



Shaping the Future of Medicine: Excellence,  
Innovation, and Integration

Executive Planning Council  
Recommendations

**July 9, 2012**

These recommendations regarding the strategic priorities for Penn Medicine have been developed and submitted to Dr. Larry Jameson, Dean of the Perelman School of Medicine and EVP of the University of Pennsylvania Health System, and to Mr. Ralph Muller, Chief Executive Officer of the University of Pennsylvania Health System by the members of the *Shaping the Future* Executive Planning Council.

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## I. Excellence, Innovation, and Integration

The last decade has been one of prosperity and notable advance for Penn Medicine. As we consider the next decade, powerful forces of health reform and global economic pressures threaten to destabilize the balance of our missions. At the same time, there is great potential for Penn Medicine to flourish during a period in which innovation and entrepreneurship will be rewarded -- from the unraveling of the basic mechanisms of disease, the application of these discoveries to develop new therapies, to new advances in population health management and, ultimately, advanced patient care.

Our recommended theme for Penn Medicine's five-year strategic plan – *Shaping the Future of Medicine: Excellence, Innovation and Integration* – reflects our call to establish the most eminent faculty, to foster a culture of unbounded creativity, and to achieve greater alignment and integration of our structure and missions. Implementation of these recommendations will strengthen our sciences so as to advance understanding at the molecular and genomic level; create new capabilities to address the most complex of our patients' diagnostic and clinical challenges across the continuum of care; enhance our impact on community and global health through prevention, screening, and population based intervention; and establish innovative modes of training which prepare physicians and scientists for the next generation of discovery and service. To accomplish these goals, the Executive Planning Council recommends the following priorities be placed at the center of our five-year strategic plan:

- Lead in the science and practice of **Individualized Medicine**, placing an even greater emphasis on service excellence and the patient experience; innovating in the development and evaluation of personalized diagnostics; and integrating multidisciplinary complex clinical care services around the patient supported by an integrated electronic medical record resulting in improved coordination of care.
- Establish a nationally recognized program in **Biomedical Informatics** that incorporates computational biology, bio-informatics, clinical informatics, population health informatics, bio sample management, and large-scale clinical data warehouses and information access.
- Commit to creative collaboration and improved relationships with industry that promotes the translation of our discoveries into effective new therapies, devices, and products. Establish a **Penn Medicine Innovation Center** to coalesce and focus the necessary resources into an "innovation zone" that ensures our discoveries are impactful.
- Invest in academic excellence through **focused recruitment and retention of outstanding faculty**, pooling our resources to create a balanced portfolio of present and future international leaders across disciplines.
- Launch recommended programs to reinforce our **commitment to a diverse and flexible workforce**, which promotes diversity, work-life balance and career flexibility for the faculty and staff.
- Convene a **Penn Medicine education council** to design innovative educational programs that span undergraduate and graduate education to prepare the health care and research workforce to meet and excel in the current rapidly changing environment.

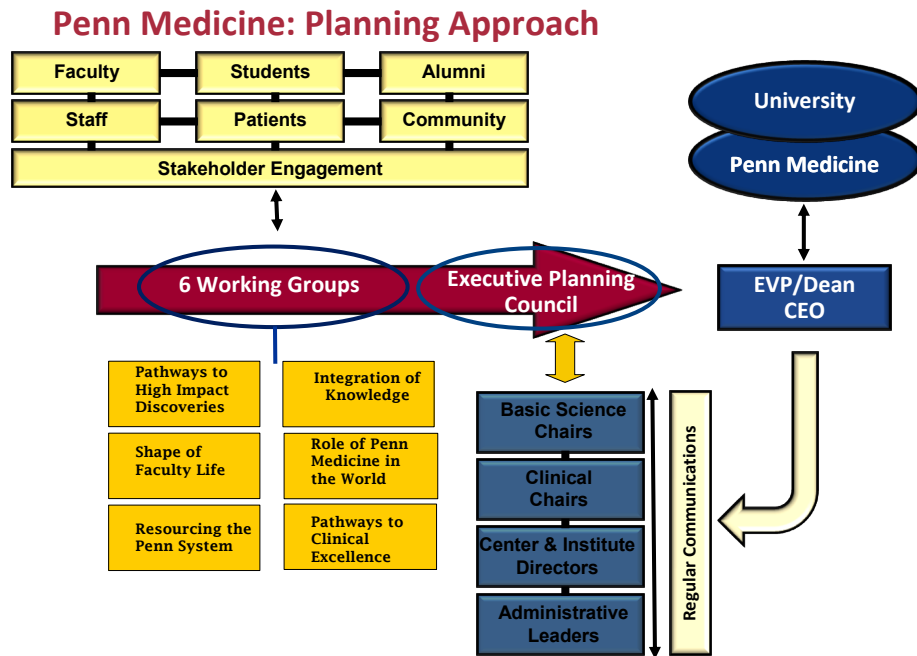
- **Optimize the Penn Medicine ecosystem** and establish integrated and transparent evidence-based finance and space allocation decision-making processes to ensure rapid implementation of these recommendations and future strategic initiatives.

Our commitment and investment in this strategic plan will establish the basis for the future prosperity and sustainability of Penn Medicine. The benefits to be gained are great. Our patients will benefit from advanced diagnostics and treatments delivered through a program of individualized medicine and a culture of service excellence. Our clinical system will work in collaboration with payers in new models of reimbursement such as bundled and value-based payment. Our outstanding scientists will be positioned to lead new discoveries and to garner enhanced support for this work through both public and private funding sources. Via new partnerships with industry, we will rapidly move the innovations of our scientists and clinicians to global markets and populations in need. Our campus will become an ever more preferred regional and national destination, evincing state-of-the-art clinical facilities and laboratories where burgeoning knowledge becomes the inception for emerging biotechnology companies. Nurturing physicians and scientists to work both individually and in teams across traditional boundaries is essential to these goals. Physician-scientists, one important catalyst in the translation of science into practice, provide an example of how to support and encourage the linkage of investigation with clinical practice and impactful implementation. Investment in state-of-the-art informatics platforms will enable researchers to make advances by harnessing the vast data available from our integrated enterprise to make more accurate and informed discoveries and decisions. To prospective faculty and students, we will be known as the institution with the most flexible and collaborative culture, where a free interchange of ideas and initiatives within and among missions is encouraged, supported, and celebrated.

To be successful, the entire enterprise must be committed to implementation of this plan. We encourage a renewed commitment to timely and bold decision-making coupled with efforts to streamline and remove administrative barriers to action that can prevent nimble responses to a changing environment.

## II. Planning Process

These recommendations are the result of a faculty-led strategic planning initiative convened during December 2011 and co-chaired by Dr. Jonathan Epstein, Chair of Cell and Developmental Biology, and Dr. Deborah Driscoll, Chair of Obstetrics and Gynecology.



Six integrative working groups chaired by faculty leaders met for four months to consider Penn Medicine wide transformational initiatives and have provided comprehensive reports of their findings and recommendations. To support their discussions, fourteen focus groups were held with patients (including faculty), nurses, ancillary clinical services, medical students, residents, PhD students, postdoctoral fellows, basic sciences administrators, and researchers. Input on Penn Medicine’s strategy was sought from department chairs, institute and center directors, administration, staff and educational leaders. The Executive Planning Council (EPC), consisting of the Planning co-Chairs, the Chairs of each Work Group, and a representative each of the Basic Science and Clinical Departments, Center and Institute Directors, and administration, reviewed the Work Group reports, which are included as integral to this report, and the input received from throughout our community, and has formulated its recommendations to Dr. J. Larry Jameson, Dean and Executive Vice President, and Mr. Ralph Muller, Health System Chief Executive Officer.

### III. Executive Planning Council Recommendations

#### 1. *Lead in Individualized Medicine*

The future clinical environment will be characterized by rapid and precise individualized diagnosis and treatment, and comprehensive longitudinal care. In the near term we must prepare to excel in a healthcare environment in which reimbursement is likely to emphasize a single payment for an episode of care (otherwise known as “bundled payment”), whether it be straightforward or complex. Whereas many organizations are seeking to expand their scale of services, Penn will focus on using its resources for closer integration of existing assets and capabilities, controlling costs, emphasizing innovation, and selectively upgrading and enhancing facilities and programs. Better integration of our clinical operation with our academic research enterprise will give us a competitive advantage in the marketplace of academic medical centers.

Complex medical/surgical care is a strength and priority for Penn Medicine because it is where the integration of research, diagnostics, and therapeutics has the greatest impact on people’s lives. High complexity quaternary care services often bring patients to their first encounter at Penn via referrals to disease-based specialties. The most complex cases currently generate over 50% of the inpatient contribution margin and in our market are those most resistant to pricing pressure and provider competition.

Penn Medicine’s clinical enterprise has made significant progress in the areas of mortality and health care acquired infections since the inception of the *Blueprint for Quality* in 2007. For example, risk adjusted mortality has decreased by 45% over the past five years across the health system and central line catheter blood stream infections have decreased by 95% over a similar time period. Unit based clinical leadership teams are now fully operational in all Penn Medicine inpatient units. Despite these advances and our surfeit of medical talent and high tech equipment, focus groups and interviews reveal that we are lacking in the kind of service, communication, and humanistic approaches necessary for an excellent patient experience – an assertion reinforced by the relatively mediocre performance of Penn Medicine hospitals in national patient satisfaction benchmarks.

The strategic goal is to achieve world-class service excellence in a patient-centered environment. Investments needed to achieve this goal will include advances in technology, electronic medical records, reporting, quality and cost measurement, and appealing clinical facilities with private rooms and state of the art design. Order of magnitude gains in quality, service, and cost will be achieved through collaborative re-engineering of clinical processes and enhanced service training with an emphasis on staff and physicians working together to deliver an optimal patient experience. We recommend that the entire Penn clinical delivery system be re-oriented and re-engineered to deliver uniquely excellent individualized medicine.

This approach will require the following initiatives:

- Place primary emphasis on exceptional care and service resulting in optimal outcomes and encounters that address the physical, emotional, spiritual and educational needs of the patient and their family with respect and courtesy.
- Implement a wholly integrated electronic medical record and advanced information systems capabilities for clinical decision-making, genomic and biological marker testing, and seamless sharing of clinical information for both research and practice supported by a medical informatics program at Penn Medicine.
- Expand current successful integrated complex care programs and build new ones (e.g. neuroscience, GI, musculoskeletal) and develop innovative infrastructure and incentive programs for quaternary inter-disciplinary disease-focused team-based programs.
- Coordinate care across the continuum for each patient, including designating a clinical care coordinator, and creating interdisciplinary forums that collaboratively evaluate and discuss the care of complex cases.
- Launch innovative research programs to develop and evaluate novel clinical decision support tools and predictive models. Conduct health services and comparative effectiveness research to evaluate health outcomes of individualized medicine interventions.
- Strengthen our commitment to exploring the genomic and environmental factors that underlie variability in drug response so that we can progressively individualize our therapeutic choices and provide a uniquely tailored regimen to our patients.
- Upgrade facilities as necessary to realize our vision of service excellence, including planned projects to expand ambulatory capacity and upgrade to private rooms at Pennsylvania Hospital, relocation of HUP trauma to Penn Presbyterian Medical Center, and state-of-the-art replacement capacity for the Hospital of the University of Pennsylvania.

Achievement of these objectives will require commitment to an enhanced model of clinical services that we must all share in creating. It will require integration and coordination amongst facilities, CPUP, administrative leaders, CCA, CHOP, the VA, and referring physicians; unifying the electronic medical record and interoperability amongst sites and clinical affiliates; research led innovation in new models of delivery of health care; closer integration with industry; and campus upgrades at all our sites to provide the necessary settings for delivering this vision. The planned facilities projects include private rooms and expanded ambulatory capacity at Pennsylvania Hospital, relocation of trauma to Presbyterian Hospital, and state-of-the-art replacement capacity for HUP – all necessary contributors to a highly service oriented and efficient clinical delivery system.

## ***2. Realize our potential for innovation***




Excellence in complex clinical care and high impact fundamental research will be foundational requirements for our success in the future. Innovation in these areas will increasingly emerge at the intersection of disciplines and from faculty who integrate knowledge providing a milieu that will attract the world's brightest faculty and trainees. Despite Penn's highly collaborative culture, there remain significant opportunities for improved capabilities, programs, and infrastructure that will stimulate inter-disciplinary innovation. For example, Penn



Medicine must achieve the critical mass of faculty and information systems resources necessary to optimally integrate and draw insight from human genomic, proteomic, metabolomic and other functional data with clinical information. Furthermore, an assessment of our current state of research impact – such as faculty memberships in distinguished societies, citations in scholarly journals, and an ability to attract the very best investigators to Penn - all signify that opportunities exist for strengthening Penn Medicine’s research excellence.

Nurturing physicians and scientists to work both individually and in teams across traditional boundaries is essential to achieve our goals. However, despite our nationally eminent MD-PhD program, our pipeline of physician-scientists is in jeopardy. This issue is particularly striking in the Department of Medicine; in 2000 there were 35 tenure track physician-scientists under the age of 45 actively engaged in laboratory bench research; in 2012, there are only 3. While reflecting national trends, the pathway to independence for such joint trainees is currently hampered by the length of time for training, the redundancy embedded in training programs, and the lack of both viable and visible career structures. It is both timely and critical that we both build new and integrate existing training programs for MDs, PhDs and MD/PhDs which foster innovative thinking, and provide adequate resources and mentoring for success.

Our efforts to realize this potential for innovation must be supported by an elevated commitment to excellence -- we must perform at the highest levels in all we do from recruitment, through promotion and retention of transformative individuals. We must increase our commitment to high-risk, high-impact research, and we must remove impediments to the realization of high-impact discoveries. Penn’s innovations, if wisely cast, will couple basic science discovery to accelerated translation in the form of new diagnostics and therapy. Our community can be optimally organized to be a true center for innovation. The following recommendations support the goal of accelerating innovation at Penn:

-  Implement a novel, cross-disciplinary process to identify and streamline the recruitment of transformative individuals for primary academic pursuits, balanced by more focused traditional hires also aligned with the strategic plan. Over the next five years, recruit five highly accomplished investigators (e.g. National Academy members or equivalent) whose arrival will catalyze Penn Medicine’s scientific aspirations. These transformational individuals should be collaborative in nature and capable of enhancing recruitment and retention of other outstanding investigators, clinicians and trainees. Grow, empower and invest in the pipeline of scientists and physicians who bridge our basic and clinical missions.
-  Create a comprehensive program to train, recruit, and support a stronger and more cohesive community of MD and PhD trainees with exposure to and expertise in the parallel disciplines of science and medicine. Nurture the continued career progression of MD/PhD trainees from completion of their graduate/medical training, through post-doc/fellowship and into the junior faculty ranks – stressing early progression to career independence. Provide clinical investigators with the resources, support, and time to be the leaders of their scholarly fields of expertise.
-  Align administrative and faculty cultures with excellence by doing more to reward research success, enhance performance evaluation at all levels, offer competitive grants for high-risk high-impact research, and ensure that resources are aligned with the highest impact research. Support for faculty should be considered investments and

success should be valued as a substantial measurable return for Penn Medicine and the University.

- Implement and invest in a unified initiative that spans the academic domain of biomedical informatics and information technology to create a class-leading link between science and medicine. This initiative should encompass all relevant fields such as: computational biology, bioinformatics, genomics, biostatistics, epidemiology, imagine analysis, and health and medical informatics. Moving swiftly in this area is imperative and should not await the eventual and necessary recruitment of an academic leader of a center, institute or department.
- Support and augment ongoing plans for the Penn Biobank, incorporating a combination of patient specimen, clinical phenotyping, community and insurance-level data, along with the bioinformatics and infrastructure necessary for Penn to be at the vanguard of individualized medicine. Penn's program will establish self-sustaining links to industry and far-reaching products across all disciplines. The creation of this platform can be staged incrementally with specific initiatives such as cancer, neurodegeneration and cardiovascular/metabolism so as to build deep and productive biobanks and datasets that can serve as foundations for broader implementation in the future.
- Markedly increase investments in technology cores with exceptional faculty leaders paired to technical directors to establish and direct relevant core facilities. Optimize core functions and efficiency by centralizing core administration and financing.
- Create a Penn Innovation Center that acts as an accelerator for transformational discoveries, assimilates existing administrative units relating to technology transfer and commercial collaborations, is responsive and accountable to Penn Medicine, and spans basic science and biomedicine as well as mobile health technologies, social media, comparative effectiveness, and health insurance benefit design. Establish a Penn Venture Fund as an investment vehicle for early stage Penn commercial activities that is managed at "arm's length" to the institution and is capable of generating a positive return on investment within five years.
- Capitalize on synergies that result from collaboration and, where appropriate, integration with our local partners. Penn Medicine possesses enormous opportunities, compared with many peer institutions because of our adjacencies to outstanding Penn schools and local institutions. Build on the success of the CTSA and other ongoing joint activities with Children's Hospital of Philadelphia. Expand the scope and membership of the Penn-CHOP coordinating team to develop joint initiatives. Numerous other exciting and novel opportunities exist through partnership with Penn Engineering, Nursing, Dental, Veterinary, Wharton and Arts and Sciences.

### **3. *Enrich the life of our faculty with diversity and flexibility***

The PSOM faculty is among the very best in the world – whether measured by tangible accomplishments such as awards, publication impact, clinical productivity or grant funding, or by more intangible, often more enduring achievements, such as collegiality, mentorship and commitment to excellence. Surveys of our faculty uniformly indicate that the climate, culture and collegiality, collaboration, mentoring and feedback are among the foremost positive characteristics of life at Penn. Despite these great strengths, there are significant opportunities to further enhance faculty life at Penn. Today, only 5% of Perelman School of Medicine faculty members represent underrepresented minority groups and only 33% are women. Achieving the

goal of a diverse faculty that mirrors our American, if not world, society will foster a culture of inclusion that will in turn advance innovative research, enhance education, and deliver healthcare to increasingly diverse local and global communities. Faculty members truly value the intellectual vitality of the Penn Medicine workplace but report that time pressures and maintaining the balance between their professional and personal lives are of increasing concern.

The PSOM currently has four full time faculty tracks: Academic Clinician, Tenure, Clinician Educator, and Research. Although current policies provide some flexibility, this flexibility may not be clearly understood. There is relatively little movement between tracks and a perception amongst faculty that the track system is rigid and unable to be responsive to change in faculty interest or career evolution. An opportunity to evaluate the tracks and embrace changes in the career trajectory of an individual for both faculty and institutional success exists.

The following initiatives are critical to enriching faculty life at Penn:




- Recruit a Vice Dean for Diversity and Multi-Cultural Affairs to lead an Office of Diversity and Multi-Cultural Affairs. Empower this position and office to have meaningful impact on recruitment, retention and cultural balance.
- Enhance the flexibility of faculty tracks by: re-evaluating the requirement of a national search during a track change; renaming the Clinician-Educator track to Clinician Scholar; enhancing equity between tracks by balancing compensation, security, flexibility, and benefits; highlighting to faculty, COAP, and Chairs the range of successful career pathways for Clinician Scholars; further developing the Academic Clinician track to maximize equity in benefits and status to recognize the importance of these faculty to our overall success; extending the length of time for outstanding young faculty to reach their potential.
- Develop metrics for collaboration, mentorship, community engagement and professionalism to be incorporated into faculty evaluations, including promotion and compensation decisions.
- Implement an equitable, mission based school-wide faculty compensation strategy that uses consistently applied, universal principles to set and adjust salaries and incentives.
- Designate leaders to oversee mentoring and professional development of faculty within each department (and larger divisions).
- Improve and expand on-site day care services with expanded operating hours to accommodate the lifestyle of Penn families.
- Create shared spaces for faculty to foster innovation and collaboration, and enhance faculty productivity, creativity and satisfaction.

Encouraging and supporting the recruitment and retention of a diverse faculty, creating flexibility and embracing changes in career trajectory will foster an environment in which each individual can reach their potential.

#### **4. *Impact health outcomes locally and globally***

As responsible physicians, providers and scientists at Penn Medicine we have a moral and ethical responsibility to share our knowledge and expertise to significantly improve the health outcomes of our surrounding community, the nation and under-served areas in the world. Towards that end, building multi-disciplinary partnerships locally and abroad will transform our educational endeavors and create new and better ways to provide health care. Several of Penn Medicine's top-ranking peers lie in Universities that have a School of Public Health, and in that setting these schools both garner resources and take the lead in the coordination of community engagement and global health initiatives. Absent this, Penn has strong examples of successful initiatives both locally and globally that are limited to circumscribed efforts, rather than institutionally coordinated.

The Philadelphia region has areas of significant health need. Dialogue with the community that is institutionally coordinated and strategically aimed at matching Penn's clinical strengths, community-based research and educational ambitions with local needs can have a positive long term impact on the lives of those whose neighborhood we share. Engagement with our community enables Penn to refine and optimize its methods for reducing health care costs and promoting wellness. Addressing high cost illnesses associated with deficits in diet, nutrition and exercise, or high-risk behaviors such as smoking, substance abuse, or unprotected sex, better prepare us for a reimbursement environment designed to improve healthcare value. The steps below will lead to a sustainable symbiotic relationship where Penn's missions are enhanced and the community health status is improved.

-  Create a community board through which Penn Medicine and the community engage in open dialogue, develop trust, and share responsibility for identifying new opportunities for education, clinical services, and research that provide mutual benefits to the institution and the community.
-  Coordinate Penn Medicine's community efforts so as to enhance access to care, increase patient satisfaction, enhance student mentoring, and increase the numbers of research studies devoted to problems that disproportionately affect underserved populations. Coordination should extend to the Provost Office and the Center for Public Health Initiatives, across other schools, such as the School of Nursing, and with external partners, such as Veteran's Affairs and CHOP.
-  Encourage community-based engagement and research through funding pilot projects, and reward and recognition in the promotion process.

As part of its mission as a leading international institution, Penn Medicine should make additional efforts to improve human welfare in under-resourced areas of the world, consistent with the University's newly announced strategic plan for global initiatives, which is based on three pillars: to prepare students and trainees for an increasingly globalized society; to strengthen Penn as a global agenda setter; and to improve the world through enhancing health in under-resourced areas of the world. The present global health program at Penn Medicine is a strong, though limited, initiative that lacks the breadth and depth of the "major league" programs of our peers, particularly those with Public Health schools. A robust global health

program will serve many purposes: it will enhance Penn Medicine's recognition both at home and abroad; it will provide international sites for education and training of US and other health professionals; and it will offer opportunities for service and research sought by our faculty. Four initiatives will establish the basis of Penn Medicine's future strength in global health:

- Consolidate existing and new efforts of education, research and implementation for Penn Medicine's global agenda under a single Center or expanded Office of Global Health Programs, working in collaboration with the university. Strongly consider recruitment of a new leader for this unified entity.
- Establish a centrally coordinated program within this Center built around the theme of *implementation science*, defined by the NIH as "the study of methods to promote the integration of research findings and evidence into healthcare policy and practice". Evidence-based implementation can leverage biomedical research, engineering, psychology, sociology, economics, and education to produce improved outcomes that take into consideration the uniqueness of each environment and how best to deploy proven treatments and therapies. Penn's unified campus and highly collaborative faculty make implementation science a distinctive platform for engaging globally as well as locally.
- Strategically launch 1-2 new global sites of engagement in different continents (for instance, one site in an African country and another in Latin America) modeled on the university-to-university relationship as exemplified by the Botswana-UPenn Partnership.
- Pursue, opportunistically, "Penn Global Health Consulting" as a revenue-producing venture offering up Penn's considerable expertise to governments and partner institutions as needed to address critical health needs.
- In concert with our mission to train global leaders, advance the foundations of global health education to our MD, PhD and resident/fellow trainees. Lead in the education of Penn medical students by fostering expansion of global health courses and programs both within the PSOM and the MPH program.

#### **5. *Create innovative interdisciplinary educational programs***

A primary mission for Penn Medicine is to develop and mentor outstanding individuals committed to careers as leaders in medicine and research. The physical integration of the University of Pennsylvania's schools on a single campus provides unique opportunities to develop integrated educational programs within Penn Medicine and with programs in other schools in the University.

The Perelman School of Medicine's last major reform in undergraduate medical education (UME) took place in the late 1990's, and was innovative and highly successful. The UME program has emphasized small group and team based approaches and has been enhanced by participation from students in other health science disciplines, engineering, and the robust MSTP program. Coupled with the strength of the integrated Biomedical Graduate Studies (BGS) program, which has undergone serial revision over the past 23 years, and the increasingly rich array of master's programs, the Perelman School of Medicine's educational environment has been widely recognized as among the very best in the country.

We are at an important inflection point given the continued evolution of the practice of medicine and the conduct of science, combined with powerful internal and external forces that challenge the viability of academic medical centers. Accordingly, ongoing innovation in the

structured approaches to the development of future leaders in medicine and research is essential. Furthermore, there will be strong internal forces (within Penn Medicine, e.g., away from silos and into team-based care and research), and external forces (outside Penn Medicine, e.g., NIH or GME reductions in funding for both research and training) that will require us to rethink and redesign new models for teaching and training future physicians and scientists that emphasize team training, collaboration, interdisciplinary and inter professional activities, online access, and the reduction of the costs and time to train. As noted above, the cross-training of physicians and scientists is both critical to this endeavor and a potential strength of Penn Medicine.

It will become increasingly necessary in this dynamic time of change for Penn Medicine to enhance the coordination across our educational offerings (UME, GME, MSTP, BGS, Masters, Postdoctoral, and CME) so as to pioneer emergent paradigms of instructional models and programs supported by new funding models and/or sources, that facilitate the ability of our students and trainees to have impactful careers in their respective fields.

As an initial action, a Penn Medicine Education Council (PMEC) of senior leaders should be convened to review our existing educational framework, to develop recommendations for the design and implementation of required refinements, enhancements and changes to our current systems and approaches that address the recommendations brought forward by the individual Strategic Plan Work Groups. This process must incorporate national and global changes in undergraduate and graduate medical and research education, and the potential for substantial cuts in funding for education and training via traditional mechanisms.

The PMEC should enlist the active participation of clinical and basic science faculty, department chairs, center and institute directors, and administration leaders, in addition to appropriate external advisors, such as development staff and consultants in order to promote innovation and to incorporate new modes of education into the changing Penn Medicine landscape. A broad reassessment of our educational mission is timely, as it will help to inform the plans for a new or renovated medical education building. It is expected that the PMEC would complete this initial planning stage within a six-month time frame.

### III. Implementation Recommendations

#### 6. *Optimize the Penn Medicine Ecosystem*

The Penn Medicine financial and market position is strong and provides a solid platform from which to invest in our strategic imperatives. A favorable clinical care reimbursement rate environment over the last decade combined with consistent reductions in costs, aligned with a high level of success in garnering competitive NIH and ARRA funds, have provided the basis for investment and research support across the enterprise. However, the “macro-economy” of Penn Medicine will become increasingly vulnerable to the shocks induced by health reform and federal deficit management. Penn Medicine relies on its high commercial payer margins as an important means of support for its academic programs and medical educational endeavors, with a significant percent of the clinical margin going to this purpose. However, capacity limits at HUP, anticipated reductions in reimbursement, and changes towards value-based payment will reduce the clinical margin and place broad financial pressure on our entire enterprise. The forecast reduction in margin is paralleled by potential decreases in NIH funding and the end of ARRA funding, which will exacerbate the fiscal pressures on our organization at the very time we strive to invest in important new initiatives. Recommendations for optimizing the Penn Medicine ecosystem – and generating new resources include:

- Establish integrated and transparent evidence-based finance and space allocation decision-making processes across Penn Medicine. Replace the Academic Development Fund (ADF) and EVP Dean’s fund with a new funding mechanism which distinguishes new initiative investment from on-going support, and which rewards peer-reviewed merit and collaboration. Charge the basic science chairs and Institute/Center directors to recommend an objective and transparent funding methodology to support the academic missions. The new funding mechanisms should incorporate the need to provide medium-range stability to Institutes/Centers for administrative support and ongoing expenses while retaining flexibility for investing in other academic initiatives
- Require each department to have a Space Plan and perform annual assessments of productivity and dollars per nsf to ensure that decisions are fair and balanced.
- Implement the Space Assignment Decision-Making processes recommended by the Committee on Resources and Support of Faculty (2006), which provide clear guidelines for when space should be reduced for a principal investigator or program.
- Conduct formal reviews of Centers and Institutes and their directors with resource allotments and reappointments based upon well articulated metrics of success, including general quality and mission specific criteria to optimize the resources invested in these inter-disciplinary organizations.
- Clarify faculty compensation policies including definition of academic base, fixed and variable compensation components, incentive metrics and use of administrative stipends for salary support where appropriate. Establish defined expectations of effort allocation and service for each faculty track. Specify salary coverage expectations from the respective sources, and establish a “salary support first” policy that requires faculty members to utilize their restricted and designated funds, and/or gift/endowment funds, toward salary gaps. Enact these policies in a consistent manner within faculty tracks and across departments and incorporate terms in all faculty offer letters.

- Consolidate redundant administrative infrastructure amongst PSOM entities, between the University and PSOM, and improve consistency of services to enhance productivity. Establish clear performance metrics to improve accountability and performance. Eliminate Penn Medicine internal incentives that encourage duplication of administrative infrastructure.
- Improve efficiency of clinical operations through integration of management engineering within units and promote integration across HUP, PPMC, and PAH to optimize capacity.

### **7. *Deliver results through leadership and collaboration***

Supporting our strategic investments will require a sustained, Penn Medicine-wide commitment to operating efficiency, resource re-allocation, funds flow management, maintaining clinical margins, maximizing returns from investments in research, and enhancing philanthropy. All parts of our organization will need to pull together to accomplish these aspirations. Perhaps most importantly, this will require an enhanced degree of transparency and trust amongst the Chairs, Center & Institute Directors, and administration.

Chairs/Directors will need to work closely together to manage resources so as to invest in the strategic priorities; for instance, committing replacement recruitments to informatics and new program areas; agreeing on incentives and a collaborative process to fund the recruitment of transformative individuals, and committing to the implementation of compensation policies and performance-based metrics that can allow resources to be reoriented to new initiatives and reward high performing areas. Similarly, the recruitment of new Chairs/Directors in the future must incorporate in the commitments made to them (where appropriate) support for the strategic priorities. Alignment of services around the patient in interdisciplinary services should incorporate modifications to funds flow that include all the stakeholder disciplines that are in a position to influence the success of the program.

Chairs must also be empowered with the principal responsibility for executing the salary arrangements for their existing faculty and for any new faculty. Effective salary policy is weakened if chairs do not have clear institutional guidance about standards and rules, and authoritative sources of advice when there are questions.

The Chairs/Directors will also need to work hand in glove with the administration to continue to reduce administrative costs, stage the implementation of new clinical facilities and programs that generate enhanced clinical results, and optimize the use of shared resources such as space, information technology, and human resources. An assertive program to reduce duplication and streamline operating costs will need to be undertaken in conjunction with the University, calling on external expertise as necessary to comprehensively review and recommend improvements to improve service while reducing duplication and costs.

Working together in new ways must also extend to the administrative services of Penn Medicine. Over the course of the last several years our organization has increasingly become more unified in areas such as information technology management, marketing and development, and facilities management. We recommend that this trend continue, with particular emphasis on coordination in finance and the process for capital allocation, space administration, and human resource management. At the same time, administrative burdens that diminish faculty productivity must be minimized with attention to reducing unfunded mandates and the time necessary to meet ever-increasing compliance and conflict-of-interest imperatives.



#### IV. Detailed Work Group Recommendations

Each of the six Work Groups prepared a detailed report and recommendations which were provided to the Executive Planning Council. The following recommendations are excerpted from these reports, organized into each of the themes defined by the EPC, with the result that certain recommendations have been grouped to avoid duplication.

#### *Lead in Individualized Medicine*

<p><b>1) Place primary emphasis on exceptional care and service resulting in exceptional outcomes where each patient encounter addresses the physical, emotional, spiritual and educational needs of the patient and their family with respect and courtesy.</b></p>
<p><b>1.1 Improve Access:</b> Create one point of contact for scheduling appointments, tests and diagnostics with coordinated times and days for intake into the general outpatient services in all CPUP and CCA practices.</p>
<p><b>1.2 Improve Professionalism:</b> Emphasize the following processes: a) hiring and selecting the right employees, b) appropriate orientation and on-boarding of all new staff in order to communicate expectations around service excellence, and c) leadership development that provides the right tools for managers to model the appropriate behavior and hold all staff accountable for service excellence.</p>
<p><b>1.3 Improve Facilities:</b> The essential need of the physical environment for the patient is cleanliness and privacy. A competitive bidding process establishing clear expectations should be held for cleaning services and other contractors. Members of the patient care team should continuously monitor for effectiveness and have avenues for correction of failed service. Incentives should be established with regard to meeting or exceeding expectations.</p>
<p><b>1.4 Develop a new patient tower.</b> A new patient tower will have a strong impact on clinical excellence by facilitating co-location of services for complex patient care cohorts, improving infection control, enhancing in-room technology and easing patient navigation as well as creating a more effective environment of care from a regulatory and accreditation standpoint. Private rooms are also an expectation by the American patient population, and beautiful surroundings add to positive feedback from patients.</p>
<p><b>1.5. Improve Patient Nutrition:</b> Food selections should be available when desired by the patient and or family. Food should be hot, fresh and appetizing when delivered, and it should be what was ordered. Dieticians/nutritionists could assist with healthy food choices for the patients or provide written guidance and nutritional counseling. Healthy snacks should be available on the wards at off hours in case meals were missed.</p>
<p><b>2) Coordinate care across the continuum for each patient, including, when appropriate, a designated clinical care coordinator or team, and interdisciplinary forums to discuss the evaluation and care of complex patients.</b></p>
<p><b>2.1</b> Create and emphasize a culture throughout Penn Medicine that gives high priority to population management of the complex patient, achieving best outcomes, and minimizing cost of care.</p>
<p><b>2.2</b> Implement a seamless EHR which is 100% transparent across care settings with capacity for UNIFIED population management, care coordination, transparency for patients and clinicians and dashboard capabilities.</p>
<p><b>2.3</b> Develop the infrastructure within Penn Medicine to monitor and standardize care processes so</p>

patients receive the same up to date evidence based care throughout the health system.
<b>2.4</b> Improve timely access to high quality, efficient inpatient and outpatient care by expanding hours of service for selected inpatient and ambulatory services, expanding use of urgent care as an alternative to Emergency Room Care, and implementing innovative solutions to after-hour advice and triage.
<b>2.5</b> Define the manpower required to achieve goals of population management and long –term care:
a. Primary care and preventive services: Create a Primary Care service line across CCA and CPUP which is focused on the delivery of the highest quality integrated care. Target the Penn insured population for phase 1 population management initiatives.
b. Implement innovative models of care that involve the increased use of physician extenders, nursing and artificial intelligence.
c. Complex Care Coordination: Assure coordinated comprehensive care is provided during inpatient care, outpatient care and transitions between the inpatient and outpatient setting. This can be provided by a combination of Penn Medicine resources and by partnering with other community based resources, and will require an explicit care management strategy.
d. Increase integration, support, and communication with home care, LTC, and rehabilitation units, as well as a commitment to palliative care - all as part of strengthening the continuum of care services.
<b>2.6</b> Train and deploy “clinical analysts” who can address the reporting and daily data management needs of the high performing practice.
<b>2.7</b> Create a process for complex and difficult to diagnose patients, where an internist (or specialist) will function as a consultant at the entry point to UPHS and help patients navigate the UPHS system to establish a diagnosis and/or coordinate care.
<b>2.8</b> Develop a web-based program/portal that will provide physicians who refer their patients to specialists at Penn secure, real-time information about their patients’ treatment plans and progress. Additional support of the patient portal development and proliferation should be undertaken.
<b>2.9</b> Implement more deliberate efforts to link the CCA practices to the main campus, particularly for post acute care, involving both primary care and community based specialists.
<b>2.10</b> Develop an initiative to determine how to measure cost and outcomes of these proposed efforts, and begin to measure value across these transitions. This can be in partnership with our payers.
<b>3) Expand current successful integrated complex care programs and build new ones (e.g. neuroscience, GI, musculoskeletal) and develop innovative infrastructure and incentive programs for quaternary inter-disciplinary disease-focused team-based programs.</b>
3.1 Design a clinically focused hospital-based organizational infrastructure that encompass clinical, operational and financial models with integrated practice units that are patient-centric and comprise all elements and disciplines for care of these patients.
a. Strong leadership is essential and would draw from physicians, nursing, and administration. Provide leadership with sufficient authority and autonomy to drive the program toward common goals; provide resources necessary to achieve those goals, and to drive accountability for outcomes and financial performance.
b. Establish a shared governance model with financial and accounting platforms that have

<p>appropriate attribution and accountability by all involved parties. Financial models, incentives and funds flow methodologies should be aligned with and incentivize integrated complex care. A financial “formula” or template should be developed to determine how support would be provided from clinical revenue and from the PSOM. The programs should be incentivized by volume, efficiency, and quality metrics, including patient flow and transitions. Shared incentives would support critical clinical arms that are not high RVU generating, and would also support academic research endeavors.</p>
<p>3.2 Identify the best sites (HUP, PMC, PAH) for such programs, and identify specific pilot projects that have a high chance of success. Potential examples include application of this infrastructure to the Cardiovascular Institute for improved clinical care, and further development of the Musculoskeletal and Neuroscience initiatives that are currently underway. Another area that lends itself to this structure would be Metabolic and Digestive Disease, incorporating gastroenterology, surgery, nutrition, and others.</p>
<p>3.3 Implement Pilots:</p>
<p>a. Develop a method of coordination and triage to schedule and direct the patient initially. Multidisciplinary outpatient evaluations/clinics can be established with either physical or virtual (i.e., appts on the same day) co-location of services. Programs would coordinate imaging, laboratory testing, clinical appointments, physical therapy, consultants for “one-stop shopping”.</p>
<p>b. Design and build inpatient disease-focused integrated clinical care physical units within a new acute care patient tower that utilize and enhance the multidisciplinary inpatient teams that are focused and trained in a specific complex care disease-based area. These teams would incorporate surgery, medical specialty, nursing, hospitalists, intensivists, consultants, and other ancillary support.</p>
<p>c. Identify and educate internists/family practice/CCA who wish to develop expertise in a focused area and participate in the “primary care” of the complex patients within that area. Utilize Penn primary care/internists as leaders in the coordination of the long-term care of these patients (link to Service Excellence and Seamless Care).</p>
<p>d. Develop program-specific protocols, templates and clinical/research databases. All patients would be offered entry into any ongoing patient protocols.</p>
<p>e. Aggressively market new and established focused high impact high value programs to grow market share.</p>
<p><b>3.4</b> Further develop research and educational opportunities within the Complex Care Programs. A strategy would be to intensify the relationship of the clinician scientist, the basic/translational scientist, the biostatistician, etc. This can be incentivized through evaluation processes for promotion, support, etc. Regular meetings could be used to update the parties in clinical basic science problems, questions and advancements. Educational opportunities could be increased for medical students, residents, and research personnel.</p>
<p><b>4) Develop an Advanced Patient Knowledge Platform for diagnostic and therapeutic decision-making that prospectively collects and warehouses patient information in order to advise clinicians at the point of care, improve clinical outcomes, increase value, and eliminate unnecessary variations in care. Expedite the final design and implementation of the Center for Personalized Diagnostics (CPD), technology that will provide full spectrum genomic testing and advanced imaging that will provide individualized care for prevention, diagnostic, and treatment purposes.</b></p>
<p>4.1 Design and develop prospective collection of predefined data elements on patients entering our health system, either physically (in a clinic or hospital) or virtually (in a patient portal) to.</p>

<p>a. Evolve Penn Data Store to include defined and free text data from administrative and clinical records and tools to help faculty and staff utilize that data for subject recruitment, research, and operations.</p>
<p>b. Implement comprehensive educational efforts to help providers enter usable data in the record.</p>
<p>c. Measure outcomes and cost for every patient to include information on initial patient condition, processes of care and outcomes of care. Outcome measures would encompass dimensions related to health status achieved, the process of recovery and the sustainability of health.</p>
<p>4.2 Develop advanced decision support infrastructure that uses collected patient information to advise clinicians at the point of care, with data available in predefined automated dashboards available at all entities, and well staffed service developed to provide data dictionary, datasets, and rudimentary data analyses to faculty and administrators.</p>
<p>4.3 Provide sequence information for hematological malignancies (first) and solid tumor (second) to identify actionable targets (drug-therapy available), prognostic and predictive care as well as to provide virtual karyotyping for solid tumors, including brain and renal cancers. The ultimate goals of this transformation would be to identify biomarkers for disease, predict susceptibility to cancer and cardiac disease and perform whole genomic sequencing</p>
<p>4.4 Focus on new and novel approaches to clinical assessment that includes state of the art imaging and pathology techniques that provide an integral part of personalized medicine. Incorporate these technologic advances into individualized pathways for diagnosis and treatment.</p>
<p>4.5 Support the development of a centralized biobank to store and catalogue patient biospecimens with the appropriate links to the clinical data stores for the purposes of clinical care and research (As proposed by the High Impact and Integration of Knowledge work groups)</p>
<p>4.6 Develop clear consent and development guidelines. This will be essential as we move into genomic sequencing and sequencing for predisposition genetic markers. This will also be important for decisions based on the “incidental-ome”, meaning findings of actionable mutations in an individual who might not have otherwise had reason to be concerned. (e.g. mutation in gene that is predictive of early on-set heart failure).</p>
<p>4.7 Develop an evidence base regarding the clinical implementation/representation of genomic information and a knowledgebase of mutations identified in control and patient samples in an on-going manner.</p>
<p>4.8 Develop a test development fund, separate and apart from the Hospital’s operating budget for reagents used in production of clinical results.</p>
<p>4.9 Develop an education program for residents, fellows, medical students and other physicians for better understanding of the generation of genomic data and interpretation of findings in a clinically usable format.</p>
<p>4.10 Establish a Steering Committee to review ethical and legal issues related to comprehensive collection of data for purposes of population management and research and also provide guidance to the Center for Personalized Diagnostics for prioritizing test development protocols.</p>

**Realize our potential for innovation**

<b>5) Implement a novel, cross-disciplinary process to identify and streamline the recruitment of transformative individuals for primary academic pursuits, balanced by more focused traditional hires across the PSOM that are aligned with the strategic plan.</b>
<p><b>5.1</b> Over the next five years, recruit five highly accomplished investigators (e.g. National Academy members or equivalent) whose arrival will catalyze Penn Medicine’s scientific aspirations. These transformational individuals should be collaborative in nature and capable of enhancing recruitment and retention of other outstanding investigators, clinicians and trainees. Promising areas for recruitment are in bioinformatics, epigenetics, stem cells, neurobiology, medicinal chemistry, cancer biology, obesity, implementation science, comparative effectiveness, and health services research.</p>
<p><b>5.2</b> Create a Dean’s Advisory Council composed of the highest impact Penn scientists and most eminent figures who are willing to serve, specifically tasked with recruiting transformational individuals. Solicit names of candidate transformational individuals from the Department Chairs, Center/Institute/Program Directors.</p>
<b>6) Align administrative and faculty cultures with excellence by doing more to reward research success, enhance performance evaluation at all levels, offer competitive grants for high-risk high-impact research, and ensure that resources are aligned with the highest impact research. Support for faculty should be considered investments and success should be valued as a substantial measurable return for Penn Medicine and the University.</b>
<p><b>6.1</b> Conduct frequent, rigorous, internal, peer-based review of the leadership and staffing of Departments, Centers, Institutes, Programs, and Cores. Conduct rigorous external peer-based review every 5-7 years.</p>
<p><b>6.2</b> Incentivize initiative and pioneering contributions through funding and recognition, as identified by annual surveys of all faculty who could be asked to name a few faculty/staff who have contributed the most to the research environment and functioning of the Department/Center/Institute/Program/School.</p>
<p><b>6.3</b> Reward research productivity, creativity, and innovation. Do more to incentivize and reward faculty for salary recovered on grants.</p>
<p><b>6.4</b> Offer PSOM-funded grants based on a competitive, peer-reviewed process for high-risk, high-impact research; to be determined by a PSOM-wide review committee. High-risk, high-impact grants need to be in the \$100K+ per year range, above the typical \$30-50K range of pilot project grants, to be effective.</p>
<p><b>6.5</b> Streamline the hiring and resourcing of all faculty, including consideration of eliminating the RAC or retooling its operation.</p>
<p><b>6.6</b> Provide a continuous program for enhancing the tenure-track physician-scientist career.</p>
<b>7) Support and augment ongoing plans for the Penn Biobank, incorporating a combination of patient specimen, clinical phenotyping, community and insurance-level data, along with the bioinformatics and infrastructure necessary for Penn to be at the vanguard of individualized medicine. Penn’s program will establish self-sustaining links to industry and far-reaching products across all disciplines. The creation of this platform can be staged incrementally with specific initiatives such as cancer, neurodegeneration and cardiovascular/metabolism so as to build deep and productive biobanks and datasets that can serve as foundations for broader implementation in the future.</b>

<p><b>7.1</b> Identify a champion who will move the biobank beyond collecting samples and lead to high impact deliverables. This champion will be accountable for the financial and institutional success of the biobank.</p>
<p><b>7.2</b> Sample collection needs to become an integral part of patient care, with ancillary staffing.</p>
<p><b>8) Markedly increase investments in technology cores with exceptional faculty leaders paired to technical directors to establish and direct relevant core facilities. Optimize core functions and efficiency by centralizing core administration and financing.</b></p>
<p><b>8.1</b> Use Department Chairs and Institute/Center/Program Directors to help identify emerging technologies. Use Dean’s Council to help recruit transformational faculty to establish/direct cores.</p>
<p><b>8.2</b> Increase PSOM investment in cores and centralize administration and financing of cores.</p>
<p><b>8.3</b> Explore opportunities to collaborate with CHOP, Wistar, and other local institutions to provide core facilities.</p>
<p><b>9) Re-engineer our approach with industry to foster productive collaboration that facilitates translation of our discoveries.</b></p>
<p><b>9.1</b> Create a Penn Innovation Center that acts as an accelerator for transformational discoveries, assimilates existing administrative units relating to technology transfer and commercial collaborations, is responsive and accountable to Penn Medicine, and spans basic science and biomedicine as well as mobile health technologies, social media, comparative effectiveness, and health insurance benefit design. Establish the Innovation Center as an administrative unit within the University, reporting to the Vice Provost for Research. Existing units and functions that should be consolidated and reorganized under the new Center include: licensing, business development and intellectual property (currently in the Center for Technology Transfer); material transfer agreements and industry contracts/grants (currently in the Office of Research Services); and outreach to industry (currently in the Office of Corporate Research in the PSOM).</p>
<p><b>9.2</b> Assign dedicated teams assigned to specific programs providing a “single point of contact” to help faculty navigate the entire spectrum of technology transfer activities. Assign senior staff Center members to specific programs within PSOM and to locate these individuals on the medical school campus in proximity to “faculty clients”.</p>
<p><b>9.3</b> Empower PSOM and its faculty with substantial input, oversight into the governance and management of the Innovation Center.</p>
<p><b>9.4</b> Develop collaborations and partnerships with ITMAT, other PSOM Departments, Institutes, and Centers, and the Wharton School.</p>
<p><b>9.5</b> Incentivize entrepreneurial activities and considered them a measure of faculty performance without substituting them for more traditional scholarly achievements.</p>
<p><b>9.6</b> Streamline regulatory requirements to facilitate rapid discovery; IRB Human Subjects, IACUC animal use, laboratory approvals.</p>
<p><b>9.7</b> Expand resources to electronically identify cohorts of patients within Penn Medicine to allow rapid assessment of feasibility of enrollment into clinical trials, or detection of underserved populations that would benefit from innovative treatment. This capacity exists in the current IT system (PICARD and Data Warehouse), but these resources are not structured or supported in a search-mode format that is easily accessible to the faculty.</p>
<p><b>10) Establish a Penn Venture Fund as an investment vehicle for early stage Penn commercial activities that is managed at "arm's length" to the institution and is capable of generating a positive return on investment within five years.</b></p>
<p><b>10.1</b> Establish a Penn Venture Fund for early stage entrepreneurial activities by Penn faculty:</p>

<p>a. “Incubator” funding on a project-specific basis to progress promising early-stage projects to a point where they are more attractive for licensing or corporate formation.</p>
<p>b. Seed and series A funding of Penn start-up companies.</p>
<p><b>10.2</b> Govern the fund at “arm’s length” from Penn by a team of investment professionals who report to a Board. The Board will have representation from Penn but will not be controlled by Penn. The Fund will be distinct from, but collaborate with, the Innovation Center.</p>
<p><b>10.3</b> Base funding decisions on traditional criteria of value, risk, potential for growth and liquidity/exit strategies. Many meritorious entrepreneurial activities of Penn faculty will proceed without participation of the Fund.</p>
<p><b>10.4</b> Participating University schools should contribute approximately \$35M to the Fund, with an additional \$15M annually from venture capital firms, pharmaceutical corporate venture groups, and angel investors. Dividends should be proportional to each groups’ initial investment.</p>
<p><b>10.5</b> Leverage each investment via investment syndicates created by the Penn Venture Fund, minimizing the Fund’s exposure to any one investment.</p>
<p><b>11) Capitalize on synergies that result from collaboration and, where appropriate, integration with our local partners. Penn Medicine possesses enormous opportunities, compared with many peer institutions because of our adjacencies to outstanding Penn schools and local institutions. Build on the success of the CTSA and other ongoing joint activities with Children’s Hospital of Philadelphia, one of the best children’s hospitals in the nation. The potential for mutual synergy between Penn Medicine and CHOP is remarkable. We recommend expanding the scope of the Penn-CHOP integration team to develop this potential. Numerous other exciting and novel opportunities exist through partnership with amongst a wide range of Penn schools, including Engineering, Nursing, Dental, Veterinary, Wharton and Arts and Sciences.</b></p>

***Realize our potential for Innovation – Part II: Achieve integration within Penn Medicine and across campus***

<p><b>12) Create a robust integrated information technology and biomedical informatics enterprise and infuse intellectual capital to achieve the mission of Penn Medicine.</b></p>
<p><b>12.1</b> Establish a Department of Biomedical Informatics to serve as an academic home to train, conduct research, and teach.</p>
<p>a. Add approximately 20 faculty members and distribute them evenly between this new Department and other Departments, Centers, and Institutes with related areas of expertise.</p>
<p>b. Invest in a world-class Chair/Institute Director.</p>
<p><b>12.2</b> Centralize and invest in research IT/IS infrastructure under the leadership of Penn Medicine Research IT. Coalesce the remaining fragmented components and match this group to an academic plan guided by the new Department leadership.</p>
<p><b>12.3</b> Form a research healthcare IT group that will leverage existing talent in the School of Medicine and elsewhere at Penn (e.g., Wharton, computer science, engineering, etc.) to develop cost-effective solutions for immediate problems. Develop an internal grant fund to incentivize and support faculty across campus to participate. Example initiatives include:</p>
<p>a. Predictive analytics. Application of cutting-edge mathematical techniques to enhance healthcare management and quality.</p>
<p>b. Mining unstructured data. Applying natural language mining techniques to leverage</p>

<p>electronic health records.</p>
<p>c. Real-time monitoring of patients in and out of the clinic. Leveraging advances in engineering and communications to follow and act on patient health in and out of the hospital in real time.</p>
<p>d. An honest broker system to link biobanking results to clinical phenotypes. To preserve patient rights and research impartiality, an "honest broker" needs to be in place as a firewall between clinical and research data.</p>
<p>e. Linking and interpreting genetic sequence data in clinical care. The use of genetic information in healthcare has tremendous potential to impact the diagnosis, reclassification, prognosis, and treatment of human disease – e.g. cancer resequencing. However, how the discoveries are made and how they are presented back to the patient will require multidisciplinary science.</p>
<p>f. Order and result integration. Today, lab results are poorly integrated into electronic health records. This project will focus on deeper and more meaningful integration.</p>
<p><b>13) Grow and empower the community of physician-scientists to catalyze research that integrates basic and clinical missions.</b></p>
<p><b>13.1</b> Create a comprehensive program to train, recruit, and support an integrated community of junior physician scientists, focusing on those in residency and fellowship. Provide support for the 5 most promising individuals each year across medical disciplines, with 5 years of support for each individual named.</p>
<p><b>13.2</b> Provide early and meaningful support to up to two trainees each year who appear to have enormous potential. The goal would be to move these talented individuals quickly towards independence. Once they have completed their clinical training, these individuals would work in a mentored environment, but then be resourced appropriately with a three year commitment to build their independent research program. The commitment would include space as necessary for that individual plus some level of staff, research funds, and an instructor level salary.</p>
<p><b>13.3</b> Enhance our ability to have clinically based physician-scientists by revisiting the current construct of the CE track, especially with regard to protected time, incentives, research recourses, and how and to whom resources are extended.</p>
<p>a. Reward team science through incentives such as improved attitudes, stated appreciation, a spirit of inclusion, financial support for highly functioning integrated teams, and acknowledgement of the value of team science at the level of COAP.</p>
<p><b>13.4</b> Revisit the construct of the clinical educator track to provide clinic-based physician-investigators with the resources, support, and time to be the leaders of their scholarly fields of expertise.</p>
<p><b>13.5</b> Restructure the Clinical-Educator Track: Define in terms of developing phenotypes of clinical populations, including genetics and genomics, recognizing that an ongoing subsidy of these important faculty members is needed. Limit CE track hiring – focus research resources on tenure track faculty and address clinical needs with AC track appointments. Most importantly, the CE track should not be used to retain and decrease expectations of research-oriented faculty who would not be competitive in the tenure track.</p>
<p><b>14) Integrate educational curricula and training programs to create viable career pathways that thrive in a changing climate.</b></p>
<p><b>14.1</b> Create one central, visible and accessible organizational structure that integrates medical education with advanced research or other professional training. A committee of senior faculty leadership representative of each educational program would design an integrated educational</p>



curriculum modeled on MSTP principles. Priority areas for initial focus would include:
a. Create an integrated 6 year undergraduate - medical school curriculum “PIK pathway”
b. Expand integration and create new educational curricula (e.g. medical informatics) across all stages of learning through partnership with other schools on campus to enable optimal integration of biology with technology, healthcare with law, etc. that will enable Penn to address its future workforce needs.
c. Create structured educational opportunities and visible and viable career paths for investigators during the critical transition period from clinical or postdoctoral training to faculty member.
d. Create a Perelman Early Career Development Program for junior PS and CE faculty that protects time to prepare for a scholarly career and fosters independence.
e. Create an identity for Penn Medicine’s integrated approach to education by designating trainees as Perelman’s PIK junior scholars in line with concept of PIK professors.
f. Capitalize on the University’s initial efforts in the domain of online education (Coursera).
<b>15) Capitalize untapped opportunities in scholarship, education, and multidisciplinary funding for optimal integration with other Schools, CHOP, the VA, and affiliates.</b>
<b>15.1</b> Prioritize and energize relationships with other Schools
a. Establish a Joint PSOM/SEAS Department of Bioengineering within two years to leverage excellence, natural partnerships, and proximity, resulting in exemplary scholarship, educational pathways, and a focus on translation of education and research to the world.
b. Foster relationships with other health science Schools on campus such as the School of Veterinary Medicine (SVM), the School of Dental Medicine, and the School of Nursing. Immediate opportunities include collaborating with SVM investigators to use and expand their clinical research center for studies of biology and translational medicine and working with the School of Nursing to create interdisciplinary efforts to change the “silo” approach to patient care and clinical research.
c. Build opportunities with the “non-medical” schools on campus, in particular the Wharton School of Business and the Law School, to promote further collaboration with PSOM in areas such as entrepreneurial activities.
<b>15.2</b> Strengthen the Penn-CHOP affiliation through the creation of Centers of Excellence in Transitional Medicine to ensure the proper transition of adolescent patients at CHOP to Penn Medicine upon reaching adulthood. Provide a platform for integrated clinical care, research and education, and represent unique venues nationally.
a. Link biomedical information by establishing a joint EMR between CHOP and Penn and linking genomics information to clinical outcomes.
b. Invest in joint programs bilaterally and expand successful joint programs. The goal is to implement one new program each year for next 5 years. Areas of expansion might include oncology (e.g. understand risk of 2nd cancers in pediatric cancer patients who survive into adulthood), hematology (sickle cell diseases, bone marrow transplant failure), and autism.
c. Reconfigure the joint oversight committee that meets quarterly on clinical issues between CHOP-Penn and include research and education leadership to set broad based goals.
<b>15.3</b> Strengthen the VA-Penn affiliation by embracing the Philadelphia VA as an extended member of Penn Medicine.
a. Expand the integration of clinical care with research, including establishment of a joint PVAMC-Penn IRB review process.
b. Encourage co-recruitment of clinical and research faculty.

c. Establish a research agenda for VA that builds on Penn’s strengths to target the unique VA patient population and system needs.
d. Help VA compete for funding of Centers of Excellence in exchange for Penn faculty salary support.
e. Improve database linkage between Penn and the VA.
f. Harmonize the expectations and reporting metrics of research space utilization between the VA and Penn Medicine
g. Coordinate research space allocation with VA.
h. Transform VA potential to provide ACGME-friendly training sites for medical students, residents and fellows.
i. Promote the use of the Intergovernmental Personnel Act (IPA). IPA makes it possible for the VA to quickly obtain research or clinical expertise from Penn and enhances the operational flexibility of VA.

### ***Enrich the life of our faculty with diversity and flexibility***

<b>16) Recruit a Vice Dean for Diversity and Multi-Cultural Affairs to lead an Office of Diversity and Multi-Cultural Affairs. Empower this position and office to have meaningful impact on recruitment, retention and cultural balance.</b>
<b>16.1</b> Identify resources, opportunities, and disseminate information regarding programs that promote and increase diversity throughout PSOM.
<b>16.2</b> Work in conjunction with the Office of Faculty Affairs and Professional Development, Departmental Leadership and Diversity Search Advisors to ensure that appropriate and compliant searches are conducted to identify diverse pool of candidates for each faculty position.
<b>16.3</b> Play a key role in mentoring, given its critical role in retaining valued faculty members. <b>13.4</b> Develop plans for evaluation and improving diversity and inclusion in collaboration with PSOM Leadership. Ensure that diversity and implementation of efforts towards diversity and inclusion are included as part of the annual department Chair evaluation process. Facilitate awards and other mechanisms of recognition that reinforce behaviors and practices that are supportive of diversity and inclusion.
<b>16.4</b> Develop a strategic plan to ensure that new initiatives and program enhancements described in the Perelman School of Medicine Diversity and Inclusion Action Plan are implemented.
<b>17) Support flexibility within careers by providing opportunities for the faculty to retrain and to reposition their professional attributes and goals. In an aligned fashion, support career track changes for outstanding, high value faculty with evolving needs and interests.</b>
<b>17.1</b> Support track changes in order to maximize alignment between faculty activities and track description and retain talent. Changes should be supported at the time of reappointment and promotion. Changes must be restricted to outstanding, high value faculty members who are clearly aligned with the target track. Reevaluate the role of a national search in track changes.
<b>17.2</b> Create equity between tracks by addressing and/or balancing differences in compensation, security, flexibility and benefits across tracks. In one model, salaries would be highest in the Academic Clinician track, security would be highest in the tenure track, and flexibility would be highest in the Clinician Educator track.
<b>17.3</b> Rename the “Clinician Educator” track the “Clinician-Scholar” track with a reemphasis on the original definition, intent, and spirit of this track.

<p><b>17.4</b> Highlight to faculty, COAP and Chairs the range of successful pathways on the Clinician Scholar track and the variety of careers that can flourish and change over time on this track.</p>
<p><b>17.5</b> Continue institutional support for 20% of Clinician Scholar effort for participating in the scholarship and teaching requirements of their track. This support should be included in the calculation of salary coverage. In addition, investment in user-friendly, collaborative, core research resources is critical and training in the use of such resources should be mandated for Clinician Scholar faculty.</p>
<p><b>17.6</b> Develop the Academic Clinician track to maximize equity in benefits and status with the other tracks. The success of faculty on this track is critical to the success of the clinical and educational missions of Penn Medicine and provides the financial support for the research mission. These changes should include the availability of month long mini-sabbaticals to build new skills and rejuvenate senior clinicians, parity in retirement benefits, ability to confer emeritus status, and recruitment to visible leadership positions on Medical School Committees including COAP.</p>
<p><b>17.7</b> Reevaluate the role of the Research track with the goal of developing descriptions of successful pathways (analogous to the pathways in the Clinician Scholar track), defining the expectations for support, and addressing metrics and timing for changes to tenure track or to research associate positions.</p>
<p><b>17.8</b> Extend the length of time allowed for extensions to probationary periods, reduction in duties and instructor positions to support outstanding young faculty who may be in a demanding stage of growing relationships and families as well as careers.</p>
<p><b>17.9</b> Develop and support retraining opportunities through the PSOM. These can include “Post-docs” in new scientific areas, enrollment in Masters training programs, courses in new technologies, and engagement in community activities, among others.</p>
<p><b>18) Develop metrics for collaboration, mentorship, community engagement and professionalism to be incorporated into faculty evaluations, including promotion and compensation decisions.</b></p>
<p><b>18.1</b> Balance the focus on individual independence as the measure of success with metrics that place an equal emphasis on leadership and vital collaboration. Metrics in this area must be developed to recognize excellence in obtaining co-PI grants/co-Investigator grants and publishing collaborative papers, as well as recognize individuals who play indispensable roles in team science by serving as the “go-to” person in both research and clinical arenas. This role can be assessed through peer evaluations and documenting vital roles that are critical to the multifaceted science process.</p>
<p><b>18.2</b> Explore new methods of measuring the quantity and quality of mentoring activities to include this critical activity in faculty assessments including at the time of promotion.</p>
<p><b>18.3</b> Recognize the value that community engagement and program development (both to the PSOM community and to the greater local and regional community) brings to the PSOM and to the career success for many faculty members. As part of the COAP dossier, the Chair/Vice Chair of Faculty should provide a summary of the candidate’s impact on the community (i.e. clinical go-to person, leadership roles in national/regional/local boards and programs, media visibility) and how the faculty member serves as an expert who represents the PSOM in their area of specialization.</p>
<p><b>18.4</b> Establish feasible and acceptable metrics for assessing professionalism to be included in faculty evaluations, including at promotion. The Chair/Vice Chair of Faculty should be responsible for documenting and assuring an individual faculty member’s professionalism and service contribution at the time of COAP evaluation.</p>
<p><b>19) Implement an equitable, mission based school-wide faculty compensation strategy that uses consistently applied, universal principles to set and adjust salaries and incentives.</b></p>

<p><b>19.1</b> Develop a set of principles and templates for setting and changing faculty salary and incentives that are consistently applied across the PSOM and recognize the changing environment, including the growing emphasis on quality and outcomes in clinical reimbursement. This set of principles should have the following criteria:</p>
<p>a. Faculty should have a clearly specified academic base salary, which is consistent within rank across the PSOM but may be higher than the University base salary for rank. Faculty compensation should include a variable component and an incentive component.</p>
<p>b. Policies and procedures for setting, increasing and reducing variable and incentive components of salary should be developed for each Department and be reviewed and approved by a PSOM compensation committee that includes faculty representation. Department Chairs should be supported in the implementation of these policies and procedures by PSOM leadership and held accountable for their implementation.</p>
<p>c. Policies and procedures should address expectations for salary coverage, increases in salary, and decreases in salary. Consideration should be given to standardizing the threshold of expected salary coverage and the procedure for decreasing salary across the PSOM.</p>
<p>d. The incentive component should be based upon performance in the missions relevant to each Department from the four school missions- clinical care, community service, education and research. Within a department, the contribution of each mission component to a faculty member’s overall incentive should be weighted according to the faculty member’s job description. Given the importance of quality and outcomes to the clinical mission and the growing focus on these metrics in clinical reimbursement, clinical incentives should include metrics in these areas.</p>
<p>e. Incentive structure, metrics, templates and experience should be shared across Departments with the goal of developing best practices.</p>
<p><b>20) Designate leaders to oversee mentoring and professional development of faculty within each department (and larger divisions). These leaders would be accountable to their respective Department Chairs and Division Chiefs and have the following responsibilities:</b></p>
<p>a. Audit mentor and mentee meetings</p>
<p>b. Audit career development plans for faculty</p>
<p>c. Develop department/division specific case studies to highlight various careers and non-traditional pathways</p>
<p>d. Develop department/division based cohort mentoring groups for junior faculty (in case of basic science, across departments)</p>
<p>e. Develop department/division based committee to search for appropriate matches for internal and external career development programs/awards (all ranks and tracks)</p>
<p>f. Monitor faculty for potential short and longer term “scholarly leave” programs</p>
<p>g. Monitor faculty for “service” aspects of individual responsibilities and consult with Department Chair regarding “service” component of promotion process</p>
<p>h. Serve as Department liaison for faculty professionalism concerns</p>
<p>i. Coordinate with Departmental COAP Chair, Education Officer and Faculty Coordinator on faculty appointment, reappointment and promotion issues</p>
<p>j. May serve on the Department COAP</p>
<p>k. Meet with faculty regarding policies and procedures</p>
<p>l. Participate on the “Incentive Committee” for department/division to help shape appropriate “metrics for success”</p>

m. Partner with Diversity Search Advisors
<b>21) Improve and expand on-site day care services with expanded operating hours to accommodate the lifestyle of Penn families. The target population of users includes faculty, instructors and post-docs, trainees, and nurses.</b>
<b>21.1</b> Evaluate models for providing day care to faculty. One model is to engage a national child care provider to establish on-site day care. The cost of retrofitting the space will be billed back through the center budget and covered through operating profits and the sponsorship fee. A second model is to develop a day care as a core facility in collaboration with existing centers in the area.
<b>21.2</b> Reserve slots for target groups according to some arrangement to be determined. Contributions to the cost of the facility from SOM, clinical departments, or Nursing could be proportional to utilization. Some positions should be held strictly for recruitment of new faculty in order to be able to accommodate these individuals upon arrival.
<b>21.3</b> Consider ensuring equity of access, regardless of salary either through scholarships to enable less affluent employees or through sliding scale subsidies based on total compensation. In this way, the access to quality care would be equalized between different user groups. In either model, the need for subsidization of day care services will be needed in order for the service to be seen as a benefit to the employee. The PSOM and UPHS should also recognize this as a benefit and ensure ongoing support of the services.
<b>22) Create shared spaces for faculty to foster innovation and collaboration, and enhance faculty productivity, creativity and satisfaction.</b>
<b>22.1</b> Create 2 faculty spaces-one in the hospital and one in the research building area of campus to:
<ul style="list-style-type: none"> <li>• Foster collaboration, team building and camaraderie</li> </ul>
<ul style="list-style-type: none"> <li>• Promote healthy eating and lifestyle</li> </ul>
<ul style="list-style-type: none"> <li>• Provide aesthetically pleasing spaces that are always available given faculty work hours, including with outdoor garden space</li> </ul>
<ul style="list-style-type: none"> <li>• Provide an area to support life needs</li> </ul>

**Impact health outcomes locally and globally**

<p><b>23) Create a community board through which Penn Medicine and the community engage in open dialogue, develop trust, and share responsibility for identifying new opportunities for education, clinical services, and research that provide mutual benefits to the institution and the community.</b></p>
<p><b>24) Coordinate Penn Medicine’s community efforts so as to enhance access to care, increase patient satisfaction, enhance student mentoring, and increase the numbers of research studies devoted to problems that disproportionately affect underserved populations. Coordination should extend to the Provost Office and the Center for Public Health Initiatives, across other schools, such as the School of Nursing, and with external partners, such as Veteran’s Affairs and CHOP.</b></p>
<p><b>24.1</b> Dedicate one staff person to learning about the community’s needs, identifying existing relationships that could be strengthened and discovering areas ripe for cooperation and relationship-building. This staff person must have support from the highest administrative levels, including from the Dean, and be a true representative of Penn Medicine in target communities.</p>
<p><b>24.2</b> Establish close relationships with the city health centers and FQHCs to develop strategies to better coordinate care for shared patients.</p>
<p><b>24.3</b> Foster the recruitment, retention, and promotion of a diverse health provider workforce.</p>
<p><b>24.4</b> Revamp medical education to be responsive to the changing health needs of society, including under-resourced populations.</p>
<p><b>25) Encourage community-based engagement and research through funding pilot projects, and reward and recognition in the promotion process.</b></p>
<p><b>25.1</b> Protect (or “buy-back”) time for community work. Offer several small internal faculty “grants” with “buy-back” of time (e.g. 5%) for work in a community-based clinical setting. For providers of specialty care, a similar salary “buy-back” incentive can be provided for running Penn-based or community-based community referral clinics open to the uninsured and underinsured of West and West/SW Philadelphia. Additional ‘buy-back grants’ can be given to the Departments to assist with running these clinics. This model could potentially lead to the placement of a few high-volume referral clinics (such as diabetes, dermatology, etc) in community settings.</p>
<p><b>25.2</b> Offer a few “community focused” faculty positions which grant significant time (e.g. 25%, 50%) for clinical work in community-based settings. This could serve as an independent funding source for faculty, protecting their time for meaningful community engagement over a period of time, and on a renewable basis.</p>
<p><b>25.3</b> Build a model for integration of community-based physicians into the Penn community. Offer Adjunct faculty positions to City Health Center and FQHC-based physicians in West/SW Philadelphia. This would allow them greater access to the academic resources of the institution, would build good will toward the institution, foster a collaborative atmosphere that will both benefit research initiatives, and increase the referral base of patients into the Penn system.</p>
<p><b>25.4</b> Reward community-based efforts in the promotion structure – for example, community-based projects could be valued in an established ranking system that could offset number of publications or teaching evaluations.</p>
<p><b>25.5</b> Support community-based research through establishing it at all levels of faculty involvement.</p>
<p><b>25.6</b> Offer pilot grants to faculty for community-based efforts. The awarding committee for these grants should be multidisciplinary and include community members. The awards should be substantial enough to support a portion of a faculty member’s salary (e.g. 20%) and a community partner, as well as cover research expenses.</p>
<p><b>25.7</b> Recruit and retain regional faculty with expertise in community research.</p>

<p><b>26) Consolidate existing and new efforts of education, research and implementation for Penn Medicine’s global agenda under a single Center or expanded Office of Global Health Programs, working in collaboration with the university. Strongly consider recruitment of a new leader for this unified entity.</b></p>
<p><b>26.1</b> Expand training programs for medical students, MPH students and residents in the Global Health track to accommodate more trainees and to develop additional courses and opportunities. These could include international collaborations such as the Afya Bora Consortium.</p>
<p><b>26.2</b> Operate international service programs such as the Botswana-UPenn Partnership, with the mission to help increase sustainable professional capacity in host countries.</p>
<p><b>26.3</b> Foster the development of new international research projects and programs, supported by an internal small grant program to fund exploratory studies that lead to applications for external funding.</p>
<p><b>26.4</b> Actively collaborate with cognate units in other Schools at Penn. Activities could include a University-wide seminar program, an annual Symposium on a specific topic in global health, and the internal exploratory small grant program.</p>
<p><b>26.5</b> Operate Travel Medicine at Penn (currently under the purview of Emergency Medicine).</p>
<p><b>26.6</b> Actively identify new research opportunities (RFAs and RFPs). In addition, aggressively seek funded collaborations with foundations, NGOs, and private sector companies for research and service programs; such initiatives would draw upon University-wide expertise.</p>
<p><b>26.7</b> Promote integration across the University through an advisory committee with representation from other health and non-health schools.</p>
<p><b>27) Establish a centrally coordinated program within this Center built around the theme of <i>implementation science</i>, defined by the NIH as “the study of methods to promote the integration of research findings and evidence into healthcare policy and practice”. Evidence-based implementation can leverage biomedical research, engineering, psychology, sociology, economics, and education to produce improved outcomes that take into consideration the uniqueness of each environment and how best to deploy proven treatments and therapies. Penn’s unified campus and highly collaborative faculty make implementation science a distinctive platform for engaging globally as well as locally.</b></p>
<p><b>27.1</b> Include new courses in implementation science in existing academic programs such as the MPH program and the Frontiers program for medical students. A more ambitious curriculum in implementation science could be included in a putative new PhD program in global health.</p>
<p><b>27.2</b> Offer experiential training in implementation science in international and domestic rotation opportunities for medical students and Penn students in other graduate programs.</p>
<p><b>28) Strategically launch 1-2 new global sites of engagement in different continents (for instance, one site in an African country and another in Latin America) modeled on the university-to-university relationship as exemplified by the Botswana-UPenn Partnership.</b></p>
<p><b>28.1</b> Develop these new programs following three main principles: 1) New programs should be developed in partnerships with colleagues in other countries, and our international partners must be involved in the earliest planning stages of any new program; 2) Programs should be designed to increase sustainable capacity in our host countries; and 3) Improvement in health is the most important outcome measure.</p>
<p><b>28.2</b> Identify a “champion” who is committed to making a second site work. Fund a Penn faculty member to supervise trainees and provide administrative support in country to arrange housing, airport transfers, Visas and help troubleshoot for Penn trainees during their rotations.</p>
<p><b>29) Pursue, opportunistically, “Penn Global Health Consulting” as a revenue-producing venture</b></p>

**offering Penn’s considerable expertise to governments and partner institutions as needed to address critical health needs.**

**29.1** Develop a model that creates a partnership between the “client” organization and a Penn administrative center, which together could assemble a team of experts to address a specific implementation problem.

**30) In concert with our mission to train global leaders, advance the foundations of global health education to our MD, PhD and resident/fellow trainees. Support flexibility and funding for these trainees to participate in either Penn MPH or global health certificate programs. Lead in the education of Penn undergraduates by fostering expansion of global health courses and programs both within the PSOM and the MPH program.**

### ***Create innovative interdisciplinary educational programs***

(Note: there was not a separate Work Group which dealt with Education; however, each Work Group considered educational issues within its context; and these recommendations are noted throughout).

### ***Optimize the Penn Medicine Ecosystem***

**31) Establish integrated and transparent evidence-based finance and space allocation decision-making processes across Penn Medicine. Replace the Academic Development Fund (ADF) and EVP Dean’s fund with a new funding mechanism which distinguishes new initiative investment from on-going support, and which rewards peer-reviewed merit and collaboration.**

**31.1** EVP Dean’s and Academic Development Fund:

- a. Charge the basic science chairs to recommend an objective and transparent funding methodology to support the academic missions. Consider a compensation formula that includes research effort, teaching responsibilities, and administrative commitments.
- b. Charge the center and institute directors to recommend clear metrics and transparent evaluation processes for continued investment.
- c. Benchmark non-academic expenses for departments, centers, and institutes to ensure efficient use of resources (i.e., accepted overhead percentage across departments., measures of faculty productivity, etc.).
- d. Incentivize chairs, center, and institute directors not only based on research productivity, but also based upon efficiency of administrative operations, and collaboration as evidenced by investment in joint recruitments and programmatic investments.
- e. Provide for a transition period from the current processes to a new methodology to allow for adjustments in operations and staffing.
- f. Provide for a transition period from the current processes to a new methodology to allow for adjustments in operations and staffing.

**31.2** New Strategic Investments/Capital Planning

- a. Create a separate funding source for innovative and transformational initiatives in Penn Medicine. Consider allocating a percentage of the clinical margin for this purpose, and incentivize chairs, center, and institute directors to invest in a collaborative manner.
- b. Establish a process to solicit proposals for innovative and strategic initiatives, including those involving faculty recruitments, from PSOM faculty and chairs.
- c. Create a committee of rotating chairs, center directors, administrators, and elected



<p>faculty to provide competitive peer-review of these proposals and to provide resourcing recommendations to the Dean.</p>
<p>d. Consider potential for commercialization of scientific and clinical initiatives along with strategic partners in biotechnology and industry.</p>
<p>e. Model major capital investments over a 5-10 year time period and in concert with the multi-year financial plan. Projects should be cataloged into: new building, major additions; repairs and renovations over the established cost limit per university policy; regulatory mandates; improvements required to adequately support programs; and infrastructure improvements, utilities, data, phone.</p>
<p>f. Consider industry benchmark to establish the size of the capital pool – i.e., % of depreciation or age of plant.</p>
<p><b>31.3 Space Allocation</b></p>
<p>a. Assess how space allocation decisions are made at peer institutions and benchmark our dollars per nsf against these institutions.</p>
<p>b. Establish clear guidelines for assigning space, including: dollars per nsf, productivity with respect to grants and high impact publications, and requirements for personnel and conduct of research.</p>
<p>c. Require each department to have a Space Plan and perform annual assessments of productivity and dollars per nsf to ensure that decisions are fair and balanced.</p>
<p>d. Implement the Space Assignment Decision-Making processes recommended by the Committee on Resources and Support of Faculty (2006), which provide clear guidelines for when space should be reduced for a principal investigator or program.</p>
<p><b>32) Conduct formal reviews of Centers and Institutes and their directors with resource allotments and reappointments based upon well articulated metrics of success, including general quality and mission specific criteria to optimize the resources invested in these inter-disciplinary organizations.</b></p>
<p><b>33) Clarify policies regarding faculty compensation to establish defined expectations of effort allocation and service for each faculty track, and in line with this clarify the concept of the “academic base” salary. Based on these metrics, specify salary coverage expectations from the respective sources, and clarify faculty incentives. Establish a “salary support first” policy that requires faculty members to utilize their restricted and designated funds, and/or philanthropic support, toward salary gaps. Enact these policies in a consistent manner within faculty tracks and across departments.</b></p>
<p><b>33.1 Specify Salary Expectations</b></p>
<p>a. Develop a consistent format for new faculty salary letters that is used across all departments, both basic science and clinical, and reflect an “academic base” that is consistent for all faculty within rank. This academic base need not be as low as the university minimum for rank.</p>
<p>b. Grandfather in existing faculty with prior offer or annual letters in ways that are true to previously made institutional commitments.</p>
<p>c. Implement explicit policies to determine the regimented lowering of salaries for individual faculty members who are not meeting expectations.</p>
<p>d. Do not provide annual salary increases for faculty whose support falls below the threshold for faculty-generated salary.</p>
<p><b>33.2 Set a 75% threshold for faculty-generated salary support for basic (non-clinician) scientists,</b></p>

including those conducting dry and wet bench research. Basic and clinical departments must provide least 25% of salary or 25% plus to provide for incentives and other faculty needs.
<b>33.3</b> Follow a “salary support first” model with clear rules about what sources of funds faculty members must direct to offset salary shortfalls.
<ul style="list-style-type: none"> <li>a. Require faculty members with unrestricted (e.g., trial residuals) or gift/endowment funds available to them to use those to support their salaries--at least to the point of the threshold described above--before other needs.</li> </ul>
<ul style="list-style-type: none"> <li>b. Apply administrative stipends as salary support before using it as additional income. Once salary is covered, such stipends may provide a temporary increase in salary income. A consistent policy with attention toward compliance policies should exist for this purpose.</li> </ul>
<ul style="list-style-type: none"> <li>c. Empower department chairs with the principal responsibility of executing the salary arrangements for their faculty. Chairs need clear institutional guidance about standards and rules and authoritative sources of advice when there are questions.</li> </ul>
<b>34) Consolidate redundant administrative infrastructure amongst PSOM entities and between the University and PSOM, and improve consistency of services to enhance productivity. Establish clear performance metrics to improve accountability and performance. Eliminate Penn Medicine internal incentives that encourage duplication of administrative infrastructure.</b>
<b>34.1</b> Eliminate all redundant offices between the PSOM and the University. If the PSOM reduces the amount it spends on duplicative offices by 40% while providing the remaining 60% (\$3.0M) to the University in order to enhance administrative services, this more robust partnership would result in savings of \$2.0M per year to the PSOM while at the same time providing additional support to the University.
<ul style="list-style-type: none"> <li>a. Develop and apply a robust system of accountability and incentive-based performance evaluations, with faculty and departmental administrator surveys playing a key role.</li> </ul>
<ul style="list-style-type: none"> <li>b. In exchange for the PSOM contributing greater financial support to University-provided administrative services, the PSOM must have a greater voice in evaluating (not just advising) University services in which the PSOM is the major user.</li> </ul>
<ul style="list-style-type: none"> <li>c. Insist that we move from a regulatory-based to a service-based culture, both from the top down (from administrative leaders) and from the bottom-up (faculty satisfaction surveys that have teeth).</li> </ul>
<ul style="list-style-type: none"> <li>d. Develop metrics and benchmarks that will be used to adjust the size and funding of all administrative offices on an on-going basis.</li> </ul>
<b>34.2</b> Review how administrative support is provided to the basic science departments, centers, and institutes (\$14.7M total per year). Identify opportunities to reduce duplicative administration with the central PSOM (\$4.3M total per year). Pilot specific functions for consolidation (Research Program Development, HR, faculty affairs, etc.) or conversion to a service center model, with an emphasis on outstanding and consistent provision of administrative support to faculty. If the elimination of redundancies between the PSOM and the departments, centers, and institutes, and right-sizing of these offices increases efficiency by 5%, this would result in an additional savings of \$0.9M per year from the \$19M of existing infrastructure.
<ul style="list-style-type: none"> <li>a. Develop metrics to right-size departmental as well as center and institute administrative offices.</li> </ul>
<ul style="list-style-type: none"> <li>b. Implement standardized financial reporting for PIs and for department chairs/center directors across all fund groups.</li> </ul>
<b>34.3</b> Conduct a thorough review of the PSOM Development office (\$9.1M per year), making sure

<p>that incentive-based performance metrics are employed, and aligning our Development functions with all three missions. If moving to a more incentive-based performance system results in a modest 5% savings, this would equate to approximately \$0.5M per year.</p>
<p><b>34.4</b> Eliminate the Office of Organization Effectiveness, and distribute its duties amongst other offices as appropriate. As some functions are transferred to other units and others are eliminated, a 50% reduction equates to \$0.25M per year.</p>
<p><b>34.5</b> Eliminate the Office of Research Program Development and distribute its duties to departmental administrators as well as to the Executive Director in the Office of the Chief Scientific Officer. A 50% reduction equates to \$0.3M.</p>
<p><b>34.6</b> Consider partnering with the University to engage an outside consultant (possibly Wharton) to evaluate administrative services at the PSOM and the University and develop more effective administrative systems.</p>
<p><b>35) Improve efficiency of clinical operations through integration of management engineering within units and promote integration across HUP, PPMC, and PAH to optimize capacity.</b></p>
<p><b>35.1</b> Create a task force to strategically appraise services that might be shifted or expanded/co-located between HUP and PPMC, to increase HUP capacity for high CMI cases.</p>
<p><b>35.2</b> Identify space for post-procedure and observation patients at HUP and other centers to avoid unnecessary admissions from the ED.</p>
<p><b>35.3</b> Building planning optionsust consider service relocation to PPMC and/or PAH.</p>
<p><b>35.4</b> Establish a community outreach committee to discuss the impact of proposed transition of services between HUP and PPMC on the West Philadelphia community.</p>
<p><b>35.5</b> Invest in a systems engineer(s) to be embedded within the clinical units to help organize a process evaluation strategy and coordinate the development of strategies to streamline care processes, reduce redundancy and improve task alignment with work force. Consider integration of this person into the unit-based clinical leadership organizational structure.</p>
<p><b>35.6</b> Pilot the reengineering project on 1-2 clinical units.</p>
<p><b>35.7</b> Consider the development of a permanent “learning laboratory” for developing and testing systems improvements directed at efficiency, particularly those that are scalable to the wider health system.</p>
<p><b>35.8</b> Create and implement a system for shared rewards, such that the resource savings generated from a local improvement effort can be partially returned to the unit in an incentive based system.</p>

## V. Comments from Chairs and Centers/Institute Directors

### *Clinical Chairs*

The strategic planning process and resultant recommendations are based on a series of themes or concepts that encompass some 35 initiatives, designed to make Penn Medicine the premiere academic medical center in the country and to prepare us for the evolution of healthcare delivery in the near term.

#### A. Clinical Themes

The clinical mission is the major financial driving force for the AMC.

##### **Theme 1: Improvement**

High performance in our clinical mission requires delivering to our patients what they want and need unambiguously, on time, in the proper amount, without waste, defect or error. Presently, our level of service and our clinical outcomes are average and not consistent with the distinction and respect with which Penn Medicine is held in the community. In order to achieve this aspiration of high performance in our clinical mission, we must engage in continuous improvement through continuous learning how to deliver care in a flawless fashion. Each clinical service must be evaluated as to whether we have the proper level of expertise, whether we provide the proper level of staffing to deliver consistently excellent service to our patients, and compared against rigorous measures of clinical outcome within our peer group. In order to achieve service excellence and exceptional clinical outcomes, resources **(increased staffing, decision making tools, and systems engineers)** will need to be embedded at the point of care to assist clinicians in the delivery of complex care. This will require significant redesign in the current delivery system but will come at a time when reform in care delivery will be the norm in American medicine. We have a chance to lead in this domain. There is a price to service excellence and the achievement of clinical outcomes. The clinical chairs believe that the proper investment in service will have a multiple rate of return in financial performance. The failure to do so may result in losing ground with respect to the reputation of our clinical excellence.

##### **Theme 2: Integration**

Given the complexity of clinical care that is the essence of our clinical mission, we must develop integrated systems of care delivery. This will require operating outside the traditional department silos and can be achieved through the development **of integrated clinical service lines**. Several examples of the service line approach exist within Penn Medicine, but the strategic plan calls for advancing these concepts to the disciplines of musculoskeletal disease, metabolic diseases, neurological diseases, and women's health to name a few examples. The success of this approach will require moving away from individual and department based incentives to programmatic incentives. The change in incentives is in keeping with the concept of bundled payments, emerging as a cornerstone of reimbursement reform. The integration of clinical services across disciplines requires an **integrated information system**. Currently, the clinical delivery system operates in 5 distinct platforms with little integrated functionality. The clinical chairs endorse strongly the concept of a single clinical information platform. If not, then existing platforms must have functional interfaces that allow for the seamless exchange of information. Ideally, the current 5 platforms should be reduced to no more than two.

##### **Theme 3: Individualized Medicine**

The clinical chairs strongly endorse the development of individualized medical approaches to care. This requires the development of **bio-banking capabilities, genomics, and clinical informatics together with uniform, detailed clinical phenotyping**. The bio-banking initiative is a unique opportunity to once again,

bring together the world of basic biomedical discovery with clinical care. The initiative provides an opportunity to redefine the role of CE track faculty within Penn Medicine. The clinical chairs suggest that these individualized platforms be advanced within a few well defined disease- based disciplines and piloted to better understand the required capabilities and the barriers to broader implementation.

#### **Theme 4: Internally focused**

The strategic plan states emphatically that Penn Medicine will remain internally focused and not develop community and regional affiliations with other healthcare systems in anticipation of health care reform. Nor will Penn Medicine expand its primary care base or experiment with alternative delivery system models of ACOs, at least in the near term. Rather, Penn Medicine will look to individual opportunities with groups of physicians and focus on **reinvestment in its human capital and physical plant**. Penn medicine will continue to focus on advanced medicine which should remain immune from pressures of declining reimbursement, recognizing that 10-20% of our activity (advanced medicine) accounts for 50-70% of our margin.

The clinical chairs remain divided on the wisdom of this approach, but agree that it seems reasonable in the near term (1-3 years). However, the clinical chairs strongly urge exploration into the implications of different payment and delivery system models such as ACOs, bundled and tiered payments.

Demonstration projects should be commissioned within CPUP to model these possibilities.

**The acknowledgement of the need for commensurate reinvestment in both human capital and infrastructure is endorsed by the clinical chairs.** The strategic planning document is unambiguous in linking inextricably these two priorities, acknowledging that while new clinical infrastructure is necessary for financial stability, it is insufficient absent a commensurate reinvestment in human capital.

While focused internally, we must recognize our moral obligation to the West Philadelphia community.

The clinical chairs endorse the concept of a UPHS wide effort to improve the health and wellbeing of our neighbors.

## **B. Research Themes**

Our research mission is what distinguishes our health system from other regional competition and is the **distinctive feature** of Penn Medicine that gives rise to its ranking among the top 3 AMC in the US. The clinical departments account for two-thirds of the research activity of Penn Medicine. Thus, clinical excellence is inextricably linked to research excellence.

#### **Theme 1: Innovation**

The clinical chairs believe that biomedical discovery should be focused on the betterment of the human condition. As such, each research program within Penn Medicine should be examined and redefined as to the human condition being addressed. Broadening the definition of what defines research excellence to include the betterment of the human condition will require investigators to rise above the narrow confines of their individual laboratories and personal successes and embrace the unique opportunities to share and collaborate toward the modification and eradication of human disease. This approach lends to the further development of translational research programs currently focused on T1 discovery. Thus, research productivity should be measured not only in terms of publication impact and grant funding, but also with respect to the engagement of the translational research community and marked against progress toward new drugs, therapeutics and devices. Creating an entrepreneurial culture will require reach across disciplines and schools and will require fundamental reform within the structures with the SOM and University (OHR,ORS,CTT) transforming these entities from bureaucratic and regulatory bodies into service organizations. In this regard, the clinical chairs endorse the creation of the **Penn innovation Center** within the SOM and with close ties to the CTT structure within the University. The clinical chairs endorse the call for an external review of tech transfer across the University. Finally, the chairs endorse

the concept of the ***Penn Venture Fund*** to create equity partnerships focused on the development of the most promising biomedical discoveries and their “first in man” applications on the path to commercialization.

### **Theme 2: Inspirational Research Leaders**

The clinical chairs endorse the recommendation to recruit outstanding basic researchers to Penn Medicine, mindful that these individuals should appreciate and respect the Penn culture of collaboration.

However, the clinical chairs feel strongly that this focus on transformative scientists should be part of a ***portfolio of research investments***, as suggested by the Centers and Institute Directors. We suggest conducting an evaluation of our research talent to identify our best investigators. We recommend reinvestments in the most promising scientists and physician scientists in our midst who themselves demonstrate a penchant for excellence and are candidates for the National Academy of Sciences. There will also need to be reinvestments targeted to accommodate bridge funding needs as the uncertainty at the NIH persists. Finally, there is a widely recognized need to replenish the ***pipeline of young physician scientists*** who have served as the backbone of the scientific enterprise at Penn. Here, the efforts must extend for sustaining the MSTP program, to identifying dedicated GME funding for PSP candidates, to the Penn Scholars Program to recruit the best and brightest young physician scientists as faculty to Penn.

### **Theme 3: Integration**

As with the clinical mission, so too in research we must develop better integration between members of our research community and across the spectrum of research from basic to translational to clinical and health services and health policy research. Such constructs do not conform to the departmental structures and thus there is a need for Centers and Institutes to develop these integrated scientific activities. The chairs endorse the concepts of these entities across UPHS, but believe that there should be a systematic review of these entities every 3 years to assure accountability for the use of precious resources. While the clinical chairs acknowledge that the decision making process should be streamlined, there is a clear call for the clinical chairs to be engaged and informed if not responsible for the recruitments within these disciplines. There should also be a transparent review of the 27 existing Centers and Institutes and consideration given to sun-setting those who have fulfilled their mission.

## **C. Educational Council**

Given that the clinical department provide over 80% of the undergraduate and graduate education at PSOM, we strongly endorse the creation of a dedicated group to examine the opportunities and challenges within our educational mission.

**Basic Science Chairs**

*The Basic Science Chairs endorse the EPC Recommendations and highlight the following:*

The basic science chairs strongly believe that the recent absolute and relative prosperity of Penn Medicine, when compared to our peers, offers an unusual opportunity for advancing our institution - an opportunity that may not arise again for 25 or 50 years, if then. We applaud the investments that have been made in new buildings and in renovating our campus, but we feel strongly that investments in our most valued asset, our faculty, must balance investments in bricks and mortar. We should leverage our competitive advantage to recruit and retain the very best in order to optimize our chances of future prosperity and eminence.

1. We recommend that Computational Biology and Bioinformatics (CBBI) be clustered in a campus wide conceptual/intellectual center or Institute that includes programmatic, service and educational components. This center would have real and virtual (for example most tenure track faculty and many service providers will be dispersed amongst existing Departments, Centers and Institutes) components and would include PCBI, a Bioinformatics Core, the Graduate Group in Genomics and Computational Biology and the diverse individuals in the medical school and the health system providing service who would be organized under the leadership of Brian Wells. The attractions of this approach are that (i) it could be created swiftly under interim academic leadership and afford a single, integrated point of investment in this area by the PSOM, UPHS and the University; (ii) it would create a visible aggregation of resources to aid recruitment of a permanent academic leader; (iii) it would foster the nascent development of faculty with CBBI expertise across our existing DCI structures and (iv) it would lend itself to further development according to the desires and experience of a new permanent director. This Center could most logically be nested initially within an existing institute, given the immediate need for an administrative structure. The suitability of ITMAT has been proposed, given (i) its campus wide reach, (ii) its integration with CHOP, (iii) its commitment to catalyzing interdisciplinary program development, infrastructure and education. However, the goal is to use this center to enhance recruitment of a permanent academic leader and to establish an independent center, institute or department according to their wishes.
2. We recommend that there be a comprehensive and transparent review of CTT and the quality of its services. While we believe that CTT should be the central focus of such a review, consideration of how CTT fits within and catalyses the entire entrepreneurial ecosystem at Penn should be amongst the prime considerations. External experts should be intimately involved in this process, which would assess objectives, governance, metrics and incentives. In particular, this review should focus specifically on interactions with PSOM in comparison to similar interactions in institutions such as Stanford, MIT, and Harvard and its associated hospitals. We support the creation of a venture fund to support intramural research with entrepreneurial objectives, and the consideration of how new models of entrepreneurial activity might be developed at Penn as the drug discovery and development landscape undergoes such fundamental change. We further recommend regular meetings of a governance committee for CTT, with the committee being representative of the support for CTT provided by different schools at Penn.
3. We applaud the initiation of a comprehensive review of ULAR that has been initiated under the direction of Dr. Wilson and urge the inclusion of substantial extramural input into these deliberations as we have described in the review of CTT.

4. We recommend that the Basic Science Chairs will lead the recruitment of the high impact individuals envisaged by the corresponding working group, making strategic decisions in consultation with the Dean as to areas and individuals of focus. We believe that this initiative should be incorporated into existing (expanded) recruitment plans for the Departments, rather than being strategically independent. A School-wide strategic plan for faculty recruitment should be developed by the Basic Science Chairs together with the Dean, CSO, and consultative bodies.
5. We recommend that clear expectations concerning research, teaching and service activity be laid out to faculty in basic science departments so that their effort is accountable. We also recommend that Chairs be clearly empowered to reduce the salaries of underperforming faculty who consistently fail to meet agreed-upon criteria, and that this option be available at the Chairs' discretion.
6. We do not support the constitution of a Department of Global Health.
7. We recommend continued enhancement of graduate education and its strong support by PSOM, particularly including the development of experiences that prepare graduates for nontraditional as well as traditional research based career development in academia or the pharmaceutical industry. We recommend that there be a formal review of the Governance (specifically, consideration of a Vice Dean), structure and resourcing of BGS and how faculty service to BGS might contribute to their effort distribution.
8. We recommend that the Basic Science Chairs meet regularly (e.g. monthly) with the Dean to review and initiate strategic considerations relevant to the academic mission of Penn Med. We believe that there has been considerable erosion of power from the basic science chairs over the past decade and that it is both appropriate and timely that we assume the responsibility as an Executive Committee that defines and implements key strategic goals for the academic mission. We also recommend that the Basic Science Chairs be engaged by leadership with the Development Office in philanthropic efforts and industry interactions devoted to strengthening basic science at Penn.
9. We support the development of a clear, transparent and rational basis for allocation of resources amongst basic science departments and continued investment to develop and sustain our cores on the cutting edge of technology development. In particular, we urge acceptance of the fact that cores offering technology crucial to PSOM's success cannot be held to the old model of cost neutrality. Certain cores such as those offering services in Biobanking, Next Next Gen Sequencing, and computing infrastructure for bioinformatics, Proteomics, and Small Molecule screening will need regular investment by the School – to update instrumentation – if Penn is to remain competitive and retain faculty. A robust process for clearly defining strategies and priorities for investment in new technologies in these cores is essential.



**Center & Institute Directors**

The Center & Institute Directors endorse the EPC Recommendations and highlight the following:

OVERALL: Consensus of I/C Directors:

- I/Cs play a critical role and contribute uniquely to the fabric of Penn Medicine
- Penn's extensive network of I/Cs distinguish us from our peer institutions.
- I/Cs facilitate development and maintenance of interdisciplinary science areas not well covered by individual departments at Penn Medicine and across the University.
- I/Cs harvest the value of the physically integrated campus on which we exist
- I/Cs catalyze translational research, providing a bridge from basic to clinical research
- I/Cs are nimbly receptive to novel NIH initiatives
- Strengths of I/Cs enhance external recognition in their mission-specific area

WORK GROUP-SPECIFIC: Key Issues Affecting I/Cs listed by WG:

**Pathways to High Impact Discoveries:**

- I/C Directors are ideally positioned to vet the need and potential use of new technologies  
*With their breadth and depth of expertise, the Committee of I/C Directors should be a key evaluator of "Innovation Centers" performing basic research with an eye towards translation, or high risk research aimed at assuming leadership in new technology platforms*
- I/Cs aid in recruiting the best new talent
- I/Cs catalyze cross-fertilization with regard to Penn Med departments and University Schools

**Shape of Faculty Life:**

- I/C participation should be considered by COAP
- Younger faculty benefit from official mentorship role from I/C(s) most closely related to their interests

**Resourcing the Penn System:**

CRITERIA FOR BEGINNING OR RENEWING I/Cs:

- Must be interdisciplinary area, not subsumed by a single department
- Must be an institutional priority for one of the following:
  - Key disease area with translational potential
  - Selected non-department-based new disciplines or technologies
  - Visionary leader in a non-department-based area
- For renewal: Must fulfill the following metrics of success:
  - Leverage of institutional funding as paid off by:
  - Interdisciplinary, collaborative research grants
  - Training grants
  - Yield on pilot grants

- High impact papers coauthored by multiple I/C members and/or using I/C-specific cores or resources
- Success in recruiting

**Integration of Knowledge:**

- I/Cs are the ideal means of integrating knowledge across disciplines, departments of the SOM, and schools of the university at Penn

**Role of Penn Medicine in the World:**

- In certain areas, I/Cs should take the lead in global initiatives

**Pathways to Clinical Excellence:**

- Leverage excellence in the areas of the I/Cs, and their membership including faculty from both clinical and basic departments, to translate research findings into new therapies

## VI. Work Group Members

The Executive Planning Council deeply appreciates the contributions of the following individuals:

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