Enhancing Effective, Safe Chronic Pain Management in PCMH-Recognized and ACO-Participating Primary Care Practices: A Kentucky ACP Chapter Quality Network Initiative

A Proposal from Kentucky-ACP, ACP, and the Bloomberg School of Public Health

Table of Contents

Enhancing Effective, Safe Chronic Pain Management in PCMH-Recognized and ACO-Participating Primary Care Practices: A Kentucky ACP Chapter Quality Network Initiative

Overall Goals and Objectives: The primary goal of this proposed initiative is to implement and disseminate an effective practice improvement program that enhances safe, evidence-based chronic pain recognition and treatment among primary care providers (PCPs) in the state of Kentucky who are involved in the Patient Centered Medical Home (PCMH) recognition process. Specific objectives include:

- Recruitment of general internal medicine PCPs in the PCMH recognition process and part of an ACO in the state of Kentucky;
- Enhancement of patient-centered, safe, and evidence-based screening, diagnosis, treatment, and referral of patients with chronic pain through implementation of a QI program;
- Evaluation of the intervention's impact on provider attitudes, knowledge, and practice as well as performance measure improvement; and
- Dissemination of best practices throughout Kentucky and nationwide through ACP's national QI Network.

Each of the objectives meet key needs laid out in the RFP and described in the next section of the proposal, namely: the importance of PCPs in chronic pain management; the pronounced need for effective and safe pain management in Kentucky; lagging implementation of PCMH-based approaches to chronic pain identification, treatment, referral, and abuse; and state- and nation-wide need for implementation of practices shown to effectively improve chronic pain care and outcomes. In addition, the progression through meeting each objective matches ACP's QI Network model, which engages participants, implements a program in selected sites, evaluates the impact of the program and disseminates an enhanced initiative more broadly, as shown in figure 1.

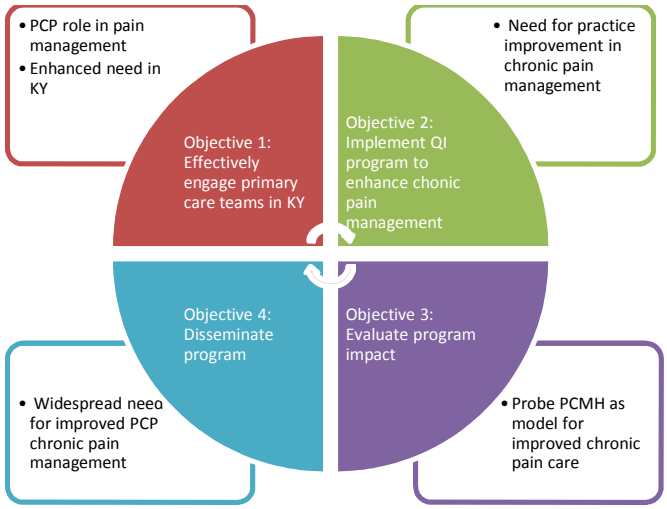

Figure 1. QI Cycle Linked to Elements of Needs Assessment

Technical Approach: In the sections below, we describe how the proposed program addresses the RFPs stated goals as well as the extant needs in the program target population and audience. Finally, we describe the intervention and evaluation design.

Current Assessment of Need in Target Area: The specific area of interest spelled out in the RFP is the "intent to support programs that demonstrate utilization of patient reported, process, or clinical outcome measures in the management of patients with chronic pain who are patients of primary care practices which are beginning, or have completed, PCMH recognition." This interest derives from the widespread nature of chronic pain; its inadequate treatment; the personal as well as economic toll nationwide; and the recognized promise of the chronic care model incorporated in the PCMH. Below, we summarize specific, relevant aspects of need, highlighting data from both Kentucky and ACP programs relevant to this is proposed initiative.

Chronic Pain in the U.S. and Kentucky

Approximately 116 million Americans have chronic pain, accounting for up to 20% of all outpatient visits and costing over $600 billion dollars per year in direct medical treatment and lost productivity costs (see appendix 1 for bibliography).

Chronic pain is associated with many common medical conditions, such as behavioral disorders, headache, fibromyalgia, lower back pain, and arthritis. In fact, arthritis is the most common painful condition with nearly 20% of patients experiencing substantial daily pain (see Figure 2). Arthritis is the most common cause of disability among U.S. adults and is particularly common among persons with multiple chronic conditions. The cost of arthritis in terms of disability and pain are quite high (Table 1). For example, in 2011, the percentage of adults with disabilities who had arthritis was 53.7%, and the percentage of adults without disabilities who had arthritis was 19.3%.

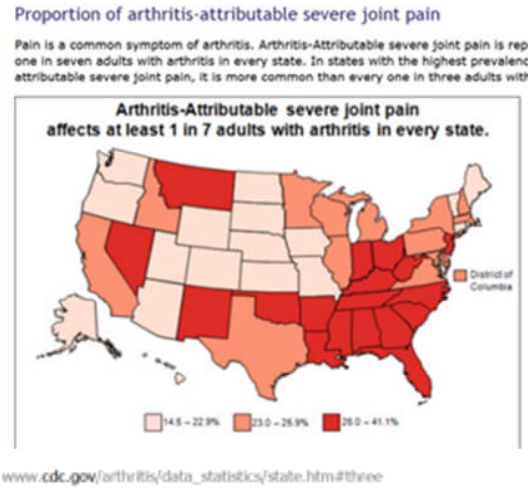

Figure 2 – Arthritis-Attributable Severe Joint Pain in U.S.

Indicator (year)	Adults with disabilities	Adults without disabilities	Disparity	p
Ever had arthritis (2011)	53.7%	19.3%	34.4	
Joint pain due to arthritis in the past 30 days (2011)	49.2%	19.5%	29.7	
Social activity limitation due to arthritis in the past 30 days (2011)	44.1%	10.5%	33.6	
Work limitation due to arthritis (2011)	67.9%	28.0%	39.9	
Currently have asthma (2011)	20.6%	5.8%	14.8	
Ever had asthma (2011)	25.1%	10.4%	14.7	
Ever had cancer (excluding skin cancer) (2011)	9.9%	5.3%	4.6	
Ever had prostate cancer (2010)	2.8%	4.5%	-1.7	
Ever had skin cancer (2011)	7.1%	5.7%	1.4	
Have chronic obstructive pulmonary disease (COPD) (2011)	19.7%	4.3%	15.3	
Have diabetes (2011)	16.8%	6.7%	10.1	
Have kidney disease (2011)	4.1%	1.2%	2.9	

http://dhds.cdc.gov/profiles/profile?profileId=4&geoTypeId=1&geoIds=21

Table 1 – Chronic Conditions and Disability

Painful and disabling conditions are even more prevalent in Kentucky. In 2011, 30.2% of adults in Kentucky reported having a disability, compared with 24.4% in the United States and Territories. People in Kentucky experience more heart disease, obesity, depression, COPD, and arthritis than in the U.S. overall. As of 2009, Kentucky has the highest arthritis prevalence rates in the nation, based on the BRFSS:

- 36% of Kentucky's adults have doctor-diagnosed arthritis;
- 38% percent of women in Kentucky have arthritis;
- 33% of men have arthritis;
- 47% of Kentuckians in the 45-64 year age range report diagnosed arthritis;
- 61% of those 75 years and older report diagnosed arthritis.

Prescription drug abuse, especially opioid analgesics and tranquilizers, is another factor requiring improved chronic pain management, especially in Kentucky. Kentucky drug overdose mortality has risen from 2.3/100,000 in 1979 to 23.6 in 2010, the third highest in the nation. In fact, Kentucky has higher rates of past-year illicit use of opioid analgesics than the US for all age groups. Key measures of prescription drug abuse showed the largest increases in emergency department visits, substance abuse treatment admissions, and unintentional overdose deaths.

This issue is of keen importance to older patients. Persons aged 65 years and older comprise only 13% of the population, yet account for more than one third of total outpatient spending on prescription drugs in the United States. Older patients often are being treated for comorbid illnesses and are more likely to be prescribed long-term and multiple prescriptions, including opioid medications for pain, as 2011 Medicare data show. The elderly also are susceptible to age-related changes in drug metabolism and potential drug interactions and also use OTC medicines and dietary supplements, which (in addition to alcohol) could compound any adverse health consequences resulting from prescription drug abuse. As a result of the above, the National Institute on Drug Abuse notes that prescription drug abuse may therefore be more dangerous in the elderly than in younger populations. And although national data indicate the highest rates of prescription drug abuse among persons under 25 years old, there are disproportionately higher rates of death from prescription drug abuse in rural areas and in older populations.

A policy paper soon to be published by the ACP concludes that a key solution to the chronic pain management problem is a broader therapeutic toolkit for PCPs that starts with strong patient–physician relationships and supportive systems of care, the target audience of this intervention—internal medicine practices implementing the patient-centered medical home model.

Primary Care and Chronic Pain Management

Chronic pain is abundantly present in the primary care setting. In a typical month, at least 52% of all chronic pain patients in the US obtain care from PCPs, with only 5% of patients ever receiving consultation from a pain specialist, due in part to the paucity of pain specialists (there are only 6 board certified pain physicians per 100,000 adult patients with chronic pain). PCPs, including internal (IM) and general medicine physicians (GP), family medicine physicians (FM),

osteopathic physicians (DO), and NPs and PAs, comprise the largest group of ER/LA opioid prescribers for a total of 54%.

Yet PCPs generally lack appropriate training in acute or chronic pain management. A recent analysis of pain curricula in US medical schools found that only 3.8% (4 medical schools out of 104 reporting) have a required pain course. Several recent surveys show the lack of training. For example, in a survey by O'Rorke and colleagues of community and university-based PCPs in IM, family practice, and IM residency programs in which 572 physicians completed an 84-item questionnaire, 24% to 32% of the respondents reported receiving "limited" education in pain management during medical school, residency, and thereafter; 45% to 55% received "in depth" education, while about 20% received no education in pain management whatsoever during their training. In another survey of 216 physicians in Wisconsin, 25% of the respondents reported having no formal pain management training whatsoever during medical school, residency, or postgraduate training, while only one half (51%) reported having pain management training through all the stages of medical training.

A practice improvement approach to chronic pain management built on the chronic care and PCMH models may be especially helpful in redressing training gaps. Leading pain treatment guidelines prescribe such approaches. The Institute of Medicine's 2011 blueprint for "Relieving Pain in America," harkens to central PCMH building blocks—with team-based care and shared decision-making—as does the Mayday Fund Special Committee on Pain and the Practice of Medicine's number one recommendation: "every American who suffers from chronic pain should have 24/7 access to a well-trained primary care provider who can offer – and coordinate – pain care that is high-quality, equitable, and cost-effective." This is similar to a "strong" recommendation made by the American Pain Society (APS) and American Academy of Pain Medicine (AAPM) Opioids Guidelines Panel – "patients on chronic opioid therapy (COT) should identify a clinician who accepts primary responsibility for their overall medical care. This clinician may or may not prescribe COT, but should coordinate consultation and communication among all clinicians involved in the patient's care."

Specific tools, which can be implemented in PDSA cycles as planned in this initiative, also can improve chronic pain management in the primary care setting. The ACP Practice Advisor (formerly Medical Home Builder) has two relevant modules: Chronic Pain Management and Opioid Risk Management. Within these resources, participants will be able to find and implement tools for pain screening, ongoing pain assessment, risk assessment tools for initiating chronic opioid treatment, urine drug test protocols, depression and substance abuse screening tools, patient education resources, self-management support, and policies and procedures documents for team-based management and creation of a referral network, including to pain specialists, behavioral healthcare and substance abuse treatment specialists, and others. It should be noted that these resources are relevant to patient populations with limited health literacy, as is the case in Kentucky. Also, they are the very kind of resources that are recommended by evidence-based guidelines, such as those issued by APS and AAPM.

Data show that such resources and tools noted above are not widely implemented. For example, surveys of PCPs indicate that more than half of these clinicians never use written screening tools to assess for risk of substance abuse, misuse or addiction before initiating chronic opioid therapy (COT). Results from current participants in the ACP Practice Advisor Chronic Pain Management module, from 28 practices and 200 clinicians, show an overall practice biopsy score of 69%, compared to 75% overall (details on this measure are described in the next section). Scores for 10 of the 35 questions under 65% are listed in table 2. Similar data from the Opioid Risk Management module are provided in table 3.

Table 2: Average Practice Biopsy Results from the Chronic Pain Management Module

#	Question	Average
1	Our practice has identified a pain management "practice champion" (a person in the practice that gains expertise and facilitates better ways of providing care).	61%
2	Our practice's pain management champion has up-to-date knowledge and skills about chronic pain management	64%
3	Our practice's pain management champion has set up a system for other providers to consult about chronic pain management matters.	54%
4	Our practice has educational resources for practice clinical and administrative staff to become competent in chronic pain management.	58%
8	Our practice has all patients self-administer standardized chronic pain assessment questionnaires that can be reviewed by the clinician.	52%
9	Our practice has an office policy that details how to screen patients for depression and appropriately caring for those who are diagnosed.	62%
14	Pill counts are incorporated into the medication review prior to or during an office visit for patients on controlled substances for chronic pain.	51%
18	Our practice writes for 28- rather than 30-day supplies of controlled substances.	48%
21	Documentation includes a new assessment at each visit with a plan to address suboptimal pain relief or excessive risk or harm.	65%
31	Our practice has established relationships with specialists when needed for consultation such as with clinical pathologists / toxicologists (for guidance in interpreting unexpected urine toxicology results).	62%

Table 3: Average Practice Biopsy Results from the Opioid Risk Management Module

#	Question	Average
8	Our practice provides patients with self-administered standardized opioid misuse assessment questionnaires that are reviewed by the clinical team.	43%
10	Our patients on opioids for chronic pain are assessed for safety utilizing pill counts and reviews of prescription history via pharmacy data bases (i.e., state prescription drug monitoring program).	62%
14	As a prescriber, I am aware of the Federal regulations related to prescribing scheduled medications.	64%
19	As a prescriber, I am aware that there is little evidence to guide rotating from one opioid to another as far as efficacy and when doing so, incomplete cross-tolerance should be taken into account.	60%
20	As a prescriber, I am aware that transdermal fentanyl should not be prescribed to patients who are opioid naïve.	64%
21	As a prescriber, I am aware that extended release opioids can be many times stronger than immediate release should not be used in patients who are opioid naïve.	64%
23	As a prescriber, I am aware that there may be several different long-acting preparations of the same drug, each with specific prescribing parameters that I should be aware of.	64%

Other factors strongly suggest that this project will realize significant improvements in care for chronic pain patients, reaching an estimated 25% improvement in overall practice biopsy

results. First, Kentucky has made better chronic pain and safe opioid therapy management a priority, realizing a small decrease in overdoses in the last year. Kentucky policies include: a mandatory prescriptive drug monitoring program, doctor shopping laws, expansion of substance abuse treatment coverage under Medicaid, provider education requirement, use of naloxone, physical exam requirement before prescribing, ID requirements with prescription fulfillment, and lock-in programs. These environmental supports will contribute to the practice change pursued in this project. In fact all of the conditions will be met in this project, including: valid, relevant, accepted evidence; knowledge and skill of the target audience; implementation gap etiology; evidence of quality/implementation gaps; requisite logistics, resources; external expectations, pressure; supportive professional norms; and, facilitation, technical assistance, planning.

The target audience for this program begins with the participating practices in the Quality Independent Physicians Accountable Care Organization (QIP ACO) and other PCMH practices recruited through the Kentucky ACP, including 5-10 practices. Among QIP ACO PCMH practices, there is an average of 5-6 physicians per practice (and additional practice staff). Data show that nearly 7300 patients were seen on average by each practice with 2000 patients per practice on a controlled substance over the last 3 years. These clinicians and patients will realize the benefit of the project outcomes. Dissemination of the results and program to ACP members across the state of Kentucky and national audience of ACP's QI Network, along with their patients, will be secondary beneficiaries. Currently, Kentucky-ACP has 1300 members; 150 practices are represented in the ACP QI Network presently. Materials disseminated to the ACP overall membership will reach 139,000.

Intervention Design and Methods: As noted above, the model for this practice improvement initiative derives from ACP's quality network approach (figure 3). Local leaders and experts refine

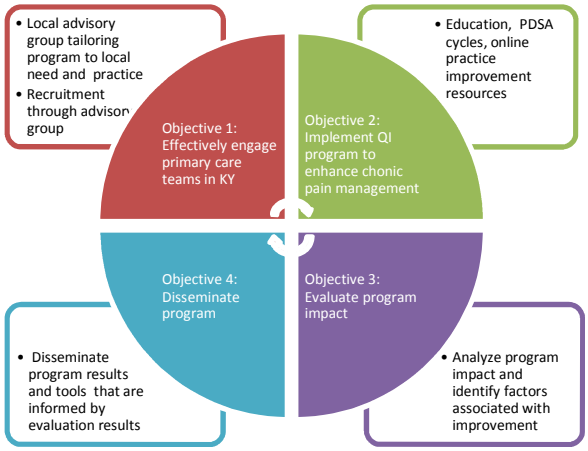

Figure 3. QI Cycle Linked to Intervention Elements

and tailor the program's design and content so as to match the culture of practice and population needs as well as recruiting participants. The program, with its varied and multiple interventions—shown as essential in changing practice—is then implemented. Strong evaluation assures formative and summative assessment that improves the program and

informs its dissemination, the last part of the cycle. More details about these components are discussed below.

Advisory group: The initiative will commence with a one-day meeting of an advisory group in Kentucky. The project lead, Dr. Hood, will identify at least two physician champions and two nurse practitioners or other allied health care providers in Kentucky who will take part in the program, along with national ACP QI leadership and the lead evaluator from the Bloomberg School of Public Health. As noted, the group will review overall program design, from practice recruitment and assessment, educational content, live program planning, QI PDSA cycle options with coaching strategies, and evaluation, assuring applicability in the Kentucky PCP environment. The advisory group will meet by teleconference at least two additional times, to discuss the roll out of the initiative, review the evaluation results, and discuss dissemination plans.

The local health care leaders on the advisory group will play an important role in practice recruitment. Electronic invitations and notices in web- and print-media will be developed and disseminated by QIP ACO and the Kentucky ACP chapter, soliciting practices that are in the PCMH recognition process. A lead physician and allied health care professional will self-nominate from each practice, completing a registration form with details concerning the practice (e.g., staffing and ownership model, level of PCMH recognition, EHR system, patient panel, currently used chronic pain management tools and measures) and the core ACP Practice Advisor practice biopsy questions based on the key attributes of the PCMH (providing an independent source of information concerning the general PCMH features embodied in the practice) and from the chronic pain modules (see appendix 2). The co-leads from each practice will continue to serve an important role as source of data and the QI-program champions.

Interventions: Elements of the interventions are described below.
Educational programs: Two types of educational programs will be implemented at the launch of this initiative, the first of which is described here. Practice champions will participate in a live, day-long program that will provide educational content concerning chronic pain assessment and safe, evidence-based treatment; discussion of current approaches utilized by the practices and their baseline data; options for improving care; and strategies for implementing the programs in their practices including their colleagues. Chronic pain management along with PCMH and QI experts will lead this program. While the burden of participating as a champion of the project is considerable—providing data, day-long learning program, ongoing leadership in QI activities, registration fee to cover the costs of meals—our experience shows that such engagement insures strong commitment to the effort. The co-leads will be recognized in ACP's national QI network reception in 2015 and be invited to author/co-author presentations and publications concerning their work.
QI Interventions. The QI interventions will be built from the ACP Practice Advisor and strategy developed by the co-leads/practice champions. The steps include:
o Practice biopsies: All members of the practice will be invited to complete the Chronic Pain Module and Opioid Risk Management practice biopsies; ACP national staff will provide each practice a report of their practice's results, highlighting any variance in the replies.

o Provider survey: As part of the program evaluation, a provider survey will be developed and administered by the co-leads to all members of the practice. The survey will assess attitudes, knowledge, and barriers. The survey will be developed by our evaluation partners at the Johns Hopkins University Bloomberg School of Public Health.

o Launch educational program: As the launch educational program for the practice, the co-leads/practice champions will plan a brown bag lunch at which they will: present the biopsy and survey results for the practice; discuss information concerning evidence-based, safe chronic pain management (which is selected in part by looking at survey and biopsy results), and lead a discussion concerning strategies for practice improvement in their practice. National ACP will support the co-leads by training them to conduct such a session at the practice champion one-day program; in addition, ACP staff will provide core content for their use and tally survey and biopsy results.

o PDSA cycles: The practice will engage in at least 2 PDSA cycles targeting the agreed upon approaches by the staff and co-leads. The co-leads will manage the activities, providing QI materials as appropriate (e.g., screening tools, patient education tools) and creating and distributing run charts for the staff to understand their progress. Many tools are available on the ACP Practice Advisor for screening, assessment, risk management and patient education, some of which are named below (a full description of interventions are provided in appendix 3). The advisory group to the project as well as the practice leads and whole team also may identify or develop QI tools for use in PDSA cycles.

Table 4: Chronic Pain Management QI Tools on ACP Practice Advisor

Initial Pain Assessment Tool	Chronic Opioid Therapy Worksheet
Brief Pain Inventory	Modified Morisky Tool (for monitoring adherence)
Joint Pain Check List	Multi-modal Treatment Tool (Patient education tool)
Depression Screening and Management Policies and Procedures	Medication Safety Reminder (Patient education tool)
Drug and Alcohol Use Screening Tools	Controlled Substance Safety Assessment
Chronic Pain Policies and Procedures Worksheet	Patient Agreement for Opioid Maintenance Therapy for Non-Cancer/ Cancer Pain
Established Patient Visit Form	Controlled Substance Patient-Provider Agreement
Numeric Pain Assessment	Current Opioid Misuse Measure
Pain Assessment and Documentation Tool (PADT)	

Maintenance of Certification: Self-evaluation of Practice Performance: To help busy physicians participate in this program and meet a professional requirement of recertification, the ACP Practice Advisor modules relevant to pain are under review for providing part IV MOC credit. The use of the modules in this program along with the action plan will serve as the intervention, with 3 performance measures forming the pre- and post-assessment measures (see next section). We believe this is a strong benefit for physicians who confront higher practice improvement requirements for recertification based on surveys of QI network program participants.

Coaching Calls: The co-leads in each practice will be invited to shape and participate in 2-4 bi-monthly expert coaching calls, so as to gain ongoing feedback and support for their efforts. At least one additional expert coaching call for all staff in each practice also will be made available for the topic of interest. The one-hour calls will provide educational content along with an opportunity to discuss with an expert QI interventions in the practice.

Performance measures: Monitoring of practice improvement as well as the evaluation will be informed by several sources of data, including the ACP Practice Advisor practice biopsy results (the results of which will be available to participants on the basis of the individual, practice, entire project cohort, and national participants) and performance measures approved by ABIM for MOC credit. The specific measures submitted for approval are listed below, but it must be stressed that individual practices may define additional performance measures that they currently can or would like to track.

- Screening for Clinical Depression (NQF measure number 0418) – this NQF-endorsed process measure stewarded by CMS has as its numerator whether the patient's screening for clinical depression is documented and follow up plan is documented; its denominator is adult patients over 18, with several exceptions noted. This measure is part of PQRS and Meaningful Use Stage 2, and is very relevant to patients with chronic pain. More details can be found at: http://www.qualityforum.org/QPS/0418.
- Assessment and management of chronic pain: percentage of patients diagnosed with chronic pain with documentation of pain assessment completed at initial visit using a standardized tool that addresses pain intensity, location, pattern, current functional status, and follow-up plan. This process measure is accepted into the AHRQ National Quality Measures Clearinghouse. More details can be found at: http://www.qualitymeasures.ahrq.gov/content.aspx?id=36642&search=pain+and+chronic+pain
- Assessment and management of chronic pain: percentage of patients diagnosed with chronic pain who are prescribed an opioid who have an opioid agreement form and urine toxicology screen documented in the medical record. This process measure is accepted into the AHRQ National Quality Measures Clearinghouse. More details can be found at: http://www.qualitymeasures.ahrq.gov/content.aspx?id=36650&search=pain+and+chronic+pain

Evaluation Design: Investigators at the Center for Health Services and Outcomes Research at Johns Hopkins Bloomberg School of Public Health will lead the evaluation, gaining IRB approval for the study upon finalization of the design and instruments. The program evaluation will test the following hypotheses: *Hypothesis 1*: The initiative will enhance clinicians' chronic pain management attitude, knowledge, and practices among participating primary care practices. *Hypothesis 2*: The initiative will result in practice changes aimed to achieve better chronic pain management. Beyond these hypotheses to test the impact of the initiative, we will seek to observe clinicians' patterns and trends in the context of practice structure and organization identified through information contained in the overall PCMH practice biopsy and registration form. As noted above, several data sources will inform the analysis, including practice survey data, practice biopsy data, and performance measure data concerning chronic pain process measures.

We will survey clinicians among participating practices at baseline and 6 months later after full program implementation to assess attitudes, knowledge, and practices concerning chronic pain.

In addition, we will review pre- and post-data from the chronic pain module practice biopsy. We will survey all clinicians and staff to avoid the risk of random error in the assessment of chronic pain practices. Similarly, to determine the effect of the program on chronic pain management processes, we will compare performance measure data used for MOC part IV pre- and post-intervention.

Surveys and practice biopsies will be conducted electronically, with access to the ACP Practice Advisor. We will ask each practice to provide a list of staff and e-mails to facilitate portal access and online survey participation. Due to small to medium size of participating practices, our goal will be to gain as high a response rate as possible. Pre- and post- performance measure data will be derived from the MOC module on the Practice Advisor.

To test the impact of the intervention, we will compare each outcome between baseline and six months later. Mixed-model analysis of variance/analysis of covariance (ANOVA/ANCOVAs) will be used to account for practice-level clustering. To evaluate any potential bias created by non-response, we will conduct a sensitivity analysis of these results. Results will be considered statistically significant at $P \leq 0.05$.

Dissemination

A final report will be presented at the Kentucky ACP Chapter's annual scientific session along with a webinar for Kentucky practices, discussing effective approaches to improving safe and effective chronic pain treatment. At the national level, the program will be made available nationwide to the Quality Improvement Network practices, including through a live launch webinar and, pending funding, ongoing coaching calls, with access to the content on the ACP Practice Advisor platform. The findings also will be submitted for peer-review publication and the results will be broadly disseminated on ACP's website, online publications, and social media outlets.

Detailed Workplan and Deliverables

The workplan and deliverables are illustrated in figures 5 -8 according to overall program objectives listed in figure 4. Deliverables are indicated in bold and assigned organizations in italics. Note that all partners and the advisory group will have ongoing input to the program.

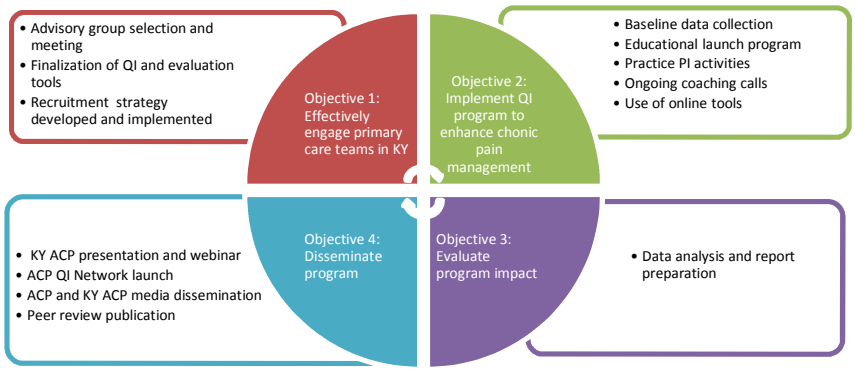

Figure 4: Workplan Overview by Objective

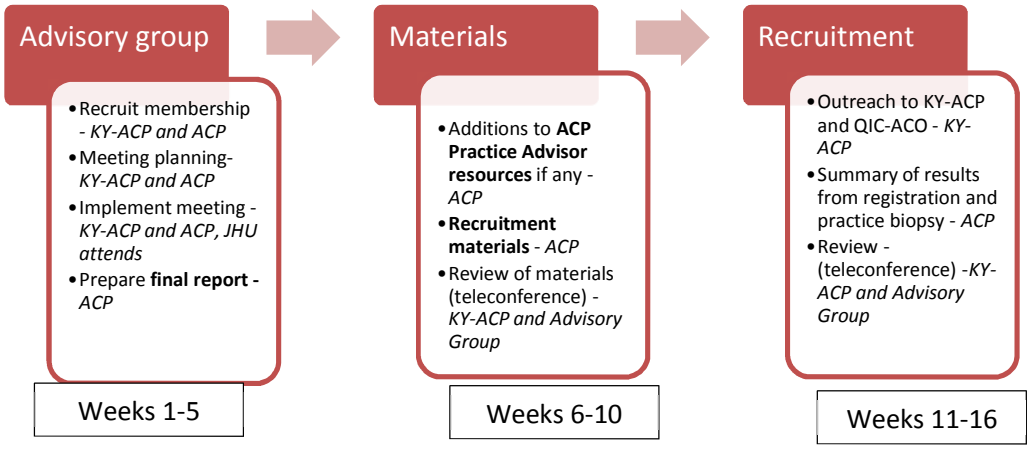

Figure 5: Development and Recruitment: Timeline and Deliverables

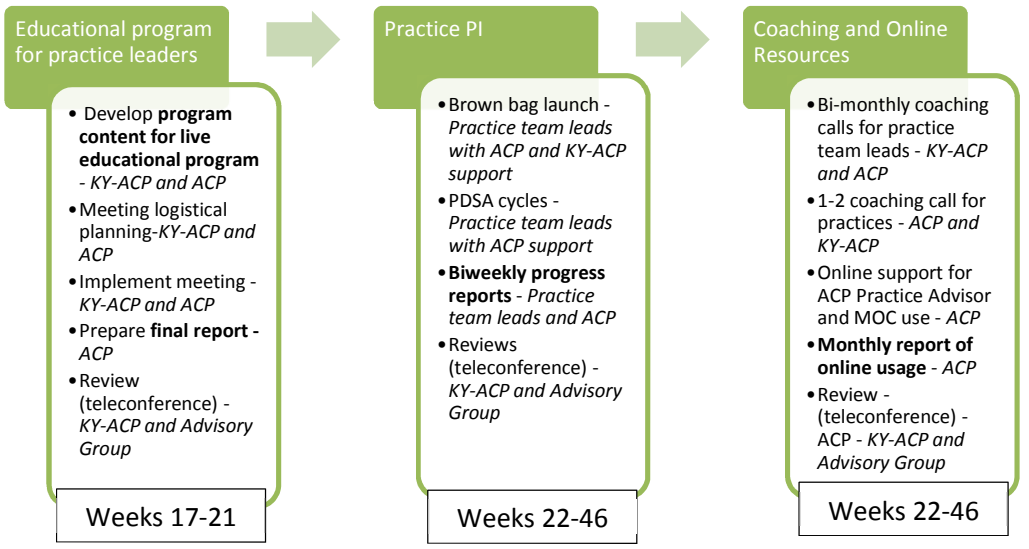

Figure 6: QI Programming: Timeline and Deliverables

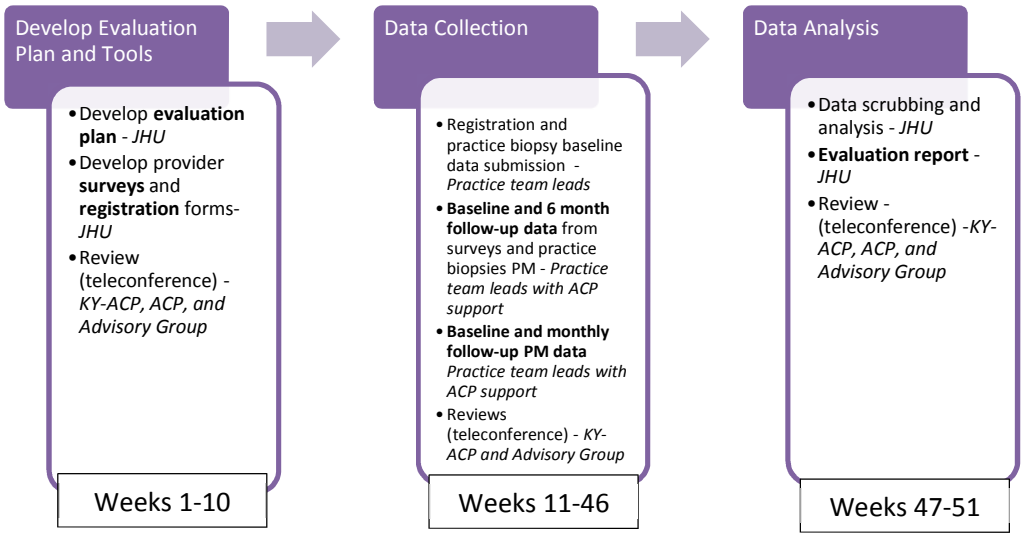

Figure 7: Evaluation: Timeline and Deliverables

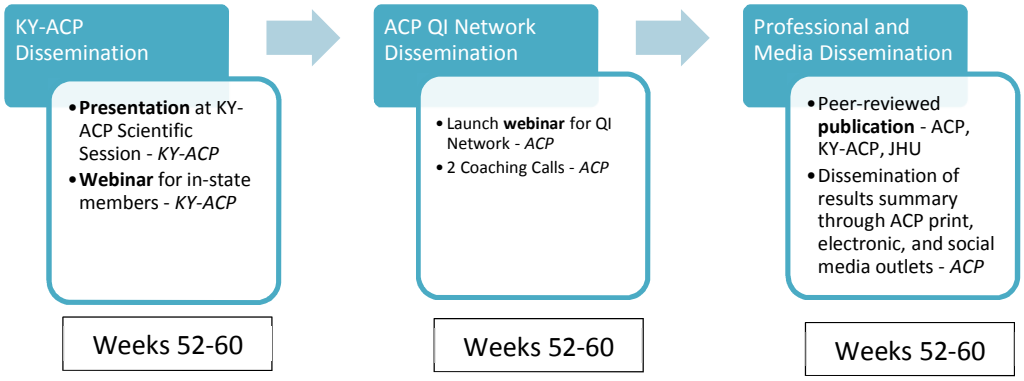

Figure 8: Dissemination: Timeline and Deliverables

Appendix 1 - Bibliography

A Call to Revolutionize Chronic Pain Care in America: An Opportunity in Health Care Reform. The Mayday Fund Web site.

Albert S, Brason FW, Sanford CK, et al. Project Lazarus: community-based overdose prevention in rural North Carolina. *Pain Med*. 2011;12:S77-S85

American Pain Foundation. Opioid prescribing patterns and perceptions: key survey highlights. 2009.

Ballantyne J and Sullivan M. Letter to Editor. NEJM 2013; 368:484-485. http://www.nejm.org/doi/full/10.1056/NEJMc1214553

Bohnert AS, Vale, Valenstein M, Bair MJ, Ganoczy D, McCarthy JF, Ilgen MA, Blow FC. Association Between Opioid Prescribing Patterns and Opioid Overdose-Related Deaths. *JAMA*. 2011;305(13):1315-1321.

Breuer B, Cruciani R, Portenoy R. Pain management by primary care physicians, pain physicians, chiropractors, and acupuncturists: a national survey. *South Med J*. 2010 Aug;103(8):738-47

Breuer B, Pappagallo M, Tai JY, Portenoy RK. U.S. Board-Certified Pain Physician Practices: Uniformity and Census Data of Their Locations. *J Pain.* 2007;8(3):244-250.

Center for Disease Control. Unintentional Drug Poisoning in the United States. July 2010. http://www.cdc.gov/homeandrecreationalsafety/pdf/poison-issue-brief.pdf

Centers for Disease Control and Prevention. Drug-induced deaths - United States, 2003-2007. MMWR 2011;60(Suppl):1-114.

Centers for Disease Control and Prevention. National Vital Statistics System. Hyattsville, MD: US Department of Health and Human Services, CDC;2012.

Chen JT, Fagan MJ, Diaz JA, et al. Is treating chronic pain torture? Internal medicine residents' experience with patients with chronic nonmalignant pain. *Teach Learn Med*. 2007 Spring;19(2):101-5

Chou R, Fanciullo GJ, Fine PG, Adler JA, Ballantyne JC, Davies P, Donovan MI, Fishbain DA, Foley KM, Fudin J, Gilson AM, Kelter A, Mauskop A, O'Connor PG, Passik SD, Pasternak GW, Portenoy RK, Rich BA, Roberts RG, Todd KH, Miaskowski C, FOR THE AMERICAN PAIN SOCIETY–AMERICAN ACADEMY OF PAIN MEDICINE OPIOIDS GUIDELINES PANEL. Opioid Treatment Guidelines: Clinical Guidelines for the Use of Chronic Opioid Therapy in Chronic Noncancer Pain. J Pain. 2009;10(2):113-130.

Chou R, Fanciullo GJ, Fine PG, et al. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain*. 2009;10(2):113-30

Culberson JW, Ziska M. Prescription drug misuse/abuse in the elderly. Geriatrics. 2008

Dahl J, Gilson A. Washington physicians' knowledge, beliefs, attitudes, and practices about the use of opioid analgesics. Abstract presented at the American Pain Society Annual Meeting, 2012

Dahl J. Preliminary analysis of state prescription monitoring programs. Abstract presented at the American Pain Society 2012 Annual Meeting

Darer JD, Hwang W, Pham HH, et al. More training needed in chronic care: a survey of US physicians. *Acad Med*. 2004 Jun;79(6):541-8

Edlund MJ, Martin BC, Devries A, et al. Trends in use of opioids for chronic non-cancer pain among individuals with mental health and substance use disorders: the TROUP study. *Clin J Pain*. 2010 Jan;26(1):1-8

Edlund MJ, Martin BC, Fan MY, et al. Risks for opioid abuse and dependence among recipients of chronic opioid therapy: results from the TROUP study. *Drug Alcohol Depend*. 2010 Nov 1;112(1-2):90-98

Farber j and Gabler E. Narcotic pain killer use booming in elderly. Milwaukee Journal Sentinal/Medpage Today. May 2012

Gaskin DJ, Richard P. The economic cost of pain in the United States. *J Pain*. 2012;13(8):715-724

Gilson AM. State Medical Board Members' attitudes about the legality of chronic prescribing to patients with noncancer pain: the influence of knowledge and beliefs about pain management, addiction, and opioid prescribing. *J Pain Symptom Manage*. 2010;40:599-612
Government Accountability Office Prescription Pain Reliever Abuse. Washington, DC: Dec 2011 (GAO-12-115).

Gugelmann HM, Perrone J. Can prescription drug monitoring programs help limit opioid abuse? *JAMA*. 2011 Nov 23;306(20):2258-9

Guidelines for Chronic Pain. This article was published online first at www.annals.org on 12 November 2013.

Hall AJ, Logan JE, Toblin RL, et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. *JAMA*. 2008 Dec 10;300(22):2613-2620

Healthy Kentucky 2010 Mid-Decade Review

http://www.medpagetoday.com/Geriatrics/PainManagement/32967

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2757137/

Institute of Medicine, Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research. National Academy of Sciences. 2011

Johnson EM, Porucznik CA, Anderson JW, et al. State-level strategies for reducing prescription drug overdose deaths: Utah's prescription safety program. *Pain Med.* 2011;12:S66-S72

Jones CM. Frequency of prescription pain reliever nonmedical use: 2002-2003 and 2009-2010. *Arch Intern Med*. 2012 Jun 25:1-2

Kentucky Behavioral Risk Factor Surveillance System Survey Data. Department for Public Health, Cabinet for Health and Family Services, Frankfort, Kentucky, **[2012]**

Kentucky State Epidemiological Outcomes Workgroup, *Prescription Drug Trends in Kentucky*. December 2011.

Kerlikowske G, Jones CM, Labelle RM, et al. Prescription drug monitoring programs – lack of effectiveness or a call to action? *Pain Med*. 2011 May;12(5):687-9

Lembke A. Why doctors prescribe opioids to known opioid abusers. NEJM 2012;367:1580-1 http://www.nejm.org/doi/full/10.1056/NEJMp1208498.

Lippe PM, Brock C, David J, et al. The first national pain medicine summit – final summit report. *Pain Med*. 2010;11:1447-68

Manchikanti L, Helm S, Fellows B, et al. Opioid epidemic in the United States. *Pain Physician*. 2012;15:ES9-ES38

Mezei L, Murinson BB, the Johns Hopkins Pain Curriculum Development Team. Pain education in North American medical schools. *J Pain.* 2011 Dec;12(12):1199-208

Miller Medical Communications and Pri-Med. Unpublished survey. 2012

Mittman B, Conditions for Practice Change, PCORI, August 2013.

MMWR Morb Mortal Wkly Rep. 2012 Jul 6;61:493-7

NIDA. Research Reports: Prescription Drugs: Abuse and Addiction. Older Adults. http://www.drugabuse.gov/publications/research-reports/prescription-drugs/trends-in-prescription-drug-abuse/older-adults

Nuckols TK et al., Opioid Prescribing: A Systematic Review and Critical Appraisal of

O'Rorke JE, Chen I, Genao I, et al. Physicians' comfort in caring for patients with chronic nonmalignant pain. *Am J Med Sci.* 2007;333(2):93-100

Paulozzi LJ, Kilbourne EM, Shah NG, Nolte KB, et al. A history of being prescribed controlled substances and risk of drug overdose death. *Pain Med*. 2012 Jan;13(1):87-95

Paulozzi LJ, Weisler RH, Patkar AA. A national epidemic of unintentional prescription opioid overdose deaths: how physicians can help control it. *J Clin Psychiatry*. 2011 May;72(5):589-92

Paulozzi, LJ. Xi, Y. Recent changes in drug poisoning mortality in the United States by urban–rural status and by drug type. Pharmacoepidem. Drug Safe. 2008 17: 997–1005. http://onlinelibrary.wiley.com/doi/10.1002/pds.1626/abstract

Peppin JF, Passik SD, Couto JE, et al. Recommendations for urine drug monitoring as a component of opioid therapy in the treatment of chronic pain. *Pain Med.* 2012;13:886-896

PMP Center of Excellence, Brandeis University. Briefing on PMP Effectiveness. March, 2012
Ponte CD, Tribino-Johnson J. Attitudes and knowledge about pain: an assessment of West Virginia family physicians. *Fam Med*. 2005;37(7):477-80

SAMHSA. Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011

Savage SR, Joranson DE, Covington EC, et al. Definitions related to the medical use of opioids: Evolution towards universal agreement. *J Pain Symptom Manage*. 2003;26:655-67
Sep 1;63(9):22 -31

Spitz A, Moore AA, Papaleontiou M, et al. Primary care providers' perspective on prescribing opioids to older adults with chronic non-cancer pain: a qualitative study. *BMC Geriatr*. 2011 Jul 14;11:35

Starrels JL, Becker WC, Weiner MG, et al. *J Gen Intern Med*. 2011 Sep;26(9):958-64
Substance Abuse and Mental Health Services Administration, *Results from the 2010 National*

Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011. http://www.samhsa.gov/data/NSDUH/2k10NSDUH/2k10Results.pdf

Substance Abuse and Mental Health Services Administration. *Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of National Findings* (Office of Applied Studies, NSDUH Series H-38A, HHS Publication No. SMA 10-4586Findings). Rockville, MD; 2010.

Taplin SH and Rodgers AB, Toward improving the quality of cancer care: addressing the interfaces of primary and oncology-related subspecialty care. J Natl Cancer Inst Monogr. 2010;2010(40):3-10.

Tellioglu T. The use of urine drug testing to monitor patients receiving chronic opioid therapy for persistent pain conditions. *Med Health R.I*. 2008 Sep;91(9):27980

Trust for America's Health, *Prescription Drug Abuse: Strategies to Stop the Epidemic 2013*, October 2013.

Tudor CG. Director, Medicare Drug Benefit and C&D Data Group, Centers for Medicare and Medicaid Services. Appendix C, analysis of Morphine Equivalent Dose (MED) in the Medicare Part D Program, Letter to All Part D Sponsors: Supplemental Guidance Related to Improving Drug Utilization Review Controls in Part D. 6 Sep 2012. http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/Downloads/HPMSSupplementalGuidanceRelated-toImprovingDURcontrols.pdf

Wolfert MZ, Gilson AM, Dahl JL, Cleary JF. Opioid analgesics for pain control: Wisconsin physicians' knowledge, beliefs, attitudes, and prescribing practices. *Pain Med*. 2010;11:425-434

Wunsch MJ. *Am J Addict*. 2009 Jan-Feb;18(1):5-14.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2757137/

www.fda.gov/drugs/drugsafety. Accessed August 2012.