UC DAVIS HEALTH | SCHOOL OF MEDICINE

Summary Report: Curriculum Renewal Process Subcommittees

UC Davis School of Medicine

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Executive Summary—Major recommendations for curricular renewal

Several strengths and areas in need of attention were brought to the forefront during the renewal process. These are listed below with further elaboration on each in the comprehensive reports at the end of this document.

Strengths

- Student Body (its diversity and focus on collaborative learning)
- Expertise/collaboration opportunities in the proximity (other professional schools and campus resources)
- Commitment of visionary medical school leaders and medical school Instructors of Record (IOR) to advancing education and educational innovation
- Curricular strengths in Social Justice, Cultural Competency and Service Learning
- OSLER and its student support services
- Opportunities for authentic learning and assessment (clinical reasoning exercises, preceptorships, CPX exam)
- Pre-existing work leading to the development of School of Medicine Graduation Competencies

Areas in need of attention

- Lack of Centralization of the Educational Endeavor
- Lack of Shared Vision for Medical School and Medical Center
- Lack of Direct and Transparent Support of Educators
- Unbalanced Curricular Focus: Underrepresentation of Non-Cognitive Graduation Competencies
- Need for a Center for Educational Innovation
- Assessment strategies fractured/uncoordinated and not universally work-place based
- Inability to accommodate needs of all learners

The Five Key Recommendations for Curriculum Renewal:

1- **Reimagine the Educational Mission**
2- **Create an Academy of Medical Educators to foster curriculum development and evolution**
3- **Create and fund a Center for Educational Innovation**
4- **Overhaul Existing Program Evaluation Processes**
5- **Recruit Additional Community-based Educators and Clinical Training Sites**

- **Recommendation 1— Elaborate and refine the educational vision to "Transform Education" for the Schools of Health which will reflect the shared values of the School of Medicine and UC Davis Medical Center**

    - Convene a group of collaborative faculty, students and staff to extend the work of the strategic planning process by focusing the strategies for transformation

- Disseminate the vision and strategies to administrators, faculty, students and staff at all levels
- Incorporate the strategies for medical education into the strategic plan for UC Davis Health
- Use the strategic plan to drive resource allocation

- **Recommendation 2—Create an academy of medical educators to consolidate and embody leadership for curriculum development and evolution**

  - Structure: The academy would consist of 40-60 faculty members (including an Academy Chair) from across basic science and clinical departments who have experience/expertise and qualifications to teach and have demonstrated excellence in teaching, leadership, faculty development, and/or educational scholarship (combination of content experts and pedagogical experts). The members and Chair would be appointed (using an application process) for pre-specified terms (with the possibility of renewal) by Faculty Executive Committee (FEC) in conjunction with Committee on Educational Policy (CEP) and the Vice Dean for Education, using student input. Academy members would serve as Instructors of Record. Members would be directly funded by the school of Medicine based upon their specific roles and expected time commitment and would be accountable to FEC/CEP and the Vice Dean for Education for the quality and quantity of teaching delivered.
  - Functions: The academy would be responsible for developing, implementing, and evaluating the curriculum in partnership with the CEP and FEC. The academy would be charged with creating and revising, on an ongoing basis, the curriculum using best practices and evidence based on educational theory and research to inform curricular design, pedagogy and student assessment.
  - Academy members would be expected to collaborate across disciplines to deliver and assess the impact of delivering an integrated and relevant curriculum that meets the needs of all learners. Members would ensure that curricular 'threads' are effectively woven and integrated throughout the curriculum.
  - Academy members would be responsible for guiding faculty development efforts in conjunction with the Center for Educational Innovation (see below) and would serve as mentors to other faculty, residents, and students pursuing careers in academic medicine
  - Members would be responsible for coaching/tutoring of all learners and would provide remediation for learners with academic/professional difficulty
  - Members would be responsible for developing assessment systems and strategies that provide meaningful feedback to learners in a coordinated manner across disciplines and assess performance across all competencies for both summative and formative purposes. Test development committees would be established with member guidance to develop and implement all summative learner assessments across the curriculum
  - Academy members would be expected to collaborate with the other Schools of Health and with other UC Schools to optimize instructional strategies and share innovations
  - The academy would be supported by academic (Deans and Staff), technical, and administrative expertise in the Office of Medical Education.
  - Funding for the academy would be derived from reallocation of state-supported FTE funds (estimated total 10-20 FTE) and reallocation of funds currently being used to support IORs and other OME teaching efforts (MCE, PBLI directors etc.).

- **Recommendation 3: Create and fund the Center for Educational Innovation**

- Goal: The center would provide expertise and technical resources to the UC Davis Schools of Health and to the Academy to develop state-of-the-art tools for teaching, learning, assessment, and educational analytics and would be a catalyst for educational innovation/scholarship.
- Structure: A chair would lead this center and specific FTE would be allotted to each of its members in order to achieve its goals.
- Functions
    - The Center would be the home of the UCD Schools of Health Educator Development Program and the teaching scholars program.
    - The Center would provide seed grants for educational innovation and scholarship and engage in other activities to catalyze efforts to advance education such as organizing journal clubs, seminars, visiting speakerships, etc.
    - The Center would sponsor educator development curricula/workshops and provide a consult service for teaching faculty to improve their teaching.
    - All faculty members with teaching responsibilities would be required to complete an educator development curriculum designed to meet their specific needs. Examples of titles/topics for faculty development might include:
        - ✓ Creating an effective learning environment
        - ✓ Successful learner-centered teaching
        - ✓ PowerPoint—Uses and Abuses
        - ✓ Effective Feedback
        - ✓ Mentoring
        - ✓ Patient-centered teaching
        - ✓ Innovative teaching for Millenials in the new Millenium
        - ✓ Crucial conversations
        - ✓ Technology in teaching
        - ✓ Small and large group teaching
        - ✓ Teaching in various settings such as the clinic and the bedside

- **Recommendation 4: Overhaul existing program evaluation processes**

    - This would be a combined endeavor of the Center for Educational Innovation and the Academy of Medical Educators
    - Reduce emphasis on Level 1 student reaction data as drivers for curricular change
    - Implement a peer-observation of teaching program for formative purposes for all faculty educators and for all courses.
    - Encourage risk taking and innovations by educators and academy members, with the expectation that many endeavors will fail or face unanticipated challenges. This type of risk taking effort should be rewarded and efforts tracked for learning purposes as well used for faculty merits and promotions.
    - Develop systems to collect more meaningful data on learner outcomes, such as post-graduate performance in residency and beyond.

- **Recommendation 5: Recruit additional community-based educators and clinical training sites**

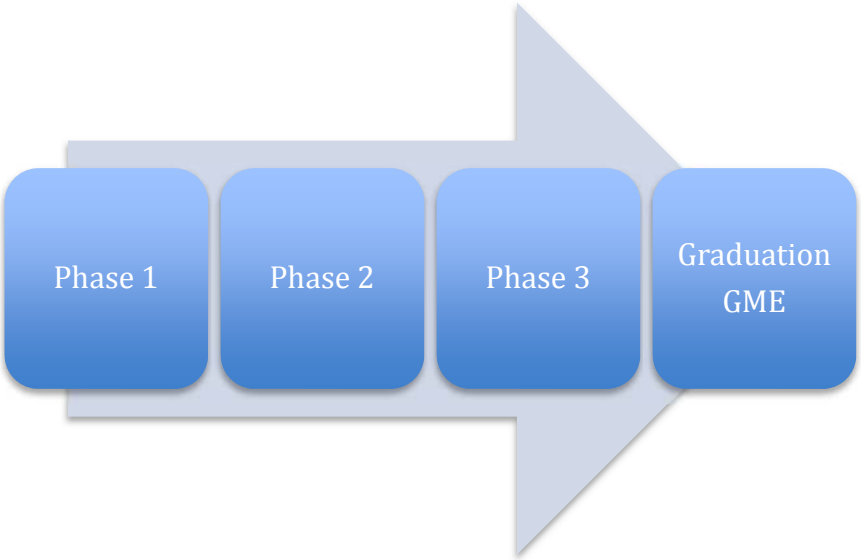
    - Incentivize volunteer clinical faculty teaching efforts (free CME offerings, parking, etc.) to help recruit more faculty/sites and to hold them accountable for quality of teaching
    - Mobilize existing resources (the PCN network and student-run clinics) to further engage in student and resident education
    - Require educator development

Example of a Novel Curriculum

Broad Goals Underlying these Changes:

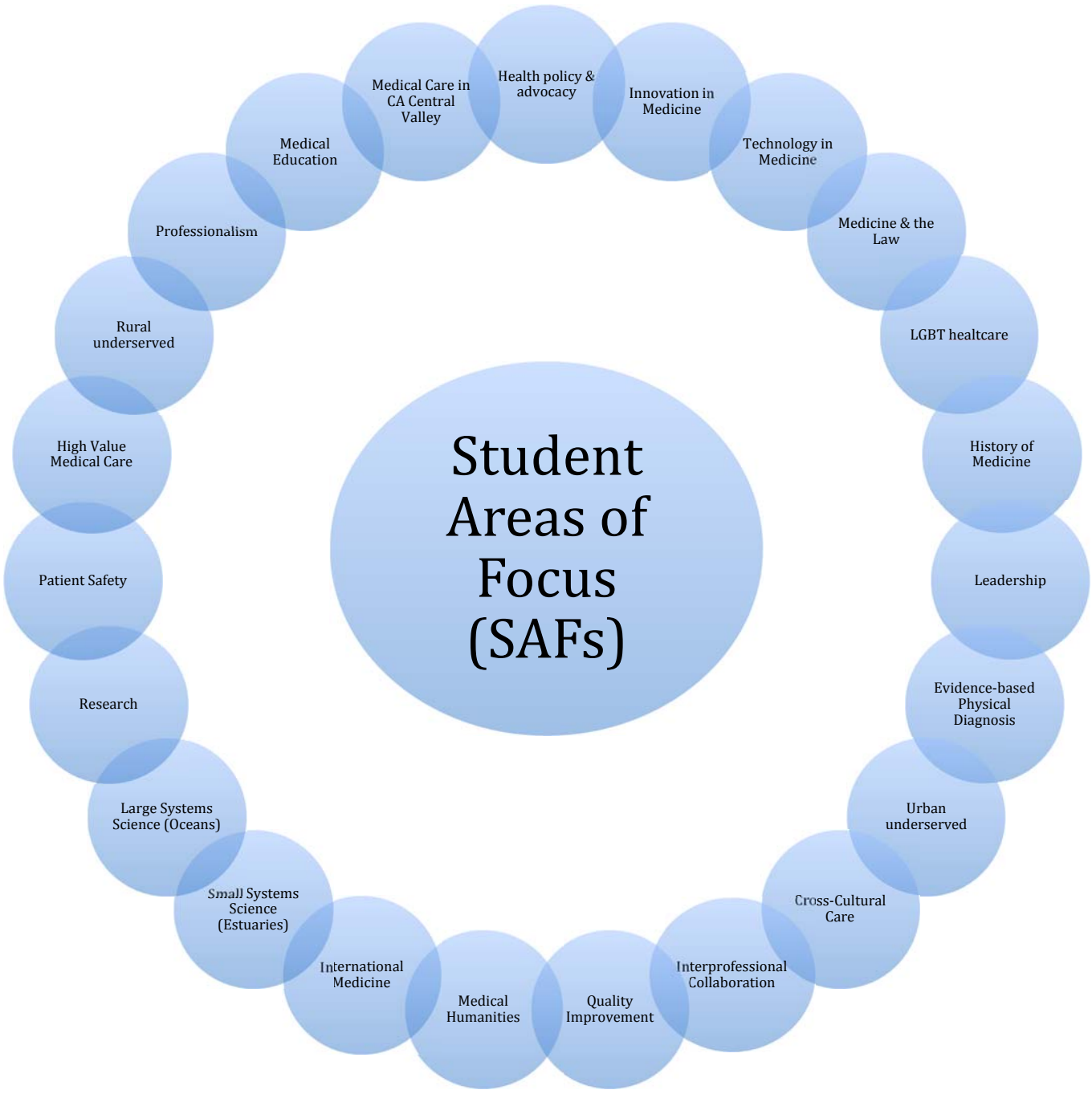
- Use of an overarching framework (such as competency based medical education) to guide curriculum development
- Early, longitudinal clinical immersion within the curriculum
- Integration of clinical and basic science throughout the curriculum
- Increased emphasis on patient-centered and learner-centered learning
- Administer longitudinal, workplace-based formative and summative learner assessments on milestones and competencies (e.g., use of portfolios and other integrated assessments at key times to determine readiness for progression to next phase.)
- Create longitudinal mentor-student coaching relationships to promote direct observation, reflection, feedback and enhance personal and professional
  time between each phase of the curriculum for remediation/intensification to meet the needs of all learners
- Create opportunities for students to focus on areas of special interest

1. Change medical school curriculum to a Flex 3P (Flexible 3 Phase) system over 4-5 years



   a. Phase 1
      i. Introduction to basic science (foundational education)
      ii. Introduction to clinical medicine via free clinics, shadowing, clinical problem solving cases, Clinical case TBL 3-4 afternoons/week. Longitudinal clinical experiences that maximize patient-preceptor-learner contact
      iii. Student Areas of Focus (SAFs) are declared in middle or end of Phase 1
   b. Phase 2
      i. Intensive clinical medicine (clerkships) with “intersessions;” longitudinal clinical experiences that maximize patient-preceptor-learner contact
      ii. Intersessions (see below) include time to work in focus area and can be used for ‘intensification’ based on individualized learning needs
   c. Phase 3

        i. Have decided upon GME focus
        ii. Focus is on transition to GME and Focus areas
        iii. Phase 3 to include residency bootcamp
2. Core complaints/concerns introduced in Phase I (UC Davis 25 similar to Vanderbilt 32)
3. Team Based weekly case inquiries—small groups (7-9 students) meet for 90 minutes 3 X week in Phase 1 and possibly portions of Phase 2—Experienced clinician educator (+ occasional guest appearance of basic science educator)
    a. This venue addresses evidence-based medicine, life-long learning, critical review of the literature, clinical reasoning, etc.
4. Continue to emphasize and focus on service learning and community advocacy
5. Intersessions throughout the curriculum to:
    a. Allow work on SAFs (Student Areas of Focus)
    b. Remediation of learners
    c. Address any curricular gaps as highlighted in ICRS final report
        i. EBM
        ii. Systems science workshops and lectures
        iii. Professionalism
        iv. Humanities & Medicine
        v. Inter-Professional Education & Collaboration
6. Introduce Student Areas of Focus (SAFs):
    a. See schematic below
    b. 1-3 faculty members would be in charge of each SAF depending upon number of students interested in each SAF


Student Areas of Focus (SAFs)
Health policy & advocacy
Innovation in Medicine
Technology in Medicine
Medicine & the Law
LGBT healtcare
History of Medicine
Leadership
Evidence-based Physical Diagnosis
Urban underserved
Cross-Cultural Care
Interprofessional Collaboration
Quality Improvement
Medical Humanities
International Medicine
Small Systems Science (Estuaries)
Large Systems Science (Oceans)
Research
Patient Safety
High Value Medical Care
Rural underserved
Professionalism
Medical Education
Medical Care in CA Central Valley

II) Description of the Process

Charge: The Council on Educational Policy (CEP) created the Internal and External Curriculum Renewal Subcommittees to help assess the strengths and gaps/areas of improvement in the curriculum at the UC Davis School of Medicine by looking 'inwards' (exploring the existing curriculum) and 'outwards' (reviewing exemplars of innovative curricula from across the nation)

Process: The two subcommittee Chairs were appointed by CEP; the Chairs then recruited a diverse cadre of members representing all stakeholders. The subcommittees developed their own approach to program evaluation (see detailed reports from each subcommittee); the two Chairs communicated with each other regularly (in person and electronically) and fed data in an iterative manner to each other, such that the two process could inform each other. Periodic meetings with the leadership (Dean Freischlag, Vice Dean Servis, CEP Chair Sweeney and the Faculty Executive Committee) were organized on an as needed basis to inform stakeholders of the progress and direction of the subcommittee work.

Each subcommittee, after about 8 months of work, finalized and approved their respective summary findings, following which the two Chairs synthesized the reports into the current final report.

III) Limitations of the report

As can be anticipated, there are some limitations to the process, predominantly resulting from the short time frame and limited time that any subcommittee member could be expected to devote to this project. These are as follows:

a) The Internal Curriculum Renewal Subcommittee members were expected to reach out to their peers and get input from them during the program evaluation process. This was variably successful and not tracked in a systematic manner. Therefore it is possible that some constituents, at this stage, may perceive a lack of engagement and involvement in the Curriculum Renewal process and may not even be aware of the existence of the process. The subcommittee Chairs recognize that and envision that this report will serve as a starting point in generating further dialogue and engagement across the health system such that other voices can be heard and input incorporated into the next steps.

b) The External Curriculum Renewal Subcommittee work, which was focused on identifying innovations in medical education, was inherently driven and biased by how an innovation was defined and how Schools were selected (see details in the ECRS report on selection criteria). Moreover, the findings of the subcommittee were based on data that could be gathered from the websites of the selected Schools; this often limited the amount of detail that was available to the Subcommittee and naturally restricted the Subcommittee to domains of innovation that were highlighted on the websites. The SOM has committed resources if the Chairs (or stakeholders) perceive the need to visit one or more of the Schools that stand out as being leaders in innovation, to gather more

detailed information about any innovation that is being considered for adoption at the UCDSOM.

c) Lastly, the final report presented here, is based on the synthesis of the two subcommittee reports performed by the two Chairs with the help of OME Staff assistance, and has not been voted on or formally sent for approval back to the respective subcommittees. The Chairs feel confident that the spirit of the final report is in keeping with what the Subcommittees discussed and agreed upon.

Final Recommendations from the Internal Curriculum Review Sub Committee of the Committee on Educational Policy

Purpose of the evaluation: To assess strengths and gaps/areas of improvement in the existing curriculum at the UC Davis School of Medicine

Members of the ICRS:

Faculty	Title	Department
Lavjay Butani, MD (Chair)	Faculty	Pediatrics
John Payne, PhD	Faculty	Physiology
Craig Watson, MD	Faculty	Neurology
Melody Hou, MD	Faculty	OB-GYN
Sam Clarke, MD	Faculty	Emergency Med
Aaron Danielson, MD	Faculty	Emergency Med
Aimee Moulin, MD	Faculty	Emergency Med
Kristin Olson, MD	Faculty	Pathology
Brian Pitts, MD	Faculty	Anesthesiology
Deborah Ward, PhD, RN	Faculty	Nursing
Medical Students		
Leona Shum	MS-3-4	SOM
Ashley Clark	MS-3-4	SOM
Kristin Cutler	MS-3-4	SOM
Talin Arslanian	MS-3-4	SOM
Ian Kim	MS-2-3	SOM
Residents/Fellows		
Adam Dougherty, MD	Resident	Emergency Med
John Javien, MD	Resident	Medicine
Olivia Campa, MD	Resident	Medicine
James (Jake) Becker, MD	Resident	Surgery
Nick Sawyer, MD, MBA	Fellow	Emergency Med
Health Sciences Library		
Amy Studer, RN, MSN, MSLIS	Health and Life Sciences	Blaisdell Medical
OME OSLER		
Joanna Arnold, PhD	Director-OSLER	OME
OME Curriculum		
John Drummer	Academic Coordinator	OME
Ryan Traynham	Director-Curriculum	OME
Polly Latow	Manager-Clinical Curriculum	OME
Susan Gardinor	Manager-Preclinical Curriculum	OME
Carol Howle	Analyst	OME

Process used:

1) Monthly large group meetings to discuss strategy, review small group reports and plan next steps (October 2015-May 2016)

2) Small groups created based on member interests and with a view toward stakeholder diversity; small groups charged with specific program evaluation questions. Small group meetings (virtual/in person) as needed. Small groups encouraged to reach out to their constituents and any other stakeholders to gather input

3) Final report presented to large group for discussion and approval (June 2016)

Program evaluation questions (see Appendix 1 for Small groups assigned to each question and the data sources used to answer the questions)

1) How well do the stated goals and objectives of the program match the real and/or perceived need for the program?
2) How adequate are the resources available (space, money, personnel, equipment, etc.) in relation to meeting the program's stated objectives?
3) How well does the environment support the students/faculty/staff/administrators in accomplishing the program's goals and objectives (funding, support)?
4) How well based is the program design in relation to sound educational theory (adult learning, cognitive load theories etc.) and practice (integration, clinical relevance, block structure of courses, LIP versus block clerkships) and in relation to student wellness?
5) How effective is the process for on-going monitoring and quality improvement for the curriculum as a whole?
6) For each of the six graduation competencies, what is the plan for targeted instruction to ensure mastery and how is mastery being assessed and documented?
7) How well is instruction/assessment balanced across all six competencies throughout the curriculum as a whole (e.g. are there competencies/assessment that are over or under emphasized?)
8) How well have learners in the program accomplished the learner outcome objectives (and are the data gathering tools that we use in the School adequate to assess this on an ongoing manner)?

Prioritized list of strengths

The following were consistently identified as strengths of the existing curriculum/curricular structures and therefore must remain intact or made even stronger if we are to build on our successes:

1) Work done in preparation for the last LCME site visit led to the development and wide dissemination of the **SOM Graduation Competencies**, which has provided a good foundation to learners and educators on the role and importance of competency-based medical education (CBME) as an essential paradigm for learning

2) **The student body**: both its diversity and the collaborative/collegial nature of the students, especially in the pre-clerkship years, driven in part by the perceived lack of competition needed since course grading is on a Pass/Fail system (without an Honors grade)

3) **Demonstrated commitment by IORs** has been able to drive change/improvement across all years, including ongoing efforts to include active learning in a variety of forms, in all courses. Frequently cited examples in the pre-clerkship curricula include

General/Systemic Pathology team-based learning (TBL) sessions TBLs and the core-cluster physical exam format used in Doctoring.
4) The **Office of Student Learning and Educational Resources** has made an enormously positive impact on student learning, learner progression and well-being; this accomplishment is made even more remarkable when one recognizes the limited staffing of this critical unit and that this unit is a very new addition to the SOM.
5) Emphasis of the **curriculum on social justice, advocacy/service learning** and cultural competence/humility has focused our efforts to train a workforce that will provide care to the underserved/rural population of Northern CA. As will be noted later, this strength is perceived by some to be a misplaced emphasis; this results from a suboptimal effort on the part of the School leadership to promote the creation of a shared vision/mission for the educational component of the SOM and to broadly disseminate this vision at every opportune moment.
6) **Curricula (and assessments) pertaining to 'authentic' clinical experiences** have made their way into the pre-clerkship curricula, although these are almost exclusively restricted to the Doctoring courses (clinical reasoning experiences in years 1 and 2, end of year 2 clinical skills exams etc.). Formative global (non-course based) learner assessments such as the various practice based learning and improvement (PBLI) activities have highlighted the opportunity to more effectively and holistically assess learner competence in the 'workplace.'
7) **Existing expertise and technology** (both in the Health System, such as the Center for Health Technology- CHT and on Campus, such as the Center For Excellence in Teaching and Learning-CETL) are excellent resources that can be leveraged but are not adequately utilized and/or are not as easily accessible to the SOM due to funding issues.
8) The existence of several **other professional schools in the proximity**, especially the School of Nursing (SON) and the rich resources and expertise that the SON brings is yet another unrealized potential, especially in integrating interprofessional education (IPE) in a meaningful manner into the curriculum. Others include the Vet Med School, the Law School, Social Work (at the California State University Sacramento) and Pharmacy to name a few. Several IPE activities have been attempted in the past and, when done well, have been extremely effective (such as the collaboration between Vet Med and Doctoring).

Prioritized list of recommendations for change/improvement and a roadmap for the 2020

Vision:

RECOMMENDATION 1-Inspire a Shared Vision for Medical Education: The SOM leadership needs to facilitate a process whereby all stakeholders can engage in creating a shared mission and vision for the school's educational programs. This is likely underway as part of the strategic planning process, although thus far very little dialogue has ensued among the several groups that oversee the various components of the medical education enterprise to weigh in and refine what was started by the Health System Leadership. Once this task is accomplished, the Office of Medical Education (OME) must highlight and disseminate this shared vision across its various functioning components to ensure alignment. Most importantly, there has been concern expressed that the Health System is not fully in alignment with the educational mission of the SOM;

this should be addressed, especially at a time where there is growing competition in the region for clinical teaching sites while our own faculty affiliates (the primary care network) contribute minimally towards student education.

RECOMMENDATION 2-Centralize the design, management and coordination of the curriculum: Recognizing that learning is progressive and developmental, and that the principles of Competency-based Medical Education(CBME) require that we 'begin with the end in mind,' any educational program must have a holistic view of learner competence and progression towards competence. With a view towards this, there is an urgent imperative for a complete restructuring of how the curriculum at the UCDSOM is designed and managed. There is no rational pedagogical reason to continue having departmental or even course- based curricular oversight since this only creates educational silos with limited ability, even with the best of intentions, to effectively integrate learning materials across subject areas and across years. This segmented course oversight further poses a barrier to holistic assessment of learner competence. The lack of cross-talk is one contributor to learner stress. Once a centralized structure is put in place, best practices based on educational theory about the effectiveness of various approaches to teaching and learning should inform curricular design, pedagogy and student assessment. A centralized body (akin to a Council on Educational Policy) needs to have complete oversight and authority over the curriculum in order to effectively achieve the following:

- Revisit the Graduation competency milestones since the larger curricular structure, learning opportunities and assessments do not always follow the developmental plan of the milestones as a consequence of a 'retrofit approach' that was used when these milestones were developed
- Bring about meaningful horizontal and vertical integration within the curriculum
- Improve consistency across the years in pedagogical approaches to promote active learning such that adequate time/space is created for these activities to occur, without other courses competing for learner time/attention
- Optimize cognitive load and eliminate unnecessary redundancy while maximizing opportunities for repetition and practice/application of learned materials (spiral curriculum)
- Decrease emphasis on mastering/recalling knowledge and instead prioritize knowledge acquisition and developing cognitive organizational frameworks and strategies. At the same we need to ensure that curricula related to each of the graduation competencies are 'threaded' in a developmentally sound and progressive manner across the years. Learner accomplishments in the non-cognitive domains of competence should be better recognized and celebrated, including calling these out in the Medical Student Performance Evaluation (MSPE) (and using them in the student ranking rubric of the MSPE)
- Integrate clinical and foundational science materials (examples include: early clinical exposure, revisitation of foundational sciences in the 3rd and 4th years, ensuring that all courses are co-taught by clinical and foundational science faculty, and by increasing clinical relevance of all materials taught)
- Create longitudinal relationships between students and preceptors (to more effectively allow assessment of learner competence and professional development over time) and between students and patients (to mitigate the

dehumanizing effect that discipline- and organ system- based curricular structures unintentionally create). This includes steps such as transitioning to a longitudinal integrated clerkship model (as opposed to stand-alone clerkships) and changing Doctoring courses into predominantly longitudinal clinical experiences with intersessions to address unmet curricular needs

- Promote the value of life-long learning and reflective practice such as by the use of learner portfolios and a functional coaching/mentoring program (and by creating learning communities)
- More effectively address curricular gaps and rapidly introduce new curricula to address these gaps. Existing stand-alone entities created to address these gaps in the past such as the Team PEACE and the Doctoring Steering Committee should not need to exist in the future and/or should directly report to the large oversight body
- Ensure that learner assessments (formative and summative) are meaningful (milestone/entrustable professional activity-EPA-based), holistic, and coordinated and that they assess work-place based performance as much as feasible. Assessment committees that report to and coordinate efforts with the curricular committee are needed to achieve the above, with the vision that all learner assessments be designed and conducted by this overarching entity (and eliminating/minimizing course-based assessments). 'Barrier' assessments should be developed (and validated) to determine progression of learners at key points in the curriculum. Professionalism, as a competency, stands out as being one that is in greatest need of more robust assessment strategies, especially in summative evaluations and early in the curriculum. Student performance across all years should be mapped to competency domains and sub-domains to better address learning needs. At the same time, the curriculum needs to better meet the needs of students with respect to the Step 1 USMLE exam, which is a current reality for them and one that is high stakes for residency program selection, howsoever strongly we might disagree with its value and use for that purpose
- Collaborate with the other Schools of Health and with other UC Schools in instructional strategies and content (including on line synchronous and asynchronous teaching sessions)

THE ABOVE TWO FOUNDATIONAL CHANGES ARE ESSENTIAL TO THE SUCCESS OF ALL SUBSEQUENT RECCOMENDATIONS

RECOMMENDATION 3- Meaningfully support faculty teaching efforts:

Educational efforts of faculty and IORs, who are passionate about education, have been undermined by the obfuscatory nature of how education is funded at the level of an educator and the inconsistency in flow of funds from the OME and the SOM to educators. In addition to a centralized curricular design and management system, there needs to be a clear line of support/funding for IORs in all phases of the curriculum (whether those leading required courses or those leading elective courses). The funds should come directly from OME and go directly to the IOR (as opposed to a Division or a Department) to effectively 'buy out' educator time. The amount of the funding should be based purely on how much time the curricular oversight committee wants the IOR to spend on the course and should be based on national benchmarks, when available. Appointment of course directors should also be charged to the curricular oversight committee and be based on demonstrated passion and expertise/excellence in

education. The appointees should be held accountable for the quality of education provided. Clear criteria for appointment as an IOR should be delineated as well as requirements for ongoing professional development for appointees. Other faculty who should be directly supported should include members of the key educational committees, mentors/coaches/tutors and competency 'thread' directors (see Recommendation 6). Additional funding should be provided to faculty and staff to promote innovation and scholarship, in the form of small to medium-sized grants. While such clear lines of support for every single educator may not be possible, the overreliance on volunteer clinical faculty (VCF) for education is disturbing, not necessarily because of the quality of education provided, but because of the increasing competition in the region for clinical training sites and due to the inability of IORs to effectively hold VCF accountable for the quality of teaching, which can be variable. At a minimum, a mechanism for financially supporting VCF should be developed and instituted, in addition to the aforementioned IOR funding clarification. Lastly, efforts that faculty devote towards education need to be recognized more explicitly and to a greater magnitude during faculty merit and promotion actions. A systematic mechanism for doing that should be developed in conjunction with the Office of Academic Personnel.

RECOMMENDATION 4-Create systems that allow greater curricular flexibility to accommodate the needs and goals of all learners: The UCDSOM has demonstrated a commitment to creating a diverse workforce that will serve the underserved communities, especially in Northern California. This is a mission that has been articulated by many, but not all, and is therefore one that needs clarification (see Recommendation 1). As a consequence of this commitment, we have matriculated many non-traditional students and students who are less well prepared for the academic rigors of medical school. While attempts have been made to support these students, the efforts have fallen short to such a significant extent that many faculty and staff feel that the SOM has done a disservice to such students. This needs to be rectified promptly and involves concrete steps, in addition to clarifying the educational mission of the SOM. These include

- Identifying students who are likely to be in need of support (based on pre-matriculation data, howsoever crude these predicators might be, and with the first sign of academic difficulty). This is best done at the level of the Admissions committee and a competency committee
- Providing robust support (addressing cognitive, metacognitive and affective domains) to such students in a supportive environment such that students not perceive this as punitive. These support systems (including coaches and mentors) likely need to be REQUIRED as opposed to optional, as supported by published literature
- Creating a decelerated/alternative track (either with the first sign of academic difficulty or even preemptively, such as starting with the post-baccalaureate program) for students who may need more than the traditional 4 years to graduate and provide financial support for such students. Within this planning, the role of the 4th year in helping students to achieve desired outcomes should also be carefully examined

- More robust remediation systems for all students including recruiting, training and supporting faculty/peers/staff who can be coaches/tutors when the need arises
- Creating a competency committee that is charged with assessing the progression of every student in the SOM across the years and across all graduation competencies
- Creating an opportunity for students to have scholarly concentration pathways based on their needs/desires and goals

RECOMMENDATION 5- Create a Center for Educational Development and Innovation: There is a paucity of faculty development opportunities that are robust, easily accessible and longitudinal, even for those who are interested in expanding their teaching expertise and engaging in educational innovation and scholarship. There is a wealth of talent and expertise in the Schools of Health that can and should be tapped and coordinated to create a menu of comprehensive faculty development programs for those who are interested. These should be made more visible and their value emphasized to the faculty and Department Chairs. Certain faculty development activities should be required for IORs and other educational administrators (tailored to their roles) who are funded by OME/CEP to ensure ongoing exposure of these personnel to foundational and evolving concepts related to educational practice and theory. Ad hoc consult teams should be created and funded to help troubleshoot and provide consultation to peers when questions related to educational theory, curricular design etc. come up. These teams should be freely available to all faculty and staff. The center would also provide expertise related to education technology, instructional design and in developing analytical tools to access centralized educational data for the purpose of student performance tracking, quality improvement and research. We suggest that the school adopt one of the more robust curriculum management software systems that already exist as opposed to attempting to create our own 'home-grown' system.

RECOMMENDATION 6-Close the following specific curricular content gaps: Several specific curricular gaps were noted by the ICRS. Within the broader competency domains, the most neglected competencies, not surprisingly, were Systems-Based Practice (SBP) and Life-Long Learning with an undue emphasis on Medical Knowledge. However, within every competency domain there were specific subdomains that were under or over emphasized, as will be outlined below. Each major competency 'thread' (with the exception of Medical Knowledge) should have a competency director (or team) appointed and funded by OME/CEP and charged with ensuring that milestones related to that competency are effectively being taught and assessed across the years.

- Interpersonal and communication skills
    - Need for early immersion of learners in interprofessional teams to promote IPE, especially with respect to collaboration, team work and effective communication
    - Adopt a consistent framework to teach and assess communication skills, especially when there are many that are widely published in the medical literature
    - Shared decision making and leadership of teams/conflict management are two subdomains that are under addressed in the curriculum
- Professionalism

    - The hidden curriculum in the first 2 years of school undermines the value of accountability at a time when reinforcing this value is of the utmost importance (such as variable attendance in classes and lack of timeliness as well as the unwillingness of faculty to hold students accountable for these). Use of peer-evaluations and changing the culture in OME may come to mean that bringing these lapses to the attention of students is not seen as punitive, but as an opportunity for learning and professional development
    - Many professionalism subdomains are less well addressed – especially altruism and humanism (both towards others and towards self). Most of the emphasis is on cultural competency/ethical-legal understanding.
    - Need for greater emphasis on healthcare disparities and awareness of sexual/gender diversity
- Patient care
    - Curricula pertaining to patient care documentation in the actual patient chart (via EHR) are still weak and inconsistent and not practical enough for learners, especially in preparing them for entry into the clinical years.
    - It is unclear if there are any curricula for handoffs that are being taught to students. This is a critical need and an area where standardized and validated teaching and assessment tools do exist, albeit at a residency level which could be easily adapted (e.g. iPASS curricula).
    - Some milestones related to patient care are unrealistically ambitious for learners and need to be revisited and revised (such as the billing documentation requirements)
    - Specialty specific milestones are needed such that patient care competencies and EPAs that are felt to be important for all graduating students are effectively integrated into curricula across the years.

- Life-long learning
    - Develop and implement a portfolio or similar tool for students and faculty/coaches/mentors to use in documenting assessment and feedback, self-reflection and improvement plans and progress
    - Need for formal curricula on self-reflection and self-regulated learning for learners and faculty alike
    - Adopt more granular learning objectives borrowing EPA 7 functions from the AAMC's EPA for Entering Residency to lend clarity to the Evidence Based Medicine (EBM) subdomain
    - Adopt a standardized approach to EBM and create developmentally progressive curricula to address this (such as the 5 A's of EBM) so that aspects of EBM are not underemphasized (currently the 'Ask' and 'Apply' are the weakest links, with the majority of the emphasis being on 'Appraising' literature)

- Systems-Based Practice
    - *Near-term goals*
    a. Create a new Systems Science course spanning across the first two years of medical school aiming to ensure SBP milestones are met

b. Redefine the QI/Community Project in the current curriculum and SBP Health Care Delivery System subdomain to include opportunities in Policy, Advocacy, and Health Care Management
c. Expand Doctoring/Problem Based Learning Cases to include health care system sciences information. This information can be embedded in current cases.

o *Long-term goals*

a. Faculty development such that optimal system-based practices are integrated into every day teaching during clinical rotations
b. Structure IPE hours. Health care professionals face many of the same problems, but we all approach these issues through the lens of our own profession. Many medical schools across the country are breaking down these professional silos and encouraging interprofessional approach to problem solving. It is time UCD SOM does the same. Interprofessional learning groups would include:
    i. Nursing
    ii. Nurse Practitioner students
    iii. Physician Assistant students
    iv. Law students
    v. Graduate School of Management students
c. Create a formal Leadership Track for students applying to UCD SOM. Similar to PRIME, students will be recruited to take part in the UC Davis School of Medicine Health Policy and Advocacy Pathway. The aim of the pathway is to develop future physician leaders that have a keen understanding of the US Health Care System and US Political System and thus have the unique skill set needed to guide health policy decisions at the highest levels.

RECOMMENDATION 7: Improve program evaluation processes. Current program evaluation strategies are suboptimal in that they are overtly heavy on student reaction as opposed to collecting and reporting more meaningful learner outcome data. These then inhibit IORs and faculty/staff from the appropriate risk-taking that is inherent in any innovational endeavor and have, in part, been a contributor to curricular stagnation. These reviews (such as the level 1 and level 2 reviews) are sent to Department Chairs who may not have a broader view of the curriculum and of education in general, and often are perceived by IORs to lead to reactive and unconstructive actions. Better learner outcome data should be collected and disseminated to stakeholders and systems put in place whereby risk-taking is encouraged and rewarded. When some innovations fail, these failures should be expected and accepted as a possible natural outcome. Such innovations (and innovation attempts) should also be documented and disseminated as part of the program evaluation process. The School also needs to direct resources and a major effort to start collecting data on learner performance and outcome after graduation from Medical School (such as by surveying Residency Programs where our graduates match and tracking their performance), as this is the most useful outcome data and one that can and should inform ongoing quality improvement of the curriculum.

External Curriculum Review Subcommittee Report

Members

Faculty	**Title**	**Department**
Paul Aronowitz, MD (Chair)	Faculty	Internal Medicine
Tom Blankenship, PhD	Faculty	Cell Biol-Human Anatomy
Richard Tucker, PhD	Faculty	Cell Biol-Human Anatomy
Sandhya Venugopal, MD	Faculty	Internal Medicine
Jennifer Plant, MD	Faculty	Pediatrics
Suzanne Eidson-Ton, MD	Faculty	Fam-Comm Med
Students*	**Current Title**	**Department**
Ariana Hossein, MD	Resident	Internal Medicine
Sophie Rosseel	MS-4	SOM
Joe Kim	MS-4	SOM
Paige Kendall	MS-3	SOM
Staff	**Title**	**Office**
John Drummer	Academic Coordinator	OME
Ryan Traynham	Director-Curriculum and Ed Tech	OME
Carol Howle	Analyst	OME

Note: Students were M2-M3-M4 when the subcommittee work was done

Summary of Themes

Curriculum Review-Renewal Initiatives

- Multi-year comprehensive curriculum review/renewal projects with leadership from Dean (UW, UCSF)
- Major investments in faculty, curriculum planning, technology
- The AMA grant program has stimulated innovations and the AMA consortium provides an avenue for sharing

Overall Organization

- Curriculum “phases” are used to describe the curriculum, rather than “years” or “preclinical” or “clinical” (“foundations”->”patient care”->”exploration and focus”)
- Shortened preclinical phase (12-18 months), often accompanied by advanced basic science teaching in the clinical phase
- Increased elective or selective opportunities in preclinical and clinical phases
- Greater emphasis on systems-based practice competency: new foundational courses, immersion experiences, tracks
- Interprofessional educational experiences – classroom, problem solving, clinical teams, simulations
- Longitudinal clinical experiences extending over several years with students in community practices

- Formal linkages with student run or community clinics / community advocacy groups
- Scholarly requirements – Area of concentration or mentored scholarly work with broad choice of disciplines (eg. science->humanities->community), time reserved for projects b/t Y1-2, Y3-4, Y4
- Tracks or Pathways – Rural, underserved, leadership, specialty
- Accelerated programs leading to provisional residency acceptance
- Flexible (extended) MD program (without additional tuition)

Preclinical Organization

- Foundations or "basecamp" block followed by integrated organ system blocks
- Integrated basic science-clinical courses or blocks with non-traditional titles
- Early clinical exposure parallel to coursework or via periodic immersion
- Weekly longitudinal clinical preceptorships
- Immersion weeks – between blocks – full time immersion in health care setting, in-depth instruction in cross-cutting area
- Weekly case inquiry / problem-based learning sessions in small groups (most preclinical, some clinical phase)
- Core patient presentations or diseases used as organizational framework for basic sciences and clinical teaching
- Reduced time for in-class lectures, increased use of on-line modules and small group teaching

Clinical Organization

- Basic science modules required in clinical years (intersessions, concurrent)
- Combined clerkships based on clinical setting rather than department (eg. inpatient includes medicine and surgery)
- Longitudinal clinical clerkships
- Intersessions between clerkships
- Structured pathways or clusters of advanced electives geared to career choice
- Transition to Residency courses or bootcamps

Assessment of Student Performance

- USMLE Step 1 following clerkships
- Assessment weeks – multi-modal
- Assessment Committees- charged with design, quality control, promotion decisions
- Performance dashboards

Faculty Organization

- Clinical coaches and mentors with 1:1 longitudinal relationships
- Academies of master educators

Colleges and Learning Communities

- College organizations – learning communities (social, mentoring, academic, research, career advising)

Resources

- Faculty development – skills, scholarship, on-line resources, coaching
- Education technology – portfolios, online learning, performance dashboards, EMR sandbox applications, simulation

Questions

- Some members have commented that the schools with concentrated basic science curricula and emphasis on scholarship and self-directed learning may not work well at UCD because the students we admit may not be as well prepared academically—eg. lower MCAT scores, higher percentage of students with degrees in science, or they may be less inclined to pursue specialist careers. Is there any evidence pro and con for this concern?
- What has been the cost to schools who have engaged in major reforms to conduct planning, implementation, and evaluation, and how have these been funded?
- How are schools compensating faculty for activities requiring major time commitments – especially clinical and research mentors?
- What strategies are schools using to recruit clinical training sites when reforms call for expansion of clinical experiences, especially into the early years of medical school?
- What are the short and long-term outcomes of recent initiatives with regard to student performance, satisfaction, career choice, populations served, etc.? Do schools have well-developed plans for comprehensive evaluation?