ABIM MAINTENANCE OF CERTIFICATION – HELPING PHYSICIANS IMPROVE QUALITY OF CARE

THE VALUE OF ABIM PIMs PRACTICE IMPROVEMENT MODULES®

Twenty studies demonstrate the value of ABIM PIMs Practice Improvement Modules® for both practicing physicians and residency clinics in several areas: assessing practice performance, exploring perceptions and experiences, and evaluating the impact on improving patient care.

ANNOTATED BIBLIOGRAPHY OF PEER-REVIEWED PUBLICATIONS

1. **Hess B, Lynn L, Conforti L, Holmboe E. Listening to older adults: elderly patients' experience of care in residency and practicing physician outpatient clinics. J AM Geriatr Soc. 2011;59(5):909-15.**
   The population of people aged 65 and older is rapidly growing. Research has demonstrated significant quality gaps in the clinical care of older patients in the United States, especially in training programs. Little is known about how older patients' experience with care delivered in residency clinics compares with that delivered by practicing physicians. Using patient surveys from the American Board of Internal Medicine Care of the Vulnerable Elderly Practice Improvement Module, the quality of care provided to adults aged 65 and older by 52 internal medicine and family medicine residency clinics and by a group of 144 practicing physicians was studied. The residency clinics received 2,213 patient surveys, and the practicing physicians received 4,204. Controlling for age and overall health status, patients from the residency clinic sample were less likely to report receiving guidance and interventions for important aspects of care for older adults than patients from the practicing physician sample. The largest difference was observed in providing ways to help patients prevent falls or treat problems with balance or walking (42.1% vs 61.8%, P<.001). Patients from the residency clinic sample were less likely to rate their overall care as high (77.5% vs 88.8%, P<.001). Patient surveys reveal important deficiencies in processes of care that are more pronounced for patients cared for in residency clinics. Quality of patient experience and communication are vital aspects of overall quality of care, especially for older adults. Physician education at all levels, faculty development, and practice system redesign are needed to ensure that the care needs of older adults are met.

2. **Oyler J, Vinci L, Johnson JK, Arora VM. Teaching internal medicine residents to sustain their improvement through the quality assessment and improvement curriculum. J Gen Intern Med. 2011;26(2):221-5.**
   INTRODUCTION: Although sustainability is a key component in the evaluation of continuous quality improvement (CQI) projects, medicine resident CQI projects are often evaluated by immediate improvements in targeted areas without addressing sustainability. SETTING: To assess the sustainability of resident CQI projects in an ambulatory university-based clinic. PROGRAM DESCRIPTION: During their ambulatory rotation, all second year internal medicine residents use the American Board of Internal Medicine's Clinical Preventive Services (CPS) Practice Improvement Modules (PIM) to complete chart reviews, patient surveys, and a system survey. The residents then develop a group CQI project and collect early post data. Third year residents return to evaluate their original CQI project during an ambulatory rotation two to six months later and complete four plan-do-study-act (PDSA) cycles on each CQI project. PROGRAM EVALUATION: From July 2006 to June 2009, 64 (100%) medicine residents completed the CQI curriculum. Residents completed six group projects and examined their success using early (2 to 6 weeks) and late (2 to 6 months) post-intervention data. Three of the projects demonstrated sustainable improvement in the resident continuity clinic. DISCUSSION: When residents are taught principles of sustainability and spread and asked to complete multiple PDSA cycles, they are able to identify common themes that may contribute to success of QI projects over time.

3. **Shaffer SL, Day HD. Systematic outpatient screening for the elderly: Care of the Vulnerable Elderly Practice Improvement Module to assess resident care of older adults. J Am Ger Soc. 2010;58:2173-2177.**
   OBJECTIVES: To determine the feasibility of using the American Board of Internal Medicine Care of the Vulnerable Elderly Practice Improvement Module (CoVE PIM) in an internal medicine residency program and to assess aggregate resident documentation of geriatric screening in continuity clinics. DESIGN: Needs assessment chart review for single-site pre-/post-intervention study. SETTING: Internal medicine resident primary care continuity clinics. PARTICIPANTS: Thirty-seven postgraduate year PGY-1 and PGY-2 internal medicine residents. MEASUREMENTS:

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Completion rate and time of CoVE PIM chart review, CoVE PIM user difficulty, and aggregate percentage of charts documenting geriatric screening measures. RESULTS: Sixty-five percent of residents completed the CoVE PIM in an average of 47 minutes (range 30-90 minutes); 72% of resident surveys rated the CoVE PIM as easy to use. Residents demonstrated very good documentation of chronic medical conditions, smoking status, height, weight, and blood pressure and poor documentation of falls and fall risk, hearing assessment, postural hypotension, balance, rigidity, bradykinesia, home safety assessment, seat belt counseling, code status, and surrogate decision-maker. CONCLUSION: The CoVE PIM can be used to assess aggregate resident performance of geriatric screening measures. In resident clinics, general adult screening performed by nurses is well documented, whereas geriatric-specific screening performed by physicians is poorly documented.

4. **Weng W, Hess BJ, Lynn LA, Holmboe ES, Lipner RS. Measuring physicians' performance in clinical practice: reliability, classification accuracy, and validity. Eval Health Prof. 2010 Sep;33(3):302-20.**
Much research has been devoted to addressing challenges in achieving reliable assessments of physicians' clinical performance but less work has focused on whether valid and accurate classification decisions are feasible. This study used 957 physicians certified in internal medicine (IM) or a subspecialty, who completed the American Board of Internal Medicine (ABIM) Diabetes Practice Improvement Module (PIM). Ten clinical and two patient-experience measures were aggregated into a composite measure. The composite measure score was highly reliable (r=.91) and classification accuracy was high across the entire score scale (>0.90), which indicated that it is possible to differentiate high-performing and low-performing physicians. Physicians certified in endocrinology and those who scored higher on their IM certification examination had higher composite scores, providing some validity evidence. In summary, it is feasible to create a psychometrically robust composite measure of physicians' clinical performance, specifically for the quality of care they provide to patients with diabetes.

5. **Hess BJ, Weng W, Lynn LA, Holmboe ES, Lipner RS. Setting a fair performance standard for physicians' quality of patient care. J Gen Intern Med. 2011;26(5):467-73.**
BACKGROUND: Assessing physicians' clinical performance using statistically sound, evidence-based measures is challenging. Little research has focused on methodological approaches to setting performance standards to which physicians are being held accountable. OBJECTIVE: Determine if a rigorous approach for setting an objective, credible standard of minimally-acceptable performance could be used for practicing physicians caring for diabetic patients. DESIGN: Retrospective cohort study. PARTICIPANTS: 957 physicians from the United States with time-limited certification in internal medicine or a subspecialty. MAIN MEASURES: The ABIM Diabetes Practice Improvement Module was used to collect data on ten clinical and two patient experience measures. A panel of eight internists/subspecialists representing essential perspectives of clinical practice applied an adaptation of the Angoff method to judge how physicians who provide minimally-acceptable care would perform on individual measures to establish performance thresholds. Panelists then rated each measure's relative importance and the Dunn-Rankin method was applied to establish scoring weights for the composite measure. Physician characteristics were used to support the standard-setting outcome. KEY RESULTS: Physicians abstracted 20,131 patient charts and 18,974 patient surveys were completed. The panel established reasonable performance thresholds and importance weights, yielding a standard of 48.51 (out of 100 possible points) on the composite measure with high classification accuracy (0.98). The 38 (4%) outlier physicians who did not meet the standard had lower ratings of overall clinical competence and professional behavior/attitude from former residency program directors (p=0.01 and p=0.006, respectively), lower Internal Medicine certification and maintenance of certification examination scores (p=0.005 and p<0.001, respectively), and primarily worked as solo practitioners (p=0.02). CONCLUSIONS: The standard-setting method yielded a credible, defensible performance standard for diabetes care based on informed judgment that resulted in a reasonable, reproducible outcome. Our method represents one approach to identifying outlier physicians for intervention to protect patients.

6. **Holmboe ES, Weng W, Arnold GK, Kaplan SH, Normand SLT, Greenfield S, Hood S, Lipner RS. The comprehensive care project: measuring physician performance in ambulatory practice. Health Serv Res. 2010 Dec;45(6 Pt2): 1912-33.**
We investigated the feasibility, reliability and validity of comprehensively assessing physician-level performance in ambulatory practice by assessing physician-level performance, adjusted for patient factors, on 46 individual measures, an overall composite measure, and composite measures for chronic, acute and preventive care. Between versus within physician variation was quantified by intraclass correlation coefficients (ICC). Medical records for 236 physicians were audited for 7 chronic and 4 acute care conditions, and 6 age and gender appropriate preventive services. Performance on the individual and composite measures varied substantially within (range 5-86% compliance on 46 measures) and between physicians (ICC range 0.12 to 0.88). Reliabilities for the composite measures were robust: 0.88 for chronic care and 0.87 for preventive services. Higher certification exam scores were associated with better performance on the overall (r=0.19; p < .01), chronic care (r=0.14, p=.04) and preventive services composites (r= 0.17, p=.01) Our results suggest that reliable and valid comprehensive assessment of the quality of chronic and preventive care can be achieved by creating composite measures and by sampling feasible numbers of patients for each condition.

7. **Vinci LM, Oyler J, Johnson JK, Arora VM. Effect of a quality improvement curriculum on resident knowledge and skills in improvement. Qual Saf Health Care. 2010;19:351-4.**
Residents at the University of Chicago participated in a required course, the Quality Assessment and Improvement Curriculum during two 1-month-long rotations. The American Board of Internal Medicine (ABIM) Practice Improvement Module (PIM) was used to guide residents through chart reviews for quality measures, surveys of patient satisfaction and an assessment of clinic systems. Residents received 12 hours of training in QI skills (i.e., using Plan-Do-Study-Act cycles). Residents worked in groups to test the effect of a small QI project of their choosing. Residents completed the Quality Improvement Knowledge Assessment Tool (QIKAT) to assess QI knowledge, and a self-assessment of QI skills. Third-year residents who did not participate in the curriculum served as an historical control group. Eighty-seven percent (26/30) of PGY2s (intervention group) and 83% (24/29) of PGY3 residents (historical controls) completed the self-assessment and QIKAT. PGY2 residents showed a significant improvement in QIKAT scores [Pre: 6.98 (6.23 to 7.72) vs Post: 9.70 (8.92 to 10.50); $p<0.001$] and in all 12 QI skills. In addition, the post-PGY2 intervention group outperformed the PGY3 historical control group in QIKAT scores [PGY2 Post-9.59 (8.82 to 10.36) vs PGY3 Control 7.34 (6.48 to 8.20]; $p<0.001$) and all QI skills. This builds on previous work from the same institution showing improvements in patient care that combining the PIM experience with a QI curriculum using small-group, resident chosen QI projects can result in improvements in resident knowledge and self-assessed skills in QI. Although not a randomized control trial, the use of a historical control did provide a mechanism to account for the effects of accumulating experience in the pre-post evaluation of this curriculum.

8. **Holmboe ES, Arnold GK, Weng W, Lipner R. Current yardsticks may be inadequate for measuring quality improvements from the medical home. Health Affairs. 2010;29:859-66.**
Health reform legislation grants authority for patient-centered medical home pilot projects to test changes in the way primary care is provided. There is concern that using a measurement tool to qualify medical homes that is solely based on presence or absence of “systems elements” may miss the point conceptually and lead physicians astray in attempts to transform their entire practice. To find out whether and how practice characteristics explain health care quality, we examined risk-adjusted composite measures of quality for common chronic and acute care conditions and preventive care from 202 general internists working primarily in small primary care office settings. We found that current conceptions and measures of what constitutes “successful” practice and care are incomplete, and have limited associations with measures of health care quality. Future research should explore more fully the issues around physician competence, including competence in systems and quality improvement; the interactive nature of clinical practice; and other important system elements not captured by current tools.

9. **Shunk R, Dulay M, Julian K, Cornett P, Kohlwes J, Tarter L, Hollander H, O’Brien B, O’Sullivan P. Using the American Board of Internal Medicine practice improvement modules to teach internal medicine residents practice improvement. J Grad Med Educ. 2010;2:90-95.**
BACKGROUND: Although residency programs must prepare physicians who can analyze and improve their practice, practice improvement (PI) is new for many faculty preceptors. We describe the pilot of a PI curriculum incorporating a practice improvement module (PIM) from the American Board of Internal Medicine for residents and their faculty preceptors. METHODS: Residents attended PI didactics and completed a PIM during continuity clinic and outpatient months working in groups under committed faculty. RESULTS: All residents participated in PI group projects. Residents agreed or strongly agreed that the projects and the curriculum benefited their learning and patient care. A self-assessment revealed significant improvement in PI competencies, but residents were just reaching a ‘‘somewhat confident’’ level. CONCLUSION: A PI curriculum incorporating PIMs is an effective way to teach PI to both residents and faculty preceptors. We recommend the team approach and use of the PIM tutorial approach especially for faculty.

10. **Hess BJ, Lynn LA, Holmboe ES, Lipner RS. Toward better care coordination through improved communication with referring physicians. Acad Med. 2009;84(10 Suppl):S109-12.**
Good communication is vital for effective care coordination. Previous research has shown that physicians can provide valid and reliable assessment of their peers. This study determined the value of the Communication with Referring Physicians Practice Improvement Module (CRP-PIM) designed to help consultants measure and improve the quality of communication with physicians that refer patients to them. The CRP-PIM required each consultant to complete a practice system survey and to invite at least ten referring physicians to complete a survey about specific communication processes from the consultant’s practice. An interactive performance report was provided to help consultants select targets for improvement. In total, 803 internists and subspecialists completed the CRP-PIM. Consultants received data from a mean of 15.21 referring physicians (SD = 5.78); surveys were received from a total of 12,212 referring physicians. Ratings were obtained from 13 items using a six-point Likert scale. Mean overall rating for consultants was high, at 5.53 (SD 0.23, range 2.46 to 5.95). Generalizability coefficient for the ratings was .78. Factor analysis supported two distinct categories of ratings. The lowest rated consultants as a group had distinct qualities. In conclusion, the CRP-PIM allows consultants to apply quality measurement in their practices to improve their communication with referring physicians and ultimately help them achieve better care coordination.

11. **Lynn LA, Hess BJ, Conforti LN, Lipner RS, Holmboe ES. The effect of residency clinic systems on the quality of care for older adults in internal and family medicine residency programs. Acad Med. 2009;84:1732-40.**
The United States healthcare system is not prepared to meet the needs of the increasing population of older adults. Few physicians become geriatricians; most will care for older adults and need to understand their healthcare needs. Using the American Board of Internal Medicine (ABIM) Care of the Vulnerable Elderly (CoVE) Practice Improvement Module (PIM), we studied the level of care provided to older adults in 52 internal medicine and family medicine residency clinic sites, the characteristics of the practice systems in those clinics, and the relationship between specific elements of the practice systems and processes of care important to older adults, and compared the results in these clinics with care provided by 144 practicing physicians electing to complete the CoVE PIM as part of maintaining ABIM certification. Patients seen by residents were younger and had fewer chronic conditions. They were less likely to receive recommended geriatric-specific and other services. The residency clinic systems were less likely to have elements designed to support these services, and even when present, there was little correlation between the system and the delivery of specified services. Among practicing physicians, there remained much room for improvement, although system elements were more likely to function well and to be correlated with higher performance on delivery of key processes of care. Much remains to be learned about the interactions between systems of care and the users of those systems.

12. **Caverzagie KJ, Bernabeo EC, Reddy SG, Holmboe ES. The role of physician engagement on the impact of the hospital-based practice improvement module (PIM). J Hosp Med. 2009;4:466-70.**
Physicians play an important role in hospital quality improvement (QI) activities. The Hospital-Based Practice Improvement Module (Hospital PIM) is a web-based assessment tool designed by the American Board of Internal Medicine to facilitate physician involvement in QI as a part of maintaining certification. The objective of this study was to explore the impact of the Hospital PIM on physicians participating in hospital-based quality improvement. A second objective is to explore the role of physician engagement on the impact of the Hospital PIM. The methodological design was a qualitative study using grounded theory among 23 early completers of the hospital PIM. Physician completers of the Hospital PIM described the impact in a variety of ways including new learning about QI principles and activities, added value to their practice, and enhanced QI experience. An emerging theme was the mediating role of physician engagement in learning about QI activities and overall impact of the Hospital PIM. Facilitators and barriers that influence the overall experience of the PIM are described. The impact of completing the Hospital PIM is described as increased awareness of hospital QI activities and learning about standard QI procedures. This impact is mediated by the degree of physician engagement with the QI process.

13. **Bernabeo EC, Conforti LN, Holmboe ES. The impact of a preventive cardiology quality improvement intervention on residents and clinics: a qualitative exploration. Am J Med Qual. 2009;24:99-107.**
This study explored the impact of the Preventive Cardiology Practice Improvement Module (PC- PIM) on residency clinics. Results from 22 clinic interviews indicated merit in using the PC-PIM to teach QI in residency. Many residents reported increased knowledge and confidence, particularly around the value of QI. Importantly, the majority recognized that QI often leads to improved patient care and outcomes, even in resource poor environments. Conducting aspects of the QI process themselves (e.g. the chart audit, decision making) led to greater awareness of the patient and systems perspectives. Barriers included a lack of resident buy-in, discontinuity of care, and a lack of institutional support. These findings shed light on how residency clinics engage in QI activities, and may aid in the implementation of future QI initiatives in residency more generally.

14. **Oyler J, Vinci L, Aurora V, Johnson J. Teaching internal medicine residents quality improvement techniques using the ABIM's practice improvement modules. J Gen Intern Med. 2008;23:927-30.**
This study describes how the University of Chicago internal medicine program used the Clinical Preventive Services PIM in the residency's quality improvement and assessment curriculum (QIAC). The PIM lead to three quality improvement projects in the ambulatory clinic: improving measurement and documentation of body mass index, smoking cessation counseling and accuracy of medication lists. Each project led to improvements in patient care; from baseline to follow-up re-measurement, BMI measurement improved from 4% to 79%; smoking cessation counseling improved from 41% to 67%; and inaccuracies in medication lists fell from 25% to 9%. They study also found increases in resident confidence in using a plan-do-study-act cycle to improve quality.

15. **Mladenovic J, Shea JA, Duffy FD, Holmboe ES, Lipner RS. Variation in residency clinic experiences: the practicum pilot study of practice-based learning and improvement and systems-based practice. J Gen Intern Med. 2008;23:914-20.**
The three aims of this study were to 1) assess the quality of preventive cardiology care; 2) characterize the practice-based systems that currently exist in internal medicine residency training programs; and 3) examine the relationships between quality, practice-based systems and features of fifteen residency training programs (23 clinic sites) as part of an observational study. Chart abstraction of 4,783 patients showed substantial variability across sites. On average, 25.8% of patients (range 4.2% to 45.1%) showed evidence of cardiovascular disease and 25% had at least one important barrier of

care. Patients received an average of 57.4% (range 29.9-76.8%) of the appropriate interventions. Sites with an EMR showed better overall information management (81% versus 27%) as well as better modes of communication (79% versus 43%). We found substantial heterogeneity among the training sites exists. Because clinics are educational venues, institutions must insist upon high functioning training environments and compliance with evidence-based guidelines to continuously improve patient outcomes.

16. **Holmboe ES, Lynn L, Duffy FD. Improving the quality of care via maintenance of certification and the Web: an early status report. Perspect Biol Med. 2008;51:71-83.**
Few question the need for continuous professional development throughout a physician's career, but rapid changes in healthcare is creating demand for physicians to acquire new knowledge, skills and attitudes to implement quality improvement in clinical practice. The Internet and World Wide Web are technologies that have the potential to facilitate deep change in physician practice and lifelong learning. The primary objective of this paper was to describe how the American Board of Internal Medicine (ABIM) has utilized the Web and Internet to engage physicians in the competencies of practice-based learning and improvement and systems-based practice. This paper specifically described how the ABIM developed and implemented Web-based practice improvement modules (PIMs) to help physicians measure and improve their clinical practice.

17. **Duffy FD, Lynn LA, Didura H, Hess B, Caverzagie K, Grosso L, Lipner RA, Holmboe ES. Self assessment of practice performance: development of the ABIM practice improvement module (PIM). J Cont Ed Health Prof. 2008;28:39-46.**
This article describes the evolution of the PIM to a Web-based tool and also provides data on the early experience with the preventive cardiology PIM among 179 cardiologists and general internists. The mean rate for systolic blood pressure control was 48%, for diastolic blood pressure 84%, and for LDL cholesterol at goal 65%. 61% of patients rated the quality of care as excellent and 58% rated the practices excellent at encouraging questions and answering them clearly. More than 85% of patients reported "no problem" obtaining a prescription refill, scheduling an appointment, reaching someone in the practice with a question or obtaining lab results. Targets for improvement were increasing the rates for LDL cholesterol or systolic blood pressure at goal, improving patients' physical activity, patient education, and accuracy of risk assessment. Improvement strategies included implementing chart forms, patient education, or care management processes.

18. **Simpkins J, Divine G, Wang M, Holmboe ES, Pladevall M, Williams LK. Improving asthma care through recertification: a cluster randomized trial. Arch Intern Med. 2007;167:2240-48.**
This study was a clustered randomized controlled trial using the asthma PIM on a CD-based platform. Eight practices (19 internists) were randomized to the intervention group and 8 practices (21 internists) to the control group. The primary outcome, ICS fill rates, was not significantly different between patients seen by intervention group physicians when compared with patients seen by control group physicians in the post-intervention period. Patients seen for asthma by intervention group physicians were less likely to receive a written action plan (AOR,0.67; 95% CI,0.48-0.93); however, they were more likely to discuss potential asthma triggers (AOR,1.62; 95% CI,1.08-2.42) and had lower self-reported asthma severity measures (unadjusted P-value 0.031) when compared with patients seen by control group physicians. The diplomates in the intervention group had difficulty with the CD technology.

19. **Lipner RS, Weng W, Arnold GK, Duffy FD, Lynn LA, Holmboe ES. A three-part model for measuring diabetes care in physician practice. Acad Med. 2007;82(10 Suppl):S48-52.**
This study used the experience of the first 626 physicians to complete the diabetes PIM to investigate the reliability of the three components of the module (medical record audit; patient survey and systems survey) and to compare reliabilities of composite measures compared to individual measures. The analysis demonstrated composite measures were more reliable and required a smaller sample size. Meaningful associations were also found between composites.

20. **Holmboe ES, Meehan TP, Lynn L, Doyle P, Sherwin T, Duffy FD. Promoting physicians' self-assessment and quality improvement: the ABIM diabetes practice improvement module. J Cont Ed Health Prof. 2006;26:109-119.**
This was one of the first studies of the practice improvement module, using both quantitative and qualitative methods, to examining feasibility and satisfaction with 16 practicing physicians. All the physicians found the data from the PIM to be valuable, and the PIM process often created an "aha" moment where the physicians discovered gaps in performance they did not expect or believed was not a problem before performing the audit. The patient survey also provided valuable data about the practice's quality in communication, with a number of physicians targeting their quality improvement plan based on the patient survey data.

OTHER ASSESSMENT PRODUCTS

ABIM has developed the Point-of-Care Clinical Question Module in which physicians can generate patient questions particular to their practice, answer their clinical questions delivered at the point of care, and find more efficient ways to get answers to their clinical questions.

Green ML, Reddy SG, Holmboe E. Teaching and evaluating point of care learning with an Internet-based clinical question portfolio. J Cont Educ Health Prof. 2009;29:209-19.

INTRODUCTION: Diplomates in the American Board of Internal Medicine (ABIM) Maintenance of Certification (MOC) program satisfy the self-evaluation of medical knowledge requirement by completing open-book multiple-choice exams. However, this method remains unlikely to affect practice change and often covers content areas not relevant to diplomates' practices. We developed and evaluated an Internet-based point of care (POC) learning portfolio to serve as an alternative. METHODS: Participants enter information about their clinical questions, including characteristics, information pursuit, application, and practice change. After documenting 20 questions, they reflect upon a summary report and write commitment-to-change statements about their learning strategies. They can link to help screens and medical information resources. We report on the beta test evaluation of the module, completed by 23 internists and 4 internal medicine residents. RESULTS: Participants found the instructions clear and navigated the module without difficulty. The majority preferred the POC portfolio to multiple-choice examinations, citing greater relevance to their practice, guidance in expanding their palette of information resources, opportunity to reflect on their learning needs, and "credit" for self-directed learning related to their patients. Participants entered a total of 543 clinical questions, of which 250 (46%) resulted in a planned practice change. After completing the module, 14 of 27 (52%) participants committed to at least 1 change in their POC learning strategies. DISCUSSION: Internists found the portfolio valuable, preferred it to multiple-choice examinations, often changed their practice after pursuing clinical questions, and productively reflected on their learning strategies. The ABIM will offer this portfolio as an elective option in MOC.

ABSTRACTS PRESENTED AT RESEARCH MEETINGS:

1. Hess BJ, Johnston M, Iobst W, Lipner RS. Improving the quality of clinical care through practice-based learning and improvement. American Educational Research Association Annual Meeting, April 2011.
2. Bernabeo EC, Caverzagie K, Hood SC, Iobst WF, Holmboe ES. View from the top: leadership perspectives on the use of practice improvement modules (PIMs) in residency programs. Asian Pacific Medical Education Conference, January 2011.
3. Park J, Lipner RS. To what extent is there a hidden system of primary care provided by subspecialists? AcademyHealth Annual Research Meeting, June 2010.
4. Gray B, Weng W, Lipner RS, Schuetz A, Peskin B, Rosner B. Linking interventions to outcomes among U.S. diabetics using the archimedes model. AcademyHealth Annual Research Meeting, June 2010.
5. Hess BJ, Weng W, Lynn LA, Holmboe ES, Lipner RS. Setting a fair performance standard for competent care of hypertensive patients. 14th Ottawa Conference, May 2010.
6. Hess BJ, Lipner RS, Weng W. Association between physician cognitive skills and performance in clinical practice. American Educational Research Association Meeting, May 2010.
7. Sares TA, Song H, Bolen MJ, Lipner RS. Assessing non-practicing physicians' quality improvement knowledge and practice. American Educational Research Association Meeting, May 2010.
8. Reddy S and Holmboe ES. A Web-based tool to improve faculty assessment of trainees' clinical competency and quality of patient care. 14th Ottawa Conference, May 2010.
9. Arnold GK, Park J, Lynn LA, Hess BJ, Holmboe ES, Lipner RS. Physician use of CAHPS® to evaluate and improve the quality of patient communication. 12th CAHPS and 2nd SOPS Users Group Meeting, April 2010.
10. Hess BJ, Lynn LA, Lipner RS, Holmboe ES. The value of practice-based learning and improvement to physician performance in procedure-based care. American Association of Medical Colleges Conference, November 2009.
11. Lynn LA, Hess BJ, Conforti LN, Lipner RS, Holmboe ES. The elders speak: what older patients could tell their physicians in training about their health needs. Association of Medical Education in Europe Conference, September 2009.
12. Holmboe ES, Conforti LN, Lynn LA, Hess BJ. Improving falls-risk screening for older patients in residency outpatient clinics. Association of Medical Education in Europe Conference, September 2009.
13. Hess BJ, Lynn LA, Conforti LN, Lipner RS, Holmboe ES. Older patients' experiences of care in resident and practicing physician outpatient clinics. Association of Medical Education in Europe Conference, September 2009.

14. Weng W, Arnold GK, Lynn LA, Lipner RS. Estimating reliability and decision consistency of physician practice performance assessment. AcademyHealth Annual Research Meeting, June 2009.

15. Lipner RS, Hess BJ, Arnold GK, Weng W. Physician performance assessment: setting a credible standard. AcademyHealth Annual Research Meeting, June 2009.

16. Gray B, Weng W. Blood pressure control and the patient centered medical home — what can we learn from patients? AcademyHealth Annual Research Meeting, June 2009.

17. Hess BJ, Weng W, Lipner RS. A methodology for setting performance standards for physicians in clinical practice. American Educational Research Association Conference, April 2009.

18. Lipner RS. Medical simulation assessment: design & implementation in a certification program. Association of Test Publishers, February 2009.

19. Hess BJ, Lynn LA, Lipner RS, Holmboe ES. The ah-ha moment: does self-assessment and implementation of quality improvement by physicians improve the care of patients with hypertension? Society for General Internal Medicine, 2009.

20. Conforti L, Ross K, Hess BJ, Lynn LA, and Holmboe ES. Length of time needed for institutional review board approval or exemption of quality improvement projects among subset of US training programs. Academy for Healthcare Improvement Scientific Symposium, December 2008.

21. Cheren M, Rentfro A, Pilous BS, Sares T, Lipner RS, Harris J, Headrick L. Are coaching, application & requirements (CAR) critical in support of on line learning in quality management? Fourteenth Annual International Scientific Symposium on Improving the Quality and Value of Health Care, December 2008.

22. Weng W, Arnold GK, Holmboe ES, Lipner RS. Comparison of physician rankings on performance quality composites in the care of hypertensive patients. AcademyHealth Annual Research Meeting, June 2008.

23. Caverzagie K, Bernabeo E, Reddy S, Holmboe ES. A qualitative exploration of the impact of completing the ABIM hospital-based practice improvement module (PIM). Society of Hospital Medicine, April 2008.

24. Caverzagie K, Reddy S, Bernabeo E, Holmboe ES. The ABIM hospital-based practice improvement module (PIM): who are the completers and what have we learned? Society of Hospital Medicine, April 2008.

25. Holmboe ES, Weng W, Arnold GK, Hood S, Lipner RS. Measuring physician performance comprehensively: results from the comprehensive care project. Society of General Internal Medicine, April 2008.

26. Nadkarni M, Bates C, Fosburgh B, Holmboe ES. The resident continuity clinic experience: a national survey. Society of General Internal Medicine, April 2008.

27. Conforti LN, Holmboe ES, Hess BJ. Using a Web-based tool to improve geriatric care in residency. Poster presented (by Eric Holmboe) at the 13th Ottawa International Conference on Clinical Competence, Melbourne, Australia. March 2008.

28. Hess B, Conforti L, Holmboe ES. Evaluating practice-based improvement training: an instrument measuring residents' attitude and confidence using quality improvement methods. Ottawa International Medical Education Meeting, 2008.

29. Hess BJ, Holmboe ES, Conforti LN, Lipner, RS. A multidimensional assessment of residents' confidence in applying quality improvement methods. Poster for RIME AAMC conference, 2008.

30. Hess BJ, Holmboe ES, Lipner RS, Lynn LA, Duffy FD. A structured assessment of physicians' ability to apply quality improvement methods. Short communication for AMEE conference, Prague, 2008.

31. Holmboe ES, Conforti LN, Hess BJ, Hood S, Lynn LA. Teaching quality improvement, systems and practice-based learning: successful examples from training programs. AMEE conference, Prague, 2008.

32. Lipner RS, Weng W, Arnold GK, Duffy FD, Holmboe ES. Feasibility of measuring quality of patient care in comprehensive care practices in the United States. Ottawa International Medical Education Meeting, 2008.

33. Lipner RS, Weng W, Arnold GK, Duffy FD, Holmboe ES. Do more idealized practice systems produce better quality patient care? Ottawa International Medical Education Meeting, 2008.

34. Lynn LA, Conforti LN, Hess BJ, Arnold GK, Weng W, Lipner RS, Holmboe ES. A comparison of the quality of care for elderly patients by practicing physicians and in internal or family medicine residency programs in the United States. Short communication for AMEE conference, Prague, 2008.

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