W. Oscar and Daisy W. Hylton Science and Premedical Endowment

Sponsors three important activities at Roanoke College:

- Presentations on science and medicine
- Pre-medical program
- Undergraduate research in the sciences
Hylton Lecture

- Changing face of Medical/Healthcare Education
- Career Opportunities
- Why Healthcare, Workforce Demands
- Road Map to Admission
- Debt Planning, Affordability
- Why VTCSOM
- Interprofessionalism
- Why Physician
Changing Face of Medical Education

- Need for more MDs
- Need for more Health Professionals
- More opportunity for direct clinical work at all levels/fields
- Team valued more than ever
- Concept of Leadership/Followership
- Interprofessionalism
Changing Face of Medical Education cont.

- Need for more Rural/Family Medicine
- Rural areas account for 20% nation’s population but only 9% MDs
- Research/PhD’s More Relevant than ever
- By 2020 US will be short 45,000 primary care physicians
- Graduating medical students do not want to enter primary care: salary, time, debt, prestige, work hours, life style
Changing Face of Medical Education: The Future

- Changing salaries
- Changing debt
- Changing length of training/school
- Specialists vs. Generalists
- Proceduralists vs. Physicians
- Scope of Practice, Turf Battles
- Art of Medicine vs. Logarithms and Protocols
- Medicine vs. Healthcare
- White Jacket vs. White Jacket vs. Name Tag

“Increase total enrollment in U.S. medical schools by 15% from their 2002 levels over the next decade.”
Shortfall of Healthcare Workers Predicted by 2025

- Physicians - 124,000
- Nurses - 500,000
- Public Health Workers - 250,000
The Country Doctor Is In

A day in the life of a vanishing breed—the small-town American physician.

Imagine this: You are a young doctor who has recently graduated from medical school. An excellent student, you could choose to practice almost anywhere—including Atlanta, where your advising professor has connections. Instead, you set up shop in a small southern town, much like the one you grew up in. It’s the kind of place where the neighbors all know each other, where families have lived for generations and still attend...
• In the 1970's the average hospitalized patient interacted with 2.1 healthcare professionals. Today it is an average of 16.

• There are over 46 distinct healthcare professional roles
  » Gawande, TED talk 2012
Health Professions

- ALL Important
- Medicine is a team sport!
Jefferson College of Health Sciences
Associate of Applied Science

- Occupational Therapy Assistant
- Physical Therapist Assistant

Certificate

- Medical Laboratory Science
Bachelor of Science

- Biomedical Sci
- Emergency Serv
- Hlth & Exercise Sci
- Health Sciences
- Healthcare Man
- Health Psych
- Nursing
- Respiratory Thrpy
Master of Science

• Nursing
• Occupational Therapy
• Physician Assistant (various specialties)
The average full-time Virginia wage* of JCHS graduates for the 5 year period 2005-2012 was $56,400, the highest posted average full-time wage of all public/private-nonproprietary colleges in Virginia for which data were available.
Healthcare Professions

- A college graduate, average starting salary within 18 months = $33,100 (2012, schev)
- Highest in Engineering, IT, and Healthcare
- Lowest in Performing and Visual Arts
- Pediatrician avg. = $132,660
- Family Physician avg. = $147,983
- Internal Medicine avg. = $154,863
- Emergency Medicine avg. = $194,831
- General Surgery avg. = $231,184
- Psychiatry avg. = $177,312
- Registered Nurse avg. = $55,239
- Physician Assistant avg. = $86,303
Hylton Lecture: Roadmap To Graduate/Medical School
Issues to Consider for College

• How do you prepare for medical school?
• What major should you choose?
• How do you get accepted?
• How much will it cost?
What major should I select?
Choosing a College Major

• No specific major is required for Med School, so pick one that interests you!
• Investigate your personal interests and aptitudes and match with a major/minor to improve your likelihood of success.
• Shadow medical professionals to get a true sense of their daily routines.
Undergraduate Pre-Med Courses

• **Typically Required:**
  – General Biology with Lab: 2 semesters
  – General Inorganic Chemistry with Lab: 2 semesters
  – Organic Chemistry with Lab: 2 semesters
  – Physics with Lab: 2 semesters
  – Mathematics: 2 semesters or 1 each of Calculus and Statistics
  – English: 2 semesters or 1 semester each English & Philosophy

• **Recommended Courses:**
  + Cell Biology  + Biochemistry  + Psychology
  + Physiology  + Genetics  + Sociology
Freshman Year

• Meet with Pre-Med Advisor early
• Join the Pre-Med Club on campus
• Map out your pre-requisite courses
• Attend Graduate School fairs
• Get involved with extracurricular and medical volunteer programs
• Talk with upperclassmen
Freshman Year Suggestions

• Scope out your pre-requisites
  -- Start your Chemistry & Biology sequences

• Get off to a good start!
  -- First semester – don’t overload! Take something fun to help transition to college life

• Keep your driving record clean!

• Watch what you post on Facebook!
What Most Med Schools Consider

• **Medical Motivation**
  -- Hospital Volunteer, Physician Shadowing, EMT

• **Campus/Community Involvement**
  -- Habitat for Humanity, Cancer Walks, Tutoring, etc.

• **Research**
  -- Lab Work, Independent Research or Publications

• **Leadership & Teamwork**
  -- Fraternities/Sororities, Clubs, Sports, Arts
Summer Breaks: “Choose Wisely”

• Medical Volunteering to Underserved Populations
  -- Inner City Clinics / Rural Populations
  -- Overseas: Central America or Africa

• Research Projects

• If you need to work to help support college expenses,
  -- Look for local medical volunteer opportunities
How do I afford medical school?

- Military Service Scholarships?
- Savings?
- Job?
- Scholarships?
- Private Loans?
- Family?

http://www.aamc.org/first

Financial Information, Resources, Services, & Tools.
Sources of Financial Assistance

• Most 4-year programs will cost $200,000+ !!
• Avg: $42,000/year, COA: $64,000/year
• Merit Scholarship Programs
• Government Service Grants
  – Military Health Professions Scholarship Program
  – National Health Service Corps Scholarship
• Outside Scholarships
  – National Medical Fellowships Program
  – Other Potential Aid Sources
• Federal Student Loans
By the Numbers ...

- 3.6 GPA National Average
- 30.2 MCAT (Allopathic Schools)

Keep Your Grades UP!
Virginia Medical Schools

• Virginia Tech Carilion School of Medicine
  – Private/Public
  – GPA 3.47 - MCAT 33
    • 42 seats, 2873 AMCAS applications, accept 1.46%
• Virginia Commonwealth University (Public)
  GPA 3.5   MCAT 28.80   Accepts 11%
• Eastern Virginia Medical School (Private)
  GPA 3.5   MCAT 29.30   Accepts 13%
• University of Virginia (Public)
  GPA 3.74   MCAT 32.23   Accepts 3.5%
• Edward Via Virginia College of Osteopathic Medicine (Private)
  GPA 3.5   MCAT 24.0   Accepts 15%
Becoming an MD

- Secondary Education
- University 4 Years
- Medical School 4 Years
- Residency Training 3 – 7 Years
- Fellowship Training 1 – 3 Years
  - New Funnel Effect: Harder to obtain Internships and Residencies
Medical School + Residency

M1 Year M2 Year M3 Year M4 Year R1 Year R2 Year R3 Year R4 Year R5 Year R6 Year R7 Year R8 Year

- Emergency Medicine
- Family Medicine
- Internal Medicine
- Preventive Medicine
- Pediatrics
- Nuclear Medicine
- Anesthesiology
- Dermatology
- Neurology
- Obstetrics and Gynecology
- Ophthalmology
- Pathology
- Psychiatry
- General Surgery
- Orthopaedic Surgery
- Radiology
- Urology
- Thoracic Surgery
ABMS Member Boards

- Allergy and Immunology
- Anesthesiology
- Colon & Rectal Surgery
- Dermatology
- Emergency Medicine
- **Family Medicine**
- **Internal Medicine**
- Medical Genetics
- Neurological Surgery
- Nuclear Medicine
- Obstetrics & Gynecology
- Ophthalmology
- Orthopaedic Surgery
- Otolaryngology
- Pathology
- Pediatrics
- Physical Medicine & Rehabilitation
- Plastic Surgery
- Preventive Medicine
- Psychiatry & Neurology
- Radiology
- Surgery
- Thoracic Surgery
- Urology

And 94 Sub-specialties!
Testing ... 1...2...3 (Oh No!)

- Maintenance of Certification
- Keep your license up-to-date
- Do Continuing Medical Education
- Written test
- Practice performance
Why in the world would you want to be a doctor?

The VTCSOM Model
A New Approach to Learning
Millennials (Generation Y) - 1981-2000 (80 million)

- Team players—collaborative
- Techno-savvy
- Socially Conscious
- Optimistic/Self-confident
- Outcomes, not process, oriented
- Prefer experiential, “hands-on” learning
- Trust networks more than institutions
- Comfortable speaking out to superiors
- Open sharing of information
- Expect frequent feedback
Millennials and Education

These students tend to respond best to:

- Active learning, debates, role playing, using technology
- Connections to real world and benefits for the students themselves
- Individuality and flexibility; these students react poorly to “one-size all” teaching assignments
- Frequent feedback; students respond better to weekly quizzes

Elam and Borges: Millennials in Medicine
• 1970’s

• Today
Gross Anatomy

- Cadavers
- Now
The VTCSOM Model

The Virginia Tech Carilion School of Medicine is an equal opportunity/affirmative action institution and is certified by SCHEV to operate in Virginia
Response

- 141 Schools
- Expansion of class size by almost all
- Expansion of campus sites
- 22 New and Developing Schools
- The VTCSOM Model
The Mission

To develop physician *thought leaders* through:

- Inquiry
- Research
- Discovery

Virginia Tech: *Invent the Future*
Mission of VTCSOM

• To develop physician thought leaders through inquiry, research and discovery, using an innovative curriculum based upon adult learning methods in a patient-centered context. Our graduates will be physicians with outstanding clinical skills and significantly enhanced research capabilities who will remain life-long learners. They will have an understanding of the importance of interprofessionalism to enable them to more effectively function as part of a modern healthcare team.
VTCSOM as a Standout

- Small class size - forever
- PBL education format
- Team
- Life Long Learning
- Clinical and Faculty Resources
- Outstanding community and environment
- International In a Meaningful Way
- Service Learning In a Meaningful Way
- Research
- Interprofessionalism
Interprofessionalism Domain
Definition of Interprofessionalism*

- Interprofessional education: “When students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” (WHO, 2012)

Core Competencies for Interprofessional Collaborative Practice

Sponsored by the Interprofessional Education Collaborative*

Report of an Expert Panel
May 2011
Interprofessional Domain

- VTCSOM Block System and Domain System
- Interprofessional Leadership (IPL): **Blocks 1-4**
- IP Experience and Assessment of Interprofessional Health Care Teams: **Block 5**
- IP Ethical and Legal Issues in Practice: **Block 6**
- IP Narrative Medicine: **Block 7**
- IP Hot Topics: **Block 8**
- Clinical Clerkships: **Years 3 and 4**
Service Learning Fair
Service Learning Projects

1. Coalition for Refugee Resettlement
2. Ronald McDonald House
3. Easter Seals
4. Adult Care Center
5. Taubman Art Museum
6. Grandin Theater
7. Community Youth Program
8. Roanoke Rescue Mission
9. Bethany Hall
10. SE Rural Community Assistance
11. Community Gardens
12. MajestaCare – Medicaid-Peds
13. CHIP
14. Bradley Free Clinic
Technology

• Simulation
• Electronic Health Record
• Imaging
• Harvey
• Anatomy Table
The Curriculum

- **Approach**
  - Patient centered curriculum
  - Problem Based Learning

- **Value Domains**
  - Basic science
  - Clinical sciences and skills
  - Interprofessionalism
  - Research
Clinical Science
Creativity in Health Education Program

Photo courtesy of Gene Marrano

Virginia Tech Carilion
School of Medicine and Research Institute
Promoting Diversity

*Ethnic and racial minorities*
*Women in STEM*
*Distance traveled*

**Diversity Initiative**

Within Reach

Community and Diversity Board
“As the founding executive director of the Virginia Tech Carilion Research Institute, I am thrilled to join the VTC enterprise.

It is the single most exciting venture among new medical research and education enterprises at this time in the history of biomedical science with unparalleled opportunities for accomplished and aspiring physicians and scientists.”

Dr. Michael Friedlander, Ph.D.
Executive Director, VTCRI
Senior Dean for Research, VTCSOM
Student Research Projects

- Reactive attachment disorder in foster children
- Critical access hospitals – outcomes and costs
- Use of emergency room
- Ultrasound testing
- Resistance training in pre-diabetics
- Chitin-binding protein in the eye
- Breast cancer phenotypes
- Pig heart attack study
- Hospital evacuation and emergency management
- Chorioamnionitis in post partum women
- Compliance in children with sickle cell disease
The Right Students

• Capability for success in medical school
• Good fit for VTC mission
  – Research, thought-leadership
• Teamwork/ethics
• Communication skills/professionalism
DOCTORS INC.  
**Teamwork Wanted**

Doctors save lives, but they can sometimes be insufferable know-it-alls who bully nurses and do not listen to patients. Medical schools have traditionally done little to screen out such flawed applicants or to train them to behave better, but that is changing.

At Virginia Tech Carilion, the nation’s newest medical school, administrators decided against relying solely on grades, test scores and hours-long interviews to determine who got in. Instead, the school invited candidates to the admissions equivalent of speed-dating: nine brief interviews that forced candidates to show they had the social skills to navigate a health care system in which good communication has become critical.

The new process has enormous consequences not only for the lives of the applicants but, its backers hope, also for the entire health care system. It is called the multiple mini interview, or M.M.I., and its use is spreading. At least eight medical schools in the United States — including those at Stanford, the University of California, Los Angeles, and the University of Cincinnati — and 13 in Canada are using it.

At Virginia Tech Carilion, 26 candidates showed up on a Saturday in March and stood with their backs to the doors of 26 small rooms. When a bell sounded, the applicants spun around and read a sheet of paper taped to the door that described an ethical conundrum. Two minutes later, the bell sounded again and the applicants charged into the small rooms and found an interviewer waiting. A chorus of cheerful greetings rang out, and the doors shut. The candidates had eight minutes to discuss that room’s situation. Then they moved to the next room, the next surprise conundrum and the next interviewer, who scored each applicant with a number and sometimes a brief note.

**Continued on Page A12**

By GARDINER HARRIS
ROANOKE, Va. — Doctors save lives, but they can sometimes be insufferable know-it-alls who bully nurses and do not listen to patients. Medical schools have traditionally done little to screen out such flawed applicants or to train them to behave better, but that is changing.

At Virginia Tech Carilion, the nation’s newest medical school, administrators decided against relying solely on grades, test scores and hours-long interviews to determine who got in. Instead, the school invited candidates to the admissions equivalent of speed-dating: nine brief interviews that forced candidates to show they had the social skills to navigate a health care system in which good communication has become critical.

The new process has enormous consequences not only for the lives of the applicants but, its backers hope, also for the entire health care system. It is called the multiple mini interview, or M.M.I., and its use is spreading. At least eight medical schools in the United States — including those at Stanford, the University of California, Los Angeles, and the University of Cincinnati — and 13 in Canada are using it.

At Virginia Tech Carilion, 26 candidates showed up on a Saturday in March and stood with their backs to the doors of 26 small rooms. When a bell sounded, the applicants spun around and read a sheet of paper taped to the door that described an ethical conundrum. Two minutes later, the bell sounded again and the applicants charged into the small rooms and found an interviewer waiting. A chorus of cheerful greetings rang out, and the doors shut. The candidates had eight minutes to discuss that room’s situation. Then they moved to the next room, the next surprise conundrum and the next interviewer, who scored each applicant with a number and sometimes a brief note.

**Continued on Page A12**

By GARDINER HARRIS
ROANOKE, Va. — Doctors save lives, but they can sometimes be insufferable know-it-alls who bully nurses and do not listen to patients. Medical schools have traditionally done little to screen out such flawed applicants or to train them to behave better, but that is changing.

At Virginia Tech Carilion, the nation’s newest medical school, administrators decided against relying solely on grades, test scores and hours-long interviews to determine who got in. Instead, the school invited candidates to the admissions equivalent of speed-dating: nine brief interviews that forced candidates to show they had the social skills to navigate a health care system in which good communication has become critical.

The new process has enormous consequences not only for the lives of the applicants but, its backers hope, also for the entire health care system. It is called the multiple mini interview, or M.M.I., and its use is spreading. At least eight medical schools in the United States — including those at Stanford, the University of California, Los Angeles, and the University of Cincinnati — and 13 in Canada are using it.

At Virginia Tech Carilion, 26 candidates showed up on a Saturday in March and stood with their backs to the doors of 26 small rooms. When a bell sounded, the applicants spun around and read a sheet of paper taped to the door that described an ethical conundrum. Two minutes later, the bell sounded again and the applicants charged into the small rooms and found an interviewer waiting. A chorus of cheerful greetings rang out, and the doors shut. The candidates had eight minutes to discuss that room’s situation. Then they moved to the next room, the next surprise conundrum and the next interviewer, who scored each applicant with a number and sometimes a brief note.

**Continued on Page A12**

By GARDINER HARRIS
ROANOKE, Va. — Doctors save lives, but they can sometimes be insufferable know-it-alls who bully nurses and do not listen to patients. Medical schools have traditionally done little to screen out such flawed applicants or to train them to behave better, but that is changing.

At Virginia Tech Carilion, the nation’s newest medical school, administrators decided against relying solely on grades, test scores and hours-long interviews to determine who got in. Instead, the school invited candidates to the admissions equivalent of speed-dating: nine brief interviews that forced candidates to show they had the social skills to navigate a health care system in which good communication has become critical.

The new process has enormous consequences not only for the lives of the applicants but, its backers hope, also for the entire health care system. It is called the multiple mini interview, or M.M.I., and its use is spreading. At least eight medical schools in the United States — including those at Stanford, the University of California, Los Angeles, and the University of Cincinnati — and 13 in Canada are using it.

At Virginia Tech Carilion, 26 candidates showed up on a Saturday in March and stood with their backs to the doors of 26 small rooms. When a bell sounded, the applicants spun around and read a sheet of paper taped to the door that described an ethical conundrum. Two minutes later, the bell sounded again and the applicants charged into the small rooms and found an interviewer waiting. A chorus of cheerful greetings rang out, and the doors shut. The candidates had eight minutes to discuss that room’s situation. Then they moved to the next room, the next surprise conundrum and the next interviewer, who scored each applicant with a number and sometimes a brief note.

**Continued on Page A12**
<table>
<thead>
<tr>
<th>Application Year</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMCAS Applications</td>
<td>1,654</td>
<td>2,743</td>
<td>3,253</td>
</tr>
<tr>
<td>Applications Interviewed</td>
<td>218</td>
<td>239</td>
<td>232</td>
</tr>
<tr>
<td>Matriculants</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>MCAT Scores - Range</td>
<td>30-42</td>
<td>30-40</td>
<td>29-40</td>
</tr>
<tr>
<td>MCAT Scores - Average</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>GPAs - Average</td>
<td>3.5</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>Virginia Residents</td>
<td>13</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>No. with Grad Degrees/Post-Bacs</td>
<td>8/5</td>
<td>8/1</td>
<td>14/2</td>
</tr>
<tr>
<td>No. with Some/Exceptional Research</td>
<td>29/7</td>
<td>27/8</td>
<td>24/13</td>
</tr>
<tr>
<td>Undergraduate Institutions</td>
<td>34</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>Men / Women</td>
<td>30/12</td>
<td>25/17</td>
<td>25/17</td>
</tr>
</tbody>
</table>
VTC will stand out among medical schools for its focus on Interprofessional (multiple medical disciplines training together, forming respect for one another as members of a team), Leadership, Team and Service Learning education.
Resources

• Association of American Medical Colleges - AAMC
  -- https://www.aamc.org/
• AAMC Facts
  -- https://www.aamc.org/data/facts
• Medical College Admissions Test – MCAT
  -- https://www.aamc.org/students/applying/mcat/
• Medical School Admission Requirements - MSAR
  -- https://www.aamc.org/students/applying/requirements/msar/
VTC Admissions Contacts

2 Riverside Circle, Suite M140
Roanoke, VA 24016
(540) 526-2560/2510

Website Link:
http://www.vtc.vt.edu
VTCAAdmissions2013@carilionclinic.org

The Virginia Tech Carilion School of Medicine
is an equal opportunity/affirmative action institution
and is certified by SCHEV to operate in Virginia
Thank you for coming!