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### Table of Contents

#### From PC-FACS Issue 164—January 4, 2016

Herigstad M, Hayen A, Evans E, et al. Dyspnea-related cues engage the prefrontal cortex: evidence from functional brain imaging in COPD. Chest 2015;148:953-961.

Ghesquiere AR, Aldridge MD, Johnson-Hürzeler R, et al. Hospice services for complicated grief and depression: results from a national survey. J Am Geriatr Soc 2015;63:2173-2180.

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#### Summaries With Commentary

Prefrontal Cortex Activation by Dyspnea-Related Cues Background. Environmental cues can influence dyspnea, 1,2 a predictor of COPD mortality. 3-5 What

can we gain from examining dyspnea's mind-body connectedness?

Design and Participants. Forty-one patients (15) women; mean age 68 [SD, 8.2] years) with mild to moderate COPD (per GOLD criteria) and 40 healthy age-matched controls (16 women; mean age 69 [SD, 8.1] years) participated in this study. All underwent 3T functional MRI (fMRI) scans while rating dyspnea-related word cues using the Visual Analogue Scale (VAS). Patients completed exercise performance assessments (modified shuttle walk test [MSWT], spirometry, oximetry) plus self-reporting questionnaires for depression, anxiety, fatigue, dyspnea, demotivation, and vigilance. fMRI was compared with dyspnea VAS ratings and psychological symptoms. Multiple regression analysis identified factors contributing to dyspnea. Conjunction analyses determined common areas of brain activation. Unpaired t-tests determined between-group differences; F tests analyzed variances shared among variables.

Results. COPD patients rated dyspnea and dyspneaanxiety word cues higher than the control group did  $(53.6\pm13.5 \text{ vs. } 8.4\pm10.4, P<0.001, \text{ and } 43.1\pm18.6 \text{ vs.}$  $5.8\pm10.8$ , P<0.001, respectively). Anxiety did not affect either group's VAS ratings. Forced expiratory volume (FEV1) did not affect dyspnea scores or MSWT, but dyspnea correlated negatively with MSWT distance. fMRI revealed that brain activation was greater in the medial prefrontal cortex (mPFC) and anterior cingulate cortex (ACC) in COPD patients; in controls, activation was stronger in supramarginal, angular, middle frontal gyri and precuneus. Depression and fatigue negatively correlated with mPFC, lateral PFC, and ACC activation. Vigilance was associated with subthreshold activation in mPFC and ACC activation.

Commentary. The management of dyspnea can be challenging, and effective treatments such as low-dose opioids<sup>6</sup> are primarily limited to diminishing the sensation of breathlessness. It is a complex process with poorly understood neurological, physiological, and psychological interrelated mechanisms - the so-called "mind-body connection." This study, using fMRI, elegantly begins to elucidate the pathways involved both before and during external environmental cues (such as the prospect of climbing stairs), which can trigger unpleasant sensations in COPD patients. The mPFC and the ACC appear to be unique in capturing these cues, but other sites in the brain are shared with depression, anxiety, and fatigue (e.g., the lateral prefrontal cortex). These areas are similar in the equally complex response to pain. By applying these newly discovered clinical relationships between neurophysiologic connections and behaviors, palliative care clinicians can focus on the triggers that may cause dyspneic episodes in each individual patient, attenuating and possibly modifying their frequency and intensity.

*Bottom Line.* Brain mapping with fMRI is improving our understanding of dyspnea and related symptom clusters.

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Source. Herigstad M, Hayen A, Evans E, et al. Dyspnea-related cues engage the prefrontal cortex: evidence from functional brain imaging in COPD. Chest 2015;148:953-961.

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## Hospice Services for Complicated Grief and Depression

*Background.* Although most people recover from acute grief after a loved one dies, more than 10% develop complicated grief (CG) and depression. <sup>1-3</sup> Is hospice addressing this issue? <sup>4,5</sup>

Design and Participants. To determine whether hospices screen for CG and depression and provide bereavement therapy, a randomized, cross-sectional sample of 775 US hospices was surveyed between 2008 and 2009. A total of 591 respondents (84% response rate) completed the survey, which asked whether the facility screened family caregivers at risk for CG and depression<sup>6,7</sup> at the time of their loved one's death. Dichotomous variables included availability of individual or group bereavement therapy and frequency of care plan updates (weekly or more often). Interdisciplinary staff meeting participation was measured as a composite variable. Hospice organizational characteristics were reviewed. Chi-square and F-tests measured unadjusted associations. Continuous variables were dichotomized in logistic regressions.

Results. Geographically, more hospices were located in the South (South, 44%; Midwest, 27%; West, 17%; Northeast, 12%). Half were nonprofit; 24% of all facilities were members of hospice chains. Three hundred twenty-seven (55%) provided screening for CG and depression plus bereavement therapy. Seventy-eight (13%) provided screening only; 141 (24%) provided bereavement therapy only. Forty-five (8%) provided neither service. In the multivariate regression model, the largest hospices (those serving >100 patients/ day) were most likely to offer both screening and bereavement services (P < 0.04). Hospices requiring >80 hours of training from social workers had a greater likelihood of providing screening only (P=0.04). Covariates that were significant only in unadjusted models included the multidisciplinary care team's size and frequency of care plan updates.

Commentary. Even with the support of hospice, one in 10 surviving family caregivers struggles with depression and CG. Hospices are the only healthcare providers required to provide bereavement services to support family after death. If the simple questions in this survey are to be believed, just over half of hospice organizations screen and provide therapeutic bereavement services. Not surprisingly, larger hospices report doing this more often — likely due to economies of scale allowing explicit staffing, policies, and procedures for this aspect of care. The survey items are limited—this study doesn't tell us what "therapy" consists of, how many people access it, and whether it is beneficial to bereaved families.

Bottom Line. Just over half of hospices report screening for CG and offering bereavement therapy for

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