Human health is determined by many factors. These include timely access to high quality health care, education, employment, housing, nutrition, clean air and water, physical activity, lifestyle and culture. The importance of understanding social-cultural and environmental factors in determining health and of integrating this knowledge into the delivery of healthcare services is increasingly recognized. Similarly, the need to manage the health of populations defined by clinical condition, age, geography, race or ethnicity, occupation or other defining characteristic is becoming a necessary core competency for health care systems. Recognizing these things, the Institute for Population Health Improvement (IPHI or Institute) was established within UC Davis Health System (UCDHS) in March 2011 concomitant with the appointment of Kenneth W. Kizer, MD, MPH, as a Target of Excellence professor in the School of Medicine and Betty Irene Moore School of Nursing, and his appointment as its inaugural Director.

This report briefly describes IPHI’s activities and accomplishments during its first year, as well as some of the challenges it has confronted and its roadmap for 2012. It also highlights the opportunity that the University of California Davis has to develop the nation’s premier population health program and barriers to actualizing that opportunity.

BACKGROUND AND CONTEXT

The health and productivity of the American population has not increased in recent decades commensurate with the dramatic advances that have occurred in the biomedical sciences and health care technologies and the nation's burgeoning health care expenditures. U.S. expenditures for health care now vastly exceed those of all other nations of the world and are rising substantially disproportionate to the rest of its economy. Despite this, the health of the American population compares poorly with that of many countries, and a number of metrics indicate that the overall health of Americans has stagnated and may be worsening.

This paradox of stagnating and possibly deteriorating population health in the face of increasing health care capabilities and expenditures is of growing concern and underscores the critical need to better understand the role of socioeconomic, cultural, environmental and lifestyle factors in influencing health and the effectiveness of health improvement strategies. Understanding these complex, inter-related factors will require innovative interdisciplinary approaches to education, research and community service that transcend traditional academic disciplines and intellectual domains.

THE UCD OPPORTUNITY

The University of California Davis (UCD) and UCDHS have an unparalleled opportunity to develop a world-class population health program, if not the nation’s premier program. This unique opportunity derives from the confluence of UCD’s intellectual assets and programs; location;
changing socioeconomic, cultural and political circumstances; and advances in relevant technologies and sciences.

UCD's assets include the School of Medicine, Betty Irene Moore School of Nursing and UC Davis Health System, which offer a diverse array of primary to tertiary care clinical services and health professional training programs having a nationally-recognized legacy of interdisciplinary and primary care. Particularly relevant assets within UCDHS include the:
- Departments of Public Health Sciences, Family and Community Medicine, and Emergency Medicine
- Center for Health and Technology and Center for Virtual Health Care
- Center for Health Policy and Research
- Center for Reducing Health Disparities
- Clinical and Translational Science Center
- National Cancer Institute-designated Comprehensive Cancer Center
- Level I Trauma Center, Life Flight Program, and Trauma Prevention Program
- Violence Prevention Research Program
- Children's Hospital
- MIND Institute
- Institute for Regenerative Cures

Other assets on UCD’s health sciences Sacramento campus include the:
- The Shriner’s Hospital for Children of Northern California
- The California Tele-health Center
- The Sacramento Area Regional Technology Alliance and UCD Medical Technology Commercialization Clinic

Especially relevant assets located on or proximate to the UCD campus include the:
- School of Veterinary Medicine and its William R. Pritchard Veterinary Medical Teaching Hospital
- Western Center for Agricultural Health and Safety at UCD
- College of Agricultural and Environmental Sciences and its:
  - Western Institute for Food Safety and Security
  - Western Center for Food Safety
  - Food Safety Laboratory
  - Center for Regional Change
  - California Environmental Law and Policy Center
- Department of Nutrition
- Robert Mondavi Institute for Wine & Food Science
- California National Primate Research Center
- School of Law
- Graduate School of Management
- College of Letters and Humanities, including the:
  - Gifford Center for Population Studies
Center for Poverty Research
- Department of Chicana/Chicano Studies and its Center for Transnational Health
- University of California’s Global Health Institute and UC Migration and Health Research Center

Other relevant relationships, assets or factors include UCD's:
- Affiliation with the Department of Veterans Affairs and VA Health Care System through the Northern California VA Health System and Veterans Integrated Service Network 21.
- Affiliation with the Department of Defense and Department of the Air Force through the David Grant Medical Center at Travis Air Force Base.
- The University of California's vast intellectual assets and potential opportunities to collaborate with other UC campuses, Stanford, USC, California State University and multiple other academic institutions.

Finally, UCD’s location is a unique and important asset for development of a population health program. Especially important in this regard are its:
- Proximity to the seat of California state government in Sacramento, including the:
  - Office of the Governor
  - California State Legislature
  - Executive branch departments, including:
    - Department of Public Health
    - Department of Health Care Services
    - Department of Managed Health Care
    - Emergency Medical Services Authority
    - Department of Health Facilities
    - Office of Statewide Health Planning and Development
    - Department of Food and Agriculture
    - Department of Transportation
- UCDHS' location in Sacramento, one of the most diverse urban centers in the country and one that draws from an enormous rural area
- California's size; geographic, ethnic and other diversity; and economic and cultural significance in the world
- UCD's proximity to and numerous connections with Pacific Rim countries

BARRIERS TO ACTUALIZING THE OPPORTUNITY
As reflected by the above listing, many population health-related programs and other resources are located within or are closely associated with UC Davis; however, key barriers constrain actualization of UCD’s potential to develop a world-class population health program.

Despite the intellectual prowess and achievements of UCD’s population health-related assets, these entities have arisen opportunistically in an “organic” manner over the years, and they are neither harmonized nor strategically coordinated. Some of these centers or programs have been highly productive and are widely recognized for their accomplishments. However, this archipelago of
population health-related departments, programs, centers, institutes and schools is not connected in a predictable, consistent and strategic manner. To capitalize on the islands of excellence and other resources that exist at UCD and to optimize their productivity, an organizational architecture is needed that connects these assets in a complementary and mutually reinforcing manner.

**IPHIC YEAR 1 OPERATIONS**

During its first year, the Institute for Population Health Improvement pursued a 5-pronged development strategy that sought to: (1) establish institutional presence and identity; (2) build a flexible organizational architecture and efficient operating infrastructure; (3) develop a diverse programmatic portfolio; (4) secure sustainable funding; and (5) establish partnerships and collaborations.

Guiding its efforts has been an organizational vision that sees a world in which the many determinants of health are aligned to promote and sustain optimal health and functionality of individuals and the communities of which they are members. To actualize this vision, the Institute continues to develop its capacity to:

1. Provide leadership and nurture scholarship in the art and science of health improvement;
2. Develop and disseminate actionable health intelligence that can be used to improve clinical effectiveness, public policy and program design;
3. Create and communicate knowledge that will inform policy, improve health equity and eliminate health disparities;
4. Build health leadership capacity; and
5. Increase healthcare provider competence in recognizing psychosocial and environmental causes of health symptoms and conditions.

**ESTABLISHING INSTITUTIONAL PRESENCE AND IDENTITY**

The IPHI has been established at a time when the State of California faces severe financial problems that are constraining all General Fund supported activities and forcing restructuring and downsizing of state government. Being mindful of the far-reaching effects that the state’s current and future budget problems, the Institute has initially focused on becoming a trusted and reliable partner of state government health-related agencies while at the same time developing financially sustainable programmatic activities that can be leveraged for investigative and other purposes.

To this end, the Director has broadly reached out to a wide array of people and programs within numerous California state agencies, as well as entities within UCDHS, UCD and other UC campuses; other academic institutions; multiple health-related foundations; and various business entities, and various for-profit and not-for-profit organizations. These inquiries have led to dozens of meetings and follow up communications and resulted in a number of tangible programmatic developments. In addition, the Director has sought to develop partnerships and ongoing relationships with population health-related programs and gain access to or management of data bases that have potential to support original and applied investigations and/or that might be leveraged for other
programmatic development. In doing this, the Institute envisions developing particular expertise and strategic functionality in several areas, including:

1. Being a reliable resource for health care reform and health policy, including quality improvement, patient safety and organizational change;
2. Developing expertise in improving the effectiveness and efficiency of clinical care;
3. Developing strategies for improving health equity and security;
4. Promoting greater understanding of the multiple determinants of health and appreciation of health being a function of the totality of one’s circumstances; and
5. Building health leadership and quality improvement capacity.

BUILDING ORGANIZATIONAL ARCHITECTURE AND CAPACITY

During 2011, administrative support for the IPHI was provided by temporary personnel and by “borrowing” time from personnel in the Dean’s Office. The lack of permanent full time dedicated IPHI staff has impeded progress. An assistant director was recruited and commenced work on November 28, 2011. The search for an IPHI program manager is underway. A website has been established and is being refined and expanded. Other operating infrastructure is being developed.

PROGRAMMATIC DEVELOPMENT

As a new entity, the IPHI's programmatic portfolio is still nascent. To date, the Institute has focused on developing interdisciplinary programs that have face validity and direct applicability, significant potential to be leveraged, and establish it as a valued partner of the California state government. A listing of the criteria that have guided program development is shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Criteria for Program Development</th>
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<tr>
<td>1. Addresses a significant need</td>
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<td>2. Has potential for substantial impact and reach</td>
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<tr>
<td>3. Provides opportunities for education, research and service</td>
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<td>4. Has significant potential for synergies and leverage</td>
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<td>5. Offers substantial opportunities for innovative and creative program development</td>
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<td>6. Offers significant potential to promote systemization and systems thinking</td>
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<td>7. Is congruent with the changing social, political and scientific context of public health and health care</td>
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<td>8. Has the potential for a broad base of support</td>
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<td>9. Has high potential for sustainability</td>
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<td>10. Is consistent with UCDHS and UC Strategic Plans</td>
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FUNDED PROGRAMS AND PENDING GRANTS

During its first year, the IPHI secured projects having an aggregate lifetime value of more than $36M. Multiple additional contracts and grant proposals are pending. IPHI’s funded projects are highlighted below.

Medi-Cal Quality Improvement Program - This 5-year $4.25M inter-agency agreement with the state Department of Health Care Services seeks to establish a quality improvement program for California's $47B per year Medicaid program, develop a systems-level quality management strategy for the $3.3B Delivery System Reform Incentive Pool (DSRIP) Program that is part of the state’s 1115 Medicaid waiver, provide on-going evaluation of the DSRIP Program, conduct a broad review of quality improvement (QI) strategies and methods used by Medicaid and other relevant publicly funded health care programs, and provide executive-level strategic advice and thought leadership to
the Department. This is a new program and recruitment of staff and program development are well underway.

**CDC Cooperative Agreement on Opiate Overdose Prevention Policies** - IPHI’s Director is Co-PI with Dr. Joy Melnikow, Director of the Center for Health Policy Research, on this 1-year $150K project funded by the Centers for Disease Control and Prevention to assess opiate overdose prevention strategies. The CDC is especially interested in assessing the effectiveness of lock-in policies.

**Every Woman Counts Program** - This 3-year $1.9M interagency agreement with the state Department of Public Health supports breast and cervical cancer screening programs for underserved women. This is an existing program that was formerly administered by UCSF.

**California Cancer Registry** - This 5-year $29M grant/contract from the state Department of Public Health supports operation of the state’s population-based cancer registry, the largest such registry in the world. This is an existing program that was previously managed by the Public Health Institute. Notice of this award was received at the end of February 2012, and implementation of the transfer of operations has just begun. It is to be fully implemented under the management of the IPHI by July 1, 2012.

**High Risk Operating Room Safety Collaborative and Surgical Adverse Events** - This 2.5-year, $825K interagency agreement with the state Department of Public Health (Licensing and Certification Division) seeks to, among other things, evaluate adverse surgical events that have been reported in California since mandatory reporting began in 2007, promulgate best practices for preventing such events and support a 1-year multi-hospital collaborative. The contract for this agreement is in the final stages of execution.

**Use of the Oncotype Dx Genetic Assay in Medi-Cal Beneficiaries with Breast Cancer** - This 1-year $58K pilot study funded by Genomic Health, Inc., is to evaluate use of the Oncotype Dx genetic assay among persons with breast cancer who are enrolled in the Medi-Cal program. The contract is in the final stages of execution. In addition to providing information about how use of the Oncotype Dx genetic assay influences the treatment of Medi-Cal beneficiaries, this study will provide important experience in linking Medi-Cal and California Cancer Registry data bases.

**CMS Innovations Grant** – In collaboration with the Betty Irene Moore School of Nursing and Northern California VA Health Care System, the IPHI submitted a 3-year $11.2M Centers for Medicare and Medicaid Innovations Grant proposal entitled *Care Coordination and Remote-access Preventive Services Specialists (Care CORPS)*. The proposal seeks to increase the effectiveness and efficiency of care for medically complex beneficiaries of two or more federal health plans by improving coordination of health care and social support services through use of a new type of technology-enabled community-based caregiver and targets former military medics and hospital corpsmen for the training.

**Redundant Federal Spending for Dual Eligible VA-Medicare Beneficiaries** – For the past two years, the IPHI Director has been collaborating with investigators at Brown University, Providence VAMC and Palo Alto VAMC to assess the amount of duplicate federal spending for dual eligible VA and Medicare beneficiaries who are enrolled in both the VA health care system and Medicare Advantage plans. A report of the initial findings has been submitted to the *Journal of the American Medical Association*, and a proposal for funding to expand the project has been submitted to the Department of Veterans Affairs.
CHALLENGES

The IPHI confronted a number of challenges during its inaugural year. These challenges can be categorized into four areas.

1. CHALLENGES RELATED TO BEING A NEW ORGANIZATION

Launching a new organization always entails challenges of establishing an operational infrastructure and recruiting staff, developing policies and procedures, creating organizational identity and presence, developing a core program of activities, and building credibility and a performance record. Surmounting some of these challenges has been more difficult than expected for reasons discussed elsewhere in this section. These challenges have been heightened by not having a broadly understood mission nor adequate resources for program development.

2. CHALLENGES RELATED TO BEING A RELATIVELY NEW DISCIPLINE

Population health is an emerging academic discipline whose scope is not yet widely understood. Figuratively, population health may be thought of as a marriage between the clinical and public health sciences. The scope and content of population health are inherently interdisciplinary and overlap with other well established disciplines – both within and outside of the health sciences, and most especially with public health sciences.

Among other things, population health seeks to apply and integrate traditional public health principles, practices and competencies into clinical settings and to apply these skills and perspectives in new ways that are increasingly possible because of advances in telecommunications and information management technologies.

The IPHI is one of few academic organizational units in the U.S. dedicated to population health. The number of such programs is likely to grow rapidly in the years ahead.

3. CHALLENGES INHERENT TO ACADEMIA

Academic health centers and academia in general are characterized by a high degree of discipline-specific or programmatic centricity and insularity, inter-departmental and inter-programmatic competitiveness, risk aversion, and institutional inertia. These dynamics are present at UCD and have affected the rate of the Institute’s development in various ways.

4. CHALLENGES INHERENT TO UC DAVIS

In addition to the challenges inherent to academia, UCD and UCDHS have specific issues that have presented challenges in developing IPHI. These include varying degrees of tension between programs at the Davis and Sacramento campuses, IPHI’s status as an independent organizational unit and the need for its faculty to have a department as an academic home, and UCD’s cumbersome and often lethargic infrastructure. UCD’s basic support systems (e.g., human resources and contracts management) have been commendably responsive to situations that have been identified in advance as needing “special handling,” but they have been less responsive on routine matters. To wit, a senior official with a state agency whom IPHI has an inter-agency agreement wrote at one juncture saying, “I realize you’re doing everything you can to prod the UCD system…my experience is that UCSF and UCSD both move faster at processing both contracts and personnel compared to UCD.”
2012 ROAD MAP

In 2012, the IPHI will continue to execute the previously described 5-pronged strategy, focusing especially on implementing existing contracts and programs, finalizing additional contracts that are in progress, and expanding infrastructure and capacity. Specific activities that will be pursued in 2012 include the following:

**INFRASTRUCTURE DEVELOPMENT**

1. Initiate a search for at least one, and possibly two, of the IPHI endowed faculty positions (contingent upon appropriate departmental support)
2. Convene a UCD/UCDHS Advisory Committee
3. Convene a National Advisory Board
4. Expand and enhance the IPHI website
5. Initiate an IPHI blog
6. Launch a Population Health Lecture Series
7. Finish compiling a database of existing UCD and UC population health-related educational, research and policy-related activities, and the relationships between and amongst these activities

**PROGRAMMATIC ACTIVITY**

1. Implement the Medi-Cal Quality Improvement Program. Recruiting and hiring of personnel and convening the statewide Medi-Cal Performance Advisory Committee are the highest immediate priorities and are well underway. Initial work to develop a statewide quality improvement plan has begun.
2. Implement the California Cancer Registry. Final negotiations with the CDPH on implementation of the CCR are underway; these have been considerably more tortuous than expected. The transition must be completed by July 1, 2012.
3. Implement the Every Woman Counts Program. Transfer of staff and operationalization of this program at UCD is well underway.
4. Finalize contract execution and begin implementation of the High Risk Operating Room Safety Collaborative and Adverse Surgical Events Program.
5. Finalize the agreement with Genomic Health, Inc., and complete the “Utilization of the OncotypeDx Assay Among California Breast Cancer Patients Covered by Medi-Cal” Study.
6. Finalize a Memorandum of Agreement with the Department of Veterans Affairs Northern California Health Care System.
7. Finalize the evaluation of incorporating the California Health Policy Forum under the management of the IPHI and, if indicated, develop a transfer of operations plan.
8. Finalize negotiations with the state Department of Public Health to administer the Combined Chronic Disease Program (Heart Disease and Stroke Prevention, Arthritis and Wise Woman), Project Lean, and California Active Communities Program. These
inter-agency agreements have an estimated three year aggregate value of approximately $20M. These agreements need to be executed by June 30, 2012.

9. Continue discussions with the state Department of Health Care Services regarding possible contracts related to California’s Coordination of Care Initiative for persons with dual Medicare and Medicaid eligibility and its nascent Value Based Purchasing Program.

10. Continue discussions with the state Departments of Health Care Services and Public Health to develop a quality improvement training program and possible UC-DHCS-CDPH Health Leadership and Quality Improvement Collaborative.

11. Explore development of a Center for Population Health Informatics within the IPHI.

12. Continue discussions with the state Emergency Medical Services Authority regarding data analysis and provision of technical assistance on various EMS-related activities.

13. Pursue other program funding opportunities as they are identified.