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I. Overall Goal and Objectives

East Carolina University (ECU) and Vidant Medical Group (VMG) are pleased to submit this proposal entitled "Enhancing Provider Education and Improving Healthcare Disparities in Chronic Myeloid Leukemia (CML) and Multiple Myeloma (MM) through a Rural Regional North Carolina Hospital Network". Funding of this proposal will provide training and standardize delivery of care for hematologic malignancies within an emerging regional Hematology Oncology Network that primarily serves a 29-county area of eastern North Carolina.

The main goal of this initiative is to ensure competency for physicians and nurses to provide state of the art care to patients with hematologic malignancies throughout eastern North Carolina. We have specifically chosen CML and MM because these disorders are likely to be treated in our regional facilities. We have seen rapid evolution of new diagnostic and treatment standards and believe the numbers of cases diagnosed each year in our region is manageable for a pilot educational project to keep providers abreast of changing standards for care of these malignancies.

In the two years of this project we will:

1) Expand provider knowledge of current national guidelines for diagnosis, treatment, and prognosis of CML and MM related to ordering, interpreting and implementing cytogenetic and molecular biomarker results. This will be achieved through a series of workshops, tumor boards, and online learning available to hematology oncology physicians.

2) Expand Nursing Education
   a. Provide nursing education specifically related the 2013 Oncology Nursing Society (ONS/American Society of Oncology (ASCO) guidelines for chemotherapy, including

the appropriate storage, administration, handling and disposal of medications. Special attention will be given to use of the newer oral treatments for CML and MM which has transformed care of these malignancies.

b. Provide nursing education about the latest molecular markers and diagnostic tests available to further ensure that appropriate tests are obtained for diagnosis and monitoring of therapy.

3) Patient education and assessment of compliance
   a. Improve patient education about their specific hematologic malignancy and the expected outcomes as well as potential side effects of therapies. Improve patient compliance with complex regimens which frequently include oral medications where compliance is very important to achieving the best clinical outcome and identify barriers to compliance.

4) Evaluation of the success of the interventions using surveys to access knowledge change and chart reviews to document adherence to NCCN guidelines.

II. Current Assessment of Need in Target Area

Vidant Medical Center (VMC) is an 861 bed tertiary referral center for nine small community-based hospitals in the Vidant Health System (VHS) located in eastern North Carolina. The bed capacity of these regional hospitals ranges from 21 to 142 beds with some functioning as Critical Access Hospitals. Oncology clinics are operational in five of these hospitals. In July of 2012, VHS contracted with ECU and Dr. Charles Knupp to spearhead the coordination of care within this Regional Oncology system linked to the tertiary medical center.

The five regional hospital sites will be: Vidant Beaufort, Vidant Chowan, Vidant Roanoke-Chowan, Vidant Edgecombe, and Outer Banks Hospital, as Hematology Oncology outpatient clinics and pathology services are presently operational at each facility. Each site presently has one or more generalist Hematology Oncology physicians, nursing staff who are either Oncology Nurse Certified (OCN) or who are working towards OCN certification, and chemotherapy infusion services. Among the five VHS hospitals, seven hematology oncology staff, five pathologists, and 16 nurses, will be the primary participants in this quality improvement study. There are an additional 21 private practice hematology oncology physicians in this region who are not presently associated with VHS. Already seven of these physicians have shown interest in our educational initiative and will be included during the second year.

The service area for the hospital network includes a 29-county area of eastern North Carolina, situated east of US Interstate 95 to the Atlantic Ocean and north of US Interstate 40 to the Virginia border. The interior of this region of North Carolina, besides the comparatively affluent coastal plain, is sparsely populated and poor, comprised of approximately 1.4 million persons, with an unemployment rate up to 21% in some counties and a median family (of four) income of $38,000. This region is ripe for development of an interconnected Hematology Oncology

network to allow patients to receive standard of care cancer diagnosis and treatment close to home and to reduce healthcare disparities for all individuals in the region.

During the course of planning for improved coordination, several limitations have been recognized:

1) Provider knowledge: Physicians presently employed in the regional Hematology Oncology clinics are a mixture of academic Hematology Oncology faculty from ECU, private practice Hematology Oncology physicians, and Vidant Medical Group employed Hematology Oncology physicians. The diversity of the group is such that provider knowledge of the latest specific guidelines regarding diagnosis and treatment of hematologic malignancies is variable. We began by surveying our physicians regarding their present use and understanding of the latest NCCN guidelines regarding Hematologic malignancies. In our initial assessment, 100% of the providers completing the survey reported using NCCN guidelines frequently (several times per month). Despite this frequent use, 80% of our regional physicians reported that they felt they had knowledge gaps related to the latest tailored therapies for hematologic malignancies and 60% reported confusion related to the appropriate use of the latest diagnostic tests for CML and MM. All reporting physicians expressed an interest in further educational efforts towards improving their understanding of the latest diagnostic and treatment guidelines in CML and MM including attending outside speaker lectures, improved use of tumor boards, and utilization of performance improvement activities. Based on this feedback, we have developed our initiative to address these deficiencies and thus improve provider knowledge and standardize use of the latest guidelines.
2) Standardization of Laboratory Services: Only one regional hospital site has on staff a full time ECU employed, School of Medicine faculty member with expertise in Hematopathology. Our other regional hospitals contract with different private practice Pathology groups in the region. Molecular and cytogenetic blood and bone marrow samples are presently sent to different reference laboratories. While not specifically included in this proposal, Dr. Ron Mageau, our hematopathologist, will begin working to standard the reference laboratory ordering and reporting of results across hospitals. We could not include this as study objectives, because we could not obtain a commitment from the VHG information technology staff to enhance the medical records system within the timeframe necessary to measure change. By standardizing the testing across the system, we will reduce the chance that ordering and interpretative errors are made by providers using different laboratories.
3) Oncology Nurse Certification (OCN): Our goal when developing our Regional Network in 2012 was to have 80% of nursing personnel providing care at these regional sites obtaining OCN certification within 5 years. While several regional hospitals have more than one OCN certified nurse on staff, most do not and we presently have an OCN certification rate among all clinics of approximately 40%. Our project will improve OCN certification completion by providing our regional nurses with Continuing Education (CE) credits which are a requisite for OCN certification. In surveying our nursing staff regarding patient education, the majority

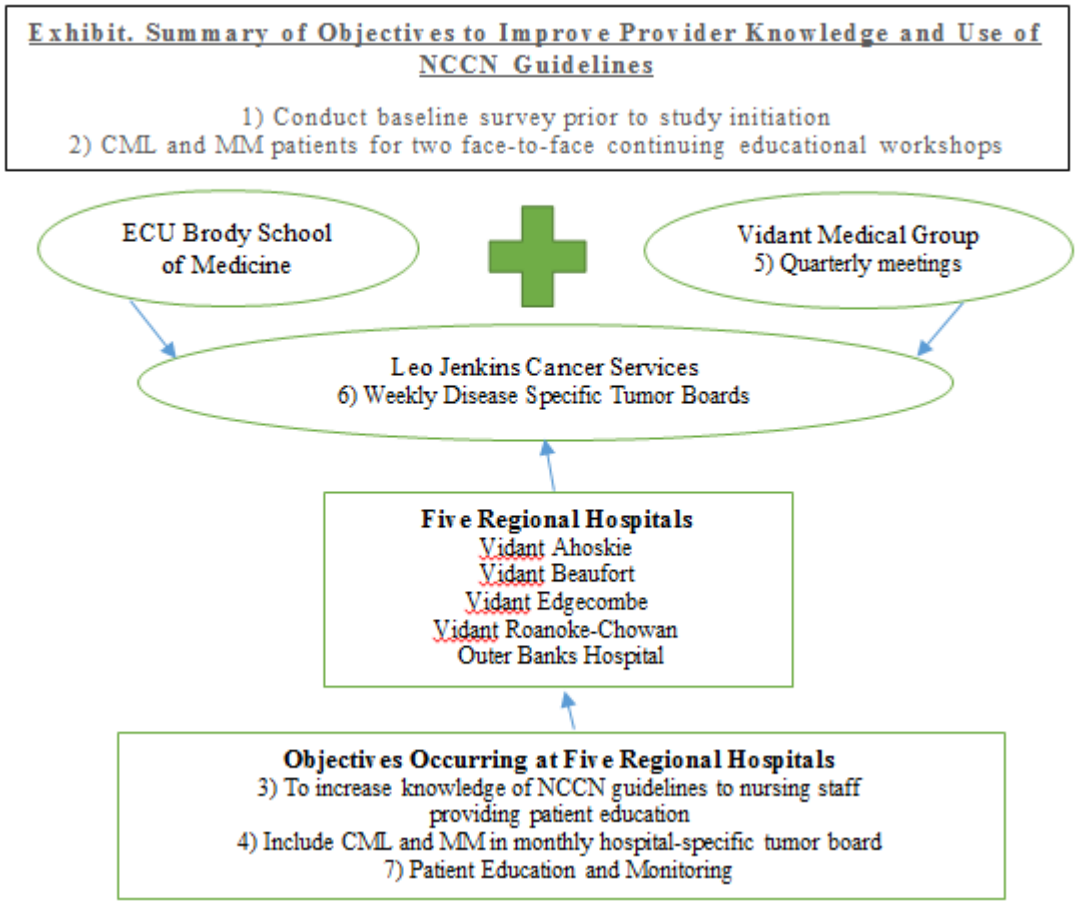
of nurses (almost 60%) reported being uncomfortable providing education to patients with hematologic malignancies and indicated a regional need for more education, especially with the newer oral anti-neoplastic medications. While OCN certification will not entirely eliminate the perceived problem of not being ready to educate patients, our survey data demonstrates that our OCN certified nurses scored higher in their comfort level with patient education than non-OCN certified nurses. The Oncology Nursing Society (ONS) in conjunction with the American Society of Oncology (ASCO) published its latest chemotherapy administration and safety standards in 2013 which outline the necessary requirements for safe administration of parenteral and oral chemotherapy drugs as well as standards for patient education related to the administration of oral and parenteral chemotherapy drugs and side effects of patient's treatments. Greater awareness of these national ONS standards through the attainment of OCN certification is expected to ensure that the level of care given in the regional clinics is commensurate with national standards. We feel that an increase in the number of OCN certified nurses at our regional sites will positively impact our project by holding our staff to ONS standards for providing state of the art patient education and nursing care.

4) Patient Compliance: Patient compliance is particularly a problem with oral medications, including Tyrosine Kinase Inhibitors in CML and Revlimid and Dexamethasone in MM. Patients may lapse into non-compliance due to side effects, cost of long term treatment, lack of awareness of the importance of continued therapy or other reasons. Our patient population, with a low literacy rates and reading levels, will benefit from the additional strategies to empower them to remain compliant. Presently, our nursing staff provides face to face education for each patient at the time of initiation of therapy. Results of an on-line confidential nursing survey demonstrated that only 44% of our regional nursing staff felt comfortable providing face to face education to patients with hematologic malignancies including CML and MM. More than a third of our nursing staff said that they felt very uncomfortable or extremely uncomfortable with providing face to face education to patients with hematologic malignancies. When asked their opinion about how to improve patient compliance with complex oral regimens for CML and MM, nursing staff cited the initial face to face education, verification of regular pharmacy refills by patients, and repeat support group or nursing education as the most likely ways to improve compliance. Pill counts at each visit and having a resource room available for patient education were felt to be only moderately effective in improving patient compliance, however, some regional clinics noted that they do not presently have the workspace resources to dedicate to a patient self education room to confirm this impression. In addition, nursing staff noted that in several clinics they frequently did not have written educational resources available to provide patients with hematologic malignancies.

III. Intervention Design and Methods:

Our seven-part educational intervention is multifaceted to address the needs of the regional physicians, nurses, and patients on several levels. The interventions we plan will produce numerous opportunities to review the latest guidelines for diagnosis and treatment of CML and MM with the understanding that on-going access and review of guidelines in different settings will improve physician and nursing engagement and retention of complex information.

The Exhibit displayed below highlights the conceptual relationship between the organizational entities (ECU Brody School of Medicine, Leo Jenkins Cancer Services and five regional hospitals within Vidant Medical Group) and objectives of the seven educational components. The following sections will provide a description of each objective and how the objective will be implemented. Section 4 will follow and describe how the objectives will be evaluated.



3.1 Baseline Assessment

3.1a Provider Surveys

In preparation for this full application, we conducted two initial online surveys (Qualtrics online software) to physicians and nurses to access baseline knowledge in the diagnosis and treatment of CML and MM. Two 20 question surveys were developed, one for physicians focused on medical knowledge of latest NCCN guidelines for CML and MM and a second focused on nursing educational issues in CML and MM and patient compliance issues. The physician survey was emailed to both the hospital network regional Hematology Oncology physicians, and private practice Hematology Oncology physicians and the nursing survey was emailed to all nurses who has worked at least one shift in any of our regional Hematology Oncology clinics in the past 6 months. We are inviting private practice Hematology Oncology physicians (n=20) to participate in these workshops because strong ties already exist and this enhances care for CML and MM patients across the region. The baseline survey aimed to assess understanding and use of the NCCN guidelines. The data from this initial survey will be utilized for development of the year long program and in evaluation of the overall project in year 2.

3.1b Chart Review

At the initiation period for the grant, each site will perform a chart review of all patients with a new diagnosis of CML and MM within the past year to obtain data related to quality measures already being performed at baseline. These will be disease specific and include: for MM 1) the administration of Bisphosphonates within the past 12 months or documentation regarding contraindication; 2) Documentation of administration of appropriate vaccinations including Influenza and Pneumococcus; 3) Documentation of assessment of suitability for stem cell transplantation; 4) Documentation of staging; and 5) Documentation of utilization of IMiD therapy up-front or rational/contraindication to use.

For CML these will include: 1) bone marrow aspiration and biopsy performed at initial diagnosis; 2) administration of an appropriate Tyrosine Kinase Inhibitor at the time of initial diagnosis; 3) documentation of peripheral blood quantitative RT-PCR for BCR/ABL transcript utilizing the International scale at onset and at each three month follow up; 4) Documentation of adequate response by RT-PCR measured by a 2 log reduction in peripheral blood BCR/ABL transcript at 3 months; and 5) appropriate mutation analysis testing if a patient has not achieved appropriate response by 3 months. Each site will be responsible for entering site specific data into a database. Leo Jenkins Cancer Services Hematologic Malignancies Nurse Navigator, who has the task of helping facilitate care closer to the patient's home, will help each site maintain their patient database information.

3.2 Face-to-Face Workshops for Physicians and Nurses

We will schedule two educational seminars, one for CML and one for MM, at the beginning of the first year and at again the beginning of the second year in which nationally recognized experts from NCCN institutions will address diagnosis, treatment, and surveillance of CML and MM. At each of these seminars, our local clinical staff Dr. Mageau, Dr. Liles, and Dr. Knupp will provide some of the education by presentation of specific pathology guidelines and presentation of interesting case vignettes with particular teaching points. Learning objectives

and curriculum for the workshop will be developed by the speakers and the project team. Planning for the workshops in year 1 will commence within the first two months of award.

At the beginning of each symposium we will have participants answer a group of medical knowledge questions utilizing PollEverywhere® Audience response software. Questions will be based on the latest NCCN guidelines for CML and MM. We have recently begun to utilize this tool for some of our important institutional conferences such as Internal Medicine Grand Rounds. These educational sessions are then uploaded to YouTube where our physicians can access them and review to clarify information. This has been so successful we plan to utilize the same technology for our symposia. This will allow people to participate who might not be able to attend a face to face meeting and also allow individuals who did attend to periodically review and solidify their understanding of medical knowledge as presented in the sessions.

During the second year of the budget we will plan two additional symposia with invited speakers who will provide latest updates in the medical knowledge and NCCN guidelines since these guidelines are extensively updated each year. We will repeat assessment of the symposia pre- and post- speaker presentations to determine immediate grasp of medical knowledge. Educational seminars will be held after clinic hours in Greenville, NC, on the ECU medical campus, which is on-average about a 60 minute drive. We anticipate participation to be high, because the regional Hematology Oncology clinical staff has never convened in this format and have indicated a willingness to participate in this type of educational endeavor in our needs assessment surveys. These seminars will be videotaped and uploaded to YouTube format for dissemination to all participants. Participants will be notified of these YouTube videos by email and will be able to review all or parts of each seminar.

3.3 Nursing Education

Nursing staff will be invited to attend the invited speaker symposia sessions. In addition, face to face educational sessions will be conducted specifically designed to enhance their knowledge and understanding of these disease processes and to help them better assess patient compliance with therapy. The nursing sessions will focus on areas identified in the 2013 ASCO/ONS Chemotherapy safety administration standards related to medical knowledge of hematologic malignancies, patient instructions in the proper use of oral chemotherapy medications and knowledge of appropriate testing for hematologic malignancies particularly CML and MM. In regards to patient compliance issues the nurses will be educated in how to identify and deal with the problem of missed doses of oral chemotherapy as well as how to educate other family members to assume responsibility for administration of drugs if the patient is not able to self administer therapy.

The number of tests presently available for the diagnosis and monitoring of efficacy of hematologic disorders such as CML and MM has increased in number and complexity in recent years. Review of the number of tests available for BCR/ABL testing and mutational analysis through specialty laboratories, such as LabCorp, complicates and confuses individuals who are trying to ensure that the proper test is obtained for each individual patient. In most of these clinic sites, the nursing staffs are charged with selecting the precise specialized tests the

physician has ordered from the repertoire of available reference laboratory tests and transmitting that information to laboratory personnel. Specific nursing education aimed at clarifying the use of each of these markers will improve communication between the physicians and the nurses and thus allow proper ordering and monitoring of patient response to therapy. Dr. Mageau, our Hematopathology expert, will provide the nursing educational seminars aimed at improving their understanding of the tests available and appropriate use of these tests.

3.4 Include CML and MM in Monthly Hospital Specific Face-to-face Tumor Boards

Each of the regional hospitals already has a tumor board which meets at least monthly or bimonthly and provides CME credit to attendees. While some Hematologic malignancy cases are occasionally discussed at these regional tumor boards, the focus is typically on solid tumor pathology. During this initiative, we will ask each regional site to review all bone marrow samples performed for the diagnosis of a hematologic malignancy at the monthly tumor board. Discussion around the case can then result in review of latest NCCN guidelines which will increase awareness about the latest guidelines as mandated by the Commission on Cancer (CoC). We anticipate that over the course of the year we will see a 10% improvement in ordering of specific molecular testing for CML. Specifically, we would anticipate an improvement in the use of mutational analysis in patients with CML who have demonstrated an appropriate molecular response but who appear to be developing resistance based on reappearance of BCR/ABL construct. We also anticipate an improvement in medical knowledge of the specific cytogenetics in MM which indicates more aggressive disease and may call for different approaches to therapy.

3.5 Quarterly Regional Administrative Meeting

All members of our Vidant regional network already participate in a quarterly meeting by a webex to disseminate new information affecting all sites. This meeting will serve as a way to disseminate individual provider, and nurse medical knowledge data as well as data from the chart abstraction for each site. With all parties present, we can discuss data and decide upon which quality measures the group can explore as performance improvement projects.

3.6 Integrate Weekly Disease Specific Tumor Boards at Leo Jenkins Cancer Services

In addition to the general tumor boards at each site, we have developed disease specific tumor boards at Leo Jenkins Cancer Services in Greenville, NC, our tertiary care center. Our regional Hematology Oncology physicians are sometimes able to attend in person or are able to videoconference into these tumor boards to prospectively discuss more challenging cases. This integration allows our regional physicians to discuss their most difficult cases on a weekly basis with an expert in hematologic malignancies. This will allow further review and discussion of latest guidelines for diagnosis, treatment and follow up of these malignancies.

3.7 Patient Compliance and Monitoring

Our patient population is a rural, poor, and often undereducated population who frequently do not fully understand their oncology diagnosis. Because they are being given oral medication they may incorrectly assume that their disease is not life-threatening. The 2013 ASCO/ONS chemotherapy safety standards stress the difficulty of ensuring patient compliance with oral

medications. CML is presently treated with oral medications which must be taken consistently for years. The medications may have uncomfortable and often have unpredictable side effects. Patients at diagnosis are fearful of a potentially lethal diagnosis and so are likely to be initially compliant, however, over time the patients often become less compliant, particularly since follow-up occurs at three months intervals. Similarly, MM is frequently treated with combinations of parenteral and oral medications some of which are only taken on a weekly basis which increases the likelihood of forgetting or misunderstanding the administration instructions. Financial issues, related to cost of drug and copays, present additional barriers to compliance. In our initial needs assessment nursing survey, several strategies for overcoming these barriers and improving patient compliance were identified. These strategies included improving our initial face to face nursing education program for patients with hematologic malignancies, development of a support group of patients with hematologic malignancies where nurses and other care providers can present information at regular recurring time points, pill counts of oral medications, compliance diary where patients maintain a calendar of when they take their medications and nursing phone calls made to the pharmacy to ensure regular refills are occurring.

4.0 Evaluation Design

4.1 Baseline assessment

A needs assessment survey was performed at the inception of the idea for this proposal. These data will be used throughout the evaluation plan to measure improvement in use of current guidelines.

4.2 Face-to-Face Workshops for Physicians and Nurses

4.2a Pre and post-assessments of knowledge gained during the educational session will be conducted in a face-to-face format by way of PollEverywhere (www.polleverywhere.com) audience response software. We anticipate a 10% improvement in baseline medical knowledge from the pretest to the post presentation test.

4.2b On-line questionnaires will be performed monthly through Class Marker (www.classmarker.com) to measure retention of knowledge at 6 months, 12 months and 18 months. Participant's medical knowledge will be reassessed monthly (2-3 questions/month) utilizing an On-line assessment tool (www.classmarker.com). This assessment will not only serve to reassess medical knowledge but will allow us to provide a short review of the correct answer to reinforce retention of medical knowledge. Each individual participant with be provided his/her data of number of correct answers on the pre and post tests as well as their performance on the monthly assessments. This will allow each provider to understand their own personal deficits in medical knowledge. Questions posed to the group will be primarily case based questions which will include cases that have been seen and diagnosed at East Carolina University and which have an interesting learning point. An example of medical knowledge questions would include:

A 53 year old Caucasian female is referred to your clinic for progressive leukocytosis and fatigue. Last year her White Blood cell count was 17,500 k/uL and today in your clinic her White Blood Count is 78,000 k/uL. She is mildly anemic with hemoglobin of 9.8 gm/dl and her platelets are normal at 153,000 k/uL. The White count differential reveals a left shift with metamyelocytes, eosinophils and basophils but no blasts. You perform a bone marrow aspiration and biopsy which reveals t(9;22)(q34;q11) by standard karyotype.

Which of the following fusion proteins would you expect to see in this patient?

a) P190 BCR/ABL
b) P210 BCR/ABL
c) P230 BCR/ABL
d) FIP1L1-PDGFRA

4.2c Once the seminars are uploaded in YouTube, format participants can review pertinent points of these presentations to solidify specific learning points. We will track how frequently these videos are accessed as a measure of physician engagement in the project. We anticipate that viewers will watch a specific portion of the video related to a specific question they have and will not usually view the entire video. However, participants who may not be able to attend one of the face to face seminars may view the entire video.

4.3 Nursing Education Evaluation

Nursing staff will be invited to attend the invited speaker symposia sessions. In addition, face to face educational sessions will be conducted specifically designed to enhance their knowledge and understanding of these disease processes to help them better assess patient compliance with therapy. The nursing sessions will focus on areas identified in the 2013 ASCO/ONS Chemotherapy safety administration standards related to medical knowledge of hematologic malignancies, patient instructions in the proper use of oral chemotherapy medications and knowledge of appropriate testing for hematologic malignancies particularly CML and MM.

We will utilize the on-line questionnaire tool Class Marker (www.classmarker.com) to assess nursing medical knowledge. In addition, since the nursing staff is expected to educate patients about their disease process and administration of their medications, we will re-survey our nurses about their comfort level with educating patients. Our initial Qualtrics survey had specific questions related to how comfortable our nurses were with their education role which we will use for comparison to later data.

4.4 Monthly Hospital Specific Tumor boards

Regional hospitals hold monthly or bimonthly general Hematology Oncology tumor boards. Most of the regional hospitals do not currently present hematologic malignancies at monthly tumor boards. The addition of these cases for presentation and discussion at all of the regional tumor boards is an innovation. After presenting CML and MM cases (about 1-3 new cases per month), we will evaluate the effectiveness of this measure by tracking the ordering of molecular testing for CML and MM. We anticipate that over the course of the year we will see a 10% improvement in ordering of specific molecular testing. Specifically, we would anticipate

an improvement in the use of mutational analysis in patients with CML who have demonstrated an appropriate molecular response but who appear to be developing resistance based reappearance of BCR/ABL construct. We also anticipate an improvement in medical knowledge of the specific cytogenetics in MM which indicates more aggressive disease and may call for different approaches to therapy. The Summary Report of Indicators will capture changes in order over time.

4.5 Quarterly meetings

All members of our regional network already participate in a quarterly meeting by a webex to disseminate new information affecting all sites. This meeting will serve as a way to disseminate individual provider and nurse medical knowledge data as well as data from the chart abstraction for each site. With all parties present, we can discuss data and determine which quality measures the group would like to use as the basis for performance improvement projects.

4.6 Disease Specific Tumor Boards at Leo Jenkins Cancer Services

We have developed weekly disease-specific tumor boards through Leo Jenkins Cancer Services (LJCS) where challenging cases can be presented for discussion of best practices. We are now beginning to integrate our regional physicians into these disease-specific tumor boards. We have already successfully linked several of our regional physicians by video-conferencing for this purpose. The number of participants and number of CML and MM cases from regional hospitals presented at LJCS tumor board will be quantified over time. Effort will be coordinated to include a CML and MM new case for discussion. An improvement of 10% in participation and case presentation is expected.

4.7 Patient education and monitoring

We will assess patient compliance before and after institution of these strategies with several measures including: pill counts, documentation of regular pharmacy fills, assessment of patient diaries regarding when they actually took their medication. Unfortunately, for both CML and MM, there are not available objective laboratory tests to confirm compliance as compared to disease resistance. We do not yet have objective data on patient compliance at any of our regional sites, however, because of the low literacy rates and poverty level, we anticipate we have a high rate of non-compliance with the oral medications for both CML and MM. We anticipate we will be able to improve the patient compliance rate by 15% from baseline with the measures we have in place.

Overall Change and Impact of Educational Interventions

A primary evaluation tool will be to abstract patient charts over the course of 16 months to identify changes in use of standards recommended in the NCCN guidelines. Because the patient population is unlikely to exceed 50 new and existing patients across all five hospitals, it is likely that careful chart review and summation of changes will occur. An electronic abstraction form will be developed for use on a laptop computer that can be used to transcribe data. Paper charts are still in use at most of the regional hospitals, and often pathology information is in PDF format, requiring transcription. The nurse navigator, in conjunction with the nursing staff

at each site, will abstract patient data for all new CML and MM patients quarterly for 16 months. Data collection is estimated to begin at approximately month 3. Each site will receive a report of how they are progressing for each quality measure in comparison to the group as a whole. The data from before and after the educational interventions will be compared for improvement. Site specific data as well as aggregate data will be shared with the group at the Quarterly administrative meeting. This data can be used to develop performance improvement measures for our regional sites. Data analysis will be performed quarterly and reported under Objective 5. Counts and percentage change will be provided. Statistical procedures will be used, such as test for difference in proportions, chi-square test, and other non-parametric tests appropriate for small samples sizes, were appropriate.

Detailed Workplan and Deliverables Schedule:

The grant period will extend over a two year period which will allow us to provide more in-depth education which is more likely to be sustainable beyond the completion of the grant.

Project Goal: To provide clinical continuing education training to standardize delivery of care for patients with CML and MM across 5 hospitals				
Objective 1: Conduct baseline survey prior to study initiation				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**
-identify questions for physician and nurse surveys (2 surveys)	Qualtrics software Prior NCCN surveys -lists of names	Final survey to be sent to providers		completed
Develop Qualtrics surveys	Qualtrics software	Final survey sent to providers		completed
Deploy surveys	Liles	Physician and nurse reply to survey		completed
Objective 1: Outcome indicators / Evaluation	**Data Collection and Timeframe**		**Result**	**Deliverable**
Percentage of physicians and nurses willing to participate	Survey results were assessed prior to grant submission to identify baseline knowledge and use of NCCN guidelines.			Response rates, and results of survey,
Objective 2: Convene physicians who diagnose and treat CML and MM for 4 face-to-face continuing educational workshops				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**

-Identify curriculum development team - Develop curriculum for CML - Multidisciplinary case-based workshops during years 1 and 2 -Develop curriculum for MM - Multidisciplinary case-based workshops during years 1 and 2. - Hold CML - Multidisciplinary case-based workshops during year 1 and 2 -Hold MM - Multidisciplinary case-based workshops during year 1 and 2. -develop questions of Medical knowledge for pre and post seminar session and monthly on line posting to Class Marker.	-establish room location, dates -invite speakers -IT staffing / equipment -curriculum planners -catering -invite all Hematology-Oncology physicians	-develop program content that can be used for other community-based programs -recorded content to be shared on YouTube -monthly Medical Knowledge questions to providers (www.classmarker.com)		-
Objective 2: Outcome indicators / Evaluation	**Data Collection and Timeframe**		**Deliverable**	
-Increase physician knowledge of NCCN guidelines by 10% from baseline to end of workshop. -Compare change in overall knowledge across time periods (baseline survey, workshops events, six and 12 months, post workshop by CML and MM.	-Surveys administered at baseline and conclusion of workshop assessing knowledge of NCCN guidelines. (pre and post test). -Measure retention of knowledge at 6 and 12 months, post workshop. -"Clicker" response measurement technology will be used to conduct pre and post tests during the workshops.		Slideset and handouts of materials distributed at workshop 1 -Slideset and handouts of materials distributed at workshop 2 -Summary Report of Survey Results	
Count of hits on YouTube to estimate location and timing of viewing video	Google Analytics will determine number of hits to watch video from both work shop over 1 year after posted.		-You Tube video of workshop1 -YouTube video of workshop2	

-Chart review at of existing patients prior to workshops and quarterly for 16 months. -Determine implementation of guidelines.	-Treatment documentation, prescription fills, orders of molecular markers, cytogenetic tests. -Determine use of guidelines by presence of orders and prescriptions reflecting current standards.		Report of Summary Indicators	
Objective 3: To increase knowledge of NCCN guidelines to nursing staff providing patient education				
Activity (include timeframe)	**Inputs (Resources needed, staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**
-Invite nursing staff to physician workshops in year 1 and 2 -create small team to develop curriculum for nursing Face-to-face educational sessions by month 2, - establish workplan for nursing training within 6 months -develop curriculum for nurses, including ASCO/ONS chemotherapy safety, patient instructions, -explore mode of IT delivery NOTE: nurses currently meet quarterly on a Friday afternoon via the Vidant conferencing network through the nursing education department.	-logistics for face-to-face workshops -GoToMeeting or similar available thru ECU -Explore ShareCare Alliance network capabilities to deploy desktop training. -Schedule	-develop program content that can be used for other community-based programs -recorded content to be shared on YouTube		
Objective 3: Nursing Knowledge, Outcome indicator/Evaluation	**Data Collection and Timeframe**		**Deliverable**	
Increase nursing knowledge of NCCN guidelines by 10% from baseline.	Surveys administered at baseline and conclusion of workshop assessing knowledge of NCCN guidelines. (pre and post test)		Summary Report of Survey Results	

Count of hits on YouTube to estimate location and timing of viewing video for workshop 1 and workshop 2, and Quarterly education nursing conferences	Google Analytics will determine number of hits to watch video from both work shop over 1 year after posted.		YouTube video of nursing education program	
Chart review at of new existing patients at quarterly for 16 months. By 6 months, 10% increase in orders for molecular tests.	For new and existing patients, treatment documentation, prescription fills, orders of molecular markers, cytogenetic tests. Document resistance to treatment given at baseline.		Report Summary of Indicators	
Objective 4: Include CML and MM in monthly/bimonthly hospital-specific tumor board - innovation				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**
-Identify coordinator and schedules content for tumor board at 5 hospital, monthly, -Discuss new cases of CML and MM in the previous month diagnosed at each of 5 hospitals. -Include relevance to NCCN guidelines and steps to Identify and present CML and MM. -market to clinical staff about CML and MM inclusion in tumor board. NOTE:	-identify cases with bone marrow slides, and charts and identify presence or absence of NCCN guidelines as applied to each case. -charts, pathology reports, slides, treatment plan. -logistics of tumor board meeting	-clinical staff attending tumor board gains knowledge of NCCN guidelines, -increase regular attendance of tumor boards -include bone marrow slides in tumor board discussion		
Objective 4: Tumor Boards, Outcome indicator/Evaluation	**Data Collection and Timeframe**		**Deliverable**	

Chart review at of new existing patients quarterly for 16 months. By 6 months, 10% increase in orders for molecular tests.	For new and existing patients, treatment documentation, prescription fills, orders of molecular markers, cytogenetic tests. Document resistance to treatment given at baseline.		Report of Summary Indicators	
Include CML and MM cases on monthly agenda	Number of times CML and MM cases are included on agenda each month		Agendas from 5 hospitals	
Increase in attendance at tumor board by nurses, physicians, and attending staff	Sign in sheet at each monthly tumor board		Sign in sheets, and email announcements of new content	
CME credits obtained	Physician complete CME test and requesting CME credit from AHEC.		CME records	
Objective 5 : Quarterly meetings held at each Vidant Hospital				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**
NOTE: Currently, physicians and nurses meet quarterly for administrative updates related to practice at hospital. At this meeting, participants will receive feedback on performance improvement across all hospitals and information on management aspects of project.	-coordinator of quarterly meeting at each hospital -teleconference line	Receive updates on performance improvement and management of project.		

Objective 5: Quarterly meetings Evaluation	**Data Collection and Timeframe**	**Deliverable**
Identify the number and type of improvement actions related to use of NCCN guidelines based on chart reviews	For new and existing patients, treatment documentation, prescription fills, orders of molecular markers, cytogenetic tests. Document resistance to treatment given at baseline.	Report Summary of Indicators

Objective 6: Integrate Weekly Disease Specific Tumor Boards at Leo Jenkins Cancer Services				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**
-Link weekly (Monday morning) hematology oncology tumor board to regional hospitals. -Connect IT capabilities for videoconference or Internet-based viewing of tumor boards to regional hospitals. Discuss new cases of CML and MM using NCCN guidelines.	-Information technology staff at LJCS, regional hospitals, and VMG.	-clinical staff attending tumor board gains knowledge of NCCN guidelines, -regularly attends tumor board,		
Objective 6: LJCS Tumor Board, Evaluation	**Data Collection and Timeframe**		**Deliverable**	
20% improvement in discussion of regional hospital CML and MM cases at LJCS tumor board.	Agendas and sign in sheet at each weekly meeting. Short evaluation at end of tumor board that includes questions about NCCN guidelines.		Agendas, short evaluation results	
Objective 7: Patient Education and Monitoring				
Activity (include timeframe)	**Inputs (staff, supplies, technology, equipment)**	**Expected Outcome(s)**	**Responsible Person(s)**	**Progress Reporting**

Nurses will counsel patients on proper use and timing of medications for CML and MM	-Nursing staff at each hospital	Greater compliance with medications		
Nurses will instruct patients how to use patient diary to track medications	Nursing staff at each hospital	Patient will complete and return patient diary		
Develop patient diary	Nursing staff at each hospital	Diary will be developed by month five.		
Objective 7: Patient Monitoring, Outcome indicator/Evaluation	**Data Collection and Timeframe**		**Deliverable**	
Patients will take medications as prescribed	Pharmacy refills, patient diaries,		Report that summarizes assessment of patient compliance	
Pharmacy refills	Nursing staff will contact pharmacy to document prescription refill.		Report that summarizes assessment of patient compliance	
Patient diaries	Appointment staff and Nursing staff will remind patients to bring diaries into office at next visit.		Report that summarizes assessment of patient compliance	

Table of Objectives by Quarter and Month&

	Year 1				Year 2			
Activities and Deliverables	1st Q 2014 Jun-Aug	2nd Q 2014 Sep-Nov	3rd Q 2014-15 Dec-Feb	4th Q 2015 Mar-May	1th Q 2015 Jun-Aug	2nd Q 2015 Sep-Nov	3rd Q 2015-16 Dec-Feb	4th Q 2016 Mar-May
Obj 2. Planning Years 1/2 Seminars	6,7				6,7			
Obj. 2 Years 1/2 CML seminar	8				8			
Obj. 2 Years 1/2 MM seminar		9				9		
Obj 2. Planning Year Two seminars				4,5				
Obj. 2 pre and post test seminar medical knowledge assessment	8	9			8	9		
Obj 2 Monthly (www.ClassMarker.com) Medical Knowledge questions		9-11	12, 1, 2	3-5	6-8	9-11	12, 1,2	3-5
Obj. 5 Share results of Medical knowledge		11	2	5				
Obj 4. Monthly Hospital tumor board presentation of CML and MM cases	8	9-11	12, 1, 2	3-5	6-8	9-11	12, 1,2	3-5
Obj 2. YouTube Video recordings	8	9						
Obj 2,3,4,6. Initial Chart review at each site for database (control patients)	6, 7, 8							
Obj 2,3,4,6. Addition of New patients to Database	6,7	9-11	12, 1, 2	3-5	6-8	9-11	12, 1,2	3-5
Obj 2,3,4,6. Comparison of patient results		11						
Obj 7. Patient education	8	9-11	12, 1, 2	3-5	6-8	9-11	12, 1, 2	
Obj 7. Monitoring patient compliance	8	9-11	12, 1,2	3-5	6-8	9-11	12, 1, 2	
Final Assessment and Report								3-5

& Month is represented by number within cell.