Following up on trainees MI use in primary care: Perceptions and practice patterns 9 months post-training

Research Highlights
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Purpose: The efficacy of motivational interviewing (MI) training for trainees and practicing clinicians is relatively well established, at least based on pre-post observations of MI skills.[1,2] Studies rarely follow up with these clinicians to examine application and continued use in practice, though a few studies have identified challenges in sustaining the skills.[2,3] Findings from a meta-analysis of randomized control trials of MI for health behavior outcomes in primary care populations suggest that MI can be an effective intervention, though most studies provided minimal information about the qualifications of the individuals engaging in MI.[4] To better understand trainees' use of MI in primary care post-training, our study explores how (if at all) physician and NP trainees use MI with primary care patients and what factors influence their use of MI.

Methods: In January/February 2018, 18 internal medicine residents (PGY2) and 8 nurse practitioner students/residents participated in 2hrs of training in motivational interviewing and received detailed feedback based on direct observation of their skills during a telephone visit with a standardized patient. MI skills improved significantly after training. Nine months after this training (October 2018) we surveyed trainees about their use of MI with primary care patients and invited all trainees still working on-site (n=23) to participate in a 30 minute semi-structured interview about their perceptions of and experiences using MI. We calculated descriptive statistics from survey results and analyzed the interview transcripts thematically.[5]

Results: 16 IM residents and 5 NP trainees completed the survey (81% response). The majority of IM residents reported using MI rarely or occasionally (69%) while all NP trainees reported using MI frequently or very frequently (100%). 15 IM residents and 3 NP trainees participated in interviews (78% of those invited). Interview themes revealed widespread endorsement of MI conceptually, but difficulty implementing it in practice due to time constraints, need to prioritize medical issues, perceived lack of skill, and unreceptive patients. Differing impressions of the goals of MI also appeared relevant to use. Trainees who viewed MI as a general communication skill or approach found it easier to use; those who conceptualized it as a technique to achieve behavior change found it more difficult. Similarly, perceptions of successful MI made it seem more or less accessible in practice. Some trainees viewed success as engaging a patient in rapport and insight building or in a conversation that explored the patients own motivations to change behavior. These trainees recognized actual behavior change as a high bar, especially within a few visits. By contrast, other trainees defined success based on tangible changes. One trainee explained, I guess the main point is that you get the outcome that you're hoping for your patient ... all the sort of behavioral changes if they make any sort of progress in that I'd probably count it as successful.

Discussion: Most studies of MI training efficacy evaluate improvement in MI skills and, occasionally, retention of skills. Our study explored trainees perceptions of MI after they had time to practice using MI in day-to-day primary care visits with real patients. The challenges many experienced may explain an important source of skill decay if they have difficulty using MI routinely, their skills will decline. A next step for training may be to model MI use in realistic primary care visits and scaffold training so trainees experience increasingly complex encounters.

Significance: Our findings suggest enhancements to MI training for primary care trainees and clinicians, particularly through strategies that will increase the likelihood of use in practice.
Predicting Residents Attainment of Graduation Targets using Milestone Ratings in Surgical Specialties

Research Highlights
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Purpose: The Accreditation Council for Graduate Medical Education requires every residency program to report learner progress in the form of milestone ratings every 6 months. Attainment of the recommended graduation target of level 4 on milestones at the end of residency is one indicator of a residents readiness for unsupervised practice. The recent availability of longitudinal milestones data allows for the calculation of probability estimates for predicting whether residents might reach the recommended graduation target within each subcompetency at various points in time prior to graduation. Previous analyses in non-procedural specialties found that national milestones data could provide information to help programs identify areas of risk and improvement for individual residents.1

Traditionally, surgical specialties have arranged their curricula (and formulated their milestones) to align with specific procedures on the basis of 3- or 6-month rotations. This study sought to determine whether this predictive probability approach could be applied to surgical specialties.

Methods: We examined milestone ratings from single resident cohorts of Orthopedic Surgery (OS, 2013-18; n=635 residents from 145 programs), Obstetrics and Gynecology (Ob-Gyn, 2014-18; n=1206 from 239 programs), and Surgery (2014-18; n=679 from 218 programs). Although milestones reporting forms are based on a common set of six core competencies [Patient Care (PC), Medical Knowledge (MK), Systems-based Practice (SBP), Practice-based Learning and Improvement (PBLI), Professionalism (PROF), and Interpersonal and Communication Skills (ICS)], there is considerable variation among specialties in milestones language and format, with varying numbers of subcompetencies per specialty (e.g., OS has 41; Ob-Gyn, 28; Surgery, 16). For Surgery, milestones are divided into 5 levels, from critical deficiencies to level 4. For OS and Ob-Gyn, milestone ratings range from level 1-5. For each subcompetency within each specialty, a Generalized Estimating Equation model was used to calculate the probability of residents not reaching the graduation target based on a threshold milestone rating per time of evaluation prior to graduation (i.e., positive predictive value, PPV).

Results: At time of graduation, the rates of not attaining the level 4 targets were higher for Surgery (range across all subcompetencies: 25-40%) than OS (range: 4-21%) or Ob-Gyn (range: 5-25%). Overall for the three specialties, PPVs increased as time of assessment approached graduation. Particularly, when residents were rated at or below level 2.5 one year before graduation, their chances of not reaching the graduation target were: for Surgery (range per core competency: PC=60-66%; MK=70-72%; SBP=63-77%, PBLI=72-77%; PROF=71-75%; ICS=67-72%); for OS (PC=10-31%; MK=9-35%; SBP=39-53%, PBLI=31-32%; PROF=31-63%; ICS=33-39%); and for Ob-Gyn (PC=25-54%; MK=31-47%; SBP=33-40%; PBLI=41-43%; PROF=32-58%; ICS=32-54%). With the exception of Surgery, these values are in the same range as results from a previous study involving non-procedural specialties: Emergency Medicine (range across all subcompetencies: 31-56%) and Internal Medicine (15-36%).1

Discussion: We found similar PPV patterns for three procedural specialties compared to non-procedural specialties. However, PPVs in surgery were more strongly predictive of not attaining the recommended graduation level. The variation in findings across specialties may be due to the differences in how the graduation target was defined in the milestone scales. Because the graduation target was set at the very end of the Milestone scale for Surgery, programs may have been more conservative in using this category, yielding higher PPVs for Surgery.

Significance: This analysis found longitudinal Milestone data in three surgical disciplines can provide useful
predictive information and help programs to intervene early with struggling residents and determine the optimal time to intervene. The differences observed may reflect differences in the format of milestones construction among specialties.
Feasibility of a Novel Video Curriculum for Asynchronous Subspecialty Education of Internal Medicine Residents

Research Highlights
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Purpose: Cancer is the second-leading cause of death in the U.S. and one of the most common diagnoses seen by practicing internists and internal medicine (IM) residents.(1,2) However, from 2009-2016 the annual ACGME survey of University of California, San Francisco (UCSF) IM residents demonstrated a 40% dissatisfaction rate with their oncology didactic and clinical experience, the highest among all UCSF IM subspecialties and considerably higher than the national average. A 2016 targeted needs assessment revealed that IM residents desired online resources about common cancers and more face time with oncologists, which is particularly difficult at UCSF where IM residents and oncologists frequently work at different hospitals. Online videos were a logical solution, but a literature search did not reveal any online oncology videos for residents. Therefore, we created videos featuring UCSF oncologists for asynchronous delivery of oncology content.

Methods: Following Kerns curriculum development model, we reviewed the ABIM Blueprint as a general needs assessment and wrote goals and objectives aligned with the residency curriculum. We used cognitive theory of multimedia learning (CTML) principles of signaling, segmenting, weeding, and matching modalities to avoid cognitive overload.(3,4) We created five short videos, each ten minutes or less, on fundamental concepts in breast (early-stage and metastatic), prostate, colon, and pancreas cancer. We posted the videos on a private YouTube account and sent links to second- and third-year residents on an ambulatory oncology rotation initially as a pilot (n=11 over two months), during which time we obtained direct feedback from residents in person or via email. We incorporated this feedback, and subsequently performed a feasibility study (n=11 over two months, anticipated n=30 by March 2019) that incorporated the videos into online modules with pre- and post-test questions, and obtained feedback via online survey. Residents could watch the videos either during protected clinic time arranged with oncology clinic preceptors or independently. We compared pre- and post-test scores using a paired two-tailed t test.

Results: Residents providing pilot feedback felt that the videos were useful, interesting, appropriate, enjoyable, and high quality, with knowledgeable speakers who were excited about the content. During the feasibility study, 11 residents contributed 43 views across the five videos. Post-test scores improved significantly compared to pre-test scores for each video, with a mean pre-test score of 48% correct and a mean post-test score of 85% correct (p<0.001). Survey results (n=7) showed that 100% of respondents were satisfied (agreed or strongly agreed) with the video curriculum and its contribution to their knowledge and oncology clinic experience and would recommend it to other residents. Four (57%) felt more confident caring for oncology patients, and three (43%) believed the video curriculum would change their practice. Two residents (29%) watched at least some videos in clinic, and all residents watched videos outside of clinical time.

Discussion: We created a novel oncology video curriculum targeted to IM residents and gathered preliminary
feasibility evidence. Residents demonstrated improved knowledge after using the curriculum and viewed the curriculum favorably. Further study is needed to determine the long-term impact of the video curriculum on resident learning and performance, and to optimize implementation within the residency curriculum.

**Significance:** This innovative method of asynchronous IM subspecialty resident education can be expanded to other subspecialty fields and training programs outside of UCSF to address unique local curricular gaps. Based on ongoing feedback from our study, we will expand and optimize our curriculum and plan to disseminate it for broad use beyond UCSF.
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Performance and Learning: Exploring the use of quality metrics in graduate medical education

Research Highlights
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Purpose: Competency-based medical education (CBME) guides the design and improvement for physician professional development. CBME is time-intensive for faculty, requiring work- and outcomes-based assessments that facilitate accountability to patients and to improve educational programs. Current assessments rarely incorporate practice outcomes and rely on high-stakes examinations, which consequently excludes practice and system-based practice competencies. Competency-based Quality indicators aim to improve healthcare systems, physician performance, and patient outcomes. These indicators could be hypothetically applied to GME and help residents improve their individual clinical competency and collective performance, a critical future practice skill. However, few studies have examined quality indicators in GME outcomes-based assessments.

The National Committee for Quality Assurance (NCQA)s Healthcare Effectiveness Data and Information Set (HEDIS) is a potential source to assess multi-levels of care from residents to systems. This study explores the feasibility of using routinely collected and efficient administrative data sources to assess residents in Family and Internal Medicine programs in a large healthcare system. We will examine the: 1. feasibility to obtain and interpret resident HEDIS measures; 2. potential to construct resident learning curves; 3. ability to compare resident performance with national NCQA practicing physician performance; 4. implications for GME using HEDIS for CBME assessment.

Methods: 501 residents in 10 ACGME-accredited programs in Family and Internal Medicine, sponsored by Kaiser Permanente Southern California (KPSCAL) were studied. KPSCAL resident quality indicators include publicly reported NCQAs HEDIS rates and routinely collected for KPSCAL patients. Rates between June 2014-May 2018 for residents performance over the past 12 months, as defined by HEDIS criteria met over all eligible patients were examined. Frequency, mean and distribution (95% Confidence Intervals (CI) to examine precision of HEDIS score true mean certainty) for residents, training year (PGY), and GME program were calculated to ascertain multi-level resident performance improvement. One-way ANOVA tests were conducted to determine group differences.

Results: HEDIS measures were reviewed for study applicability, with 28 identified for breast/cervical/colorectal cancer screening, childhood immunizations, comprehensive diabetes care, high blood pressure control, monitoring patients on persistent medications, and well-child visits. For all programs, 21 of 28 measures had a 95%CI less than 5%, which we interpret as closer to the true HEDIS score performance mean. For resident PGY cohorts, we generally observed smaller 95%CI intervals as a resident progressed from PGY1 to PGY3 (p<.05). To explore constructing learning curves, on average, each resident had 6.4 (+/-2.9) quarterly timepoints (over 12 possible timepoints) per HEDIS measure while PGY cohorts had measures for all timepoints. When comparing residents scores to NCQA reports, we observed residents exceeded the national mean for every reported HEDIS measure.

Discussion: We found that repeated resident HEDIS measures were available in ambulatory care over the course of their training with smaller 95%CI intervals as residents advanced. We also observed interval differences due to frequency of measures for residents and program setting, regardless of PGY level. While constructing learning curves is possible using HEDIS scores, the availability of scores at specific time points will depend on number of patients seen per resident to reliably measure HEDIS rates within a 95%CI. Interestingly, we found potential practice and system-level effects on resident performance, given the interval variation across programs and with residents
Discussion: We confirmed the potential to systematically assess resident performance using HEDIS measures for primary care programs in a large healthcare system. Our findings show residents HEDIS performance is trackable over time and presents an opportunity for GME programs to monitor individual and program performance. By demonstrating quality indicator use to support CBME in practice-based and system-based measures, we furthered our understanding to the multilevel effects on resident performance through systematic assessment.
Significance: This innovative method of asynchronous IM subspecialty resident education can be expanded to other subspecialty fields and training programs outside of UCSF to address unique local curricular gaps. Based on ongoing feedback from our study, we will expand and optimize our curriculum and plan to disseminate it for broad use beyond UCSF.