

A New Medical Curriculum for the 21st Century

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Summary

- The old Emory curriculum
- Why change?
- The new curriculum overview
- The four parts of the new curriculum
 - Foundations (Human basic health and disease)
 - Applications (basic clinical medicine)
 - Discovery (student research)
 - Translation (further clinical information + back to basics)
- What kind of doctor are we trying to make?

Emory University's 20th Century Curriculum

- A standard American Curriculum
 - The first year:
 - Anatomy, embryology, physiology, biochemistry, cell biology, histology, neurobiology
 - The second year:
 - Pathology, pathophysiology, microbiology, immunology, pharmacology, physical diagnosis

Emory University's 20th Century Curriculum- PROBLEMS

- There were many hours of lecture on most days; some laboratory sessions
- There were many bored and exhausted students many of whom did not go to class
- It was so bad--There was a “transcript team” - a few people who went to class and took notes for the rest of the class!!!

Emory University's 20th Century Curriculum

- The third year: 12 months of clerkships
 - 3 months of internal medicine
 - 2 months of surgery
 - One and a half months of pediatrics
 - One and a half months of obstet gynecol
 - One and a half months of psychiatry
 - One month of neurology
 - One month of family medicine
 - Two weeks Radiology
 - One week dermatology

Emory University's 20th Century Curriculum

- Fourth year (8 months):
- One month internal medicine sub-internship
- One month surgical subspecialty
- One month Emergency Medicine
- 4 months of electives
- One month of vacation (internship interviews)

Is there another way? 1994

- After only 40 or 50 years, someone asked: might there be a better way?
- So they “fiddled around” a bit around the edges
- In 1994, they decided to cut back on some lectures and add some Problem Based Learning:
- First year (M1)- 6 cases for 3 weeks (2 hour sessions)
- Second year (M2)- 8 cases for 2 weeks (2 hour sessions)
- A case presentation was made and there was discussion with a basic science professor and a clinical professor. Students were to ask the questions and find the answers- variable success
- Two new courses: biostatistics and preventive health

Real Progress!!

- In 2004, (only 10 years later?!) Dean Tom Lawley decided the time was right for a new curriculum
- Why?
- Plan to build a \$15 million education building (many teaching rooms; simulation rooms; OSCE rooms)
- Time to try something new and different

Why?

- Explosion of knowledge and new disciplines
 - Molecular biology
 - Nano-medicine
 - Biomedical engineering
 - Informatics- computer science
 - Decision making systems
 - Robotics
 - New imaging technologies

What is the desired “Product”?

- What kind of MDs do we want to produce?
- Characteristics
 - Superb clinicians (as before)
 - Passionate about medicine and making a difference
 - Understand the social, psychologic and economic issues of the society
 - Curious about medicine and creative thinkers
 - Lifelong learners
 - Future leaders of medicine

Guiding Principles- Theory

- Culture Change for the School of Medicine- medical education will be clearly valued and explicitly supported
- More Integration- both horizontal (across disciplines) and vertical (across years)
- Early introduction to clinical medicine
- Flexibility
- Discovery (research) phase for creativity, curiosity

Guiding Principles- Practice

- Reduced lecture time
- Increase use of patient simulators
- Excellent faculty mentoring
- Extended exposure to master clinicians
- Capstone Course at the end- some return to basic science

Guiding Principles-What to Teach

- Competency based curriculum
 - Clinical practice
 - Application of medical knowledge
 - Critical analysis
 - Professionalism
 - Lifelong learning
 - Effective communication
 - Moral reasoning and ethics
 - Personal awareness and wellness

How to Do It--"Society" System

Faculty Involvement

- The Old Legacy System (formerly led by each of four deans)
- Now 1 leader and 3 additional faculty in each society (8-9 students/faculty)
- 30% pay supplied by Dean's Office- directly for teaching!! This is new!!
- Faculty serve as clinical skills & small group teachers
- Long term relationship/advising

Society System- Close Supervision

- There are 4 societies
- Each is led by one major “mentor” responsible for care of 36 students but major care of 9 students
- There are three sub-mentors in each society who care for 9 students each
- Total of 16 mentors who watch over their respective groups for all 4 years but particularly during the Foundation Phase

Mentor + Role Model+ Parent

- These faculty are great influences on the students
- They MENTOR- help them figure out what is important and help them with projects and getting others to help them
- BUT- they also are ROLE MODELS for how doctors work, behave, how they dress, how they take responsibility, etc.
- They keep track of (PARENT) their students, keep them on the right track, discipline them when necessary and give them feedback, and give them support too

Four Educational “Phases”

- Phases that integrate the curriculum and cross departmental lines
- Foundations of Medicine (15 months)
- Application of Medical Science (12 months)
- Discovery Phase (5-10 months) or more
- Translation Phase (8 months)
- We will discuss each of these phases in detail

Educational “Phases”

- Foundations of Medicine (15 months)-
 - core knowledge of basic and clinical sciences
 - Early introduction to patient care->
 - Longitudinal out patient clinic experience
 - Elective time
 - Volunteer experience

(More detail later)

Educational “Phases”

- Applications of Medical Science (12 months)
 - Core knowledge of basic medical specialties
- Discovery Phase- (5-10 months)
 - This is entirely new!!
 - Specific area of enquiry chosen by the student in lab science, clinical research, public health or health policy
 - Generation of new knowledge and to introduce research to all students

Educational “Phases”

- Translation of Medical Sciences (7-8 months)
 - Time to explore more specialized areas of medicine, complete advanced competencies in clinical medicine, and prepare for residency
- Also- Maximize unique resources at Emory-Georgia Institute of Technology, Carter Presidential Center, Centers for Disease Control and Prevention

Overview

Overview of New Curriculum

Year 1



Year 2



Year 3



Year 4



Foundations: Competencies

Medical Knowledge

Problem Solving

Professionalism

Clinical Skills

Self Development

Communication

Interpersonal skills

Back to Foundations: Educational Theory

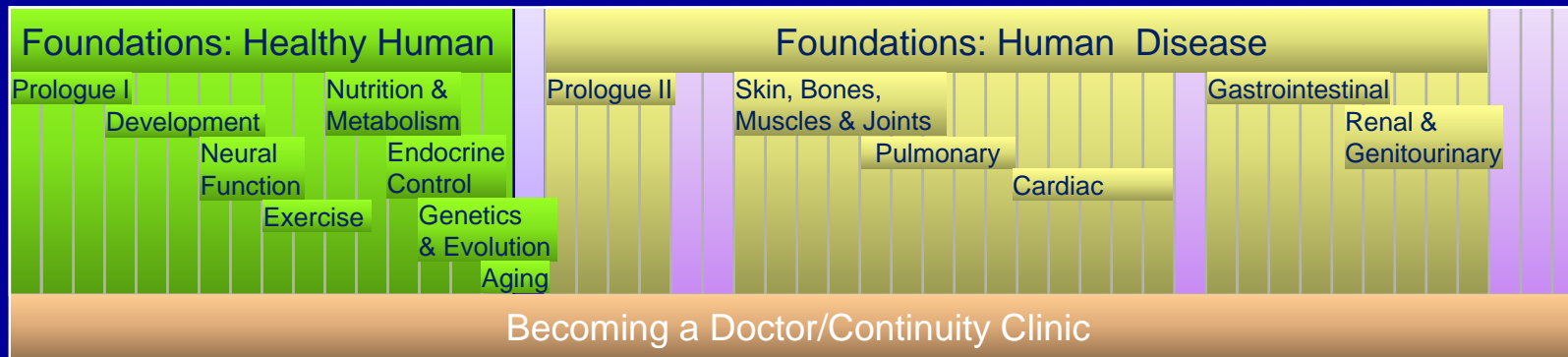
- Teach key concepts without unnecessary detail and avoid duplication!! -(try to avoid “burnout”)
- New modes of teaching (PBL, simulations, standardized patients) keep students interested and curious
- Have clinicians and basic scientists work together to form the curriculum and teach
- Decrease time to 18 months (rather than 24) and decrease lecture time- < 2hours a day
- More faculty interaction

Changing Principles- Different "Angle of Attack"

- Foundations of Medicine Phase
 - THIS WILL BE THE OPPOSITE OF PREVIOUS EMORY AND MOST CURRICULA!!
 - Begin with the study of the whole living human and the society and environment where they live
 - Next: integrated analysis of organs, biologic systems and the study of cells
 - Sub-cellular anatomy and physiology

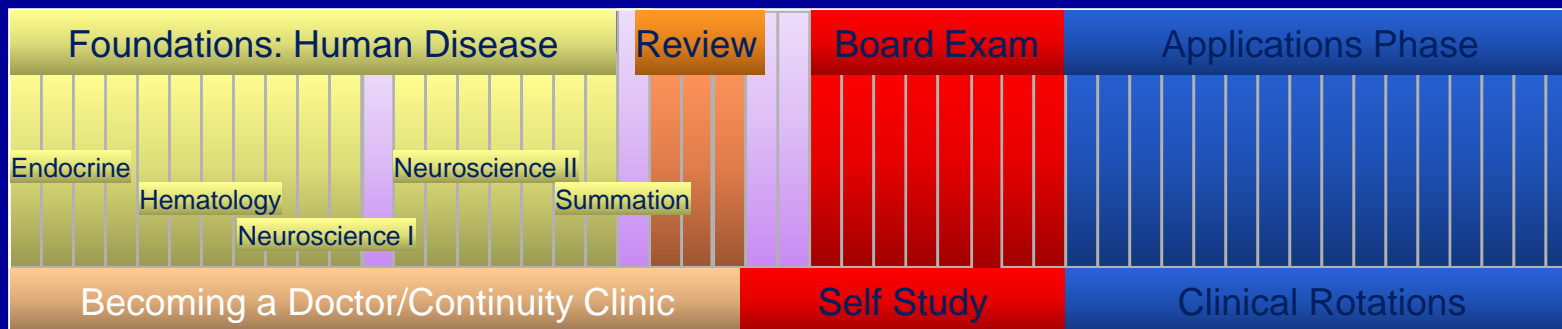
FOUNDATIONS OF MEDICINE CURRICULUM

Year 1



Year 2

Designates Vacation Time



Foundations: Healthy Human

- Begin with some cases as “Hooks”
- Healthy Human- biosphere, population health, social medicine (School of Public Health, Centers for Disease Control)
- Cognition and behavior
- Homeostasis
- Organ structure and function
- Tissue studies
- Cellular and molecular biology
- Evolutionary biology---> leading back to Biosphere!!

Foundations: Healthy Human

- Other pieces of the puzzle
- Human anatomy
 - Anatomical dissection remains
 - BUT-
 - Anatomical models
 - Major use of imaging
 - Xrays/ CT/ MRI

Foundations: Healthy Human

Prologue I: 3 weeks

- Week 1: Orientation
- Week 2: Week on the Inpatient service (HOOK!)
- Week 3: next slide---->

Prologue- Week 3

Monday	Tuesday	Wednesday	Thursday	Friday
Determinants of health	Threats to health	Becoming a patient	Becoming a doctor	Balance
Patient presentation	Global threats to health:	HIV epidemic	Cultural context: the healer	Homeostasis
Definition of health and disease	Poverty, environment Violence, disease	Becoming a patient: pt interview	Social contract with society	Reflective writing about culture and
The determinants of health	Small Group Dr/Pt; Dr in society;	OSCE suite Physical exam; hand	OSCE suite Physical exam:	Maintenance of personal health
	HPI with group leader and standard pt	Washing; inspection; vital signs ENT	same	Small group Discussion reflective writing

Foundations: Healthy Human

The Healthy Human: 13 weeks

- Embryology Tissues Cells (ETC): Weeks 4-6
- Neural Function: Weeks 7-9
- Exercise: Weeks 10-11
- Nutrition: Weeks 12-13
- Endocrine Control: Week 14
- Genetics and Evolution: Weeks 15-16
- Aging and Death: Week 17

Embryology Tissues Cells [ETC] (wk 1 of 3)

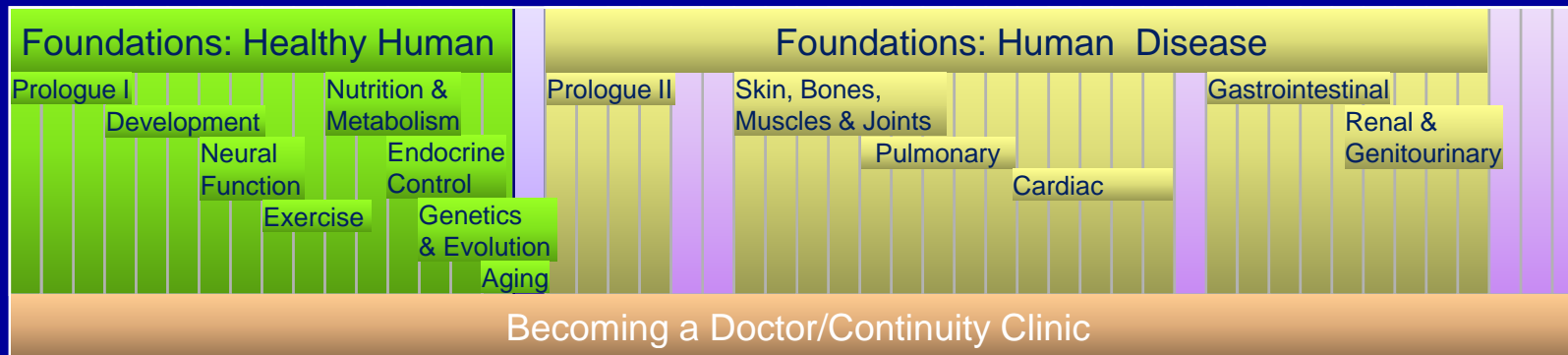
<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
Case Presentation: Skin as Study of epithelia	Epithelia		Basic Cell 1: Basic Organization	
	Epithelia Lab and Basic Intro. To Skin	Embryology: Mechanisms of Birth Defects	Basic Cell 2: Membrane Structure/Function	Review Session
Ectoderm		Basic Cell 3: Exocytic Route, Mitochondria		
Endoderm		Basic Cell 4: Endocytic Route, Peroxisomes		
Basic Mechanisms of Differentiation				
Morphogenesis and Cell Interactions				
	1-2:45pm <u>SG</u> <u>Discussion</u> : Read/watch and discuss pt's experience of illness, autonomy	1-2:45 pm OSCE Suite-O&S <u>Societies Physical</u> <u>Exam</u> : Skin, Cardiac and Lung (basic) incl draping	1-2:45 pm OSCE Suite-H&L Societies <u>Physical Exam</u> : Skin, Cardiac and Lung (basic) incl draping	Quiz / Test

Foundations: Healthy Human

- Mini clerkship
- Three week experience in physical diagnosis and clinical exposure

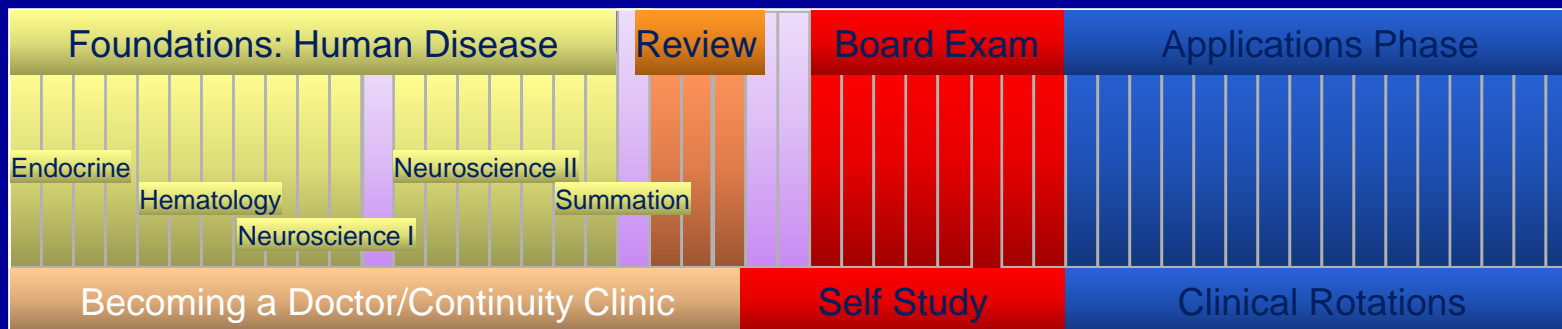
FOUNDATIONS OF MEDICINE CURRICULUM

Year 1



Year 2

Designates Vacation Time



Foundations: Human Disease Abnormal and Normal

- Prologue II: Basic Pathology, Microbiology, Pharmacology
- Skin, Muscle, Bones, Joints: 4 wks
- Pulmonary: 5 wks
- Cardiovascular: 5 wks
- Gastrointestinal: 4.5 wks
- Renal/GU: 4.5 wks
- Endocrine/Reproduction: 4 wks
- Hematology: 3 wks
- Neurosciences: 9 wks
- Summation: 2 wks
- Review: 4 wks

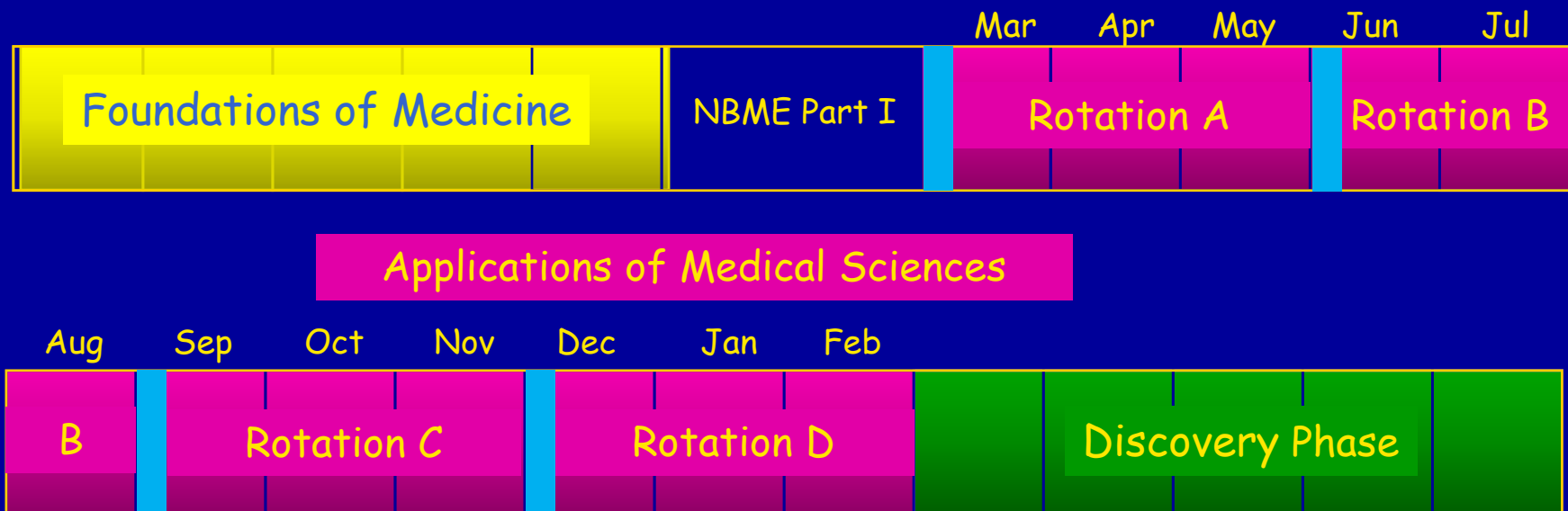
Phase II: Pulmonary module

			Pulmonary: Week ONE		
	MONDAY 2/4	TUESDAY 2/5	WEDNESDAY 2/6	THURSDAY 2/7	FRIDAY 2/8
8-9	Case: Cystic Fibrosis	Anatomy: Clinical Thorax	OPEN	OPEN	Pathology: Pneumonia
9-10	Genetics of Cystic Fibrosis	Anatomy Lab 6 - Thorax	Structural Basis Resp Function	Cilia / Lab Overview	CO and other problems
10-11	Infections in Cystic Fibrosis		Common Pulmonary Pathogens 1	Cell Biology and Histology: Laboratory	Soc Small Groups: AW clear, infxn, bronch
11-12	Organization of the Thorax		Common Pulmonary Pathogens 2		
PM					
1-2		Pulmonary H&P	Clinic (Lister and Harvey)	Clinic (Osler and Semmelweis)	Radiology of the Thorax
2-5					Anatomy Lab 6 - Thorax

Foundations: Human Disease

- Elective time (summer of first year)
 - Can be in many areas: basic science, public health, ethics, administration
 - Meant to help identify an area of study for Discovery Phase
- Medical Service Project: work with underserved populations- Atlanta, rural Georgia, other countries
- Capstone session- comprehensive review of the 15 months of Foundation!

Application Phase



Introductory week for each rotation

Application Phase

- Clinical Blocks interspersed with a week of preparation (knowledge and skills)
- Increase in Out-Patient experience
- Ongoing mentoring by Society Advisor
- Working in of foundation sciences as possible
- Continue emphasis on responsibility to the patient
- Complete these rotations before career decisions must be made!
- More elective time to figure out choices of career

Application Phase

- One week of initial orientation overall
 - Legal issues (privacy, notes)
 - Working with a ward team
 - Presentations
 - Information system use
 - One day comprehensive OSCE - identify students who need additional help and if there are sites that need to do a better job of teaching these skills

Application Phase

- Rotations
 - Internal Medicine
 - Surgery
 - Pediatrics
 - Obstetrics/Gynecology
 - Neurology/Psychiatry

Application Phase

- One week introduction to core skills of rotation
- Also discussion of basic science that is applicable
 - Examples- surgical techniques
 - psychiatric interviewing skills
 - Physical exam skills
 - Pathophysiology
- Core reading assignments
 - Clinical readings
 - Basic science readings

Application Phase

- Faculty Development Will be Critical !!
 - Teaching faculty will have to be compensated for these activities
 - Teaching faculty will have to be promoted for their teaching activities if we are to have at least some senior faculty do the teaching
 - Importance of faculty mentoring!!

Discovery Phase

- Foundation for understanding and appreciating basic science, clinical and population research
- Demonstrate what research can do to improve the health of patients and the public at large
- Develop a respect for critical necessity of continued discovery
- Identify students who are interested in research as a career

Discovery Phase

- 5-9 months
- Mentored and involves discovery/creativity
- An end-product (abstract, paper, or just “published” at Emory) approved by the mentor
- Can add a tuition free year
- Flexibility in timing
 - Delay until after clinical electives
 - After the MPH or MS year

Discovery Phase

- Student is not a passive observer!
- At end, student will prepare a report
- All reports will be published in the Emory Student Journal of Medicine
 - (will probably be electronic for low expense)
- Students can use other elective time and summers to do more research and make more progress

Discovery Phase

- Students can use this research for
 - MD/PhD
 - MD/MPH
 - MD/MS
 - MD/MBA
 - Perhaps even MD/JD or MD/DTheology

Translation Phase

- 3 Electives
- 2 Months for Interviewing/Vacation/Electives
- 4 Required Courses
- Senior Clerkship (sub-internship) in Medicine, Pediatrics, OB/GYN or Surgery
- Intensive Care Clerkship (Medical, Surgical, Pediatric, Neurologic.....)
- Emergency Medicine Clerkship
- Weekly continuity clinic again
- Capstone Course

Translation Phase

- Capstone Course (uncertain content)
- 1) Difficult Doctor/Patient interactions
- 2) Doctor/Doctor and Doctor/nurse/Physical therapist/Occupational Therapist/Social Worker communication/teamwork
- 3) Medico-legal issues
- 4) Safety
- 5) Ethics
- 6) Basic Intern skills (geared to specialty)
- 7) Review of new science since beginning Medical School

Conclusion

- Emory's new curriculum will develop physicians who:
- Are professionals
- Are superb clinicians and can apply medical knowledge
- Can develop new knowledge
- Can critically analyze new information
- Can effectively communicate
- Are personally aware
- Are lifelong learners
- Have good moral reasoning and ethics

Thanks

- J. William Eley MD Executive Associate Dean for Students
- Jonas Shulman MD consultant and previous Senior Executive Associate Dean for Students

Questions?