# FINAL REPORT: Partnering with Patients to Improve Management of Chronic Pain in Primary Care 1/1/2014 – 8/15/2016 Grant ID: 10359049

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# I. STRUCTURED ABSTRACT

**Purpose:** This project implemented and evaluated the impact of six, monthly Integrative Health Group Visits (IHGV) for patients with chronic non-malignant pain (CNMP). The IHGVs, conducted by an interprofessional team, emphasized patient skill development and empowered patients to be active participants in their own healthcare while encouraging social support among group members.

**Scope:** The IHGVs were implemented in three primary care practices, with 63 patient participants, 126 providers and staff.

Methods: Sixty-three participants with CNMP divided into two cohorts of three groups each were enrolled in two-hour-long, monthly IHGV over six months. A new integrative health modality was introduced at each visit, with an emphasis on developing skills for home practice. Each visit included group activities and discussion and individual visits with a primary care physician. Health outcomes were assessed pre- and post-intervention using validated instruments. Focus groups including participants, providers, staff, and support people were conducted, as well as surveys of providers and staff. A Patient-Family Advisory Council was implemented to guide the program.

**Results**: From pre- to post-six-month intervention, there were significant improvements in pain interference with enjoyment of life, self-care, and life support activities. Patient activation significantly improved, specifically in maintaining positive lifestyle changes. There were significant improvements in depression and anxiety. Improvements in feeling down/hopeless, sleep, tiredness, concentration, ability to move, ability to relax, restlessness, irritability, and fearfulness were also present. Self-assessment surveys of providers' knowledge of GV as well as their ability to lead GV demonstrated significant improvement. In focus groups, providers noted greater understanding of patients, and patients expressed feeling more like "partners in their care" rather than "patients." The IHGV model for management of chronic pain patients is feasible and effective in busy academic heath practices, especially for improving mental health in CNMP patients. Both patients and providers recognized benefit from this model.

# Key Words: Pain, Group Visits, Integrative Health, Patient-Family Advisory Committee, PFAC

# II. PURPOSE (Objectives of the study)

The overall goal of this project was to improve management and outcomes for patients with chronic, nonmalignant pain (CNMP). The specific objectives included:

- 1. To coach three primary care practices through skill development and system changes needed to establish a longitudinal group visit program for patients living with CNMP.
- 2. To help CNMP patients to improve their own care by creating a Patient and Family Advisory Council (PFAC) to guide improvement and assist with self-management.
- 3. To incorporate an integrative approach to chronic pain into group visits through use of consultants in psychology, nutrition, wellness coaching, physical therapy and pharmacy.

### III. SCOPE (Background, context, settings, participants, incidence prevalence)

#### **Context/Background/Incidence**

### Pain

Chronic pain is an epidemic within the United States.<sup>1</sup> It is the most common cause of longterm disability, and almost one third of all Americans will experience severe chronic pain at some point in their lives.<sup>1</sup> For several years there has been a heightened awareness of the need to improve pain management for our patients at the University of Cincinnati Medical Center (UCMC). We have been actively assessing the quality of care provided to patients with CNMP in our Primary Care Network (PCN). The PCN includes 14 primary care practices, which saw over 50,000 patients in 2011. A study of three PCN practices in 2009 found 23% of office visits were with CNMP patients. This study and one conducted in two other PCN practices in 2012 identified practice gaps including: **1**) poor documentation of CNMP assessment and management; **2**) underuse of structured assessment instruments; **3**) limitations by providers to assess and understand functional disability and emotional stress due to CNMP; **4**) wide variation in prescribing medications for CNMP; and **5**) minimal coordination with specialists and other providers.

Prior practice improvement efforts established standardized care templates in the electronic medical record, provided evidence-based academic detailing, and mentored practices in quality improvement techniques. The goal of that work was to improve systems of care for providers and their practices. To significantly change outcomes in chronic pain, however, we determined that there was a need to better engage our patients as partners in improving health.

The complexity of chronic pain results in patient and provider misperceptions which become significant barriers to optimal management and patient satisfaction. A study of chronic pain patients managed by primary care providers found that patients feel disrespected, mistrusted, and suspected of drug-seeking.<sup>2</sup> As a result, patients are turning to other sources of information and management advice, and they are not sharing this information with their providers.<sup>3</sup> Some issues can be addressed through education, but there is an enduring concern that patients feel providers "can't relate" to what they are experiencing, particularly with regard to issues of daily living and quality of life.

For example, a survey of CNMP patients in one of our partnering practices revealed significant anxiety among patients regarding management of pain medications. Specifically, the process for getting refill prescriptions for opioids was poorly defined and inconsistent. Patient anxiety over accessing their medications translated into a high volume of phone calls and contributed to provider and staff dissatisfaction with caring for CNMP patients. In a 2012 study of our providers, >80% of respondents felt more stress caring for patients with CNMP than other patients, and <40% felt they could truly help patients with CNMP, suggesting a significant breach in the therapeutic relationship between providers and patients.

This project was specifically designed to reconnect providers and CNMP patients as partners in the care process using three strategies that promote patient engagement and activation: group visits, a Patient-Family Advisory Council and an integrative approach to chronic pain management.

### Group Visits

Group visits are an innovative delivery model designed to improve outcomes through better accessing the expertise of patients' experiences for mutual support and group problem-solving. Integrative group visits incorporate short individual medical evaluations by a provider, but the majority of time is spent in interactive group sessions that promote patient engagement and emphasize patient self-management in areas such as medication adherence, complementary and integrative medicine modalities, nutrition, exercise, and psychosocial contributors to health and illness. Use of group visits in complex chronic diseases such as cardiovascular disease, diabetes, and migraine have all supported improved outcomes, decreased resource utilization, and better patient-provider satisfaction.<sup>4-15</sup> While little exists in the literature on the use of group visits in chronic pain, interventions developing social support systems, such as peer mentors or support groups,<sup>16-18</sup> have been found to be effective and there is broad agreement that longitudinal, multimodal interventions and multidisciplinary coordination improve care and should be part of the treatment strategy for patients with chronic pain.<sup>1,19</sup>

Encouraging experiences with group visits have been noted on a small scale within our PCN practices where several of the providers on our project team were involved in conducting group visits for conditions including diabetes and sickle cell disease, as well as longitudinal group visits (in which a cohort of patients stays together for a series of group visits) for well woman and well child care in a model called CenteringParenting<sup>®</sup>. The experience has found positive provider, staff and patient satisfaction, but it has taken considerable effort to initiate the group care model within a system largely focused on individual care. The logistics of group visits (i.e., space requirements, staffing, and simultaneous check-in/out) and skills needed for facilitation and managing group dynamics are significantly different than what is needed for individual care. This creates a need for new skill development and assistance during practice change, especially as this concept expands to practices that have not been engaged in such a model.

To successfully incorporate this new model of care, formal training, quality improvement coaching and patient guidance for the process were needed. This project applied learnings from other group visit programs to the primary care management of patients with CNMP using a group model with an integrative health focus. Our goal was to determine if care improved and whether the program could serve as a sustainable model for enhancing the management of CNMP within primary care.

### Patient-Family Advisory Council (PFAC)

With increasing evidence of the impact of patient engagement and activation on overall health<sup>20-22</sup> we recognized that the expertise of our patients was an untapped resource to improve care in chronic pain. While the group visit model itself provides increased access to this expertise at the point of care, there is evidence that deliberately seeking patient input into healthcare planning, such as through Patient-Family Advisory Councils, and incorporating patients as improvement team members, increases the likelihood that programs will meet patient needs.<sup>23,24</sup> The use of Patient and Family Advisors in this capacity is a nationally-recognized strength of Cincinnati Children's Hospital Medical Center, but is a new area of growth needed for UCMC. This project incorporated a PFAC for group visit guidance with the goal that it would serve as a foray into the incorporation of PFAC's within current and future activities in these practices.

### Integrative Approach to Chronic Pain

An integrative approach to CNMP care incorporates the best of conventional medicine with the best of evidence-based complementary medicine.<sup>25</sup> It also addresses patient concerns with function and helps to bridge silos created by patients seeking complementary therapies outside the realm of their traditional healthcare setting. There is ample evidence for non-pharmacological approaches to pain management; however, conventional treatment of CNMP often focuses exclusively on pharmacotherapy management. With growing concerns regarding the use of chronic opioids, it is imperative that treatment options are maximized to optimize patient care. Our innovative group model incorporated an integrative health approach in which PCP visits were enhanced by integrative health specialists in yoga, acupuncture, mindfulness, massage, progressive muscle relaxation and nutrition to support skill development for patients and providers.

### Setting

Three NCQA-certified PCMH primary care practice sites owned by UCMC, an urban academic medical center, participated in the study: the Internal Medicine Residents' Practice, the Internal Medicine/Pediatrics Practice (a combined faculty-resident practice) and the Internal Medicine Faculty Practice. As discussed in more detail below, an improvement team was convened consisting of the Improvement Advisor, Faculty Leads from our Project Team, as well as five physician Provider Champions, 12 resident Facilitator Participants, three nurse/MA Staff Champions, and eight (reduced to five by project's end) Patient and Family Advisory Council members drawn from the practice sites.

### **Participants**

### Patient participants

Among the three practices, 63 adult CNMP patients were recruited to participate in the group visit program (the Internal Medicine Residents' Practice: 30; the Internal Medicine/Pediatrics Practice: 16; and the Internal Medicine Faculty Practice: 17), targeting primary care patients of the Provider Champions and Resident Facilitator Participants. All patients were recruited with the expectation to participate in six months of group visits which was followed or preceded by a period of usual care.

### **PFAC** participants

One to two patients with CNMP (and at least 1 support person of their choosing) were recruited at each practice for inclusion in a PFAC for the duration of the project. A total of eight PFAC participants were recruited to participate in the group visits and the focus groups. At the end of the project there were five active PFAC members. One PFAC member participated in the first focus group and 6 months of group visits but needed to withdraw halfway through the study due to scheduling conflicts. Two other PFAC members had scheduling conflicts that led to their withdrawal before the group visits began.

# Provider and Staff Champions

Faculty and chief resident Provider Champions were recruited from the practice sites, including a total of three faculty and two chief residents. One Staff Champion was recruited from each of the three practice sites. Provider Champions were involved in identifying patients that met inclusion criteria for the research team. Provider and Staff Champions were involved in facilitating the group visits, and participating in the improvement team.

# Other Provider and Staff participants

The providers and staff members of the three participating practices who were not serving in a champion role participated in surveys. Sixty-seven staff members were approached to complete the surveys during the first data collection time, while only 59 were located for the second data collection.

### Resident Facilitator Participants

Eleven resident providers (six during the first 10 months of the intervention period and five during the final three months) from the Internal Medicine Residents' Practice participated in this study by identifying their patients that met inclusion criteria for the research team, helping to facilitate the group visits, and participating on the improvement team.

# IV. METHODS (Study design, data sources/collection, interventions, measures, limitations)

### **Study Design**

Our project planned a randomized crossover design with an intervention period of one year to assess the practical application and overall impact of group visits for chronic pain patients and providers. Patients were recruited from each of three primary care practices and assigned to one of two cohorts: **Cohort 1:** *Six months of group visits followed by six months of usual care;* or **Cohort 2:** *Six months of usual care, followed by 6 months of group visits (beginning at the end of Cohort 1 group visits).* "Usual care" was defined as *the routine pain care typically provided to the patient in their primary care practices.* As described in more detail in "Limitations," because of study limitations, the study design evolved into a one-group pre-post comparison, with our two cohorts combined for most analyses (Fig 1).



### Interventions

The primary interventions in this project were: 1) the design and implementation of the group care model for patients with CNMP in three primary care practices; 2) the creation of a PFAC; and 3) the creation and implementation of an integrative health curriculum, with

inclusion of integrative health consultants into the group visits, for skill development of patients and providers.

### Design and Implementation of Group Visits:

**Improvement Team Formation and Weekly Meetings:** Due to the similar nature of program activities across the three practices, one Improvement Team was formed including the project Co-Pls, the Improvement Advisor, the Program Manager, the Provider and Staff Champions, and the Resident Facilitator Participants. This core team met weekly starting six months before the intervention period and has continued to meet following the completion of the research project. Weekly meetings allowed for group visit planning, testing of process design via PDSA cycles, provider and staff development and interface with the larger practice systems. The nurse leaders of the three practices also attended this meeting on an ad-hoc basis to articulate needs of the practices, to assist with process design and resource issues. These weekly improvement meetings were separate and in addition to biweekly meetings of our research team that began at the onset of the project period and continued throughout it.

**Basic Training Program:** A Basic Training Program (BTP) was planned and executed in November 2014 to train 33 providers, residents, staff and PFAC members in the group visit model, group visit facilitation, evidence-based management of CNMP and motivational interviewing. Additionally, the BTP provided an opportunity for the integrative health faculty on our Project Team to provide an overview and evidence-base for the integrative health portion of the group visit curriculum. Descriptions of available services and referral processes were highlighted. A facilitator's guide that contained reference material for all of the BTP presentations, as well as the documents that would later be provided in a patient handbook, was provided to all participants. Pre-work was required in advance of the training, and skill development in the core areas continued via the Improvement Team and PFAC meetings during the intervention period.

**Patient Recruitment:** Patient recruitment for cohort 1 occurred November 2014 through January 2015, and for cohort 2 November 2014 through June 2015. Provider Champions and Resident Facilitator participants focused primarily on identifying eligible participants among their own patients and referred these potential candidates to the research nurse for formal recruitment after discussing the program briefly with the patient to gauge interest. As providers in the practices became aware of the group visit program, some patients of other providers were also identified as people who might benefit from the program. These patients also were referred to the research nurse for formal recruitment. Recruitment proved more time-consuming for providers than anticipated, in part due to lack of familiarity of patients with the group visit model and difficulty in contacting some patients by phone.

**Group Visit Design and Process:** The implementation of the group visit model was guided at each practice site by the Improvement Advisor and Co-PIs. During the weekly improvement meetings, each site prepared a written "Visit Plan" by modifying a standard template (Table 1) prior to each visit. These visit plans were also informed by a debrief huddle that took place at the end of the previous group visit. Each longitudinal cohort participated in six monthly group visits. Each visit lasted two hours. All patients completed HIPAA forms and signed privacy statements as well as permission for photography prior to participating in the initial visit. Group Rules were developed by each cohort and posted in the room at each visit.

# **Group Visit Template**

Table 1

Activity	Example(s)	Time
Arrival and Registration	Sign in; receive parking pass	30 Minutes
Opener	All group members write down how pain interferes with living a healthy life on a piece of paper, then throw it in a box in the middle of the circle. Everyone picks out one and reads it. Discussion on how to overcome obstacle.	10 Minutes
Living Well Circle Activity; Activity on Last Integrative Health Topic	Each IH modality is written on a piece of paper lying on the floor. All group members gather near the modality they enjoy the most. Discussion on use and tips for integrating the modality into a daily routine, and the benefits produced.	15 Minutes
Integrative Health Activity and Coaching	Chair yoga; progressive muscle relaxation; auricular acupuncture	20 Minutes
Health Stations	Vitals; pain assessments; brief focused individual time with PCP; integrative health coaching	60 Minutes
Discussion Board	Topics written down on white board in front of room, such as, "irritability from pain" and "walking helps the pain" from individual discussions during the health stations. All group members openly discuss the current topic(s).	10 Minutes
Closing Activity	Facilitators ask the group questions, such as, "How will you use these new skills after you leave? Or "What did you learn today?" to solidify topics learned and to encourage use of new integrative modality	5 Minutes

Interactive Activities: Each visit began with the Facilitator (usually the Provider Champion or Resident Facilitator participant) guiding the group in Opener and "Living Well" activities. These activities engaged all patients in the group, and supported relationship development among participants who were then comfortably able to solicit valuable expertise on living with chronic pain from each other. The integrative health consultants were coached on techniques for group visit facilitation and, with support from the Project Team, facilitated activities in their specialty area during the "integrative Health Introduction." The Closing activity by the Facilitator allowed the group visit to end with an affirming message of mutual support.

**Health Stations:** During "Health Stations," the group worked on developing Integrative Health skills while individual patients were seen briefly for vitals and pain assessments by the nurse/MA and for brief pain management-focused visits by the faculty or resident provider. All activities took place within the group visit space or an immediately adjacent exam room to minimize time away from the group. **Discussion Board:** The Discussion Board, a flip chart posted with markers, allowed patient concerns and questions to direct a portion of each visit. At any point during the visit, patients or facilitators could add a topic to the Discussion Board for group sharing during the last 25-30min of the visit. These discussions allowed the group to recognize their shared challenges of living with chronic pain and problem-solve practical solutions together.

**Debrief:** At the conclusion of each group visit, the improvement team held a debrief huddle to discuss what worked best and what needed improvement. The guidance from this discussion was relayed in the following weekly Improvement Team meeting to translate learnings for the subsequent group visit.

### **Quality Improvement**

Successful and sustainable changes for improvement of care within complicated and dynamic settings require not only subject matter experts, but also guidance in addressing system constraints, process variation, and complexities of change management. This project used the Model for Improvement to structure the design and implementation of the model, featuring weekly improvement team meetings, process mapping and small tests of change (Plan-Do-Study-Act or PDSA cycles). This approach allowed implementation of the model in a planned, yet flexible manner that provided space for adjustment as challenges were uncovered in the local system.

### Patient and Family Advisory Council

The PFAC members participated in our Basic Training Program and then applied their knowledge by participating in the group visits. Two to four PFAC members were present in most groups visit to provide self-management support to patients, model self-reflection and assist in forming personal action plans for healthier behaviors. In addition, the PFAC met quarterly for further skill development and to provide feedback to project leadership on the developing group visit model.

### Integrative Health Curriculum

An integrative health curriculum was developed in conjunction with the UC Center for Integrative Health and Wellness (Table 2). This curriculum resulted in 1) a set of provider- and patient-focused materials on the six core integrative health skills featured in our program: antiinflammatory diet, mindfulness, progressive muscle relaxation, yoga, acupuncture and massage; 2) an "Integrative Health Introduction" activity facilitated by an integrative health consultant expert in the topic of focus; and 3) individual integrative health coaching for patients during the "Health Stations" portion of the group visit. The emphasis during this time was on hands-on, active learning through activities such as using pressure points, stretching routines, guided imageries, etc. Attention was paid to teach modalities and skills that patients could easily replicate themselves at home or with the aid of a family member. Patients were provided with a handbook that contained resources related to the integrative health topic at each session to support their use of learned techniques at home. The materials were curated by the research team to include both an overview of the IH topic as well as specific home routines and additional resources for self-study. The integrative health consultants also participated in the debrief huddle, which allowed them to adjust future sessions in which they participated based on feedback from the team and PFAC members.

<u>Table 2</u>					
Integrative Health Modality	Integrative Health Provider	Group Activity	Home Practices	Resources	Required Materials
Massage Therapy	Licensed Massage Therapist	Demonstration 1) Self-massage of self-massage with and with sock and without sock tennis ball tool and tennis ball tool; 2) Epsom salt bath		<ol> <li>1) Online videos;</li> <li>2) Books;</li> <li>3) How to find a local massage therapist</li> </ol>	Sock and tennis ball tools
Yoga Therapy	Trained Yoga Instructor	Chair yoga	1) Sun salutations; 2) Chair yoga	1) Online videos; 2) Books	None
Mindfulness Meditation	Research assistant with Mindfulness Training	Introduction to mindfulness and short experiential	<ol> <li>Daily mindfulness tips;</li> <li>Audio recordings/ written scripts</li> </ol>	<ol> <li>Audio</li> <li>recordings; 2)</li> <li>Books;</li> <li>Phone</li> <li>applications</li> </ol>	Raisins
Anti- Inflammatory Diet	Registered Dietician	Introduction and open discussion on an anti- inflammatory diet	<ol> <li>1) Anti- inflammatory diet daily tips;</li> <li>2) Recipes</li> </ol>	<ol> <li>Phone applications;</li> <li>Books;</li> <li>Websites</li> </ol>	None
Acupuncture/ Acupressure	Licensed Acupuncturist	Demonstration of acupuncture on a few volunteers. Remainder of the group practiced self- acupressure	1) Acupressure	<ol> <li>1) Online videos</li> <li>2) How to find a local acupuncturist</li> </ol>	Needles, sterile wipes, disposal bin

# Integrative Health Curriculum

Integrative Health Modality	Integrative Health Provider	Group Activity	Home Practices	Resources	Required Materials
Progressive Muscle Relaxation	Research assistant with PMR Training	Diaphragmatic breathing exercise followed by PMR	1) Audio recordings/ written scripts	1) Audio recordings	None

# **Data Sources/Collection/Measures**

The goal of this mixed methods research project was to successfully implement a longitudinal group visit model incorporating an integrative health approach to improve the care of patients with CNMP in primary care settings and assess its effectiveness. The evaluation for this project was focused on assessing the impact of educational and systems interventions on the knowledge, attitudes and perceptions of patients and providers regarding integrative health-focused longitudinal group visits for CNMP. Clinical outcomes, resource utilization and the practicality of integrating these interventions in primary care practices were also assessed. Specifically, the following sources of data were used to assess the effectiveness of the group visit model for managing CNMP patients within the three participating primary care practices:

a. <u>Chart reviews</u>: A research team member trained in EPIC and experienced in chart reviews abstracted data from the records of patients in cohorts 1 and 2. Retrospective data, reflecting usual care, was abstracted for the 12 months prior to the onset of six, monthly group visits. The same information was abstracted 12 months later, following completion of the group visits and six months of usual care (Fig 2). The chart review data included demographic information, clinical data (including the use of pharmacologic and non-pharmacologic pain interventions used) and utilization data regarding primary care visits, ER visits, hospitalizations and PC communications related to pain management.



b. <u>Semi-structured interviews</u>: Research team members experienced in qualitative research methods interviewed providers and staff who were directly involved in the group visits, including the Provider Champions, Staff Champions, and Resident Facilitator participants, regarding group visit implementation obstacles and solutions.

These interviews were conducted following the completion of all group visits at a given practice.

- c. <u>Surveys</u>:
  - i. <u>Provider/Staff/ Resident Facilitator surveys</u>: Providers, Staff, and Resident Facilitator participants at the participating practices completed the Practice Culture Inventory within 6 weeks prior to onset of the group visits and at completion of all group visits at a given practice. Providers and Resident Facilitator participants participating directly in the group visits also completed a survey to assess comfort with the group care model and with integrative health skills prior to the onset of group visits and following the completion of group visits at a given practice.
  - ii. <u>Patient surveys</u>: At each group visit (beginning with group visit #2 and mailed to patients following visit #6), patient participants who attended the visit completed a brief "Visit Assessment" to obtain feedback regarding the visit and to assess their use of integrative health skills introduced during previous sessions
- d. Focus groups:
  - i. <u>PFAC</u>: A focus group was conducted for PFAC members at two of their quarterly meetings, once at 4 months into the group visits and once at 10 months into the group visits.
  - ii. <u>Patients</u>: Focus groups of patient participants were conducted after the completion of all group visits.
- e. <u>Patient Clinical Assessments</u>: Assessments of pain, disability, function, mental health, opioid risk and activation/self-efficacy were completed by all patient participants at onset of the group visit program, at 6 months and 12 months (cohort one only) unless otherwise specified in the table below.

Data collection tools

- Brief Pain Inventory (BPI)
- Pain Disability Index (PDI)
- PEG
- PHQ-9
- GAD-7
- Opioid Risk Tool (ORT)
- Patient Activation Measure (PAM)
- Pain Self Efficacy Questionnaire (PSEQ)

# **Data Collection Tools**

Outcome	Instrument	Measures	# of items	Study validated	Comments
	Brief Pain Inventory (BPI)	Self report of pain severity, treatment, and impact of functioning	9	Yes	Primary Outcome
Pain Related	Pain Disability Index (PDI)	Self report of pain related functional impairment	7	Yes	
	PEG	Self-report global assessment on pain intensity, emotional health, and function	3	Yes	Given to patients each visit
Mental	PHQ-9	Self report of depressive symptoms and suicidal ideation	9	Yes	
nealui	GAD-7	Self report of anxiety symptoms	7	Yes	
Opioid	Opioid Risk Tool (ORT)	Identification of risk factors for opiate related aberrant behaviors	5	Yes	Completed by all patients at study outset
Self Efficacy	Patient Activation Measure (PAM)	Predicting general health and disease self management through stages of activation	22	Yes	
/ Attitudes / Perceptions	Pain Self Efficacy Questionnaire (PSEQ)	Measuring one's self efficacy with respect to pain management	10	Yes	

# **Limitations**

Table 3

As expected working within "live" practice settings, there were a number of ways in which the implementation of our project did not match our original plan. The randomized cross-over design evolved into a one-group pre-post comparison for the majority of our data. This was primarily due to three factors: 1) recruitment was significantly more time consuming for providers than anticipated, slowing recruitment and making the plan for baseline data collection of patient clinical assessments for cohort 2 (at time zero, prior to the six months of usual care) infeasible; 2) slow recruitment eliminated the randomization at the point of entry to the study. Unless requested by the participant, patients were recruited first for cohort 1 and then for cohort 2 due to time constraints; 3) despite an initial 41 patients recruited for cohort one, only 26 participated and just 12 completed at least 4 sessions, limiting the number available for analysis. This relatively small number of participants led us to combine the two cohorts for the bulk of our analyses. In addition to the change in study design, we also varied from the plan in the following ways: 1) consolidated the three Improvement Teams into one due to overlapping activities and need for shared learnings; 2) reduced the number of PFAC members due to low initial participation of some members (a change that actually led to one patient-family member pair attending all group visits for two practices, which enhanced learning across the practices); 3) had additional participation of Internal Medicine-Pediatric resident and pharmacy students in the group visits themselves as the practices and residency programs became aware of the program; and 4) increased recruitment for cohort 2 from planned 25-30 to 37 patients in order to ensure larger average group size than we had in Cohort 1.

### V. RESULTS (Principal findings, outcomes)

### **PATIENTS:**

There were 63 patients enrolled in group visits over the course of the project with 26 in cohort 1 and 37 in cohort 2. Of the 26 enrolled participants 20 were African American, 1 Asian and 5 Caucasian. Cohort 2, there were 21 African Americans, 14 Caucasian and 1 other.

Chart review: Out of 63 enrolled patients, we reviewed the charts of 56 patients who completed a full HIPAA release consent form and participated in the project. Each chart was reviewed for calendar year 2014 and for calendar year 2015. These reviews documented a wide breadth of pain was represented by the data set. Musculoskeletal pain, including joint and low back pain, was the most common type of chronic pain reported by patients in the study with another significant subset of patients with Sickle Cell Disease (SCD). The racial demographics of this participant population are described above. The chart review also examined the payer sources for the enrolled subjects. Results obtained indicated a representative variety of payers, including private insurance, Medicaid, and Medicare. This breadth of payer sources promotes the generalizability of our study due to the fact that one of the most significant barriers for patients' access to treatments and resources (specifically integrative medicine modalities) is related to insurance coverage. Additionally, the chart review also documented the pain assessment tools used by the PCP and found that they most commonly included the PEG Tool and the 1-10 Analog Pain Scale. Both of these tools were previously directly incorporated in the EPIC EHR. Although the usage of both the tools increased slightly from 2014 to 2015, providers more often employed the 1-10 Analog Pain Scale.

Looking at types of pain medicines prescribed within this data set, the sample was fairly representative of a typical primary care population. The vast majority were prescribed an opiate for their chronic pain in addition to various adjuvants. We did not see a significant change in opioid prescriptions during the project period (66% were taking chronic opioids in 2014; 68% were taking chronic opioids in 2015). This absence of change in opiate prescribing is perhaps consistent with the lack of a statistically significant change in quantitative pain scores that we found with this sample as well. However, it is interesting to note that there was no increase in opioid prescriptions throughout the duration of the project, despite many of the group visit activities involving some form of physical exertion (e.g., yoga). The chart review also showed an increase in the amount of communication documented regarding nonpharmacological treatment alternatives to opioids (e.g., exercise). Although there was a discernable trend toward more documented conversations it was not possible to quantify whether these discussions represented actual increased usage by patients or follow through with referrals to integrative medicine providers.

We also examined patient charts for markers of clinical utilization related to pain (e.g., phone calls, office visits, ED visits). Although no statistically significant change in utilization was observed, it was an interesting finding that in both cohorts there were 1-2 patients who were "high utilizers" (e.g., 22 ED visits in one year), but the average participant had 0-1 pain-related ED visits in their chart review. Furthermore, the "high utilizers" mostly represented the subset of patients with SCD, who had a significant number of chronic pain-related hospitalizations as well.

**Patient Assessments:** We examined eight questionnaires, each with approximately 63 patient respondents at baseline, 36 of those repeated at six months, and 9 repeated at 12 months.

The summaries below address the baseline-to-six month change and baseline-to-12 month change. Each of the variables was also examined for 6 month-to-12 month change with no significant change. The two cohorts were compared on baseline scores and on the baseline-to-six month change, and none of those differences were significant. Cohorts were compared on the ORT at baseline only.

**Brief Pain Inventory:** Scales assessing minimum, maximum, and average pain during the past 24 hours, extent of interference with activities (each scale scored zero to ten). At baseline the scales averages were near a scale mid-point of 5, with a mean minimum pain of 5.1, maximum of 7.1, and average of 6.0. Patients reported an average of a 47% reduction in pain due to current treatment. For the 36 patients repeating at 6 months, average pain scores went both up and down from baseline to six months as follows – minimum pain up 0.2, maximum up 0.2, and average down 0.1. Interference with enjoyment of life decreased by 0.3 points. Percent reduction in pain due to treatment increased from 48% to 56%. There are patients with volatile ratings across time, so that some of the mean changes could be strongly affected by a few extreme ratings. The only change with a significant p-value was Question 9g, how much the pain interferes with enjoyment of life – which decreased by 1.1, p = .02. No significant changes were observed for comparisons of baseline-to-12 month.

- <u>Pain Disability Index</u>: Seven scales assessing the extent to which pain interferes with activities, each scored zero to ten. Baseline scores were near the midpoint of five. Highest ratings were for interference with recreation and with occupation (6.1) and lowest was for self-care (4.0). From baseline to six months the significant changes were improvements in self-care (p = .02) and in life support activities (p = .05). No significant changes from baseline to 12 months.
- <u>Patient Health Questionnaire</u>: Nine items assessing mood (primarily depression), to some extent via reports of somatic issues, each item scored zero to three. At baseline the three items that stood out with high scores were tiredness, sleep problems, and general problems, each with an average of about 2.0. Longitudinal results were interesting in that five of ten scales and the total score improved significantly from baseline to six months. Overall, this was the questionnaire that most captured positive change across time in our patients. From baseline to 12 months, sleep and tiredness improved significantly.
- <u>Opioid Risk Tool</u>: Assess risk for opioid abuse from self-reported demographics, psych history, and substance abuse history. At baseline the mean score was 3.1 on a zero to ten scale, with zero to three representing low risk, and 4 to 7 representing moderate risk. The cohorts were not significantly different.
- <u>GAD-7</u>: Seven items assessing anxiety over the past two weeks, scored zero for not at all, to three for every day. At baseline the highest item was "Trouble relaxing." From baseline to 6 months all seven items improved, four of them significantly. The total also improved significantly. From baseline to 12 months, there were no significant changes.

*Patient Activation Measure:* Thirteen items scored 1 to 4 with a higher score indicating greater activation. At baseline item means hovered around 3, or a response of "Agree," with various activation statements. From baseline to six months the total score improved significantly from 36.8 to 40.1, with significant improvement in one item for maintaining positive lifestyle changes. From baseline-to-12 months, the same item, maintaining positive lifestyle changes, improved significantly.

- <u>PSEQ</u>: 10 items addressing patient confidence in his/her ability to perform various tasks or to enjoy things, scored zero (low confidence) to 6 (high confidence). At baseline the mean of all items was 3.1. The most confident item addressed the ability to cope with pain, while the lowest, at 1.7, was confidence in coping with pain *without* medications. No changes from baseline to either 6 or 12 months were significant.
- <u>PEG (six sessions)</u>: Three items addressing pain and its interference with enjoyment of life and general activities, scored zero (no problem) to 10. At baseline, means were between 6.0 and 7.0. From session 1 to session 6 or to 12 months there were no significant changes.

**Patient Session Surveys:** Forty six session responses were obtained for cohort 1 and 2. Figure 3 indicates the percentage of patients who found the specific modalities that were used during the group visits as "helpful" versus "not helpful." Figure 4 demonstrates the percentage of patients who used the modalities "often" versus "rarely."







**Patient Focus Groups:** Qualitative data was collected using a semi-structured guide<sup>26</sup> with key prompts. Patient groups were facilitated by a primary care physician, psychologist and medical sociologist. The focus groups were transcribed and coded using the Nvivo 10<sup>27</sup> software package. The facilitators independently coded each transcript using the editing method and then met to discuss codes and reach a consensus on themes. Key themes are presented and expanded upon below.

- *Reasons for Joining the Group* 
  - o Doctor's recommendation, would not have joined if they just saw a flier
  - $\circ$   $\,$  Manage pain without medication and see what the program had to offer  $\,$
  - o Meet other patients with CP
- Pain Pill Management
  - Some have stopped taking them, others take less than they did prior to the groups, and others take the same amount.
  - Taught alternatives to opioids, given other options to try before resorting to taking a pill
- Key Experiences/Learning
  - Very afraid of acupuncture, but tried it and felt relief. Massage and diet also were popular modalities.
  - Given information on using new techniques, now it is up to the patient to use them
- Community between Group Members
  - Meet others with CP, share and learn ways to manage pain, learn and improve together
  - Group is a new family who understands what they are going through

- Social aspect helps get mind off the pain
- Positive Outcomes of the Pain Groups
  - o Taught alternatives to pain medications/new treatments for pain
  - Social aspects of group (e.g. having a good time, laughing, joking)
  - Having something to do outside of the house
- Positive Things about Group Structure
  - o Different IH modalities offered were good
  - Having doctors present and they were attentive and got on the patients' level, which made patients feel more validated
  - Group meeting once per month
  - o Everyone made you feel welcome and like they were happy to see you

# • Suggestions for Improvement

- o Too much paperwork
- Not enough time with integrative health providers (both one-on-one time, and experiential time in the circle)
- o Prefer twice per month, or offering a make-up class in case you miss one
- Reminder call 2-3 days in advance (helpful for setting up transportation)
- Prefer more continuity with the residents and would like their PCP to be present in the group
- Provide more information about where to find resources, including insurance coverage
- o Food should be more suited to African American culture
- Morning time is challenging, should have different time options available

# • Challenges Faced

- o Transportation (cost and access), sickness, cold weather
- Integrative Health Modalities

Acupuncture	Very popular, but cost is too high and insurance coverage is a barrier
Massage	Massage peanut and red star massager were helpful
Yoga	Trouble with some stretches; turned exercises into game with granddaughter
Diet/Nutrition	Food and grocery shopping tips
Mindfulness	Breathing helped
PMR	Teach earlier; one patient has hired someone to come and offer weekly PMR to his employees

# **PFAC:**

Insights were provided by the PFAC on an ongoing basis and a focus group was completed at months four and ten. There were four PFAC participants in the first focus group and 3 participants in the second focus group.

# **PFAC Focus Group 1:**

- Role in Group Visit
  - Talking with other patients, encouraging them to try new things, making patients feel more comfortable
  - Help move chairs and clean-up
  - Very comfortable in role. Faculty and staff made them feel comfortable and they grew more comfortable with time
- Training
  - Training was fine, but would have been helpful to have some specific training related to dealing with difficult patients
- Suggestions for Improvement
  - Not enough time with IH providers
  - o Provide more specific information about resources
  - Group visit room could be improved
- Positives of Group Visits
  - PFAC had more access to experts and staff and could call them or talk to them after a group visit
  - o Importance of talking with other patients who "understood them"
  - More forceful in their communications with their PCP (e.g., write down all of their questions and concerns ahead of time so that they would be more prepared to discuss their pain with their provider)
  - Groups help with pain and dealing with others around them who might not understand what they were going through

### **PFAC Focus Group 2:**

- Role in Group Visit
  - Feel more confident approaching and interacting with patient participants, even those who are quiet or more standoffish
  - Having more knowledge after participating in the 1<sup>st</sup> cohort helped increase confidence. Knowing that the facilitators were relying on them when doing the individual visits also boosted confidence
  - More effective at relating to patients because they are seen as peers as opposed to the doctors who are seen as providers, not friends
- Training/Suggestions for Improvement
  - Need more upfront training—meet with the facilitators 2-3 times before the groups start. The basic training was not effective for PFAC (briefly mentioned, but their responsibilities were not clearly defined)
  - o Groups meet more than once per month

# • Positives of Group Visits

- Group visits were fun and when you are having fun, you are not thinking about the pain.
- Have seen the doctors improve and learn, especially not talking down to patients and looking to them to find out what to discuss, instead of always leading the conversation.

### **PROVIDER/STAFF/FACILITATOR ASSESSMENTS:**

Provider Self-Assessment Surveys were completed pre- and post- group visits for each 6month cohort. Responses on every item showed a statistically significant increase in confidence from pre to post. Details are listed below (Table 4).

# Provider Self-Assessment Pre- and Post- Group Visit for Cohort 1 and 2

<u>Table 4</u>

		Cohort 1 (n=16) Mean Score		_	Cohor Mea	t 2 (n=18) n Score	
Self-assessment questions		<u>Pre</u>	Post		<u>Pre</u>	Post	p-value
Q1: I have the knowledge and skills I							
need to manage patients with chronic							
pain		2.61	3.31		2.50	3.50	0.02
Q2: I can describe to patients what							
happens during typical group visit							
session for chronic pain patients		1.94	4.38		2.00	4.50	<.0001
Q3: I understand the overall process of							
implementing group visits in a primary							
care practice (such as scheduling, room							
needs, resource needs, etc.)		2.39	3.63		1.80	3.70	<.0001
Q4: I have the knowledge and skills I							
need to participate in my assigned role in							
the group visits		2.33	4.44		2.20	4.70	<.0001
Q5: I have a clear understanding of role							
and activities of the Patient family							
advisory council (PFAC)	-	1.83	3.28		1.70	4.10	<.0001
06: Lam able to use reflective listening							
techniques during natient encounters							
		3.06	4.25		3.10	4.40	0.001
Q7: I am able to use motivational							
interviewing techniques to assess							
readiness of change and to do behavior							
change counseling	-	2.67	3.31		2.50	3.40	0.01
Q8: I am able to coach and facilitate							
patients through a guided imagery							
exercise?		1.83	3.25		1.80	3.80	0.002

	Cohort 1 (n=16) Mean Score		_	Cohort 2 (n=18) Mean Score		
Q9: I am able to coach and facilitate patients through a breathing exercise for relaxation?	2.00	3.50		1.90	3.80	0.001
Q10: I am knowledgeable regarding the evidence supporting the role of acupuncture in the management of chronic pain	1.39	2.56		1.30	2.90	0.003
Q11: I am knowledgeable regarding use of common vitamins and supplements in the management of chronic pain.	1.28	2.56		1.20	2.60	0.007
Q12: I am able to coach patients in appropriate diet recommendation for management of chronic pain.	1.44	3.25		1.60	3.30	0.0003
Q13: I understand the appropriate referral of patients for movement therapy (ie. physical therapy, chiropractic, pilates, yoga) in the management of chronic pain.	2.33	3.94		2.20	3.80	0.006
Q14: I am able to coach a patient in doing chair yoga for the use of chronic pain.	1.17	3.07		1.10	3.33	0.003
Q15: I am comfortable facilitating group visits for patients with chronic pain (N/A if not provider champion)	2.38	4.33		2.33	4.38	0.0001
Q16: I am able to use a variety of facilitation techniques to conduct group visits (N/A if not provider champion)	2.38	4.44		2.17	4.50	<.0001

Scale: 1-not at all confident, 2-somewhat confident, 3-moderately confident, 4-very confident, 5extremely confident

### **Practice Culture Survey**

Providers, staff, and facilitators completed the practice culture survey within six weeks prior to the onset of the group visit model and at the completion of all group visits at a given practice. There were no significant changes in the practice culture survey. Details are below.(Table 5)

# Practice Culture Survey by Providers, Staff and Facilitators

<u>Table 5</u>

	Total Surveys Completed			Completed pre- and post- by same Individual		
	N=59 Mean	N=67 Mean		N: M	N=33 Mean	
Practice Culture Questions	<u>Pre</u>	Post No.	<u>p-value</u>	<u>Pre</u>	<u>Post</u>	<u>p-value</u>
Q1: I am treated with respect at my workplace?	3.80	3.68	ns	3.85	3.72	ns
Q2: I am given everything I need to do my job?	3.32	3.24	ns	3.30	3.18	ns
Q3: How often is your job uncomfortably stressful?	1.95	2.06	ns	1.97	2.03	ns
Q4: It is safe for me to communicate errors?	3.49	3.46	ns	3.48	3.48	ns
Q5: Resistance to change gets in the way of improving patient care?	1.57	1.59	ns	1.72	1.78	ns
Q6: The needs of patients take precedence over the needs of the practice?	2.98	3.19	ns	3.03	3.18	ns
Q7: Other staff members are receptive to info?	3.53	3.45	ns	3.58	3.45	ns
Q8: My worplace has a systematic way to look at?	2.00	2.09	ns	2.09	2.21	ns
Q9: My workplace has a process?	1.89	1.95	Ns	1.97	2.10	Ns
Q10: How much of a priority does your practice place on prompt f/u?	3.30	3.31	ns	3.45	3.30	ns
Q11: To what degree does the practice leadership know?	3.53	3.48	ns	3.61	3.48	ns
Q12: Teamwork is valued in my workplace?	1.47	1.52	ns	1.42	1.67	ns

# Provider/Staff/Resident Facilitator Focus Group Analysis:

Focus groups were done at the conclusion of Cohort 1 and Cohort 2 including 13 physicians and 3 staff. Below are the key results from these focus groups.

- Memorable take away message/experiences
  - o Appreciating struggle of patients with CP
  - Surprised/pleased that patients will try/get relief with self-based integrative modalities
  - o Group model gave patients validation and purpose; was empowering to patients
- Group facilitation difficulties
  - Struggle between "leading" and "participating" in the group
  - Lack of skill with group facilitation (rule setting, conversational tangents, problematic participants (dominating, non-participant, rude))
- Benefits of group visit process
  - Peer support and education
  - o Normalization of experience
- Ways to improve the process
  - Larger groups with more consistent attendance
  - Facilitation skills training prior for facilitators
  - More details on access to integrative modalities in the community (don't introduce what patients can never access)
  - Prepare post-group follow-up program
- Chance in providing CP care after group experience
  - Concerns that barriers to integrating new knowledge/skills can't be overcome (lack of time, lack of continuity, continued focus on opioids, etc.)
  - Less judgmental of patients with chronic pain and more willing to offer alternatives to pain meds.
- Facilitator comments regarding specifics about each modality

	Insufficient access; only some could participate during		
A <i>cupu</i> ncture			
	Insufficient training/experience with self-acupressure		
	Most dramatic for the patients		
Massago	Great simple exercise with the tennis balls – practical, do-		
wassage	able, useful		
Voga	difficult to implement well at home after only one group		
roga	session		
	Practical education, but samples/tasting would have been		
Diat	useful		
Diet	Facilitators may have learned more than patients, as some		
	education above patient literacy		
Mindfulness/meditation Easy to teach, hard to actually practice			

Progressive muscle	No comments made
relaxation	

### **Data Analysis:**

For all patient outcome measures, baseline means were compared to six month means, and each to 12 month means, using paired t-tests applied to patients with values at both time points being compared. Reported p-values are two-tailed, unadjusted for multiple comparisons.

### VI. DISCUSSION (conclusions, significance, implications)

### **Conclusions:**

This project aimed to improve management and outcomes for patients with CNMP through the creation of an integrative group visit program in partnership with a PFAC. The project was successful in implementing the model in a setting with limited prior experience with group visits and demonstrated improvements in patient and provider outcomes. While pain and disability scores showed a trend toward improvement at six months, these were mostly not statistically significant and were limited by the short time horizon of six months and the small number of patients (n=36). Analysis of the cohort 1 patients at 12 months was even more limited by numbers with data on only nine patients. Several clinical outcomes did improve significantly, however. In the area of mental health, sleep problems and tiredness as assessed by the PHQ-9 improved significantly at 6 and 12 months. Four of seven items on the GAD-7 assessing anxiety improved significantly at 6 months, but these improvements were not statistically significant at 12 months. The Patient Activation Measure likewise showed significant improvement in the total score and in the item on maintaining positive lifestyle changes at 6 months and this single item was also significantly improved at 12 months. Based on the known synergies among chronic pain, mental health and sleep issues, these improvements are clinically important.

Beyond the improvements in patient clinical outcomes, the project demonstrated increased use of non-pharmacologic modalities among patients to manage pain following the group visits and an increased confidence on the part of providers to coach patients in these techniques. Anti-inflammatory diet, massage, mindfulness meditation and progressive muscle relaxation were the modalities reported by patients as being used the most frequently, whereas antiinflammatory diet, acupuncture and progressive muscle relaxation were rated most helpful. Patient remarks during the group visits indicated a very positive experience in managing their pain by incorporating these modalities.

In addition to improvement in patient care, involvement in this project resulted enhanced education of the provider. There were statistically significant improvements in provider confidence in the knowledge of integrative techniques and ability to coach patients in them across all modalities measured. Providers also improved their confidence using motivational interviewing techniques to support healthy behavior change and in their understanding of appropriate referrals to integrative health providers.

The involvement of the PFAC members both during the group visits and via the quarterly meetings was invaluable. During the group visits, they helped to create a sense of community in the group (i.e., welcoming patients, socializing) as well as contributing to group problem-solving

about pain management. As the project progressed, additional development of the PFAC members allowed several of them to co-facilitate activities within the group visits. In the quarterly meetings and via post-group visit debriefs, feedback from the PFAC supported our tailoring of the group visit activities to better meet patient needs (i.e., avoid activities requiring long time standing up, open discussion of impact of pain on mood).

Importantly, the implementation of the integrative group visit model within three busy academic primary care practices occurred without a disruptive impact on the larger practices, as demonstrated by the lack of significant change in the Practice Culture Inventory. Provider confidence in their knowledge of the group visit process and facilitation skills improved significantly during the program and additional providers and health professions students beyond those originally recruited became involved during the program out of interest. At the close of the project, the three practices elected to find a way to continue the group visits as an ongoing clinical program.

#### Significance:

The significance of an effective model for the primary care management of CNMP patients has both local and national significance. Locally, in our academic health center practices, research has shown that providers, many of whom are medical residents, feel uncomfortable managing patients with CNMP and also that patients are not consistently happy with the pain care they receive. In contrast, the providers and patients who participated in the group visit program described better connection (i.e., providers "appreciating the struggle of patients with chronic pain" and "being surprised/pleased that they would try and get relief from integrative approaches," and patients feeling doctors were "attentive and got on the patients' level").

Given that the majority of CNMP care is delivered in primary care settings, models that allow patients to receive excellent care while also meeting needs of the health care team are critical for access. This is especially true in an academic health center, where the involvement of health professions learners (in the case of our project, Internal Medicine and Internal Medicine-Pediatric residents and pharmacy and psychology students) in innovative delivery system designs has a potential ripple effect into their future practice. For example, a visiting Family Medicine resident from Australia participated as a research assistant on our project during the intervention period. She is now completing her training in her home country and is planning to begin integrative group visits for CNMP in her practice upon graduation. Likewise, familiarity with the group visit model promotes its use in other patient populations. Six months following our intervention period, for example, one of the Provider Champions who was new to group visits with our program created a "Healthy Lifestyles" group visit model with a focus on obesity management.

Nationally, with the high prevalence of chronic pain and CDC guidelines advising decreasing use of opioids in the face of the heroin epidemic, care models that allow for skill development in non-pharmacological approaches are critical. Current practice models in primary care allow limited time for patient skill development and conventional health professions training remains lacking in training on integrative health modalities such as those included in our program. For the majority of participants, both patients and providers, our project was their first exposure to using many of the integrative health modalities. Without a system that supports development of these skills, decreasing pharmacologic treatment of CNMP seems infeasible if not unethical.

Group visits have been shown to offer more provider contact time, social support and shared learning in a sustainable format for chronic conditions,<sup>4-15</sup> but this model has not yet been used widely in patients with chronic pain. Specifically with integrative group visits, we are aware of one other program with a model similar to ours.<sup>28</sup> Support groups and group education classes however, have been successful in chronic pain<sup>16-18</sup> and group visits are a logical extension of these models given the need for CNMP patients to see providers regularly, especially when use of opioids is involved.

The impact of group visits conducted using an interprofessional team approach as we did is also powerful. Specifically, the integration of a pharmacist into the team increased the likelihood of diversification of the pharmacologic management beyond opioids and NSAIDS and likewise could improve the safety of opioid prescribing and monitoring. Our utilization review showed some trend toward an increase in non-opioid medications for pain, but was not designed to closely assess quantity of opioid use or its monitoring. The number of patients also was small and this represents an area for future study. Finally, the inclusion of a community health worker on our team in one of the practices showed potential for connecting patients to additional community resources outside the health center to further their skill development and connections with each other.

#### **Implications:**

To move forward with this model in CNMP management, it will be critical to design ways to pilot the model in practices new to group visits without a significant investment and to secure leadership and patient buy-in. The former is a challenge given the very different space, training, staffing and process needs in group versus individual care. The latter becomes even more difficult if there is not a way to see this foreign model in action through a pilot. We were fortunate with our program in that our partnering practices had enough experience with group visits to anticipate many of these needs and that we had funding to work through implementation barriers. Without prior experience in group visits, however, it is difficult for providers and staff to understand what is needed logistically for groups, and to execute the group visits successfully, including recruiting sufficient patients and handling facilitation challenges. Even with the past experience of our practices, we did not recruit adequately for cohort 1 given the patient population, leading to small numbers in our analysis and risking leadership buy-in. At the conferences where we have disseminated our work, we have met many providers who are convinced of the potential of the model for CNMP patients, but who lack a clear path forward to implementation. As we continue to disseminate our findings, we plan to add to the resources available to such providers.

Specific lessons worth disseminating include: the importance of provider recommendation of patient participation; where possible, the presence of the patient's own primary care provider in the group; the expectation that only about half of confirmed patients will show up for the first group; the need for reminder calls sufficiently in advance to arrange transportation; the support of interaction during "circle time" for the first 1-2 visits in each cohort; the template of group activities; and the increased need for discussion time as the cohort progresses and sharing among patients increases.

Many questions remain to be answered about the use of integrative group visits in CNMP. It is unclear what frequency and total number of visits within a cohort is best, for example. More

frequent visits initially may facilitate group bonding but may jeopardize access to the program for other patients and financial viability when insurance is billed for visits. Our study was not able to show an impact on ER/hospital utilization, but a next step could be to examine this outcome with a larger sample size looking at high and low utilizers separately. Likewise we did not closely examine impact on opioid use (for example via pill counts) or on safe prescribing and monitoring habits, and these represent important areas of potential impact for group visits.

In conclusion, this study demonstrated that integrative group visits for people with CNMP is a feasible and effective model in primary care practices. By our presence in an academic setting, we were likewise able to demonstrate the educational impact of this model on health professionals in practice and in training. We recommend further study in defining key aspects of the model and in how to best support practices desiring to adopt it.

### VII. LIST OF PUBLICATIONS AND PRODUCTS

- Sian Cotton, PhD, Jill Boone, PharmD, Kristen Kraemer, MA, Chris White, MD, JD, MHA, Anthony C. Leonard, PhD, Rachel Wasson, BA, Nancy Elder, MD, Amy Short, MS, Tiffiny Diers, MD. "Integrative group visits for patients with chronic non-malignant pain: a pilot study". Poster presentation at the 2016 International Congress on Integrative Medicine and Health. Las Vegas, NV. May 2016.
- Tiffiny Diers, MD, Susan McDonald, MA, Christopher White, MD, JD, MHA, Sian Cotton, PhD, Nancy Elder, MD, MSPH, Anthony Leonard, PhD, Amy Short, MHSA, John Kues, PhD, Jill Boone, PharmD "Improving Outcomes in Chronic Pain: Integrative Health Group Visits". Poster presented at the annual meeting of the Academy of Integrative Pain Management, San Antonio, TX. September 2016.
- Victoria Eby, BS, BA, Susan McDonald, MA, Jill Boone, PharmD, Tiffiny Diers, MD, Chris White, MD, JD, MHA, Nancy Elder, MD, MSPH, Harini Pallerla, MS, Sian Cotton, PhD. "Patient Perspectives on Integrative Health Group Visits for Chronic Non-Malignant Pain". Poster presented at the annual student poster exhibition, University of Cincinnati College of Medicine, Cincinnati, OH. May 2016.
- 4. Diers, T., Boone, J., Wasson, R., Cotton, S., et al. "Basic Training: A Manual for Training Providers, Staff and Facilitators in Integrative Pain Group Visit Facilitation and Implementation". University of Cincinnati, January 2015.
- 5. Susan B. McDonald, MA, Rachel S. Wasson, MA, Kristen Kraemer, MA, Christopher White, MD, JD, MHA, Tiffiny Diers, MD, Jill Boone, PharmD, Nancy Elder, MD, MSPH, Sian Cotton, PhD. "A Model for Primary Care: Development, Implementation, and Preliminary Effectiveness of Integrative Health Group Visits for Chronic Non-Malignant Pain". Manuscript pending submission.

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