Purpose: Humanism is a highly desired trait in physicians, but it is a complex construct that is not easily described. Understanding how humanistic traits are expressed longitudinally through medical school has implications for medical school admissions, curriculum development and residency selection processes.

Our primary research questions for this investigation were:

To what extent do Gold Humanism Honor Society (GHHS) members arrive in medical school with characteristics typically associated with humanism, specifically empathy and patient centeredness? Do empathy and patient-centeredness change and evolve differentially among GHHS members compared to their non-GHHS peers?

What other characteristics are associated with students who are recognized by their peers as being exceptionally humanistic medical students? Specifically, are tolerance of ambiguity, coping style, and perception of the learning environment associated with the peer nomination for GHHS status?

Approach/Methods: This study utilized the dataset from the American Medical Association-sponsored LES (AMA-LES) which is described in depth elsewhere. Between 2011 and 2015, 585 students from 13 North American medical schools who were participants in the AMA-LES study completed the Jefferson Scale of Empathy (JSE), Patient-Practitioner Orientation Scale (PPOS), Tolerance of Ambiguity Questionnaire (TOA), Ways of Coping Questionaire (WOC) and Medical School Learning Environment Survey (MSLES). In the final administration, students self-identified as Gold Humanism Honor Society (GHHS) inductees or not (non-GHHS). T-tests, effect sizes, and longitudinal generalized mixed-effects models examined the differences between GHHS and non-GHHS students.

Results/Outcomes: The response rate within this sample ranged from 66.2% in the third year (387 students) to 100% in the fourth year (585 students) when the study population was defined. Respondents identified as GHHS (17.6%), and non-GHHS (82.4%).

Students inducted into GHHS scored significantly higher on average over four years than non-GHHS inductees on clinical empathy (p=.001, effect size =.35), patient-centered beliefs (p < .0001, effect size =.45), tolerance of ambiguity (p=.03, effect size =.24) and overall learning environment perception (p=.008, effect size=.29). For the Ways of Coping, there were significant differences for the active subscale overall average (p=.01, effect size=.28).

Students reported higher levels of empathy (p=0.02) and patient-centeredness (p=0.01) at medical school matriculation. This difference persists in the fourth year of medical school (empathy p=0.001; patient-centeredness p=0.0002) and when controlling for time, race, gender, and school (empathy p=0.01; patient-centeredness p=0.003). GHHS students have significantly higher tolerance for ambiguity in the fourth year (p=0.03) than non-GHHS students.

Discussion: Students who are perceived as highly humanistic by their medical student peers (leading to induction in the GHHS) enter medical school with stronger humanistic attitudes and beliefs than their non-GHHS classmates. Although humanistic attitudes and beliefs vary over time during students’ four years, the gap between the two groups remains constant.

While empathy and patient-centeredness are commonly associated with humanism, there is also an association between students who are recognized as humanistic and a higher tolerance of ambiguity, more active ways of coping, and more positive perceptions of the learning environment.

The fact that for JSE, PPOS, TOA and MSLES, the year 4 difference (i.e. after GHHS recognition) between the two groups is greater than at any other point in time studied, may indicate a well-known self-perception booster effect...
resulting from positive recognition of a laudable trait.

**Significance:** Examining the psychosocial correlates of GHHS induction yields valuable insight into the multi-faceted nature of humanism in medicine. Our findings provide criterion validity to commonly used self-report scales to measure aspects of humanism, such as the JSE and PPOS.

With a better understanding of the characteristics associated with humanistic medical students, undergraduate admissions committees and residency selection committees may be better poised to accept medical students with an aptitude for humanistic care. Medical schools can develop curricular programs to support various humanistic characteristics, which our data suggest should include tolerance of ambiguity and more active coping styles.

Areas for future research include investigating the maintenance or erosion of humanistic attitudes of GHHS vs. non-GHHS inductees as they progress through residency training and the remainder of their developmental career-span.


**Level of Audience:** Mid-career

**Focus of Presentation:** UME

**PRESENTER:** Elizabeth Gaufberg | Lisette Dunham | Ed Krupat | Brent Stansfield | Charles Christianson | Susan Skochelak

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Purpose: To understand what dimensions of culture in medical residency programs are related to greater vitality among residents nationally? Nationally 50% residents report burnout. Recent scholarship questions whether residents can conduct their clinical work and learning with optimal vitality, compassion, competence, and personal safety.

Approach/Methods: In 2015, we surveyed 1708 medical residents (70% response rate), 956 Internal Medicine, 441 Pediatrics, and 311 General Surgery; 879 (51%) women, 268 (16%) under-represented in medicine minority (URMM), and 305 (18%) international medical graduates in 34 residency programs at 14 academic medical centers. We adapted the reliable and validated C-Change Faculty Survey, which measures dimensions of the culture of academic medical centers and has been used in the US, Canada, and Europe. The 78-item C-Change Resident Survey (CRS) measures resident perceptions of 13 dimensions of the culture: Vitality; Self-efficacy in Career Advancement; Institutional Support; Relationships/Inclusion; Values Alignment; Ethical/Moral Distress; Respect; Mentoring; Leadership Aspirations; Work-life Integration; Gender Equity; Under-Represented in Medicine Minority Equity; and Competencies. We collected data on gender, sexual orientation, race/ethnicity, age, US versus international medical degree, presence of children at home <18 years, and PG year. Data were analyzed by hierarchical models to accommodate clustering, including models in which individual dimensions of culture predicted Vitality up to a model in which nine dimensions of culture predicted Vitality.

Results/Outcomes: About 4.7% of all variance in vitality is at the between-program level, while the balance is at the within-program level. When dimensions of culture are added individually to the model, Work-Life Integration explains more within-program variance, 35.5%, than any other single predictor, while Values Alignment explains the most between-program variance, 76.0%. The inclusion of three dimensions of culture, Work-Life Integration, Relationships/Inclusion, and Institutional Support as predictors in a hierarchical model predicted 48% of the variation in Vitality at the within-program level and 90% at the between program level. Demographic variables had very minimal effect on Vitality.

Discussion: Although only 5% of all variation in resident vitality is in program means, the differences are meaningful, and there would be every reason for a program with a low mean vitality to raise that mean. Variation in program vitality means is largely explained by resident perceptions of the dimensions of culture, foremost among which are Work-Life Integration, Relationships/Inclusion, and Institutional Support. It is reasonable to conclude that efforts to alter residents’ perceptions of these dimensions of the institutional culture will achieve higher mean vitality. Given that most within-program and between program variation in vitality can be explained by a combination of the dimensions of culture, targeted interventions including activities to create a more relational culture and trust, work-life support and values alignment may significantly enhance resident well-being.

Significance: The study helps answer the question as to which dimensions of the culture predict resident vitality and well-being and are amenable to improvement. The ACGME CLER initiative is calling for assessment of the culture of residency programs to address concerns about resident well-being. The CRS is a valid instrument for this assessment.


Level of Audience: Mid-career
Focus of Presentation: GME

PRESENTER: Linda Pololi

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ABSTRACT BODY:

Purpose: Learning communities (LCs) are a rapidly growing phenomenon in medical education and are believed to improve the learning environment (LE) and student development. There is currently great variability in definition in LC from one medical school to another. Given the growing interest in LCs in medical schools, their current variation, and the range of resources medical schools have to implement LCs, an evidence base for LC structure and function could enable schools to make best use of resources in implementing LCs effectively. The goal of this study was to determine what features of Johns Hopkins LC have the greatest association with student-wellbeing and empathy.

Approach/Methods: We conducted a cross-sectional survey of all medical students at Johns Hopkins University School of Medicine (JHUSOM) at the end of the 2015-2016 academic year. JHUSOM has had a LC since 2005 which groups 120 students from each class into 4 “Colleges.” Within each College, students are grouped into 6 advisory “molecules,” comprising an LC faculty advisor and their 5 advisees. The LC curriculum includes a yearlong clinical skills course (“Clinical Foundations”) taught by their advisor in year 1 and 90 minute reflective sessions on critical incidents in subsequent years. Students are required to meet in person with their advisors 3 times a year. Each College has a designated room in the medical school building and hosts social and community service events.

Surveys included items which asked students to rate the value of each component of the LC on a 5-point Likert scale and used validated measures to quality of life, the emotional exhaustion and depersonalization domains of burnout. The Interpersonal Reactivity Index was used to measure empathy. Learning environment perception was measured by the Johns Hopkins Learning Environment Scale (JHLES).

All variables were dichotomized at the median. Bivariate and multivariate logistic regression models were constructed using quality of life, emotional exhaustion, depersonalization and empathy as dependent variables. All multivariate models adjusted for sex and medical school year. Previous work had shown that learning environment perceptions were related to student wellness, so we hypothesized that effects of LC could be mediated through their effect on LE perception. Accordingly, we created another multivariate model which adjusted for overall LE perception.

Results/Outcomes: Overall 368/480 (77%) students responded to our survey with response rates across for each class exceeding 70%. Average age was 26 years (SD 4.7) and most (53%) were male. Across all class years, 74-86% students rated the Clinical Foundations course as having "a lot" or "exceptional" value to them; advisors also received consistently high ratings (72-80%) across all years. All LC components were significantly associated with overall JHLES score and multiple domains. The top magnitudes of association with JHLES after adjusting for gender and class year were seen with social activities (OR 4.4 [2.5-7.8]), advisors (OR 4.1 [2.4-6.9]), and Clinical Foundations (OR 3.9 [2.2-7.0]). After adjusting for effect of total LE, most LC components were associated with better quality of life and greater empathic disposition. The only LC components associated with lower rates of burnout were advisors and the Clinical Foundations course. Notably, the Clinical Foundations course was the only LC component to have significant associations with burnout, quality of life and empathy (p<.05).

Discussion: In this study of 368 medical students in the JHUSOM LC, we found that the first year Clinical Foundations course and advisors were highly valued and were most closely related to student well-being and empathy while social activities, a dedicated Colleges room, and having peers in a “molecule” were not strongly associated. These suggest that investing in well-structured early clinical courses could be worth it, while other costly interventions, such as an LC room, may not.

Significance: Our study is the first to provide evidence regarding which LC features relate to improved student outcomes and paves the way for future work which can assess if new LC interventions can improve well-being and empathy.


**Level of Audience:** Mid-career

**Focus of Presentation:** UME

**PRESENTER:** Sean Tackett

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ABSTRACT BODY:

**Purpose:** Mounting evidence suggests that medical students are at high risk for depression and burn-out. Yet, there is limited use of mental health services and inconsistency across institutions in the content, method of delivery, and lack of assessment of wellness programs. To address this, we piloted a wellness curriculum focused on evidence-based psychological interventions, peer-led delivery, and standardized assessment.

**Approach/Methods:** A semester-wide workshop was developed to provide every first-year medical student (M1) with two second-year medical student (M2) mentors that led discussions and exercises that addressed five common mental health themes in medicine, including:

1. Loneliness
2. Imbalanced Social, Emotional, and Academic Life
3. Criticism
4. Mental Health Stigma
5. Burn-Out

In order to address these issues, our approach emphasized using evidence-based psychological interventions to create the content of this program. Each session integrated exercises that have each been associated with increases in resilience, optimism, and connectedness among peers in at least five randomized-control trials. Since sessions were largely based on open sharing of potentially vulnerable information (e.g. experience with burn-out and depression), sessions were led by M2s to decrease any barriers to disclosure. For instance, students were asked to list stress-inducing situations, identify how to address these stressors, and then write about a situation that has been worrying them for 15 minutes. Other sessions included objectives that focused on addressing loneliness, mental health stigma, and dealing with criticism.

In order to evaluate the effectiveness of the program, M1s were given surveys at the beginning and end of the program. These surveys included psychometrically validated measures, such as the Maslach Burnout scale, PQ-2, and GAD-7. To draw comparisons, M1s at another non-participating SUNY medical school were given surveys. These surveys aimed to compare the M1s' levels of depression, anxiety, and burn-out.

**Results/Outcomes:** The approachability of mentors has allowed seven M1s to access student mental health counseling. Additionally, students have reported a stronger sense of community among their classmates, a willingness to reach out for help, and greater feelings of belonging. Through the support of the faculty in integrating the program into the class schedule, the program promoted a closer relationship between administration, faculty members and students.

**Discussion:** The integration of this program into the school's curriculum prioritizes the values of physician wellness and work-life balance. Based on formal surveys, students believe the program's success is attributed to creating a space for honest discussion about wellness. Moreover, we believe our model of using peer mentors has allowed for approachability leading to increased access to mental health services.

**Significance:** The Mentorship & Wellness Program equips M1s with a foundation that aims to reduce feelings of depression, anxiety, loneliness, and burn-out. The effects of these evidence-based strategies are intended to continue after the first academic year and throughout the rest of medical school. The feasibility and cost-effective foundation of the program’s curriculum will allow for adjustability in its use by other medical schools to shape medical school culture in challenging mental health stigma. Future research will study the effects of this intervention during residency training and beyond.


**Level of Audience:** Early-career

**Focus of Presentation:** UME

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