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Save the Date!
Case Western Reserve University School of Medicine
ANNUAL EDUCATION RETREAT
Friday, March 3, 2006, at HealthSpace Cleveland

THEME OF ISSUE 7:

Clinical Immersion Plans for Block 2: Building a Human Being

Clinical immersion is a one-week period in each of blocks 2 through 6 of the Foundations of Medicine and Health (the first one and one-half years of the new curriculum) to provide a **meaningful and timely clinical context for basic science learning**. “*Architects*” of the clinical immersion week for **Block 2, Building a Human Being, Derek Neilson, M.D., and Marni Falk, M.D.**, both instructors in Genetics, shared their plans to date. Keep in mind that models for the new curriculum remain fluid and open to revision. While the structure has been determined, the details have yet to be “fleshed out,” or as Dr. Neilson puts it, they have decided on the “bones,” but not the “muscles” and “tissues.”

Block 2 integrates **Cancer Biology, Development, Endocrinology, Genetics, Molecular Biology, and Reproductive Biology**—diverse fields whose themes overlap regarding the movement and interaction of molecules and cells. Block 2 is a chronological progression that begins with conception and gradually builds a human body. The medical specialties most relevant to Block 2’s content are endocrinology, medical genetics, obstetrics and gynecology, oncology, pediatrics, and surgery. Block 2 faculty include Georgia Wiesner, M.D., glw2@case.edu, design leader; Joseph Bokar, M.D., Ph.D.; Ron Conlon, Ph.D.; Marni Falk, M.D.; Michael Harris, Ph.D., Smitha Krishnamurthi, M.D.; Ricardo Loret de Mola, M.D.; Kathleen Molyneaux, Ph.D.; Thomas Murphy, M.D.; Derek Neilson, M.D.; and Matt Warman, M.D. Student representation on the Block 2 design team includes Melinda Dendrinis (Year I); Gina Hoang (Year I); Michelle Kim (Year II); Leland Metheny (Year II); Elizabeth Peacock (Year I); David Shultz (M.S.T.P.); and Jessica Voorhees (Year II). Course Manager assisting the team is Ms. Nivo Hanson.

The major creative dilemma consisted of how to incorporate the entire class of up to 140 medical students in a one-week experience. Once it was established that every student need *not* have the *same* experience, the decision was made to **focus on common themes** rather than diseases, per se, and design a means whereby students could “share” their collective experiences. The clinical immersion week is designed to permit the student to draw on this variety of content and use knowledge and skills learned earlier during the block. The plan is to thoroughly work through individual cases from every specific angle. The challenging part consisted of determining how to maximize individual learning among a large number of students given limited clinical resources such that each student will recognize how basic science is integrated into clinical medicine.

Initially, students will be divided into **four groups**, where each investigates a different *focus area* throughout the clinical immersion week of Block 2. Clinical immersion themes reflect specific content learned during the ten preceding weeks. Block 2’s clinical immersion is rich in genetic, endocrine, and embryologic developmental aspects. Students not only focus on basic science but address psycho-social issues as well. At this time the four themes (description of each follows later in the article) that comprise the clinical immersion are:

- Early Pregnancy Issues: Difficulty in Conceiving or Carrying as in Infertility and Multiple Miscarriages
- Cystic Fibrosis
- Inherited Cancer Syndromes
- Congenital Chromosomal Syndromes

To achieve the desired degree of *personal relevance* and *direct personal responsibility*, each of these four groups will be subdivided into smaller subgroupings of students. The tentative format is for students from each of the four subgroups—A, B, C, and D—within each of the four themed groups (focus areas)—to have a separate, but complementary schedule. On Monday, **Day 1**, each subgroup will be presented with a **real patient with a clinical problem**. Over the following **three days**, each subgroup will participate in a **series of clinical activities** during which they will be exposed to different aspects needed to completely evaluate the case. At the **end of each day**, subgroups (A, B C, and D) will **come back together to talk to each other and a faculty facilitator about their experiences**. On Friday, **Day 5**, each subgroup will share findings via an **oral presentation** to their larger group. The presentations will be from each of the four clinical immersion topics (focus areas) and will allow for a shared learning experience where students will teach and learn from one another. One large group will consist of all the subgroup A’s from each of the four different themed groups, another of all the B’s, etc. The **skills needed** for the clinical immersion encourage taking advantage of existing university resources: 1) librarians to show students **how to make the best use of resources in their search**, and 2) a resource person to teach students **how to deliver an effective oral presentation**. The goal is to achieve “balance” in the weeklong immersion by combining personal experiences with individual research. Students will be encouraged to be creative in their oral presentations—for example, staging a patient-doctor dialog to embellish a PowerPoint presentation.

To link the basic science concepts to the clinical problem, the immersion experience will use the “*triple jump*” method that incorporates a clinical case, activity, and shared learning. Step 1 uses the **case** as the trigger; Step 2 uses **activities** consisting of research, talking with a patient, or performing a simulated activity; and Step 3 uses **debriefing** or shared learning of presentations to fellow students and a faculty mentor to solidify the experience.

Note the **basic science** concepts involved in each brief **description of the four clinical immersion focus areas**. In every scenario, students will be presented with a **case** and will interact with **real patients** as if they were their own. Students learn **how to take a “pedigree”** (formalized structure of a family history) earlier in Block 2 and will then put this skill into practice during the clinical immersion. Students will become familiar with “**screening**” tests, which establish the level of risk, and “**diagnostic**” tests, which are tests that include or exclude a specific diagnosis. Individual immersion themes are in different stages of development.

Early Pregnancy Issues: Difficulty in Conceiving or Carrying as in Infertility and Multiple Miscarriages

Both infertility and multiple miscarriages are one of the major issues facing high risk obstetric patients. This clinical immersion integrates molecular biology, genetics, endocrinology, reproductive biology, and development. It will focus on the chromosomal, single gene, and endocrinologic causes for infertility. Possible clinical sites or activities include infertility clinics, IVF surgical procedures, anatomy lab correlates, pathology lab correlates, prenatal ultrasound clinic, clinical embryology lab, and support group meetings.

Cystic Fibrosis

Cystic fibrosis is the most common genetic cause of childhood pulmonary disease. Carriers of the disorder are seen in about 1/25 Caucasian individuals. This clinical immersion integrates molecular biology, development, and genetics. The treatment is often multidisciplinary and thus lends itself to a valuable clinical immersion experience. Potential sites or activities include talking with patients who have cystic fibrosis, chest physiotherapy, inpatient adult or pediatric cystic fibrosis rounds, adult and pediatric outpatient cystic fibrosis clinics, basic science cystic fibrosis research labs, prenatal genetics labs and genetics clinics, pathology correlates to review the lung and pancreas pathology in cystic fibrosis, and support group meetings.

Inherited Cancer Syndromes

While all cancers are caused by cellular genetic abnormalities, only a small proportion of cancers are inherited. This clinical immersion integrates molecular biology, genetics, cancer biology, and endocrinology. This immersion will link the current basic science knowledge of genetic mutations to an understanding of cancer development and therapy in practice. Potential sites and activities include cancer genetics clinics, adult or pediatric inpatient oncology rounds, adult and pediatric outpatient oncology clinics, radiation therapy suite, Genetics Cytogenetics CS laboratory, pathology and hematology correlates, multidisciplinary tumor boards, and support groups.

Congenital Chromosomal Syndromes

Many congenital defects in children are caused by changes in chromosome structure or number and can be identified by special chromosome studies called florescent insitu hybridization or FISH. This clinical immersion integrates molecular biology, development, genetics, and reproductive biology. Potential sites or activities include the prenatal ultrasound clinic, genetics clinic, pediatric developmental clinics, anatomy lab correlates, and pathology lab correlates.

Dr. Neilson hopes that by seeing patients, students will come away from the clinical immersion with the perspective that basic science is relevant. Additionally, students who may not have entertained the thought may decide to explore research as a viable career path. A researcher with a clinical practice, Dr. Neilson explained, “Having patients with problems makes me want to do science.” He describes himself as “problem-driven:”—“How can I help this patient?”

Also a researcher with a clinical practice, Dr. Falk views her research as an important tool to help her patients. She explained the driving force behind a geneticist is understanding “why.” The geneticist has a diagnostic orientation for finding the cause. Dr. Falk describes the role of the clinical immersion as “making basic science *come alive* in a personal way that is clinically practical so that each student comes away with an individual understanding of the realities, necessities, and practical limitations of clinical medicine.”



Derek Neilson, M.D., den4@case.edu, knew that he wanted to become a geneticist even before he entered medical school at the Oregon Health Sciences University. After graduation from medical school in 1998, he was one of the first to enroll in the Five-Year Combined Residency Program in Pediatrics and Medical Genetics at University Hospitals of Cleveland and Case Western Reserve University, a first-of-its-kind program. Today, as an Instructor in the Department of Genetics at the Center for Human Genetics at University Hospitals, Dr. Neilson sees patients with genetic disorders for diagnosis and treatment and performs genetic research on neurodegenerative disorders. Dr. Neilson is a board-certified pediatrician and medical geneticist. He often consults

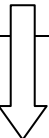
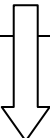


on children with physical or developmental abnormalities, such as mental retardation and birth defects. He is a recipient of a K-08 Mentored Career Development Award through NIH entitled, “Genetic Mechanisms of Acute Necrotizing Encephalopathy.” When asked what makes his career rewarding, Dr. Neilson replied “getting everyone focused in the same direction to work toward a common goal and achieve some resolution.” While very few genetic disorders can be made to go away, they can be managed. The child can have a very good life even with these problems, and the goal is to *maximize* the *potential* of these children.



Marni Falk, M.D., mjf21@case.edu, likes combined training programs! She was part of the Seven-Year B.A./M.D. Accelerated Program at the George Washington University School of Medicine, where she earned her M.D. in 2000. Like Dr. Neilson, she went on to the Five-Year Combined Residency Program in Pediatrics and Medical Genetics at University Hospitals of Cleveland and Case Western Reserve University. She is both a board-certified pediatrician and a medical geneticist. As an Instructor in the Department of Genetics at the Center for Human Genetics at University Hospitals, Dr. Falk sees patients of any age—from the unborn baby to the adult. She is the principal investigator for the K-08 Mentored Career Development Award through

the NIH entitled, “Translational Genomic Study of Mitochondrial Complex I Dysfunction in *C. elegans*.” Through these studies—on worms!—she hopes to help humans with mitochondrial disease. Dr. Falk’s satisfaction derives from her dual role: taking care of patients with genetic problems and furthering what we know via clinically relevant translational basic science research and clinical research.

Clinical Immersion Design Template

All students (128)															
Focus Area A 32 students				Focus Area B 32 Students				Focus Area C 32 students				Focus Area D 32 Students			
A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
<ul style="list-style-type: none"> • 2-4 day menu of activities related to the area(s) of focus • Possible flexibility related to the interests of the student group under the guidance of an advisor • End of each day debriefing with students (8) and advisor • Possible shared components (consistent across focus areas): <ol style="list-style-type: none"> 1) Medical informatics training/project 2) Pathology correlation 3) Teaching development (how to present material at the end of the week, engage colleagues, etc) 4) Senior Med Student linkage (Clerkships) 5) Activities related to longitudinal themes – Ethics, Civic Professionalism, Clinical Mastery 6) Independent study 															
Day 5 – Debriefing in a matrix mixing groups in different focus areas to disseminate knowledge and experience															
 32 students A1-B1-C1-D1 Interactive presentations (Would strongly consider groups of 8-16 to facilitate group process)				 32 students A2-B2-C2-D2 Interactive presentations (Would strongly consider groups of 8-16 to facilitate group process)				 32 students A3-B3-C3-D3 Interactive presentations (Would strongly consider groups of 8-16 to facilitate group process)				 32 students A4-B4-C4-D4 Interactive presentations (Would strongly consider groups of 8-16 to facilitate group process)			

QUICK OVERVIEW OF THE NEW CURRICULUM

Use these *New Curriculum Update Bulletins* to keep informed about the progress of curriculum planning.

Recall that the curriculum vision for the CASE System of Medical Education focuses on **four pillars**: **civic professionalism, leadership, research and scholarship, and clinical mastery**.

The curriculum develops the pillars through **four major components**:

- 1) **Foundations of Medicine and Health**
- 2) **Research and Scholarship**
- 3) **Core Clinical Rotations**
- 4) **Advanced Clinical and Scientific Studies**

CASE System of Medical Education

Year I	Year II	Year III	Year IV
Foundations of Medicine and Health (20 months, including vacation)	Core Clinical Rotations (48 weeks, flexible scheduling)		
	Research and Scholarship (4-month block plus electives, flexible scheduling)		
			Advanced Clinical and Scientific Studies (10 months, flexible scheduling)

Foundations of Medicine and Health

July 2006						March 2008	
Block 1 Becoming a Doctor	Block 2 Building a Human Being	Block 3 Food to Fuel	Block 4 Homeostasis	Block 5 Host Defense and Host Response	Block 6 Cognition, Sensation, and Movement	BOARD REVIEW BLOCK	
(Social-Behavioral Context, Civic Professionalism, Epi/Biostats)	1 Week Clinical Immersion (Endo, Repro, Development, Genetics, Mol Biol, Cancer Biology)	1 Week Clinical Immersion (GI, Nutrition, Energy, Metabolism, Biochemistry)	1 Week Clinical Immersion (CV Pulm, Renal, Cell, Regulation, Pharmacology)	1 Week Clinical Immersion (Host Defense, Microbiology, Blood, Skin, Auto-immune)	1 Week Clinical Immersion (Neuro, Mind Musculoskeletal)		
Reflection & Integration	Reflection & Integration	Reflection & Integration	Reflection & Integration	Reflection & Integration	Reflection & Integration		
Block 7: Structure (Anat., Histo-Path, Radiology)	Block 8: Clinical Mastery	Block 8: Clinical Mastery	Block 8: Clinical Mastery	Block 8: Clinical Mastery	Block 8: Clinical Mastery		
LONGITUDINAL THEMES	LONGITUDINAL THEMES	LONGITUDINAL THEMES	LONGITUDINAL THEMES	LONGITUDINAL THEMES	LONGITUDINAL THEMES		
• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics	• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics	• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics	• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics	• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics	• Civic Professionalism • Leadership • Population Medicine • Bioethics • Research & Scholarship • Epidemiology/Biostatistics		

RESEARCH AND SCHOLARSHIP

Each student will:

- Undertake a mentored experience in research and scholarship
- Have a minimum of 4 months protected time for his/her scholarly project
- Identify a research question, develop an approach to studying the question, prepare a proposal, pursue the project and interpret the observations
- Develop a thesis in the format of a journal manuscript

CORE CLINICAL ROTATIONS

The Core Clinical Rotations encompass three **16-week blocks** of clinical experiences that also incorporate basic science objectives. There are two 16-week blocks of basic core rotations (Basic Core I and Basic Core II) and 16 weeks of advanced core rotations (Advanced Core). Students experience both breadth and depth in clinical care, along with basic

science integration, through clinical experiences that are developmental and provide opportunities to reinforce, build upon, and transfer knowledge and skills.

The new core clinical rotations will begin in July 2006 for current students in the Class of 2008 and will be shared by students in both the University and College programs. In the following year they will begin as early as March of the second year for students in the University program. Each 16-week block will be offered at our three affiliated teaching sites (UH/VA, MetroHealth, CCF). For Basic Core I and Basic Core II, students are based at one site for the 16-week block. The Advanced Core can be taken in modules and shared among teaching sites.

CORE CLINICAL ROTATIONS March 2008-July 2009

BASIC CORE I:
 Family Medicine, Internal Medicine, Surgery
 Basic Science Integration
 (16 weeks at one of 3 teaching sites)

BASIC CORE II:
 Neurosciences, Pediatrics, Psychiatry, Women’s
 Health (OB/GYN)
 Basic Science Integration
 (16 weeks at one of 3 teaching sites)

ADVANCED CORE:
 Undifferentiated Care
 Chronic Care
 Care of the Aging
 Peri-Operative Critical Care and Pain Management
 (Each four weeks, flexible scheduling)

TYPICAL OPTIONS FOR CORE CLINICAL ROTATIONS AND RESEARCH

March 08			July 09
Research 16 weeks (March-July)	Basic Core I or II 16 weeks	Basic Core I or II 16 weeks	Advanced Core 16 weeks Flexible scheduling
Basic Core I or II 16 weeks	Research 16 weeks (July-November)	Basic Core I or II 16 weeks	Advanced Core 16 weeks Flexible scheduling
Basic Core I or II 16 weeks	Basic Core I or II 16 weeks	Research 16 weeks (November-March)	Advanced Core 16 weeks Flexible scheduling

ADVANCED CLINICAL AND SCIENTIFIC STUDIES

- Two Sub Internships
- Areas of Concentration: 12 weeks of linked experiences integrating basic science and clinical experiences and intended to result in an area of expertise
- Further clinical and research electives

EDITOR'S CORNER

My conversation with Dr. Neilson about maximizing potential for children with physical or developmental abnormalities and their capacity to have a very good life inspired me to re-examine my own tendency to give in too frequently to what I perceive as my limitations. Maybe some of you can identify... *Lois Kaye*

Maximizing Potential

How often do we fall back on our perceived limitations
As excuses for not trying to better our own situation?
Our “obstacles” may be inherited, society-driven, or self-imposed,
And we use them to explain why we haven’t reached our goals.

Goals don’t always have to be lofty, realistic, unchanged, or achieved,
But their *pursuit* expands our horizons revealing capabilities beyond what we believed.
We need to listen to our own unique inner goals—“To thine own self be true.”¹
Otherwise, we let someone else decide what we can and cannot do.

Is it lack of ambition or procrastination, lack of time or other obligations?
Is it fear of failure—of not measuring up to the next guy or our own expectations—
That makes us turn away and play it safe, ruling out any pleasant surprise?
Where’s the spirit of adventure we’d be wise to exercise?

If we learn something from every experience, it can’t be a total waste.
Knowledge gained can come in handy in another time and place.
And if we discover we can’t do *one* thing, there’s no point in obsessing.
We can do *other* things, so let’s be grateful for that blessing.

Reaching for the realm of possibility helps us grow—
We become more worldly and meet people we might never get to know.
Even if we don’t achieve what we set out for, under said circumstance,
We gain respect for what it takes and increased empathy for those who take the chance.

How much of success depends solely on our ability innate?
Let’s not underestimate hard work and the role played by fate.
Being in the right place at the right time can open an unexpected door
That leads to exotic places we never thought to explore.

We need to keep creating opportunities, to feel we have a choice.
In determining our future, we have to have a voice.
Faced with current constraints, we can better cope
If prospects loom on the horizon—we’re less apt to mope!

We might begin with “baby steps,” and when enough courage we amass,
Graduate to bigger things if it should come to pass
That we are ready and willing to risk falling on our ... face.
For something we believe in, having tried and lost is no disgrace!



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¹ William Shakespeare, *Hamlet*