR=1.7; 1.05-2.9; *P*=.033) were associated with earlier PC.

Commentary. Although the American Academy of Pediatrics supports an integrated model of PC "in which the components of PC are offered at diagnosis,"[4] even in high-risk patients, pediatric PC involvement often is delayed. Previous studies have shown that specialty consultation occurs much closer to the patient's death than to diagnosis. This is especially true in the oncologic population: in one study, only 8% of patients were referred within 1 week of diagnosis.[5] By contrast, in this study, half of patients were referred PC within a week of diagnosis. This is likely because of "trigger" PC consults for

high-risk infants with complex congenital heart disease, the most common specific diagnostic group in this cohort. Conversely, late referrals of pulmonary and cancer patients reflect lack of standardized practice for PC consult.

Bottom Line. Automatic PC consult criteria are appropriate in children with high likelihood of mortality and lead to rapid PC involvement after diagnosis.

Reviewer. Rachel Thienprayoon, MD MSCS FAAP FAAHPM, StarShine Hospice, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Source. Rossfeld ZM, Miller R, Fosselman DD, et al. Timing of palliative consultation for children during a fatal illness. *Hosp Pediatr.* 2019;9(5):373-378.

References

1. Widger K, Sutradhar R, Rapoport A, et al. Predictors of specialized pediatric palliative care involvement and impact on patterns of end-of-life care in children with cancer. *J Clin Oncol.* 2018;36(8):801-807.
2. Fraser LK, Miller M, McKinney PA, Parslow RC, Feltbower RG. Referral to a specialist paediatric palliative care service in oncology patients. *Pediatr Blood Cancer.* 2011;56(4):677-680.
3. Keele L, Keenan HT, Sheetz J, Bratton SL. Differences in characteristics of dying children who receive and do not receive palliative care. *Pediatrics.* 2013;132(1):72-78.
4. American Academy of Pediatrics. Committee on Bioethics and Committee on Hospital Care. Palliative care for children. *Pediatrics.* 2000; 106(2 Pt 1):351-357.
5. Johnston DL, Vadeboncoeur C. Palliative care consultation in pediatric oncology. *Support Care Cancer.* 2012;20(4):799-803.

Communicating with Caregivers on Emotion Into Bereavement

Background. As end-of-life cancer care increasingly is provided at home, families are bearing more care responsibility.[1] Do hospice nurse supportive communication and family caregiver (FC)−nurse positive emotion (PE) exchange affect FC bereavement depression?

Design and Participants. This prospective, observational, longitudinal study identified the effects of hospice nurse supportive communication and FC-nurse PE exchanges on FC bereavement depression. Nurses and FCs of cancer patients were recruited from 10 hospice agencies. Digitally recorded nurse home visit conversations were coded using the Roter Interaction Analysis System to capture emotion-focused FC-nurse communication and supportive nurse responses. FCs completed the Hospital Anxiety

and Depression Scale Anxiety Subscale and Geriatric Depression Scale-Short Form at enrollment and 2, 6, and 12 months postdeath. Descriptive statistics and multilevel modeling were used.

Results. Spouse FCs (n=101) were mean age 66 years (SD=10), 60% female, and 92% white, and they had an average of 5.32 visit recordings (SD=3.53)—mean visit length was 40 minutes (SD=21; range=5-114 minutes). Nurses (n=58) were mean age 42 (SD=15) years, 92% female, and practiced an average 4.5 years (SD=4.9) in hospice. Patients had a median 54 days in hospice. Change in depression levels over time depended on FC PE talk frequency during visits (β=0.02, *P*=0.032). Contrary to their hypothesis, there was no relationship between FC distress speech and depression; FCs expressing mean $\geq$9 PE statements/visit demonstrated increased depressive symptoms over time (β=0.38, *P*=0.038). Results also reveal an interaction between caregiver PE talk and anxiety symptoms (β=0.02, *P*=0.04). There was a marginally significant association between higher nurse emotional responding and increased FC enrollment depression (β=0.07, *P*=0.054). This association did not change into bereavement.

Commentary. Supportive communication by hospice nurses with family caregivers has long been integral to hospice philosophy of "meeting the family where they are." However; how this communication impacts caregiver distress over time is less clear. In this study, nurses responded appropriately to FC distress, and that distress did not seem to correlate with later depression. On the other hand, when FCs more frequently expressed positive emotions, they tended to be more depressed later on. Findings raise questions about what families verbally articulate, how we respond, and how families continue to cope. Perhaps those who focus on positives are the very group who internally struggle the most. Seeing the world through rose-colored glasses may not always be a good thing if it means that families are not able to articulate fears and worries.

Bottom Line. Although we must continue to respond carefully to distress and negative effect, we also must pay attention to positive effect.

Reviewer. Daniel L. Handel, MD, University of Colorado School of Medicine, Denver, CO

Source. Reblin M, Baucom BRW, Clayton MF, et al. Communication of emotion in home hospice cancer care: implications for spouse caregiver depression into bereavement. *Psychooncology.* 2019;28(5):1102-1109.

Reference

1. Brédart A, Kop JL, Efficace F, et al. Quality of care in the oncology outpatient setting from patients'
perspective: a systematic review of questionnaires' content and psychometric performance. *Psychooncology.* 2015;24(4):382-394.

Rave Reviews

Goesling J, DeJonckheere M, Pierce J, et al. Opioid cessation and chronic pain: perspectives of former opioid users. *Pain.* 2019;160(5):1131-1145.
Knowing how to taper opioids is equally as vital as understanding how to prescribe them. Many clinicians have never been taught how to do it safely and with minimal risk and discomfort to the patient. This paper looks at the challenge of opioid cessation from the perspective of chronic pain patients who had been tapered from opioids. Although the study primarily evaluated patients with noncancer pain, the findings apply to any patient who has been treated chronically with opioids, including cancer patients and survivors.

Finnerup NB. Nonnarcotic methods of pain management. *N Engl J Med.* 2019;380(25):2440-2448.
This report is a very recent and excellent review of nonopioid-based therapies for acute and chronic pain. It is essential to know how to combine and maximize the benefits of nonopioid analgesics in a way that can be effective for many patients. This review does a great job of summarizing available alternatives.

McPherson ML, Walker KA, Davis MP, et al. Safe and appropriate use of methadone in hospice and palliative care: expert consensus white paper. *J Pain Symptom Manage.* 2019;57(3):635-645.
Methadone remains one of the most important and attractive analgesics used in the palliative care setting. However, its prescribing requires solid knowledge of its complex pharmacology. This report does an excellent job of outlining the appropriate patient selection process, safe prescribing practices, potential benefits, cross-reactivity, and conversion ratios—a must-read for all clinicians entering palliative care.

PC-FACS Feedback