AN OVERALL REPORT ON THE STATUS OF COMMUNITY MEDICAL CENTERS’ CANCER PROGRAM WITH A SPECIAL EMPHASIS ON PANCREATIC CANCER.
The Community Medical Centers’ Cancer Committee is pleased to introduce its 2014 Annual Report. The program continued to have a steady growth over this last year. Community has been accredited by ACOS/CoC since the 1970s and has set many new standards that will need to be met.

Over the past year, we have been working diligently to meet the new standards that are required by the CoC, which are focused on patient care from the time of diagnosis, through treatment, and following the patient. In addition to breast and lung cancer navigation programs we’ve had in place for the past few years, we also added navigation programs for patients diagnosed with gastrointestinal, head and neck cancers. Our navigators in these areas are helping patients through their initial diagnosis of cancer and guiding them through the very complex treatments these cancers require helping patients and their families to understand and prepare for their treatment and proceeding in a timely manner. We are excited to soon bring further navigation, palliative care and survivorship programs that will continue to enhance the patient care experience.

This year’s report has a special emphasis on Pancreatic Cancer. Surgeon Babak Eghbalieh will present the program’s data for the last 10 years. He compares Community’s results to national outcomes.

On behalf of the Cancer Committee, I wish to thank all of those who contributed to this report. The Cancer Committee consists of dedicated professionals from multiple disciplines. Their commitment and hard work have resulted in the program’s continued growth and success. I look forward to this coming year’s achievements.

Dina Ibrahim, MD
Cancer Committee Chairman
Community Oncology Associates
Community Medical Centers
The 2014 Cancer Committee Members are listed below in alphabetical order:

Haifaa Abdulhaq, MD
Medical Oncologist, UCSF Fresno

Alec Beach, RTT
Technical Service Manager, Oncology Services
Community Regional Medical Center

Karissa Bouchie, RD, CDE
Clinical Nutrition Manager,
Community Regional Medical Center

Cynthia Burton, LSCW
Psychosocial Oncology, Oncology Services
Community Regional Medical Center

Dawn Delozier, PhD
Genetic Counselor

Babak Eghbali, MD, FASC
Cancer Liaison, CCFMG/UCSF Fresno

Penelope Evans, RN
Clinical Educator, Ambulatory Care Clinics
Community Regional Medical Center

Elisa Foster, MD
Radiologist

Jennifer Geise
American Cancer Society

Lynn Gilbank, RN
Lymphedema Clinic
Clovis Community Medical Center

Deborah Gumina, MD
Surgeon, Clovis Community Medical Center

Bonnie Harkins, RN, OCN
Research Nurse, Oncology Services
Community Regional Medical Center

Dina Ibrahim, MD
Medical Oncologist, Cancer Committee Chairman

Mary Leyser, CTR
Cancer Registry Supervisor, Oncology Services
Community Regional Medical Center

Dineshi Liyanage, MD
Palliative Care, Clovis Community Medical Center

Timothy Lopez
Inpatient Pharmacy Manager, Community Regional Medical Center

Alison Malfatti
Outreach Coordinator, California Cancer Center

Donna Marqueling, RN
Risk Management - Patient Safety
Community Regional Medical Center

Beverly McCann, RN
Nurse Coordinator, Marjorie E. Radin Breast Care Center
Clovis Community Medical Center

Kudzi Muchaka
Oncology Services Director, Community Regional Medical Center

Robin Munoz, RN
Nurse Navigator, Oncology Services
Community Regional Medical Center

Kathleen Norkunas, RN, BSN, OCN
Nurse Coordinator, Lung Nodule Program, Oncology Services
Community Regional Medical Center

William Pitts, MD
Pathologist, Pathology Associates

Crystal Rodriguez, RN
Rehabilitation, Oncology Services
Community Regional Medical Center

Nancy Shuster-Artis, RN
Quality Management Coordinator,
Community Regional Medical Center

Lori Soto, RN
Inpatient Oncology Manager, Community Regional Medical Center

John Strubert
Radiology Diagnostic Manager, Clovis Community Medical Center

Uma Swamy, MD
Radiation Oncologist, California Cancer Center

Christine Swift, RN, MSN, CHPN, CCRN
Palliative Care Manager, Community Regional Medical Center

Harminder Toor, RN
Administration, Home Health Services
Community Health Center - Sierra

Chris Ann Venugopal
Nursing Administrator, Fresno Heart & Surgical Hospital

Jeff Zweifel, RN
Oncology Services
Clovis Community Medical Center
Dear Colleagues,

It is my distinct privilege and honor to report on the status of our cancer program in this year’s annual report. I have served as the Community Medical Centers’ Cancer Liaison Physician (CLP) to the American College of Surgeons Commission on Cancer (CoC) for the last seven years.

As the CLP, I have had the opportunity to serve as a clinical champion, on a wonderful team of health care providers, to improve the cancer care provided to patients at Community. My primary responsibilities as the CLP are to monitor, interpret, and report the program’s performance using National Cancer Database (NCDB) data to help evaluate and improve the quality of care. In so doing, I report and facilitate a discussion of our facility’s performance and response, related to the accountability and quality improvement measures, or other NCDB facility data, with the Cancer Committee every quarter. Each year I attend the CoC national meetings and report back on CoC activities, initiatives and priorities to the Cancer Committee. Over the last couple of years, I have seen our program grow with the development of our mission, for excellent state of the art and comprehensive care of cancer patients across all of our facilities. This work is often “behind the scenes,” and the many people who contribute to this effort often go unrecognized. Members of our Cancer Committee have worked hard over the past year, and years prior, to continue our mission and improve our performance overall. I would like to take this opportunity to thank everyone on behalf of the committee for all of their efforts and dedication.

The CoC Accreditation program encourages hospitals, treatment centers and other facilities across the nation, to improve their quality of patient care through various cancer-related programs. These programs focus on prevention, early diagnosis, pretreatment, rehabilitation, surveillance for recurrent disease, support services and end-of-life care.

Five elements are key to the success of a CoC-accredited cancer program:

1. The clinical services provide state-of-the-art pretreatment evaluation, staging, treatment, and clinical follow-up for cancer patients seen at the facility for primary, secondary, tertiary, or end-of-life care.

2. The Cancer Committee leads the program through setting goals, monitoring activity, evaluating patient outcomes, and improving care.

3. The cancer conferences provide a forum for patient consultation and contribute to physician education.

4. The quality improvement program is the mechanism for evaluating and improving patient outcomes.

5. The cancer registry and database is the basis for monitoring the quality of care.

I am pleased to announce that our Commission on Cancer (CoC) survey in October of 2014 earned us another “Three-Year Accreditation.” Furthermore, although during our last survey we had obtained six of seven possible categories for Commendation, our program fulfilled the requirement for all seven. This was a great achievement and placed us among the top programs in the country taking care of patients with cancer.

In just a short three years, with an increase of yet another 10% in our total cancer patient volume, Community has continued to meet our increasing patient needs by providing state-of-the-art cancer care. During 2014 we had a total of 2,928 cancer cases, of which 2,103 were analytical. Our commitment to pursue, and improve on, the Central Valley’s cancer care has led us to spearhead, influence and increase recruitment of medical, as well as surgical, oncology specialists to the area, where we were once lacking.

Over the last three years, our proactive approach to continue building on our multi-disciplinary care across all of our facilities, has led to a stronger foundation in the care that is offered to our cancer patients. We have seen an expansion in the various ancillary services that we offer. As such, I would like to highlight some of our achievements.

MULTI-DISCIPLINARY CANCER CONFERENCES

As per my report last year, we have had yet another increase in the number of these conferences offered across all Community facilities.

Our Lung Nodule Program continues to decrease the time interval from diagnosis to treatment of patients with newly identified lung lesions. The pendulum has swung in terms of a reduction in the number of patients presenting with stage 4 cancers to more of those who are evaluated earlier at stage 1.

Our monthly Cancer Conference at Clovis Community Medical Center has continued to grow in response to our overall growing cancer cases at that facility, extending Community’s mission to provide multi-disciplinary evaluation and care for all cancer patients. Since its short inception, 34 complex cancer cases have been reviewed.

I am truly grateful to our colleagues at our Marjorie E. Radin Breast Care Center who continue to provide an excellent comprehensive care for our breast cancer population. Although they had a total increase of 10% in cases reviewed since 2013, their quality of care has maintained the highest of standards. It is no surprise that they have earned two national accreditations for Excellence in Breast Cancer Care. Radin is one of nine Certified Quality Breast Centers of Excellence in the country meeting standards set by the National Quality Measures for Breast Centers (NQMBC). Additionally, the American College of Radiology...
(ACR) has named Radin as a Breast Imaging Center of Excellence in mammography, breast ultrasound and stereotactic or needle biopsy.

The general Tumor Board Teaching Conference at Community Regional Medical Center reviewed a total of 169 cases in 2014, offering a forum for our multitude of subspecialty cancer patients to receive a comprehensive review. This conference continues to be well attended.

I am happy to report that during this past year we added three more site-specific multidisciplinary cancer conferences: Head & Neck, Breast at Community Regional, as well as Hematology-Oncology. These site-specific areas of care did not really have a home in the past for dedicated review and we are fortunate to have physician champions behind each one. These conferences altogether reviewed a total of 145 cases — 39 cases in Head & Neck, 26 cases in Breast and 80 cases at the Hematology conference.

The weekly Hepatobiliary/Gastrointestinal (HPB GI) Oncology Conference continues to spearhead our mission for comprehensive cancer care. This conference has representation from 20 specialists, including physicians as well as non-physicians, all dedicated to meet the increasing demands of this complex cancer population in the Central Valley. Over the past two years, 307 cases have been reviewed at the conference. In just a year, the case reviews increased by a total of 16% (2013 - 142 cases, 2014 - 165 cases). I would like to take this opportunity to extend my greatest gratitude to both pathology as well as radiology departments for pursuing and providing sub-specialists in this area to review the HPB cases every week.

With the increasing neurosciences program, we have had a steady increase in the number of cancer related services required for this specialty. Our neuro-oncology weekly conference, with its own dedicated multi-disciplinary same-day clinic, has allowed us to offer state-of-the-art treatment plans, including CyberKnife technology, to our patients.

**PATIENT NAVIGATION**

A patient-centered approach is at the forefront of the accreditation standards by the Commission on Cancer (CoC) of the American College of Surgeons (ACoS) for hospital cancer programs such as Community. As of 2010, we were at the forefront of multidisciplinary care and started the only Lung Nodule program in central California and one of only a handful in the nation. As part of this program, we thank Kathy Norkunas, RN, as well as Catrina Asanuma, RN, for their amazing dedication and superb care as our Lung Nodule nurse navigators. During the latter part of last year, we had a new addition to our navigation program. Robin Munoz, RN, our hepatobiliary-pancreatic as well as head & neck, nurse navigator. In just a short time, Robin has proved to be an excellent addition to our team and we are fortunate to have her. Beverly MacCann has been our navigator for breast cancer at Radin and continues to provide superb care. We are fortunate to have a new nurse navigator added to our team with Julie Villasenor, RN, spearheading our neuro-oncology program. We are very excited to continue the growth of our navigation program, and as such have delineated a specialty-based phased integration of other nurse navigators over the coming year.

Our success with our inpatient palliative care services has increased momentum for an outpatient-based palliative care program. We are excited about this endeavor as well, as providing palliative care in the outpatient setting allows our team to address the varied needs of patients and families earlier in the course of their illness. Our clinicians have the opportunity to get to know our patients and their families over time, and to assist in the development of a care plan that takes their individual needs into consideration. Our early involvement also means that we are available to manage our patients’ symptoms when they are receiving palliative and/or curative/restorative therapy.

Overall, 2014 saw a significant growth in our cancer care at Community. During this past year we continued our proactive approach to treatment of cancer and expanded our services across the board to our cancer patients. Cancer care is, and will remain, one of the top priorities for Community in the coming year(s). Our mission and devotion to providing a comprehensive program for patients with cancer has started a building process that is momentous. All of our facilities are tirelessly working and coordinating to ensure success in this endeavor. We are all inspired to move ahead and participate in the growth and expansion of cancer care services. The growth of our programs has precipitated the growth of our participation in clinical trials, improving and expanding the therapies and options available to our patients. I am also excited to see our inpatient oncology acute care services growing at both our Clovis Community and Community Regional campuses. Lastly, we are excited to announce the addition of a dedicated vice president of cancer at Community that will be joining our team.

I would like the extend my sincere gratitude to the volunteers and staff at Community not only for their outstanding service, but also their fortitude, insight, and guidance in the care of our cancer patients. As we approach the years ahead, we remain committed to growth and improvements in the exceptional services provided at our facilities. Our staff, nurses and physicians are champions of compassionate patient care and talented in their expertise of oncology. I want to leave you with this quote: “Remember how far you've come, not just how far you have to go. You may not be where you want to be, but neither are you where you used to be.” I hope to continue my primary responsibility as the Cancer Liaison Physician to help monitor and interpret our program’s performance, as well as our data, to help facilitate improvement of the quality of care provided to cancer patients at Community.

Sincerely,

**Babak (Bobby) Eghbalieh, MD FACS**

Cancer Liaison Physician Commission on Cancer, American College of Surgeons
CANCER COMMITTEE

A successful cancer program depends on the effective leadership of a quality cancer committee. Responsibility for goal setting, planning, initiating, implementing, evaluating and improving cancer-related activities for patient care lies in the hands of the facility’s capable leadership. Composed of dedicated and caring professionals, Community’s Cancer Committee is multidisciplinary and represents the full scope of cancer care for our patients. Physicians representing each of the diagnostic and treatment services, along with non-physician representatives from administrative, clinical, and supportive services, round out the leadership team, overseeing care to patients in four facilities: Community Regional, Clovis Community, Fresno Heart & Surgical Hospital and the California Cancer Center. In addition to providing direction for cancer program activities, the Cancer Committee also sets annual goals for clinical practice, community outreach, programmatic endeavors and quality improvements.

ACOS ACCREDITATION

Community’s Cancer Program, which includes all of its facilities, has been accredited by the American College of Surgeons (ACOS) since 1980. The Commission on Cancer Accreditation (CoC) program focuses on quality of care via performance metrics and quality improvement, ensuring patient-centered care. The CoC encourages hospitals, treatment centers and other facilities to demonstrate commitment to quality of care for their patients. The CoC accreditation is nationally recognized by organizations such as the Joint Commission, American Cancer Society, Aetna, CMS, NQF and National Cancer Institute as having established performance measures for the provision of high quality cancer care. Community achieved the Teaching Hospital Accreditation in 1999. We achieved our last accreditation in 2011 and will be surveyed in 2014.

ONCOLOGY SUPPORT SERVICES

Community’s Oncology Program has been designed to incorporate a trans-disciplinary approach to cancer care designed to address the multidimensional factors associated with cancer care to enhance biomedical care and promote quality of life for patients and families. Community’s Cancer Program has met several of the new ACoS standards by integrating psychosocial distress screening and service provision into routine oncology care, launching the patient navigation program, and development of the survivorship care plan process.

Nurse Navigation provides oncology patients with a single point of contact for questions and concerns while serving as a vital link between the patient and the healthcare providers to facilitate timely access to care throughout all phases of treatment and into survivorship.

Psychosocial Oncology services are essential to ensure holistic, comprehensive, trans-disciplinary cancer care for patients and their loved ones. Psychosocial support is initiated early in care to ensure effective interventions are provided to address the practical, psychological, social and spiritual needs associated with a cancer diagnosis for patients and families across the illness trajectory.

Nutrition services provide patients with clinical support and education regarding the variety of complex nutritional needs inherent of cancer treatment, recovery and prevention.

Speech Language Pathology (SLP) rehabilitation is a vital component to multidisciplinary cancer care, providing proactive comprehensive assessments of the multifaceted impact on speech, voice, swallowing, cognition and language associated with radiation therapy, chemotherapy, and surgery. SLP rehabilitation offers a myriad of clinical and rehabilitative interventions both pre- and post-treatment while ensuring patients and families are educated regarding a variety of conditions.

MEDICAL ONCOLOGY

Medical Oncology Service is provided by several medical oncology groups at Community. Consultations and treatments are provided at Deran Koligian Ambulatory Care Center. Chemotherapy is also administered at Community Ambulatory Infusion Center. The Deran Koligian Ambulatory Care Center is staffed by UCSF Medical Oncologists Trials.
RADIATION ONCOLOGY
Community Regional and the California Cancer Center offer the latest in radiation therapy technology – providing our patients state-of-the-art radiation therapy. At California Cancer Center, two new Elekta Infinity Accelerators recently went into clinical operation – providing clinicians with the most advanced tools for image guided radiation therapy (IGRT), intensity modulation radiation therapy (IMRT) and volumetric modulated arc therapy (VMAT), ensuring our patients have the best available treatment delivered in a comfortable environment. The pre-treatment planning process is supported by a radiation therapy specific large bore CT scanner also recently installed. Our clinicians use a state-of-the-art Philips Medical’s treatment planning system to customize optimal treatments for each patient.

In addition, the Charles and Anne Matoian Oncology unit located at Community Regional has a CyberKnife stereotactic radiation therapy system. CyberKnife is the only robotic radiation therapy system in existence that is dedicated to stereotactic radiation therapy delivery. The CyberKnife is the only system that can verify tumor locations and track any movements during the treatment process so that adjustments are made as needed. Community Regional also has a Siemens Primus Linear Accelerator that provides 3D conformal radiation therapy and IMRT services. The following list of advanced radiation therapy treatments are available through the Community Radiation Oncology departments:

- Stereotactic Radio Surgery (SRS)
- Stereotactic Body Radiation Therapy (SBRT)
- Image-Guided Radiation Therapy (IGRT)
- Volumetric Modulated Radiation Therapy (VMAT)
- Intensity Modulated Radiation Therapy (IMRT)
- 3d Conformal Radiation Therapy (CRT)
- Prostate Seed Implants (Brachytherapy)
- Partial Breast Irradiation (Brachytherapy)
- High Dose Rate (HDR) Brachytherapy

CANCER REGISTRY
The Cancer Registry at Community was established in 1964 to help monitor trends and outcomes of cancer incidence in our community. The Cancer Registry is made up of professionals responsible for the collection and management of accurate and timely cancer patient information. The registry follows approximately 17,000 patients annually. Quality cancer data is central to the nation’s fight against cancer, and cancer registrars are the first link in capturing that data.

The registry provides members of the hospital medical staff with data which enables them to evaluate diagnostic and treatment approaches, analyze quality of care, study survival rates, and ultimately improve the overall care provided by Community and the California Cancer Center. Cancer registrars are data information specialists that collect and code patient-level data for cancer registries. The registries provide essential information to healthcare providers and health officials to better monitor and improve cancer treatment, conduct research and target cancer prevention and screening programs. They manage a wide range of demographics and medical data on those with cancer and some of the benign tumors as well. The information is both submitted and utilized by state and national cancer registries to enable cancer programs to accurately determine cancer patient populations, formulate plans for improvement and measure outcomes of treatment and survival. This data is included in numerous publications including the Annual Report to the Nation on the Status of Cancer, a collaboration of the American Cancer Society, the Centers for Disease Control and Prevention, the National Cancer Institute, and the North American Association of Central Cancer Registries, all of which use cancer registry data to provide up-to-date information on cancer occurrences and trends.

The registry collects all treatment data for diagnosis and/or treatment of patients at our hospitals. This allows for a lifetime follow-up of all patients. We have five certified cancer registrars that added about 2,000+ new cases each year between our multiple sites.

The Cancer Registry also is responsible for coordinating the multidisciplinary cancer conferences and helping with outpatient screening clinics, along with other educational programs. As previously mentioned, last year, we helped achieve Community’s Cancer Program, the American College of Surgeons’ three-year accreditation with seven out of eight commendations.
CANCER SERVICES

CANCER CONFERENCE
Community Regional and Clovis Community provide physicians with many opportunities to present cancer cases in several Cancer Conferences throughout the Community system. Physicians may present individual cases in an open forum to discuss diagnosis and make recommendations for workup and treatment. A full patient presentation includes medical history, pathology, radiology, and TNM staging. These meetings are multidisciplinary and prospective. Cancer Conferences promote ongoing education for residents and medical staff while providing an opportunity to learn about new treatments and open clinical trials. Speakers are selected from both local and national institutions of excellence to address topics of cancer care and research. Community, with UCSF Fresno, provides unique access to specialty physicians through Cancer Conferences, research and collaboration.

COMMUNITY REGIONAL MEDICAL CENTER
General Cancer Conference:  Every Wednesday, 7:30 AM
Hepatobiliary (HPB) Conference:  Every Thursday, Noon
Cyberknife: Every Wednesday, Noon
Lung Nodule Conference: Every Monday, 5 PM

CLOVIS COMMUNITY HOSPITAL
Clovis Cancer Conference:  3rd Thursday of every month, 12:30 PM
Radin Breast Conference: Every Friday, 1 PM

If you have any questions concerning the Cancer Conferences, please call Mary Leyser, CTR 559-451-3641.

LUNG NODULE PROGRAM
The Lung Nodule Program, developed through a collaboration with Community Regional and UCSF Fresno, is one of only a handful in the country — and the first in central California. The goal of the program is to provide optimal diagnosis and management of lung cancer at all stages using a coordinated multidisciplinary approach. Patients are evaluated by the Lung Nodule multidisciplinary team in an expedited manner. This program simplifies the process for the patient while alleviating unnecessary procedures and office visits. This process is coordinated by the program nurse navigator who ensures timeliness of follow-up and treatment. With timely treatment, careful consideration is given to the options of minimally invasive surgery, Cyberknife® therapy and more optimizing treatments. The multidisciplinary team consists of professionals in the fields of: thoracic surgery, pulmonology, medical oncology, radiation oncology, diagnostic radiology, vascular and interventional radiology and pathology. To expedite the evaluation and treatment of lung nodules, Community Regional’s Lung Nodule clinic team of experts conduct weekly meetings to evaluate new cases and recommend customized courses of treatment, if necessary.

MARJORIE E. RADIN BREAST CARE CENTER
The Marjorie E. Radin Breast Care Center at Clovis Community continues to be the only breast center in central California that holds two Breast Care of Excellence certifications. These certifications have been awarded to us from the highly regarded American College of Radiology (ACR) and the National Quality Measures for Breast Centers (NQMoBC). To achieve the Breast Center of Excellence from the ACR we have achieved accreditation in three modalities, which include mammography, ultrasound guided biopsy and stereotactic guided biopsy. Certification from the NQMoBC includes passing many high quality measures such as data collection and benchmarking. These certifications are one of the most important parts to being a successful breast center.

We are proud to announce the implementation of tomosynthesis, also known as 3D mammography. This is the latest breakthrough in breast imaging. Both 2D and 3D mammography are performed as a combination examination, which results in better visualization of fine details. This exciting breakthrough has a positive impact on breast cancer screening and diagnosis. Tomosynthesis helps aid the elimination of overlapping breast tissue, which improves our ability to find cancers earlier or find cancer that may be missed on 2D alone. This new modality offers greater accuracy in determining size, shape and location of abnormalities. 3D mammography can also decrease false positives, which often results in a greater peace of mind for patients.

The nurse navigator at the Radin Breast Care Center coordinates our weekly multidisciplinary breast conference and clinic. Patients referred to the clinic are followed throughout their continuum of care by our navigator. She ensures that the patient is given education about the treatment process, helps facilitate appropriate and timely treatment based on
the plan of care outlined in the conference. She will look to evidence-based practice using NCCN guidelines for our breast care patients. She is also involved in outreach and breast health education through multiple events in our community throughout the year.

Our center also has the support services of a social worker who meets with patients and their families. She is available for brief counseling as well as assisting with resources during their treatment course. She also oversees our English and Spanish speaking support groups for patients and their families.

The Radin Breast Care Center now offers risk screening and a monthly High Risk Clinic. Their patients’ risks are assessed by our care coordinator and scheduled for the High Risk Clinic as indicated. This service is available to women who are referred by their primary care provider and women who have their breast imaging at our facility.

At the Radin Breast Care Center, taking care of patients is a privilege. We are proud to say we have the latest technology in breast care services to serve our community.

COMMUNITY OUTREACH
As an accredited ACOS facility, Community is committed to delivering a minimum of three yearly educational events and screenings for Central Valley residents. The goal for each of the programs is to provide free resources to the Valley’s underserved population as well as current patients and their families.

Education includes helping the community better understand cancer and its risks, including early detection and ways to prevent, diagnose, and treat. Each effort includes a combination of education, screening, treatment, and support activities.

CYBERKNIFE®
CyberKnife is a revolutionary tool that allows physicians to perform life-saving surgery where before there was no surgery possible. It uses a robotic arm to pinpoint and destroy tumors in the same way that technology guides cruise missiles. Patients experience no pain, no incision, no anesthesia and require minimal recovery time. The CyberKnife system is proven to be the most accurate, real-time, image-guided robotic radiosurgery system in the world. The combination of the image-guidance system and the multi-jointed robotic arm allows CyberKnife to compensate for patient movement, sparing patients the pain and inconvenience associated with the conventional head frame that is fixed to the patient’s skull. CyberKnife’s ability to track and compensate for patient movements (like breathing) also allows this remarkable tool to treat tumors in areas of the body where older systems like Gamma Knife cannot. Since CyberKnife treatment is a simple and painless outpatient procedure, patients can focus on other things and get back to their normal activities quickly. Community Regional has treated more than 450 patients with CyberKnife. Various cancer sites treated are lung, liver, prostate, metastatic melanoma and CNS tumors, to name a few. If you would like any more information on CyberKnife, please call (559) 459-2752.

CANCER RESEARCH

Clinical trials are vital in studying all aspects of medicine, not just cancer. The stakes may seem higher when researching medicines to treat cancer, but all new treatments, drugs and medical devices included, must go through clinical trials before being approved by the FDA. At one time, clinical trials were available only at major medical centers. Patients now have more options which may include remaining close to home during a study, or even staying with their own doctors.

Community is dedicated to providing the latest cancer treatments to its patients. The Cancer Research staff monitors all new patient records for eligibility for enrollment in clinical trials supervised by a certified clinical research nurse. Radiation trials utilize the latest technology. Treatment modalities include 3DCRT, IMRT, IGRT, Brachytherapy and CyberKnife. Medical oncology clinical trials focus on the latest in chemotherapeutic agents and diagnostic tests to improve the outcomes and quality of life of patients.

For more information on clinical trials, please call Bonnie Harkins, California Cancer Center at (559) 451-3647.

Bonnie Harkins, RN OCN CCRP
Cancer Research Nurse
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PANCREATIC CANCER
2014 REPORT

OVERVIEW
Pancreatic cancer is the fourth most common cause of cancer-related death in the United States. The pancreas functions as both an endocrine gland and an exocrine gland. As such, malignant transformation can occur in a multitude of cell-lines within the pancreas. The exocrine cells and endocrine cells of the pancreas form different types of tumors. It’s very important to distinguish between exocrine and endocrine cancers of the pancreas. They have distinct risk factors and causes, have different signs and symptoms, are diagnosed using different tests, are treated in different ways, and have different outlooks. More than 95% of pancreatic cancers are classified as exocrine tumors, most of which are classified as Ductal Adenocarcinomas (PDAC). Tumors of the endocrine pancreas are much less common and most are benign. This report will focus primarily on Pancreatic Adenocarcinoma, an exocrine tumor.

During 2014, an estimated 46,420 people were diagnosed with pancreatic cancer and approximately 39,590 people will die of pancreatic cancer. California sees about 10% of the national volume of pancreatic cancer and the Central Valley sees about 15% of that portion. The peak incidence of pancreatic cancer occurs in the seventh and eight decades of life.

RISK FACTORS AND GENETIC PREDISPOSITION
As with any cancer, there are established, associated and probable risk factors for development of pancreatic cancer. Although the increase in risk is small, there is a firm link to cigarette smoking with an attributable risk of about 25% (10-30) and a cumulative Life-time Risk of 2-3%. There is a genetic component in approximately 10% of cases, and familial excess of pancreatic cancer is associated with a high risk. Certain familial cancer syndromes are associated with an increased risk of pancreatic cancer (see Table 1 page 12), as well. However, most cancers develop sporadically with no findings of any genetic predisposition. The association between diabetes mellitus and pancreatic cancer is particularly complicated. Numerous studies have shown an association between new-onset non-insulin-dependent diabetes and the development of pancreatic cancer. Middle aged patients, 50 years of age, with a low BMI, with no family history of diabetes, who suddenly develop diabetes, are likely to have an underlying pancreatic cancer in about 25% of the time.
FOCUS ON PANCREATIC CANCER

SUBMITTED BY BABAK (BOBBY) EGHALIEH, MD FACS

Although incidence is roughly equal in both sexes, African Americans have a higher incidence as compared to the general population. The incidence of pancreatic cancer has steadily increased in the United States since 1999. Breast, prostate, and lung cancers will remain the top cancer diagnoses throughout the coming years. However, pancreas and liver cancers are projected to surpass breast, prostate, and colorectal cancers to become the second and third leading causes of cancer-related death between the years 2020 to 2030, respectively.

BIOLOGY AND GENETICS

PDACs arise from a ductal cell lineage or from acinar cells that undergo acinar-to-ductal metaplasia. About 67% of tumors are located in the head/neck/unciate part of the pancreas and about 33% in the body/tail region. Pancreatic intraepithelial neoplasms (PanINs) are the most common precursors to PDAC, and are often found associated with areas of focal pancreatic inflammation. Although most PDACs are solid in nature, certain cystic lesions of the pancreas are also premalignant: Pancreatic Intraductal Papillary Mucinous Neoplasms (IPMNs) are found equally in men or women in their 60s and often communicate directly with the main pancreatic duct; Mucinous Cystic Neoplasms (MCNs), which are overwhelmingly found in women in their late 40s, are often solitary cystic lesions in the body or tail of the pancreas. IPMN lesions involving the main duct have a higher malignant potential than those in the branches, with the risk of malignancy at around 62%. The risk of malignancy in MCNs is about 15%.

<table>
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<th>Attributable risk</th>
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<td>- HNPPC (Lynch Syndrome)</td>
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<tr>
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<td>Physical inactivity</td>
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</tr>
<tr>
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<td>Certain pesticides (beta-naphthylamine, Benzidine)</td>
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Figure 2 – Community – Pancreatic Cancer Last 10 Years – Race

Table 1 – Genetic Risk Factors

Degree of evidence | Risk factor | Attributable risk |
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Virtually all PanINs, even the earliest type, PanIN-1, harbor kRAS mutations. Mutant KRAS alleles show increased expression as PanIN-1 evolves to intermediate PanIN-2, and then to the carcinoma in situ lesion, PanIN-3. The few precursor lesions that do not contain mutant KRAS often have mutations in other genes in the KRAS signaling pathway, such as those in BRAF. Loss of CDKN2A, a tumor suppressor, is also found in some early PanINs. It is now thought that a KRAS mutation is necessary, but not sufficient, to drive PanINs to PDAC. Recent studies, however, have shown that in mutant KRAS-driven PDACs, KRAS is required at all states of pancreatic carcinogenesis and for subsequent tumor maintenance. KRAS is mutated in approximately 95% of all PDACs — the highest percentage of all solid malignancies.

Besides mutated KRAS and the loss of CDKN2A (often referred to by the protein it encodes, p16INK4a), genetic alterations have been found in tumor suppressor genes SMAD4 (also termed DPC4) and TP53. A more detailed genomic analysis of a large number of PDACs has uncovered an average of 63 genetic alterations, mostly point mutations, which affect up to 12 different signaling pathways or processes. These include alterations in apoptosis pathways, hedgehog signaling, regulation of invasion, and signaling via KRAS, TGF-ß, and Wnt or Notch. The expression of sonic hedgehog protein (a ligand of the hedgehog pathway) in both early and late PDAC lesions has been implicated as a chemo-attractant in the desmoplastic response (a host stromal response resulting in the proliferation of fibrotic tissue with an altered extracellular matrix and a pronounced hypovascularity).

**Figure 3**

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**PANCREATIC CANCER SCREENING**

As with any cancer, there is strong support for identifying screening modalities that would enable us to identify patients at risk for pancreatic cancer. This is still a topic of much debate. However, an international Cancer of the Pancreas Screening (CAPS) Consortium summit, with 49 multidisciplinary experts in 2011, has developed consensus guidelines for pancreatic cancer screening. The group recommends screening with EUS and/or MRI/MRCP for high-risk individuals, defined as 1st-degree relatives of patients with pancreatic cancer from familial kindreds; carriers of p16 or BRCA2 mutations with an affected 1st-degree relative; patients with Peutz-Jeghers Syndrome; and patients with Lynch Syndrome and an affected 1st-degree relative with pancreatic cancer. The conclusion reached by this group requires more evidence regarding the optimal management of such patients with detected lesions, the age to begin screening and screening intervals. [NCCN 107]
FOCUS ON PANCREATIC CANCER
SUBMITTED BY BABAK (BOBBY) EGHBALEH, MD FACS

DIAGNOSIS, PRESENTATION AND STAGING

As mentioned earlier, over 90% of pancreatic cancers are ductal adenocarcinoma (PDAC) and its variants. The review of Community’s data over the last decade reveals that we follow the national trends in regards to the histology of pancreatic cancers diagnosed with PDACs leading the pack at 67% (Figure 4).

Figure 4 – Top 15 Histologies
Pancreatic cancer may cause only vague symptoms that could indicate many different conditions within the abdomen or gastrointestinal tract. Symptoms include vague discomfort or pain (usually abdominal or back pain), weight loss, jaundice, loss of appetite, nausea, changes in stool, dyspepsia, depression and diabetes. It is important to note that there are no early warning signs of this cancer.

STAGE OF CANCER AT TIME OF DIAGNOSIS

Unfortunately, for decades most patients present with stage 4 disease (metastatic) at time of diagnosis. Comparing our data from Community to the National Cancer Data Base for the last 26 years reveals that our patient population presents similarly. About 30% of patients present with early stage 1 and 2 cancers that are amenable to curative surgery. At Community over the last decade, about 45% of patients present at stage 4 and 9% at stage 3. (Figure 5 next page)

The primary way to diagnose pancreatic cancer is with a dedicated imaging. A pancreatic protocol multi-phasic fine-cut CT scan is the imaging of choice for pancreatic cancer staging. Such a scan is generally the means to distinguish between patients who are candidates for surgical resection with intent to cure and patients who are not resectable with locally advanced or metastatic disease. There are other imaging modalities which can be used; however, they are generally
viewed as complimentary to CT, providing additional information for patients whose initial scans reveal no lesion or whose lesions have questionable involvement of blood vessels or lymph nodes. A dedicated pancreatic protocol MRI is generally similar to a CT scan. One modality that has significantly contributed to our diagnostic armamentarium is Endoscopic Ultrasound (EUS).

EUS allows us to better define lesions that are particularly smaller than 2 cm or otherwise not visualized on CT, evaluate of cystic lesions, it is the preferred modality to directly biopsy lesions without the risk of tumor seeding. EUS is about 75% to 95% accurate in assessing T stage and 74% to 87% accurate in assessing lymph node (N) stage. Use of PET/CT scans following a standard CT protocol allows us to increase the sensitivity for detecting metastatic disease. A PET scan alone vs standard CT alone have sensitivity for metastatic disease of 61% and 57% respectively. However, the combination of the two (PET/CT) leads to a sensitivity of 87%. It is important to note that a PET/CT is not a substitute for a high-quality pancreatic protocol CT scan.

### BIOMARKERS AND PANCREATIC CANCER

With the introduction of genomics into cancer evaluation and personalized medicine and treatment, significant strides have been made in identifying the right kind of biomarker. Biomarkers are generally classified into four categories: prognostic, predictive, early detection and endpoint biomarkers. As such, a prognostic biomarker will allow us to measure it before treatment to indicate long-term outcome for patients untreated or receiving standard treatment. It may also reflect both disease aggressiveness and effect of standard treatment as well as utility in determining who needs more intensive treatment. A predictive biomarker, on the other hand, will be measured before treatment to identify who will benefit from a particular treatment.
As it relates to pancreatic cancer, many tumor-associated antigens have been studied in connection with this aggressive cancer, including: carcinoembryonic antigen (CEA), CA-125, tissue polypeptide antigen, pancreatic anti-oncofetal antigen and CA19-9.

CA19-9, a sialylated Lewis A blood group antigen, is the best validated and most clinically useful biomarker in pancreatic cancer. It is commonly expressed and shed in pancreatic as well as hepatobiliary disease. However, because it is also expressed in other malignancies, it is not a tumor-specific biomarker. As biomarkers go, CA19-9 is classified as a prognostic biomarker. Thus, it has the potential use in diagnosis, screening, staging, determining resectability as well as predictability for chemotherapy response. As a diagnostic biomarker, it has a sensitivity of 79% to 81% and specificity of 82% to 90% in symptomatic patients, but as a screening biomarker it is poor in performance because of its low positive predictive value. Lastly, in about 15% of the population, it is not expressed due to lack of Lewis A antigen.

SURGICAL TREATMENT OF PANCREATIC CANCER

Surgical resection is the only potentially curative technique for managing pancreatic cancer. However, as mentioned earlier most patients present with unresectable cancer at time of diagnosis. Over the last 50 years, surgical resection of pancreatic cancer has become a safe option in experienced hands and centers across the country, with surgical mortality rates below 5%. The strongest prognostic indicators for long-term survival are based on: Negative margin status (R0 resection), tumor size, tumor DNA content and absence of lymph node metastases. Patients with tumors located in the head and neck part of the pancreas, who generally present with jaundice, are offered an open or laparoscopic pancreaticoduodenectomy (Whipple Procedure). Those with tumors of the body and tail, usually present at more advanced stage at time of diagnosis. When these tumors are resectable, a distal pancreatectomy with splenectomy is offered. The goals of surgery are to provide a negative margin resection (i.e. R0 resection). Over the last decade with advancements in surgical technique, those with borderline resectable cancers, which may have involved the adjacent portal vein, are now in select cases offered a more extensive resection with vein resection and reconstruction. If an R0 resection is obtained with vein excision, longevity appears similar to those with R0 resection without venous involvement, with no significant increase in morbidity and mortality. In regards to performing an extended lymphadenectomy at the time of surgery, the data to date does not show any survival advantage to performing a regional lymphadenectomy in addition to the standard pancreatectomy procedure. Nodal metastatic disease is a marker of systemic disease and removal is unlikely to alter overall survival (OS). Surgical removal of the tumor is possible in only approximately 15 to 20 percent of patients with PDAC. Even with R0 resections, recurrence rates are unfortunately very high in this disease. Therefore, additional therapy is required for all patients with resected PDAC. As it stands today, the median survival of resected patients after surgery, following adjuvant therapy, ranges from 20.1 to 23.6 months.

SYSTEMIC THERAPY AND RESISTANCE

Systemic therapy is used in all settings of pancreatic adenocarcinoma. Results from many trials have shown that adjuvant therapy improves outcomes over observation alone following resection. Until 1996, only a single agent, 5-FU, was available as the agent of choice for systemic therapy of PDAC. Since then, gemcitabine monotherapy has category-1 evidence supporting its use in the adjuvant setting. For patients with locally advanced or metastatic disease, gemcitabine has been established as providing clinical benefit and a modest survival advantage over treatment with bolus 5-FU. For over a decade, gemcitabine or gemcitabine in combination with other chemotherapy agents has been the standard of care for advanced PDAC.
In 2011, FOLFIRINOX (oxaliplatin, irinotecan, leucovorin, and 5-FU) was shown to provide a modest increase in overall survival, although the toxicity was greater. The addition of molecularly targeted therapies has been evaluated; to date, only erlotinib (Tarceva), targeting the EGF receptor, has demonstrated a modest, albeit statistically significant, response rate in combination with gemcitabine. The recent elucidation of alterations in the various signaling pathways in PDAC and in pancreatic cancer stem-like cells may lead to the testing of new agents and combinations in the future, and to defining the patient populations that might benefit from targeted systemic therapy.

Resistance to therapy is a characteristic feature of PDAC, and the extent of resistance is greater than in many other human tumors. This could be due to inefficient drug delivery, intrinsic and acquired resistance of the tumor, tumor hypoxia, or the insensitivity of cancer stem-like cells to currently used agents. It is thought that the dense desmoplasia produced by the dynamic interaction of stromal cells with the tumor, and which constitutes 90% of the tumor volume, creates a barrier to systemic drug delivery and penetration. Novel approaches, employing newly-developed biological molecules, may provide a means to overcome therapeutic resistance in patients with PDAC. All patients should be offered participation in clinical trials if criteria is met post resection. Ongoing research will further elucidate our limited understanding of this aggressive biology in hopes of finding new avenues of directed treatment.

**ROLE OF RADIATION IN THE ADJUVANT SETTING**

The majority of the data comparing chemotherapy to chemoradiation in the adjuvant setting do not generally show an advantage to the addition of radiation. However, this remains to be a very controversial issue. Multiple studies have been conducted to answer this very question. Does radiation therapy in conjunction with chemotherapy improve overall survival (OS) and disease free survival (DFS)? Moreover, with the increasing shift of offering more patients neoadjuvant...
therapy, what role does radiation play in the neo-adjuvant setting? The answer to these questions still remains to be conclusively determined as there are conflicting findings. Some studies reveal no improvement in DFS or OS, while others suggest that chemoradiation gave better OS than chemotherapy alone. There also remains the benefit of adjuvant chemoradiation in the patient subsets with R0 vs R1 resections. As it stands, every patient is to be evaluated in a multidisciplinary forum to evaluate the benefit of each arm of therapy based on the individual findings.

MANAGEMENT OF METASTATIC DISEASE

The primary goals for this patient population is to provide palliation and lengthened survival. It goes without saying that such survival benefits are usually limited to patients with adequate performance status. For those unfortunate patients with poor performance status, some benefit may be derived from administration of monotherapy with gemcitabine (this is a Category 1 recommendation).

SUMMARY

Pancreatic cancer is considered one of the most aggressive human tumors. With its predicted increase in incidence over the next decade, early detection, multi-disciplinary evaluation and intervention will play key roles in improving overall survival. Resection remains the only chance for a cure for pancreatic adenocarcinoma, and most resectable patients should undergo surgery without delay, followed by adjuvant therapy. Traditionally, borderline resectable patients and select resectable patients can undergo neoadjuvant therapy in the hopes of improving the chances for an R0 resection (negative margin) or can immediately undergo surgery (category 2B). However, recent data is leading most centers, including ours, to proceed with neo-adjuvant therapy prior to surgical intervention. As it stands, surgical resection of early stage pancreatic cancer offers the most chance for increased survival. Addition of adjuvant therapy does however add to overall survival as compared to surgery alone. Additional therapy is an option for those patients whose disease recurs following surgery. Patients with locally advanced unresectable disease and good performance status can undergo chemotherapy and chemoradiation with second-line therapy if performance status is maintained after progression. Good performance status patients presenting with metastatic disease can undergo chemotherapy and can undergo second-line therapy if performance status is maintained after progression. Specific palliative measures are recommended for patients with advanced PDAC characterized by biliary or gastric obstruction, severe abdominal pain, or other tumor-associated manifestations of the disease.

Overall, in view of the relatively high likelihood of poor outcomes for patients with all stages of pancreatic cancer, the national guidelines recommend that investigational options (i.e. clinical trials) be considered in all phases of disease management. High priority research areas being explored for pancreatic cancer include: identifying biomarkers for early detection using registries of patients with a family history of pancreatic cancer, developing drugs that target specific gene mutations, understanding how the tumor microenvironment alters drug delivery, and harnessing the immune system for the treatment of pancreatic cancer.

REFERENCES

1. NCCN Guidelines 2015.