

2016 NCOA ANNUAL MEETING

SATURDAY GENERAL SESSION

NORTH CAROLINA ORTHOPAEDIC ASSOCIATION
October 7-9, 2016 | The Pinehurst Resort, Village of Pinehurst, NC

*This continuing medical education activity is jointly provided by the North Carolina Orthopaedic Association
and the Southern Regional Area Health Education Center.*

What keeps your Academy leaders up at night?



**North Carolina Orthopaedic
Society, October 8, 2016**

AAOS
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ORTHOPAEDIC SURGEONS

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Disclosures

- **AAOS Board of Directors**
- **2nd VP – AAOS**
- **Consultant (no stipend)**
 - Center for Medicare & Medicaid Services
 - BlueCross/BlueShield VT & MN
 - Green Mountain Care Board
 - OneCare VT



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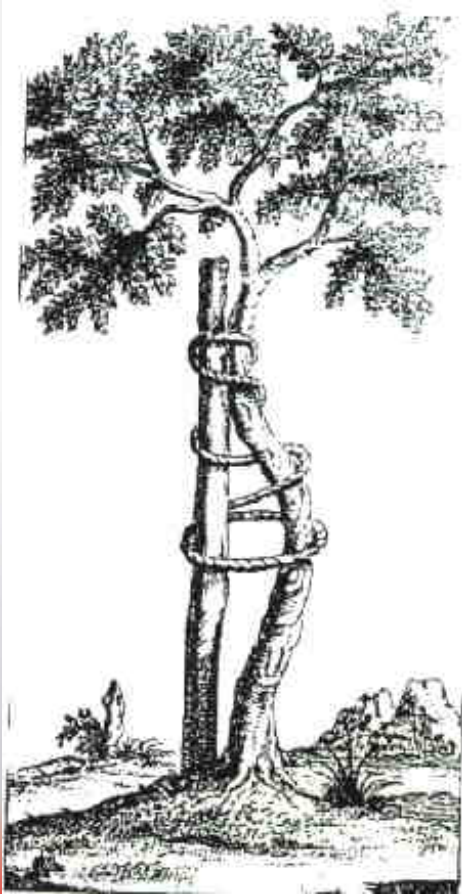
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Educational objectives

- Overview of the AAOS organization
- Insight into the challenges facing the AAOS & the Board's responses

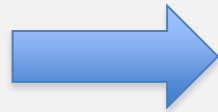
“Pop Quiz”



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“THE ACADEMY”



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AAOS Membership

American Academy of Orthopaedic Surgeons

- Founded in 1933
- Preeminent provider of MSK education in the world.
- Continuing Medical Education (CME)
 - Annual Meeting
 - CME courses held around the country and at the Orthopaedic Learning Center
 - Various medical and scientific publications and electronic media materials

American Association of Orthopaedic Surgeons

- Founded by the Academy Board of Directors in 1997.
- Engages in health policy and advocacy activities on behalf of MSK patients, physicians and the profession.

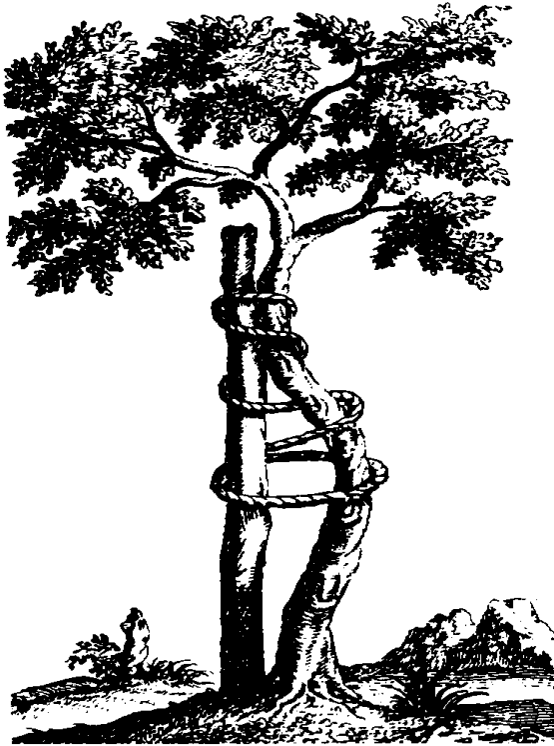
AAOS & AAOS

Parallel Orthopaedic Organizations

- American **Association** of Orthopaedic Surgeons
 - ◆ 501 (c) (6)
- American **Academy** of Orthopaedic Surgeons
 - ◆ 501 (c) (3)



AAOS Mission



Serving our profession to provide the highest quality musculoskeletal care.

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AAOS Vision

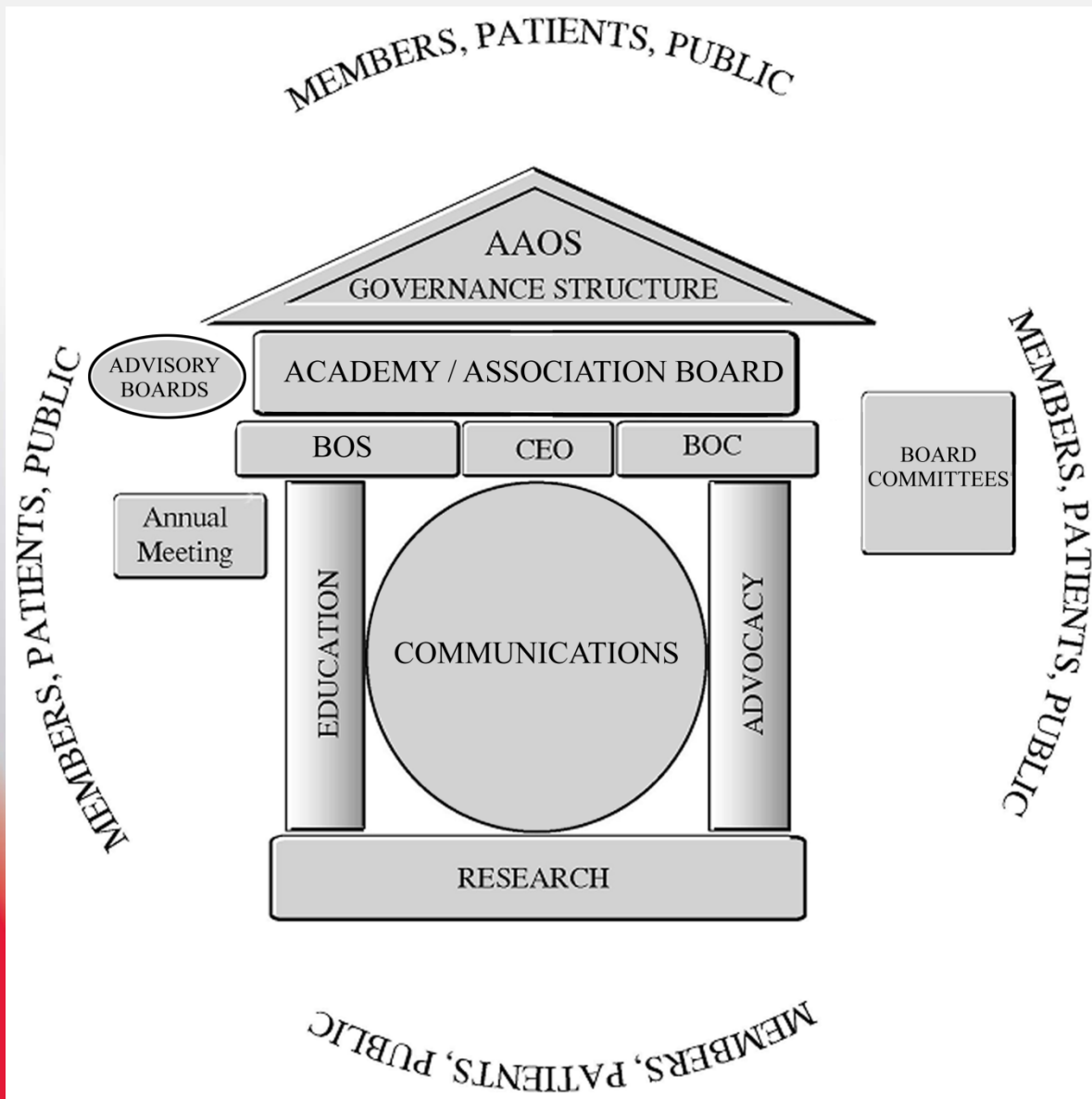
Keeping the world in motion through the prevention and treatment of musculoskeletal conditions.



AAOS is your Medical Professional Organization

- Board of Directors (BOD)
- **Board of Councilors (BOC)**
- **Board of Specialty Societies (BOS)**
- Diversity Advisory Board (DAB)
- Woman's Health Issues Advisory Board (WHIAB)
- **Resident Assembly**





AAOS Governance Structure

Board of Councilors

- Represents the views of the AAOS fellowship through state and regional representation
- Advocates positions that support orthopaedic physicians and their patients
- Promotes effective and efficient communications within the orthopaedic community
- Serves as an advisory body and resource to the AAOS Board of Directors

BOC = “House”

- Representatives from:
 - Every state orthopaedic society,
 - DC and US Territories
 - Canadian Orthopaedic Association
 - U.S. Military: Air Force, Army, Navy
 - Regional societies: 4 societies
- Members elected by their respective society
 - Term = 3 years
 - Eligible for 2 terms

Board of Specialty Societies

- Facilitate communications between and among BOS societies and the AAOS
- Advise the AAOS Board of Directors on concerns/agendas/ideas of BOS societies
- Foster unity and collaborative initiatives



AANA
Arthroscopy Association of North America



**AMERICAN ORTHOPAEDIC
FOOT & ANKLE SOCIETY.**

RECONSTRUCTION • SPORTS MEDICINE • TRAUMA • TECHNOLOGY



**Limb Lengthening and
Reconstruction Society**

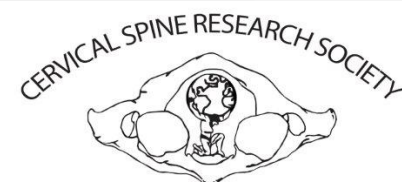


ASSH

American Society for
Surgery of the Hand



AAHKS
AMERICAN ASSOCIATION OF
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FOUNDED 1973



ASIA

AMERICAN SPINAL INJURY ASSOCIATION

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BOS = “Senate”

- BOS Member Organizations
 - Slotted seats:
 - Presidential Line
 - Communication
 - Education
 - Health Policy
 - Research
 - Executive Director
- Members elected by their respective society
 - Term = 3 years
 - Eligible for 2 terms
- Each member organization has one vote

5 Major Topics

1. Advocacy

- SGR, ACA, Medical Liability Reform, Payment Reform, IOASE

2. Fellowships

- ACGME policy changes, funding, process

3. Quality

- Performance Measures, CPGs, AUCs, MOC, PIMs, Patient Safety

4. Education

- Competition, IP/content development and use, technology

5. Unity / Partnerships

The Resident Assembly

‘The Future of the Academy’

The Purpose of the RA



- Serve as an advisory body to the AAOS on issues of importance to orthopaedic residents.
- Provide forum to allow orthopaedic residents to embrace their roles as patient advocates and life-long learners.
- Offer opportunities to get involved and participate in the AAOS.

Membership

- Resident Delegates
 - Represent their respective residency program, vote on important issues, and serve as an information conduit
- Honorary International Members
- Medical Students

Academy Councils 501(c)(3)

- Council on Education
- Council on Research and Quality

Association Council 501(c)(6)

- Council on Advocacy

Council on Education Committees

- CME Courses
- Central Evaluation
- International
- Leadership Development
- Patient Education
- Publications



Council on Education Committees

- Education Track
- Candidate, Resident, and Fellow
- Education Enhancement Fund Governance
- Annual Meeting
 - Central Instructional Courses
 - Central Program
 - Exhibits

Council on Research and Quality Committees

- Biomedical Engineering
- Biological Implants
- Evidence-Based Quality and Value
- Research Development
- Patient Safety
- Performance Measures



Council on Advocacy Committees



- Coding, Coverage, and Reimbursement
- Medical Liability
- PAC
- Health Care Systems

Communications Cabinet

- Serves entire organization
- Liaisons to
 - Board of Directors
 - Council on Education
 - Council on Advocacy
 - Council on Research and Quality
 - BOC
 - BOS
 - Diversity Advisory Board
 - Women's Health Issues Advisory Board
 - Resident Assembly



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4 Major Areas

1. Education Products and Services (+++) \$
2. Advocacy & Government Relations (---) \$
3. Quality & Research Initiatives (---) \$
4. Orthopaedic Assoc. Management (+) \$

“Show me the money”

Annual Meeting 40%

Industry floor space

Non-Fellow Registration

Membership Dues 33 %

Product sales (books, videos, ICL's) 12%

**Management fees, investment income and
facilities rentals 15%**

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AAOS 2017 Annual Meeting

MARCH 14-18
SAN DIEGO, CALIFORNIA

Our Academy Meeting – Just for you.

Device Manufacturer Consolidation



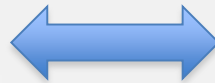
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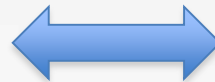
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Competition for Educational Revenue

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AOSSM

OTA
Orthopaedic Trauma Association



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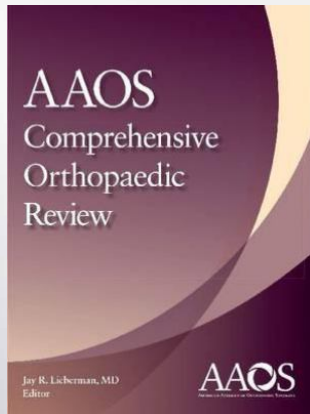
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AAOS Products & Services

AAOS 2016 Annual Meeting
March 1-5 | Orlando, Florida



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“Industry Partners”



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Competitive Education Marketplace





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“Educational Disruptors”





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Sustainable growth Rate



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Medicare Access and CHIP Reauthorization Act of 2015 (MACRA)

- ▶ Repeals the SGR **(Uncertainty)**
- ▶ Streamlines Medicare's existing quality program PQRS, VBM, EHRs into one: Merit-base Incentive Payment System (MIPS)
(Certainty ??)
- ▶ Provides access to Medicare claims data
(Transparency)

AAOS Quality Resources

- **Clinical Practice Guidelines**
- **Appropriate Use Criteria**
- **Performance Measures**
- **Patient Safety Initiatives**



AAOS Advocacy Resources

- **Federal Advocacy**
- **State Advocacy**
- **Orthopaedic PAC**
- **Engagement “Get Involved”**

The Orthopaedic PAC



- **Access** – gives us a seat at the table, and
- **Opportunity** – to advocate for our patients and *their timely access to quality care*
- **“Ortho-partisan”**



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SPOTLIGHT

Concurrent surgeries come under new scrutiny

The Boston Globe

SPOTLIGHT UPDATE

Overlapping surgeries to face US Senate inquiry

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AAOS and Media Relations

General Media Relations



The New York Times

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Standards of Professionalism

- Orthopaedic Expert Opinion and Testimony
- Providing Musculoskeletal Services to Patients
- Professional Relationships
- Research and Academic Responsibilities
- Advertising by Orthopaedic Surgeons
- Orthopaedist-Industry Conflicts of Interest

Professional Compliance Program

AAOS Professional Compliance Program
Grievance Actions

	Sanction	Forms of Publication			
		Letter to Opposing Party	AAOS Now	Medical board, ABOS, state orthopaedic societies	NPDB (patient care only) Total 22 to date
UNOFFICIAL ACTION	Letter of Concern (sent to either party)	 Notice without details			
OFFICIAL ACTION	Reprimand	 Notice with details			
	Censure				
	Suspension				
	Expulsion				

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**Fragmentation of the
House of Orthopaedics**

"A house divided against itself cannot stand."

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Unity

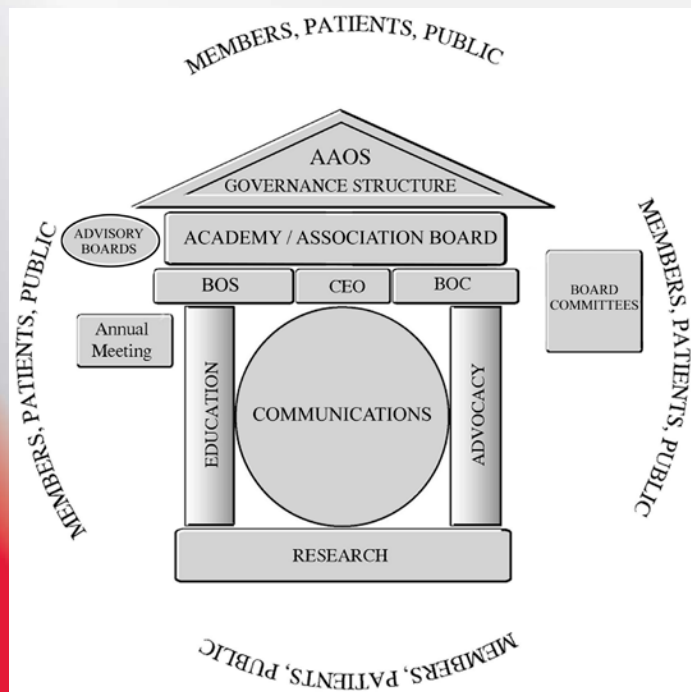
CHALLENGE

- Fragmentation



OPPORTUNITIES

- Education
 - CME
 - Publications/Products
- Quality initiatives
- Communications
- Advocacy
- New orthopaedic building
 - AANA
 - AOSSM
 - AAHKS



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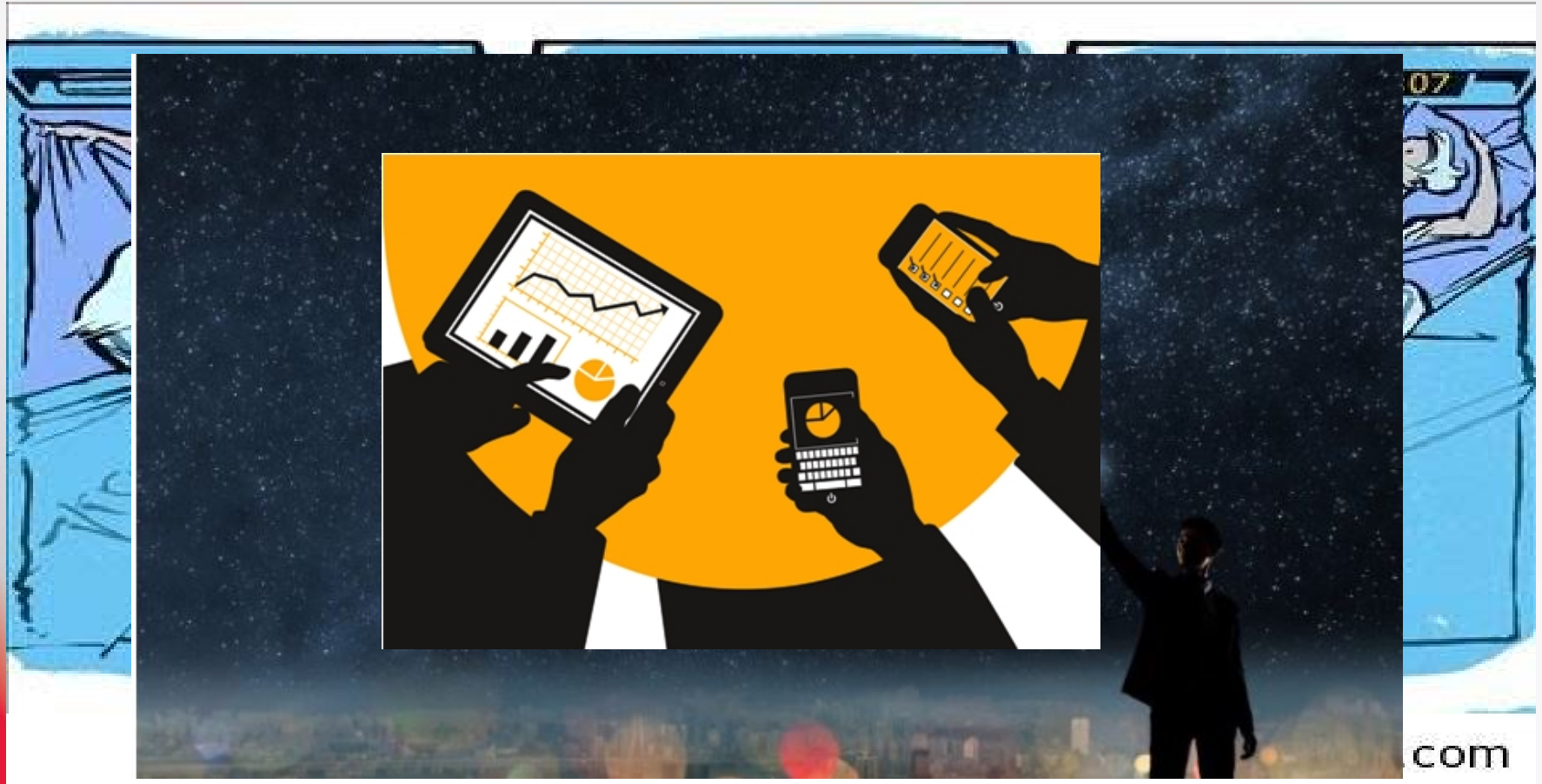
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AAOS MOC Resources

- Learning Portfolio
- MOC Dashboard
- MOC Preparation
 - OKU and OKU Specialty Series
 - MOC Prep Course
 - Self-Assessment Exams

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Quality Outcomes Data

Who collects data?



How is data collected?

Who pays for the data?



Who owns the data?



AAOS RESEARCH & QUALITY RESOURCES

- Evidence-Based Quality and Value (EBQV) Committee
- Clinical Practice Guidelines (CPG)
- Appropriate Use Criteria (AUC)
- Performance Measures (PM)
- OrthoGuidelines App
- Online information about evaluating evidence
- OKO courses

What has the Academy done
for me lately?

Medical Students & Residents



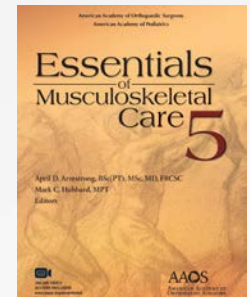
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Medical Student Resources

- AAOS Mentoring Program
- Nth Dimension Summer Orthopaedic Internship Program
- Essentials of Musculoskeletal Care



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The Resident Assembly



- The Resident Assembly serves as an advisory body to the AAOS.
- The Resident Assembly is designed as a forum to allow orthopaedic residents to embrace their roles as patient advocates and life-long learners.
- With the creation of the RA, residents will enjoy an unprecedented amount of opportunities to get involved and participate in the AAOS.

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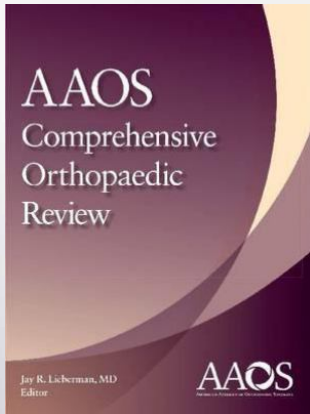
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AAOS Resident Resources

- Resident Newsletter
- Career Development
- Practice Resources
- Practice Management Lecture Series
- Diversity in Orthopaedics
- Ethics & Communication training
- Free Webinars
- Free Journal Access

AAOS Education Resources

AAOS 2016 Annual Meeting
March 1-5 | Orlando, Florida



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Private Practice Engagement

- AAOS Committee
- Annual Meeting reviewer
 - Posters & Podium presentations
- Board of Councilors
- Advocacy Ambassador Program
- OrthoPAC & Capitol Club

Academic Engagement

- **Clinician Scientist Program**
 - Junior Faculty year 1-3
- **Leadership Fellows Program**
 - < 45 years
- **Academy committee service**
- **AM Poster & Podium presentation reviewer**
- **BOC BOS Mentoring Program**

AAOS Academic Practice Resources

- **Curriculum Planning Resources**
 - **Business, Policy, and Practice Management in Orthopaedics Lecture Series**
 - **Resident Ethics Series**
 - **Communications Skills Mentoring Program**
- **Subscriptions**
 - **ResStudy OrthoBullets**
 - **Orthopaedic Video Theater**
 - **Instructional Course Lectures Online**

AAOS

- Your Professional Organization
- Dedicated Volunteers and Staff
- Financially Healthy ... Challenges
- Responding to the needs of our members

“Go confidently in the direction of your dreams. Live the life you have imagined.”

~Henry David Thoreau



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Seeking Eudaimonia: Perspectives on an Orthopedic Journey in the Modern Healthcare Era

William G. Ward, Sr., MD
NCOA - 2016

Orthopedic Practice Evolution

Personal Odyssey

The Journey Begins

- '71 UNC – Undergraduate
- '75 Duke Medical School
- '78 Tulane – Pediatrics– 1/2 year Internship
- '79 Emory University – Internship
- '80 Lincoln County Hospital – 4 years ER doctor - (Jeb born – has TS)

The Journey Continued

- '84 Duke – Orthopaedics
 - Goldner's Last Resident
 - Harrelson inspired
- '89 Cleveland Clinic –
 - Sports (Jeb)
 - Mirror test – not my personal destiny
 - Concern – Wouldn't like the view 20 years later
- '90 UCLA – Orthopaedic Oncology
- '91 Wake Forest

The Journey Continued @ WFU

- Gary Poehling
 - Great Enabler & Facilitator
 - Opened the Door
- Started Orthopaedic Oncology Practice
 - Built multidisciplinary collaborative team
 - Performed over 5000 oncology cases

Subsequent Journey

- WFU 1991-2012
- Guthrie Clinic 2013-2014
- Novant Health 2014 - Present

Guthrie Clinic

Integrated Healthcare System

Hospitals and Clinics

All specialties

Pennsylvania & New York

Guthrie Experience

- Leadership role – Chair of Orthopedics, Chief MSK Service Line
- Education – Master's degree – Health Care Admin – King's College – Wilkes Barre, PA
 - Health and healthcare
 - Ethics in healthcare

8 “Masters” of Ethics

- Aristotle - Virtue, Practical Wisdom, Eudaimonia
- Martin Buber - Interpersonal relationship hierarchy
- Lawrence Kohlberg - Stages of moral development
- Viktor Frankl - Life of meaning
- St. Thomas Aquinas - God based - “basic good”
- Immanuel Kant - Duty based - Deontology-Categorical imperative
- John Stuart Mills – Utilitarianism (greatest good to greatest #...)
- John Rawls - Self interest (“any could be you”-protects lesser positioned)

Aristotle Key Ethical elements

- Virtue
- Practical Wisdom
- Eudaimonia

Eudaimonia

- Happiness
- Contentment - via choices made

Viktor Frankl

- Life of meaning

Poehling Assignment

Steven Covey Course

7 Habits of Highly Successful People

- Core Guiding Values
- “Meaningful healer”

Reflections on my personal journey

- Ethical viewpoint
- Guiding orthopedic principles
- Practical reality
- Implications for others

Orthopaedic Oncology Orthopedic Practice

Where have we been?

Where are we going?

Why?

Early 20th Century

1910 Flexner Report on medical education in US

- Basis for medical education reform

- 1/3 medical schools closed (end of proprietary schools)

- Primary focus on Scientific basis of medicine

What was Flexner Report?

- Carnegie & Rockefeller Foundations
- (Abraham Flexner and the Hopkins Circle)
- Book length report - Medical Education
- Established biomedical model - gold standard
- “Scientific knowledge and its advancement as the defining Ethos of a modern physician

Hopkins Circle

- William Welch - founding dean at Hopkins
- William Osler - first Hopkins chief of medicine
- Frederick Gates - Baptist Minister - advisor to John D. Rockefeller
- Abraham Flexner - High School teacher - taught students to solve, not memorize (subsequently earned PhD in education)

Basic tenets of Flexner report

- Hyper-rationality
- Science at its core
- “Medical professors were to be freed from any major responsibility for patient care and could dedicate their lives to research and teaching”

Concerns

- William Osler and Harvey Cushing

- Primacy of “patient beneficence” was overlooked.
- Focus on Science too narrow
- MD’s too removed from the realities and messy details of patients lives.
- Considered welfare of patients and the education of students as more important priorities
- Acknowledged the centrality of scientific knowledge

- Edmond Pellegrino

- Doctors would become neutered technicians with patients in the service of science rather than science in the service of patients.

New Flexner Report

by Tom Invi (AAMC) & Molly Cooke (AMA)

- New focus/Courses/Curricula
- Core competencies
- Practice-based learning
- Patient communication
- Medical Ethics
- Medical humanities
- i.e. Patient-centered

Flexner Effect

A century of science-based physicians & healthcare culture

Identify cause-effect

Diagnosis-Treatment paradigm focus

Episodic doctor-patient practices

Episodic hospital-based treatments

We think of health in terms of healthcare episodes

Healthcare - 20th Century

Explosion in Episodic Healthcare

Episodic Interventions & Facilities

Heart attack – ICU, Cardiac Catheterization, Stents

PVD – Bypass surgery, Stents

Cancer – Chemotherapy, Tumor resection

CHF, Heart attack – ICU, Hospitalization, Medications

Pneumonia – Hospitalization, Antibiotics

Arthritis – Joint replacement surgeries

Trauma – trauma centers, trauma surgeries

Evolution in Healthcare Towards End of 20th Century

Massive Healthcare Infrastructure for Episodic Healthcare

- Hospitals
- Doctor's Offices
- Rehabilitation Facilities & Entities
 - NH
 - SNF
 - IRF
 - ORF
 - HHT

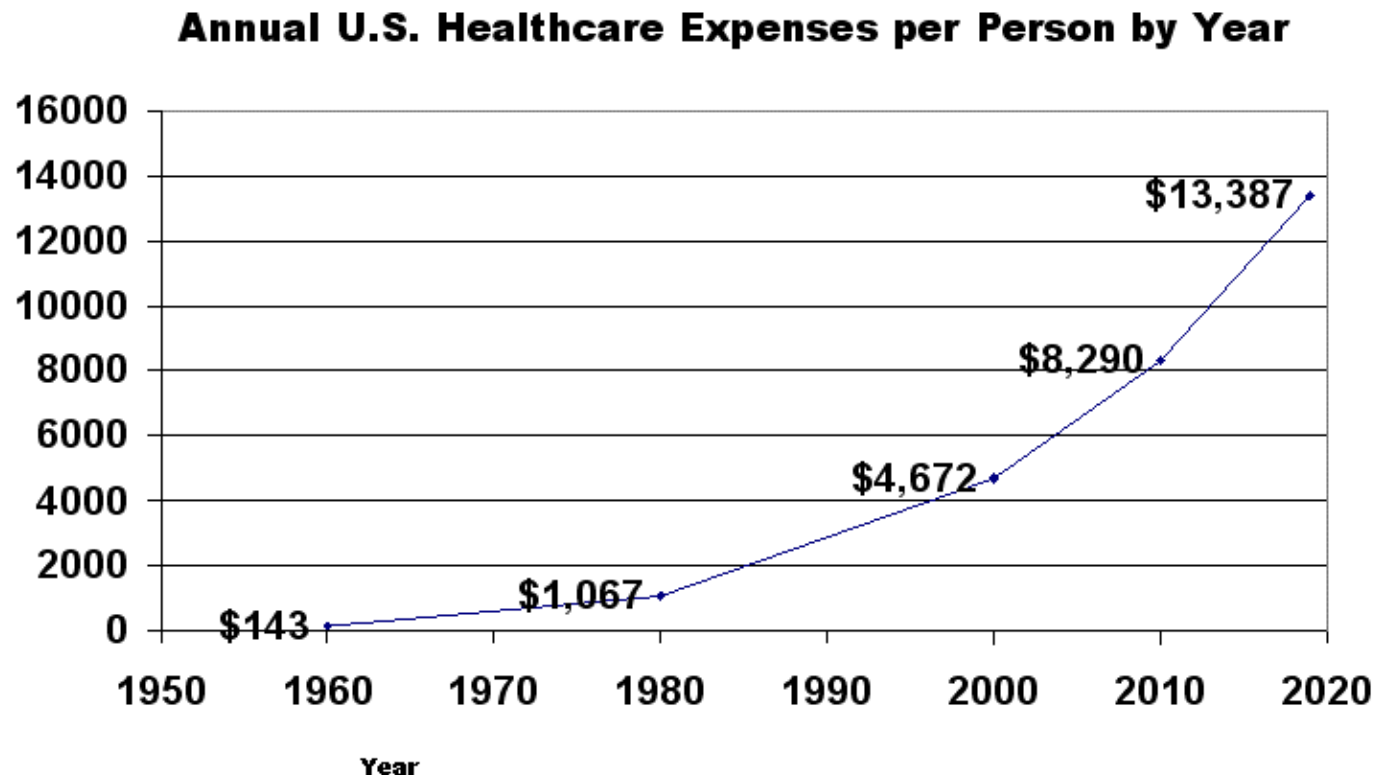
Enter the Business of Medicine

- Hospital for service
 - Evolved towards
- Hospitals for service and ROI
 - “No margin --- No mission”
- Advertising – Competition – Govt – CON
- We think of “health” as “healthcare”!
 - (Episodes)

End of 20th Century Realizations

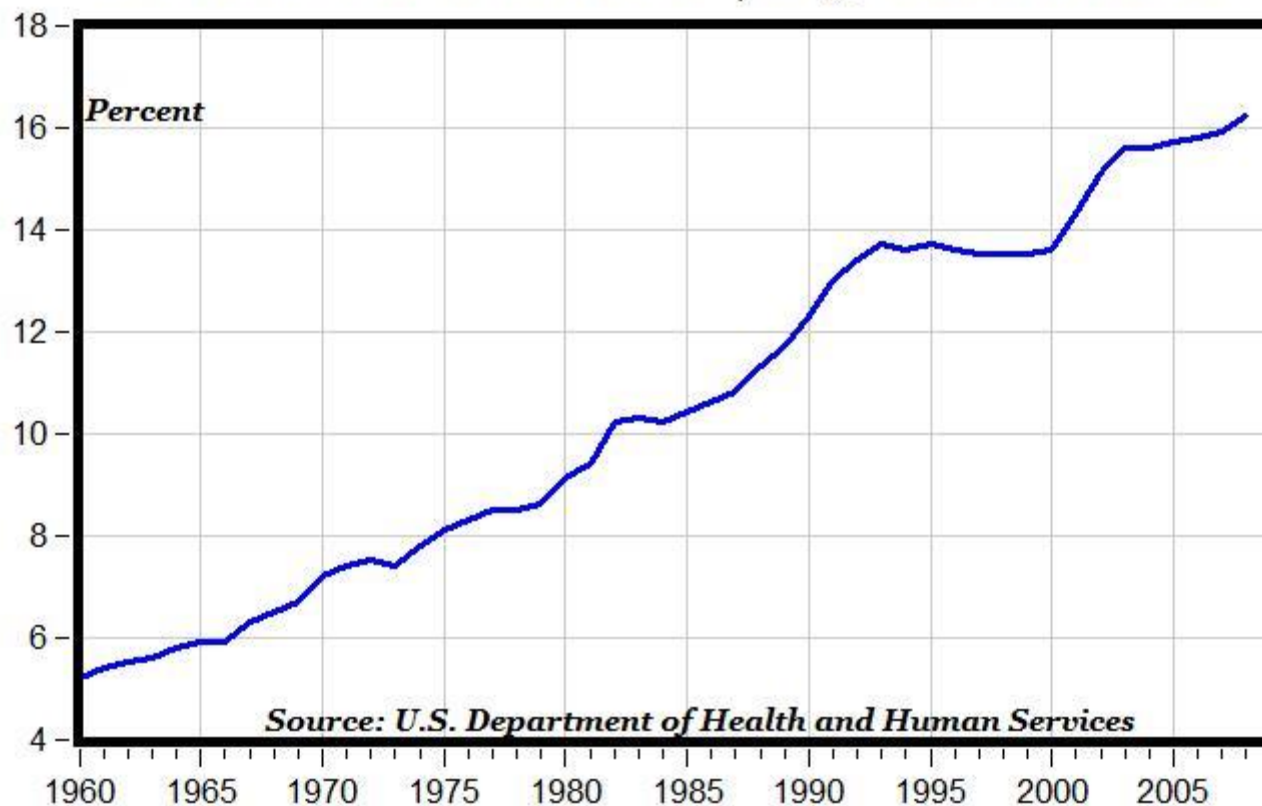
Healthcare \neq Health

Cannot Afford continuing upward Spiral Healthcare costs



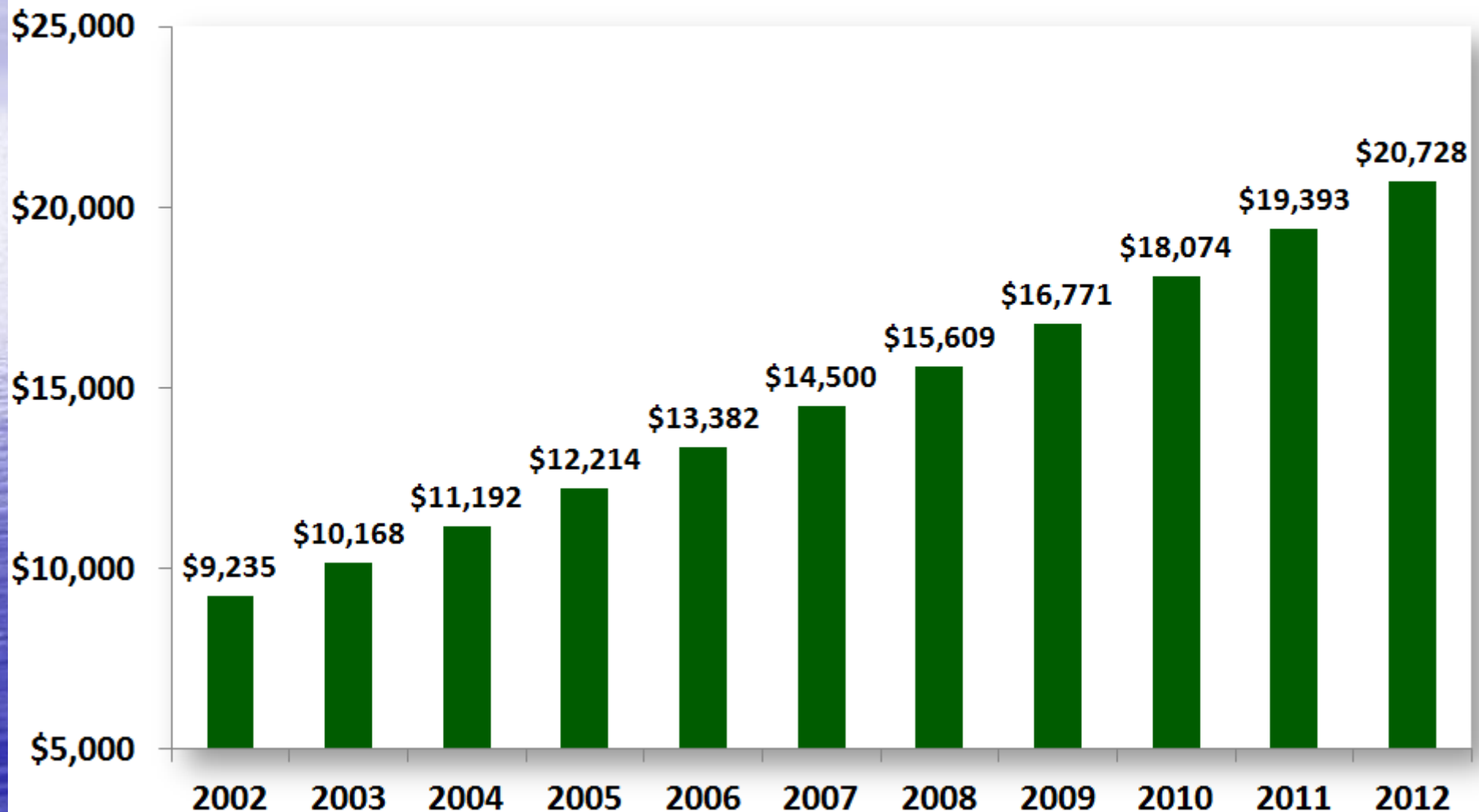
Source: <http://www1.cms.gov/NationalHealthExpendData/downloads/proj2009.pdf>

Total Health Care Expenditures Percent of GDP, 1960-2008

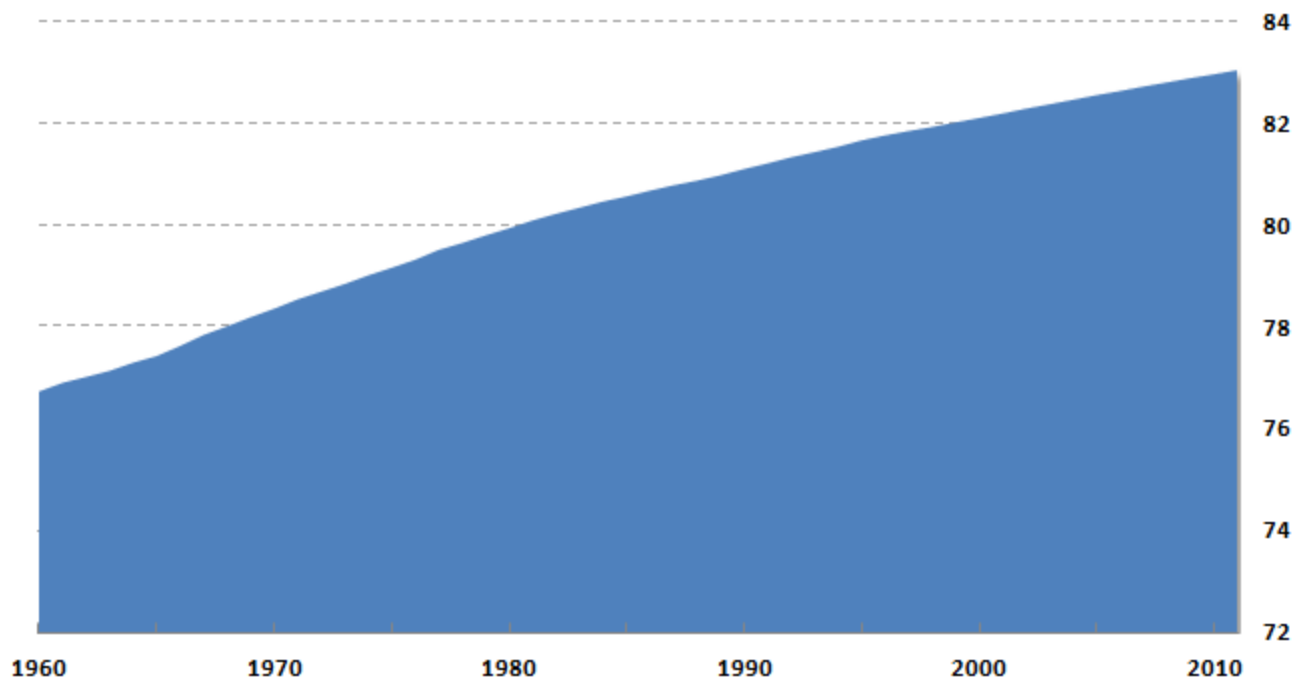


Milliman Medical Index

(Family of 4 - per year)



Meanwhile, Life Expectancy Has Dramatically Increased...



Source: Average life expectancy at birth, in years (Social Security Administration)

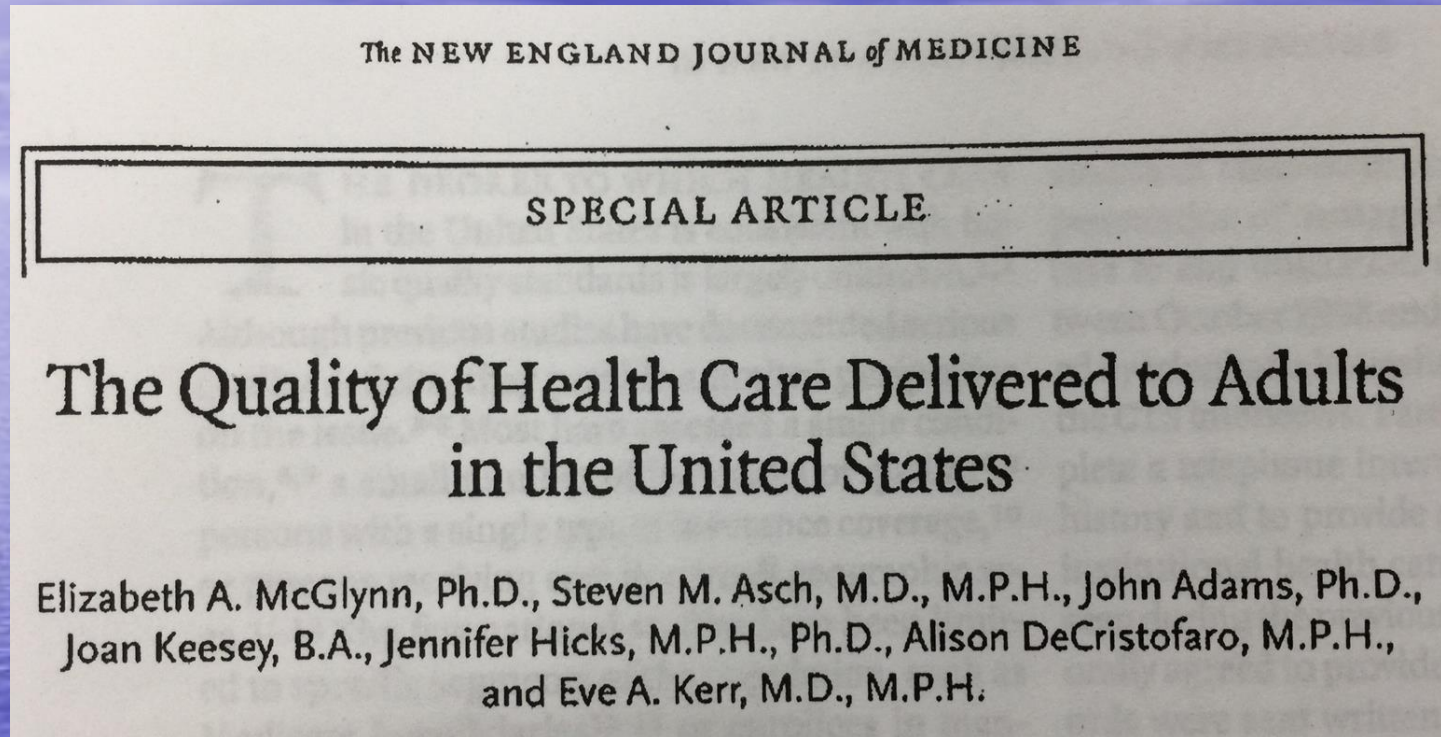
End of 20th Century Realizations

Health \neq Healthcare (Episodes)

“Volume” \neq Value

Value vs Costs in Healthcare

Landmark Paper



McGlynn et al, NEJM 348: 2635-2645, 2003.

Almost half (45+%) of healthcare that is delivered does not meet basic expectations
439 Indicators for 30 conditions and preventative care

McGlynn paper

Examples of care not being met (not esoteric measures):

- Asthma: Long acting bronchodilators for patients with frequent use of short acting agents
- Breast Cancer: Appropriate follow up of palpable mass
- : Choice of surgical treatments for stage I or II cancer
- CHF: EF (ejection fraction) assessed prior to medical therapy
- Cerebrovascular: Antiplatelet therapy for non-cardiac stroke or TIA's

McGlynn paper

Examples:

- Hip Fracture - Prophylactic antibiotics not given on day of hip surgery
- Headache - CT or MRI for patients with new-onset headache and abnormal neurologic exam
- Acute Back Pain - Avoidance of prolonged bedrest
- Hyperlipidemia - Treatment of high LDL cholesterol in patients with CAD
- Etc
- Etc

Reasons for High Cost and Suboptimal Quality

Care Silos – lack of integrated care

Each party responsible only for their portion of the healthcare continuum

Each treats “their diagnosis”

Financial Silos

Each party reimbursed independently for their portion of the healthcare

Orthopedic Joint Replacement

1970's-1980's:

10-14 day hospital stay

Prolonged bedrest

1-2% pulmonary embolism rate

Discharged home after PT completed

High costs – High morbidity

Orthopedic Joint Replacement

Late 1980's-2000's

Early mobilization

DRG reimbursement – one set fee for hospital

Hospital focus - length of stay (Utilization Review)

- transfer to rehab
- outpatient therapy
- rehab costs shifted to Post Acute facilities & providers (a separate silo) – mostly still “fee for service”

Rehab Centers proliferate

Joint Replacement Past 10 Years

Post Acute Provider:

Fee for service-"Allowable"

28 day rehab stay covered (ALOS-27.6 days)

Undefined number of OP visits or sessions, etc)

Must show "progress" toward goals

Payors Concerns

- Spiraling costs
- Variable care
- Minimal coordination of care
- Lack of standardization
 - Variable unpredictable, ever-increasing costs
 - Variable unpredictable results



Standardized Care Can Effect Results – P4P Methodology

SCIP Measures

- preop antibiotics within 60 minutes of incision

Previously often overlooked

Instituted Pre-op “pause”

Antibiotic verification

Standardized options

Standard operating procedure

“Never” forgotten

Bundled Payment for Care Improvement

Reimbursement methodology - can influence care

Not just about cutting costs

Provide maximal value for dollars spent

Requires collaboration, coordination and integration of care

Re-examine the status quo at all stages of the care continuum

Appropriate care – appropriate patients – all times

“Indicated” vs “expected” treatments

“Indicated” vs “entitled” treatments

Protocols for all – not just “bundle” patients

BPCI Alignments

- Shared cost savings/penalties - CMS/Institutions/(MD's)
- Seek alignment Acute and Post Acute facilities
 - (and all that work there)

BPCI

Break down silos

Coordinate & Optimize care along best practices

Foster collaboration

Improve outcomes – decrease complications & readmissions

Control costs

BPCI is but One Small Acronymic Example

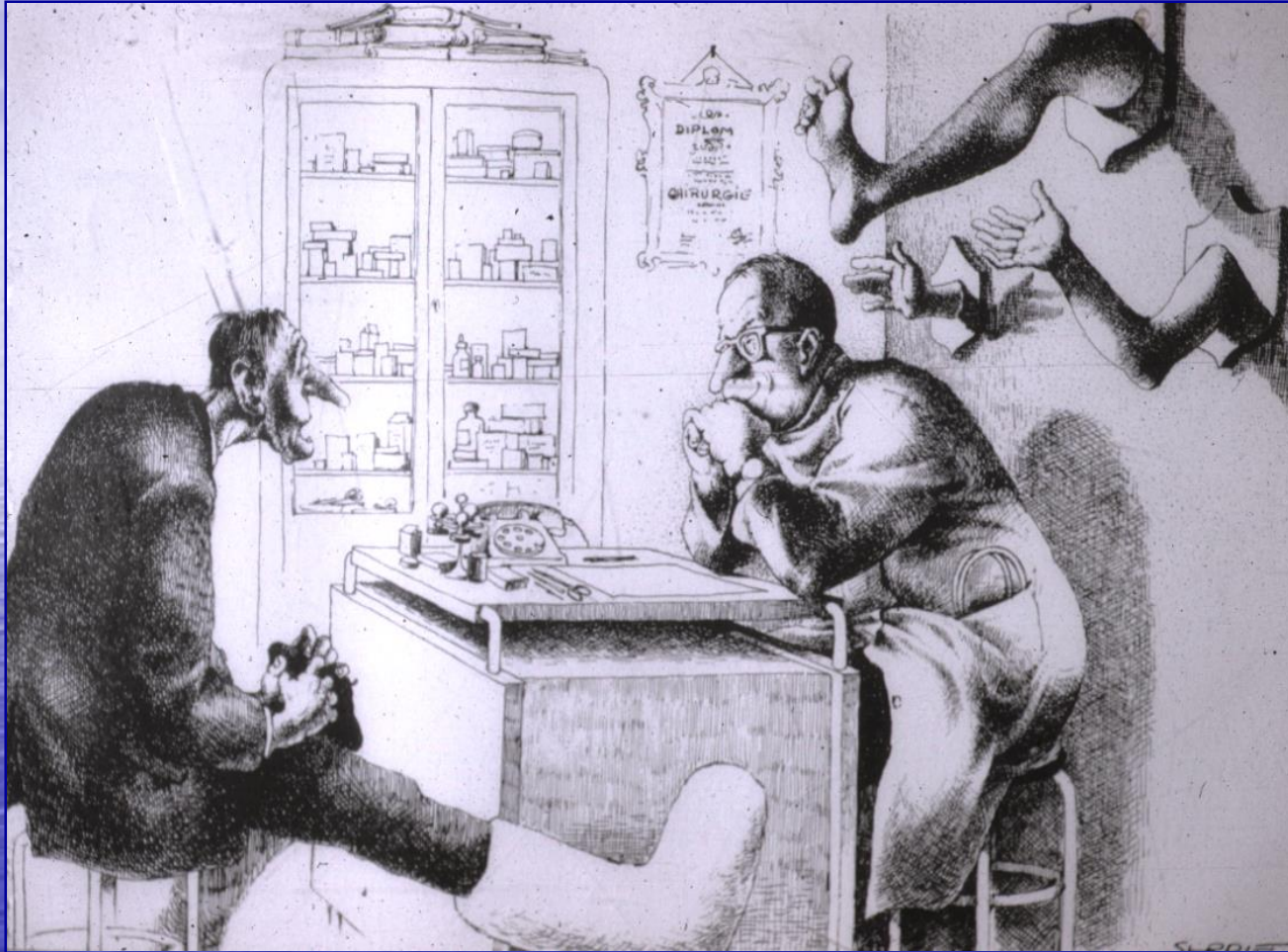
MACRA	MIPS
EPM	EMR
ACO	CJR
Etc	Etc

Healthcare is changing

- Evolving towards focus on health maintenance
- CHF, ASCVD, Hypertension, Diabetes, COPD, Obesity, Renal – the heavy hitters
- Orthopedics – an important but smaller piece of this pie
- Huge external influences on orthopedic practice

So How About Orthopedic Oncology

Orthopaedic Oncology Prior to 1975-80



Orthopaedic
Oncologist's
Office

circa 1970

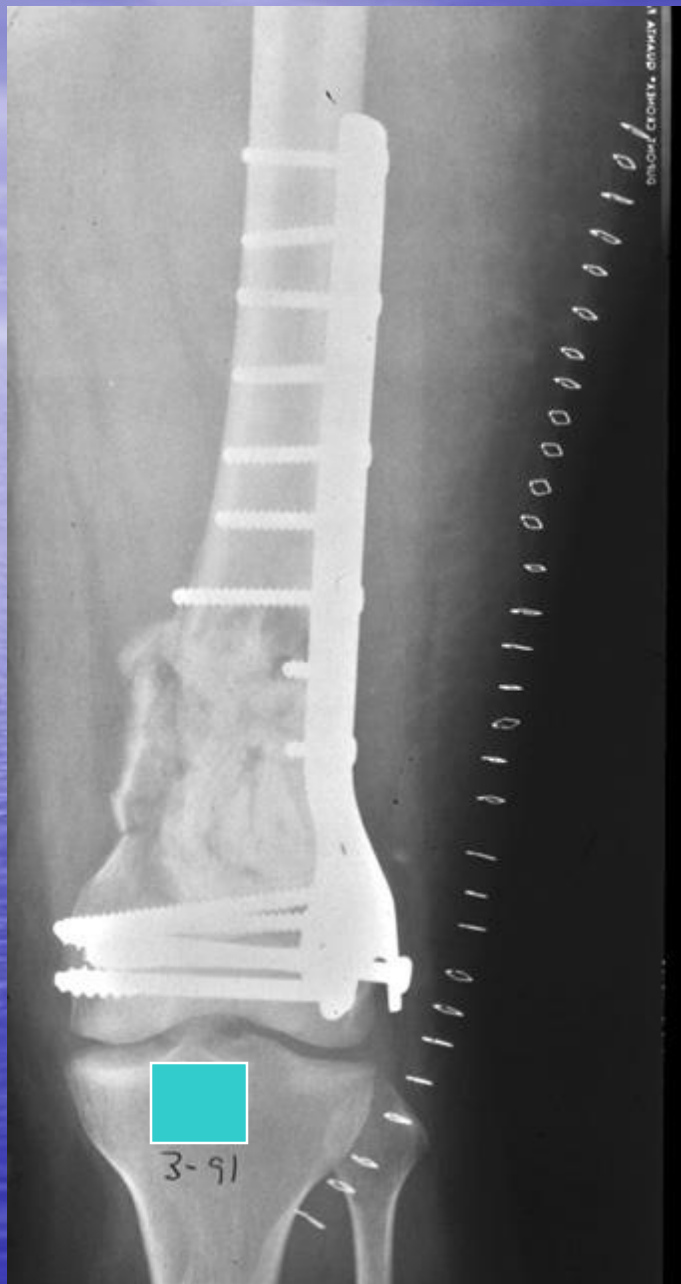
1980's

- PreOp Chemotherapy for OS
- Limb Salvage Surgery

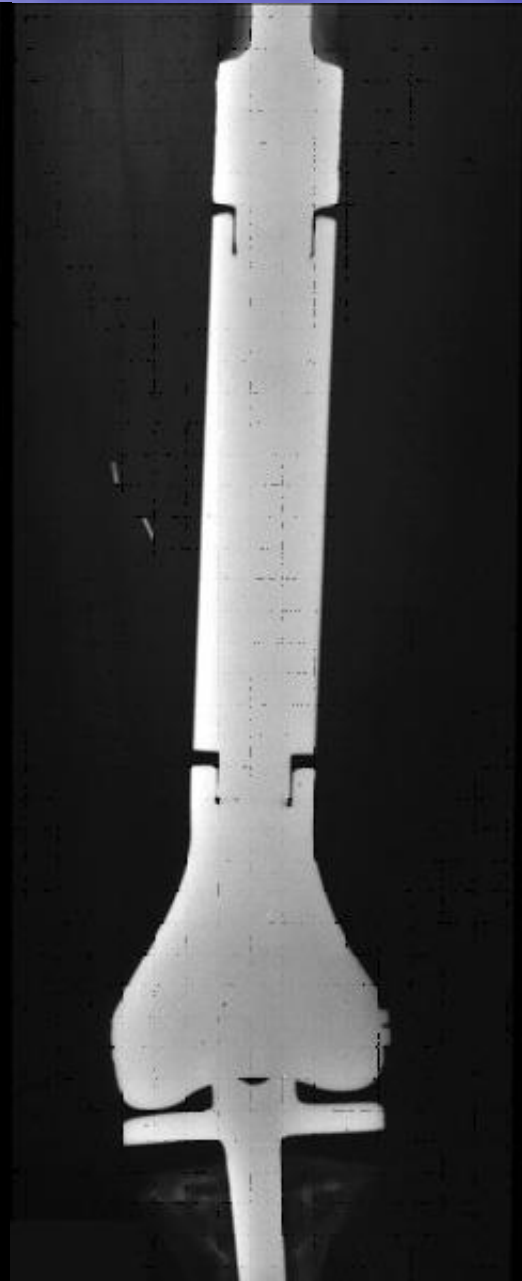
Early 1990's Controversies

- Heavy Metal vs. Dead Bone
- Endoprostheses vs Allografts
 - Answer – Use both (but mostly heavy metal)
 - Custom ———> modular systems
- Open biopsy ———> needle biopsies
- PreOp vs. Post Op RT for ST Tumor
- RT vs. Surgery for Ewings Sarcomas



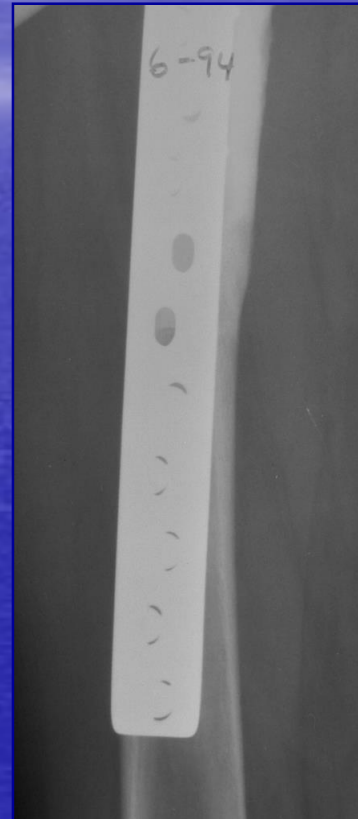
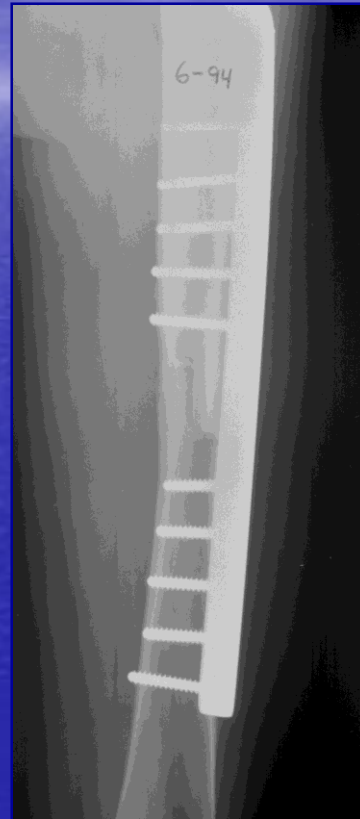
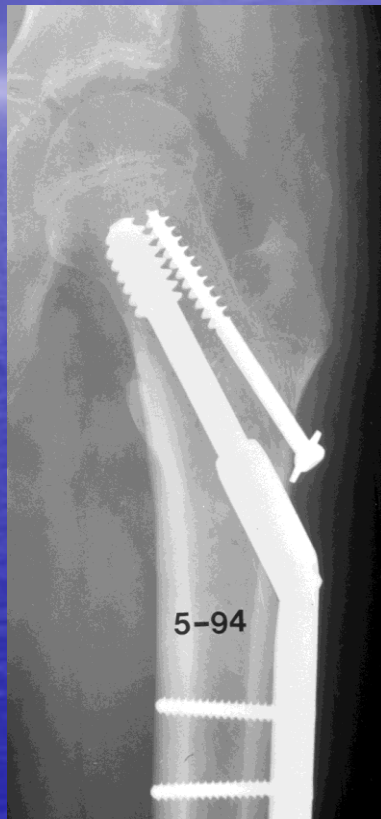
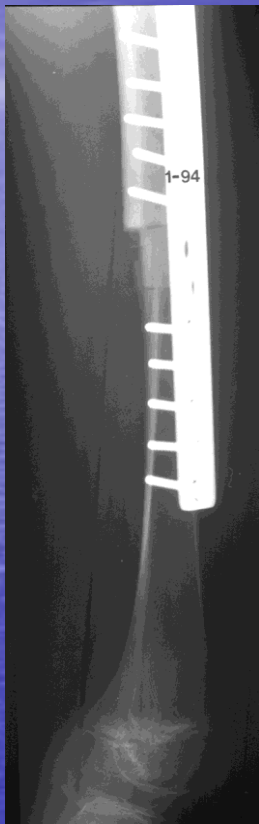
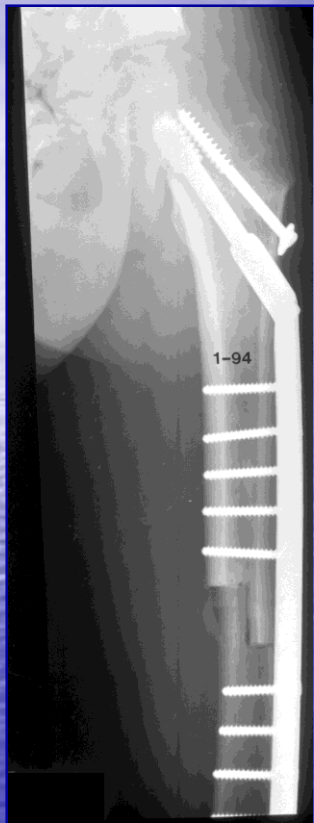


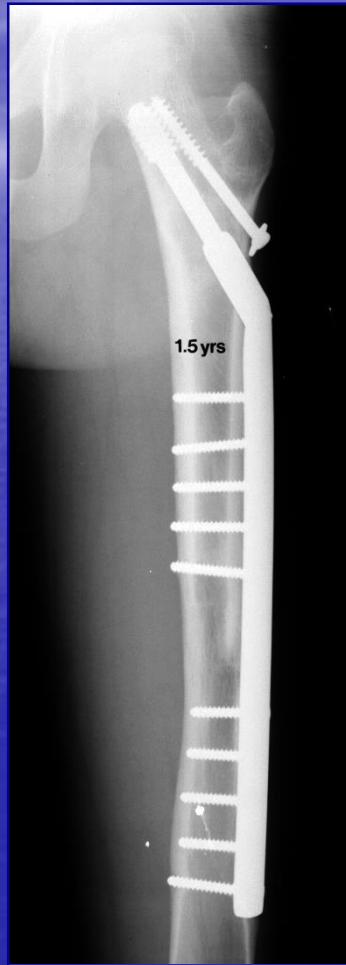


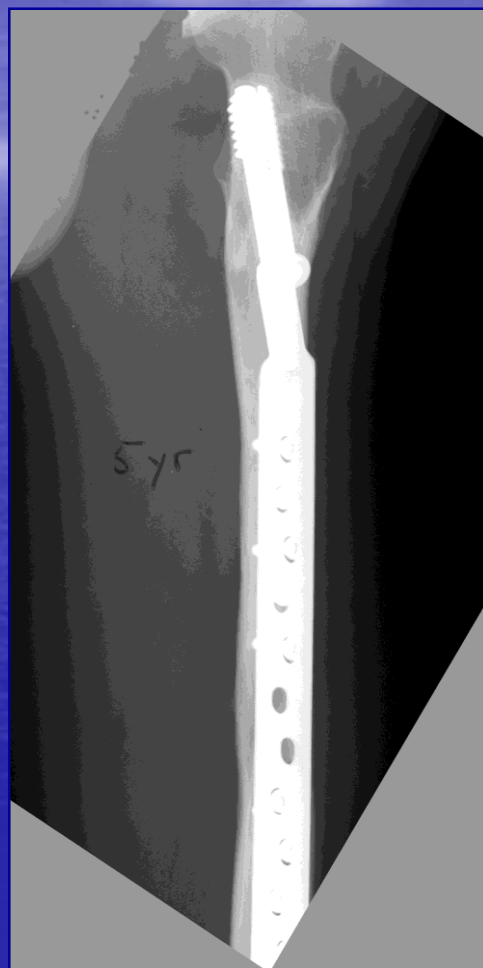






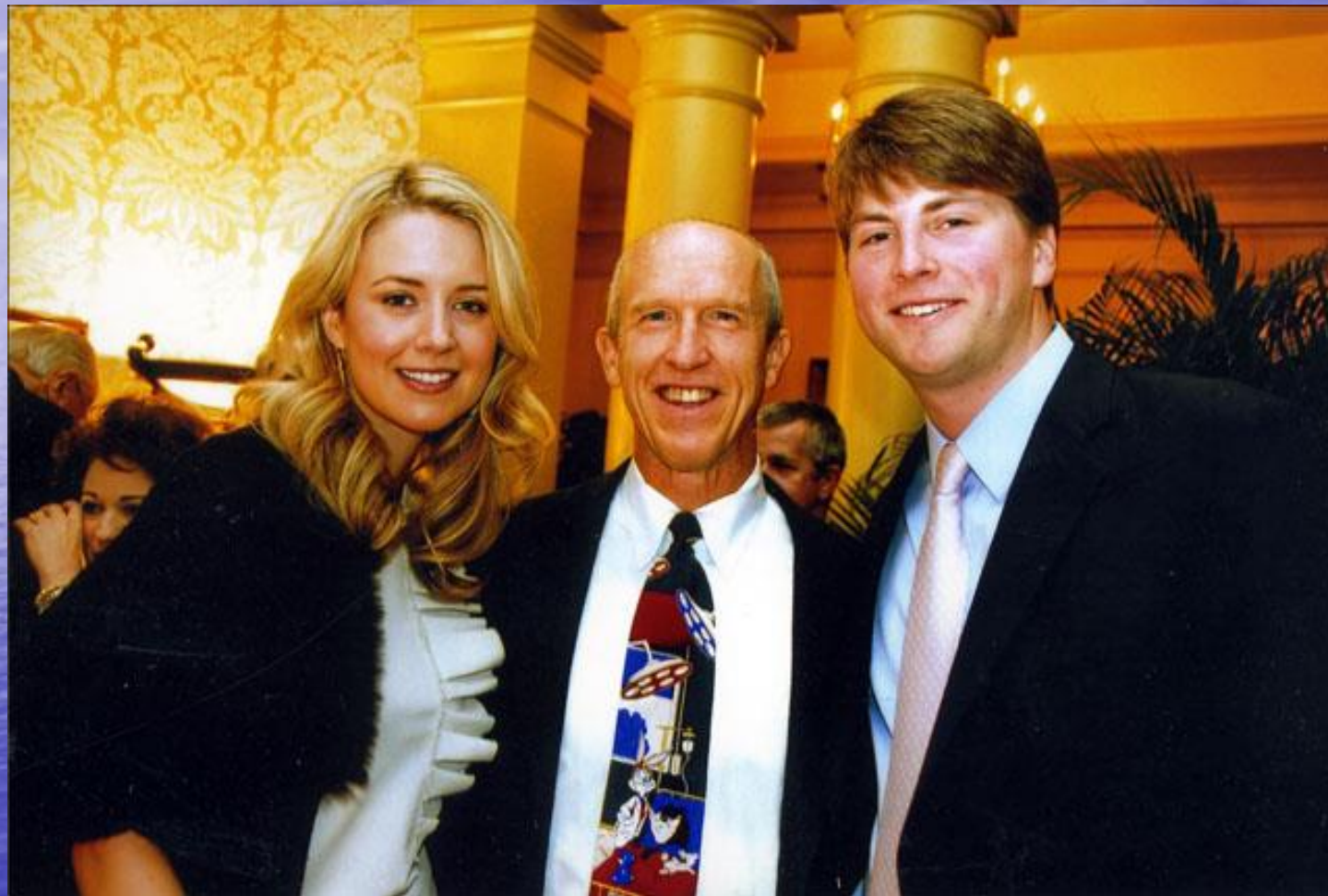














Mid-Late 90's Controversies

- RFA vs. surgery (osteoid osteomas)
- Allograft vs ICBG for bone graft
- Synthetic bone graft materials
- Bishosphonates for metastatic bone disease
- Role of VAC – large defects and STSGs

RT HAND
BIOPSY RT HAND
101177293



4/2005

51 kVp
0.74 mA

8

63-
8 

OEC

RT HAND
BIOPSY RT HAND
10117729



4/2005

54 kVp

0.93 mA

10

35-☀

0 ◐

OEC

RT HAND
BIOPSY RT H
101177293



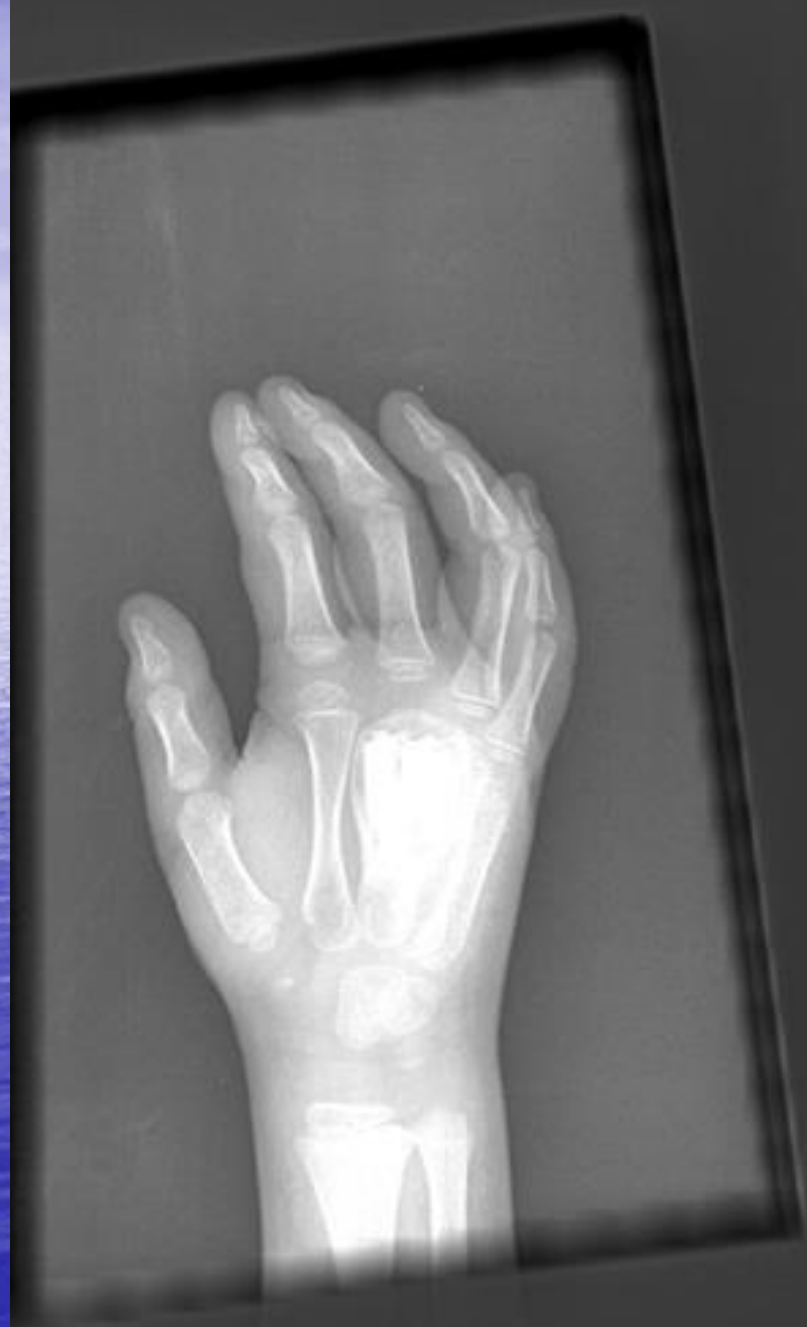
4/2005

52 kV
0.83 mA

12

40-
0 

OEC



R



6/2005

11/2008



RIGHT

102920501

1/2009

54 kVp
0.95 mA

2

55-
0 

OEC



RIGHT

102920501



55 kVp
1.02 mA

3

56-
0 

OEC

1/2009

2/2009



4/2011





4/2012





2000's

- Molecular biology
 - Alphabet soup – growth factors VEGF, PDGF, etc.
 - RANK, RANK Ligand
 - MDM2 - cytogenetics
- CT guided Navigation – Pelvic resections

A set of preliminary beliefs

- Guiding principles of practice

Basic Concept – Primary Malignancies

- Order of priorities
 - 1) Life
 - 2) Limb
 - 3) Limb function

Sentinel moments -

- 17 year old Hispanic girl – spinal osteosarcoma patient - recurrence:
- “Doctor, I’m too young to die.”
- Osteosarcoma research – UCLA data – every osteosarcoma LR – DOD or dying
- - Need for adequate resection!

Sarcomas

- N > 700 now

Last Review before leaving Academics

- Limb Salvage 575 (87%)
- LR 59 (8.9%)

Soft Tissue Sarcomas

EPS, MFH, MFS, SYN-S, MPNST, LMS, LS,PS, Others

N = 404

LSS 344 (85%)

LR 48 (11.9%)

Local Recurrence

	<u>With</u>	<u>Without</u>
RT	25/141 (17.7%)	22/223 (9.9%)
Amputation	10/50 (20%)	38/323 (11.8%)
Chemo Rx	28/192 (14.7%)	19/203 (9.4%)

Osteosarcoma

Chemotherapy 92/103 (89%)

RT 7/103 (7%)

Osteosarcoma

N = 103

LSS – 85 (83%)

LR = 0

Alive – 66 (64%)

5 and 10 Yr Survivorship of IIB extremity osteosarcoma is 76 and 71% respectively

Osteosarcoma Results

- Confirms principles of strong team approach
 - Effective chemotherapy
 - Adequate resection

Pathologic Fractures

Guiding principles

- Restore/Preserve function
- Do your best fix up front
- Better to prevent a fracture than to treat one.

Advantage of Recon Nails

- Protects full length of femur
 - from femoral head to femoral condyle



Length of Stay

Impending Fractures

7 days

Completed Fractures

11 days

$p = 0.01$ (Wilcoxon rank sum test)

Average Blood Loss

Impending Fracture	438cc
--------------------	-------

Completed Fracture	636cc
--------------------	-------

$p = 0.01$ (Wilcoxon rank sum test)

Discharge to Home

Impending Fractures
(79%)

72 of 97

Completed Fractures
(56%)

48 of 85

$p = 0.01$ (Chi square test)

Support Free Ambulation

Impending Fracture	35%
--------------------	-----

Completed Fracture	12%
--------------------	-----

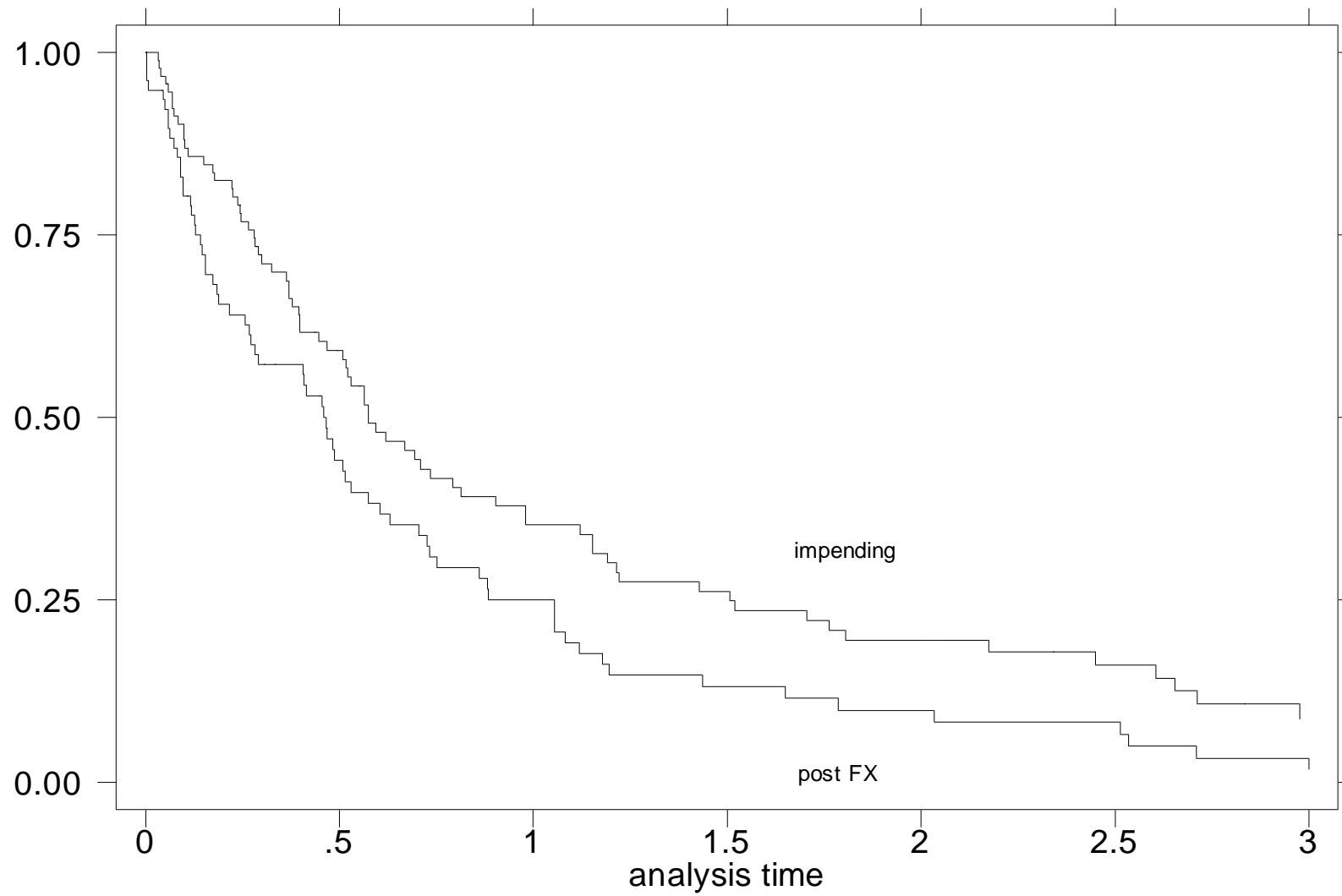
$p = 0.002$ (Chi square test)

Survivorship

	One-Year	Two-Year
Impending Fracture	35%	19%
Completed Fracture	25%	10%

$p = 0.015$ (log rank test)

Kaplan-Meier survival estimates, by impending



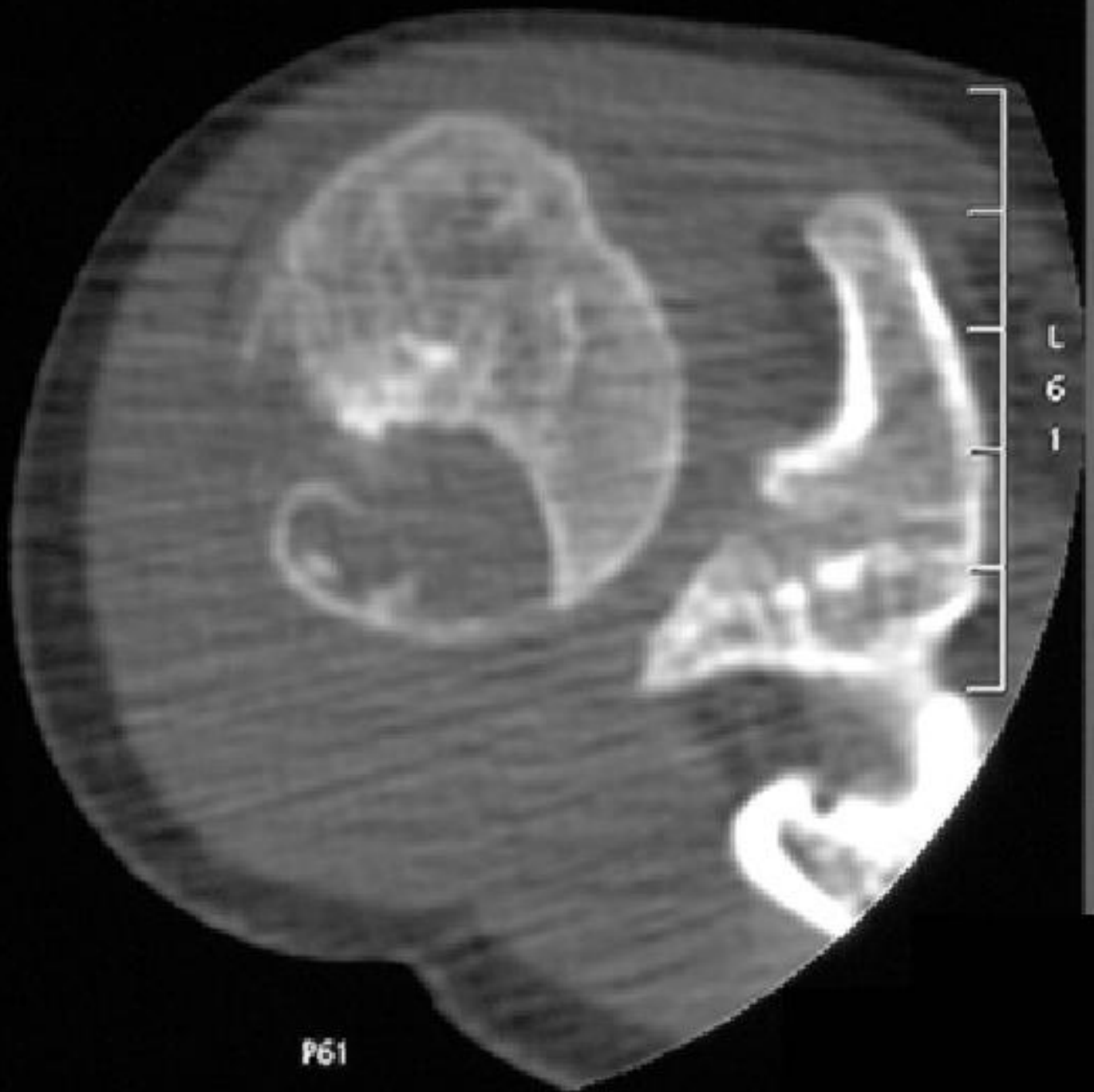
Benign Tumors

- Soft Tissue – “adequate” resection
- Bone – Preserve/Restore function
 - Extensive use of allograft bone

The body has an amazing capacity to heal.

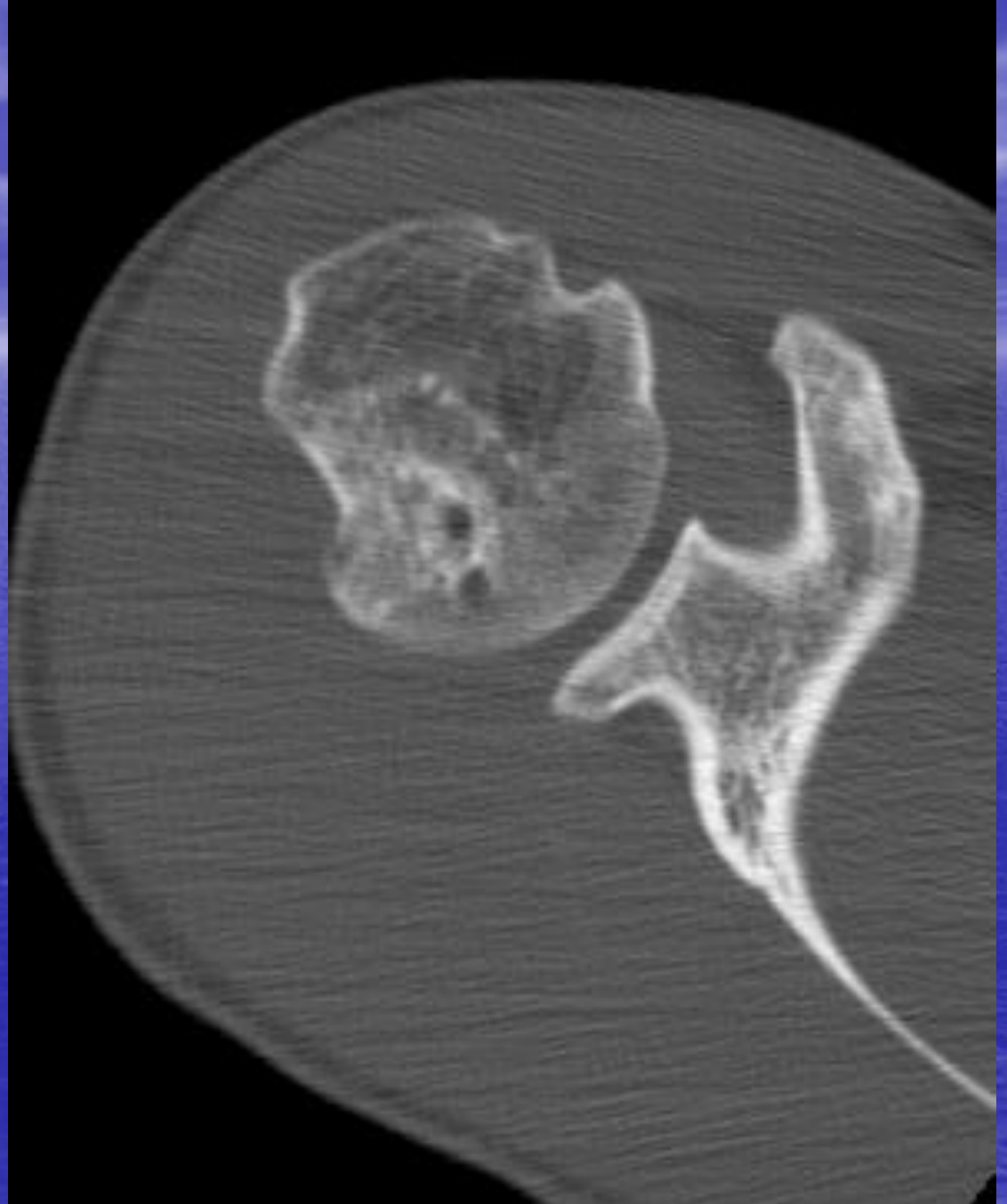


11 yo boy with 8 mo intermittent shoulder pain – primarily dribbling BB



P61

5 year f/u s/p adjuvant
H₂O₂, phenol, cautery
and allograft



5 year f/u



Personal Belief

- Follow sound general principles
- Evidence-based medicine – Protocols
- Cannot practice cookbook orthopaedic oncology
- Individualize Diagnosis & Treatment
- Be thorough
 - Be compulsive and conscientious

You can accomplish great things!

Personal accomplishments

- Nurtured growth of WF Orthopaedic Oncology Team
 - Orthopaedic oncologists
 - Heme/Onc – Pediatric & Adult
 - Pathology/Cytopathology
 - Radiation Oncology
 - Musculoskeletal Radiology
 - & others
- Doing same at Novant

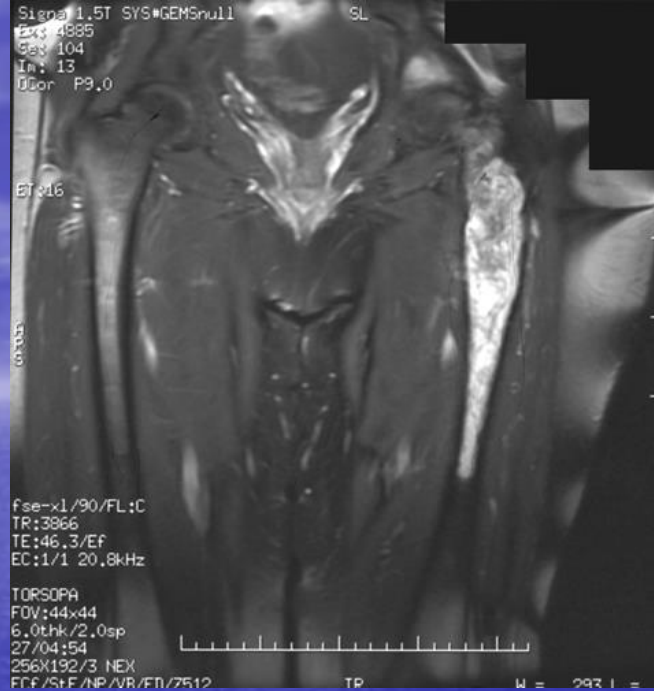
Personal Accomplishments 1991-2016

- 10,000 (+) surgeries
- 700 (+) sarcomas
- 600 (+) Metastases / Pathologic Fractures
- 5000 (+) Oncology procedures
- 2500 (+) Arthroplasties

Best Christmas Present

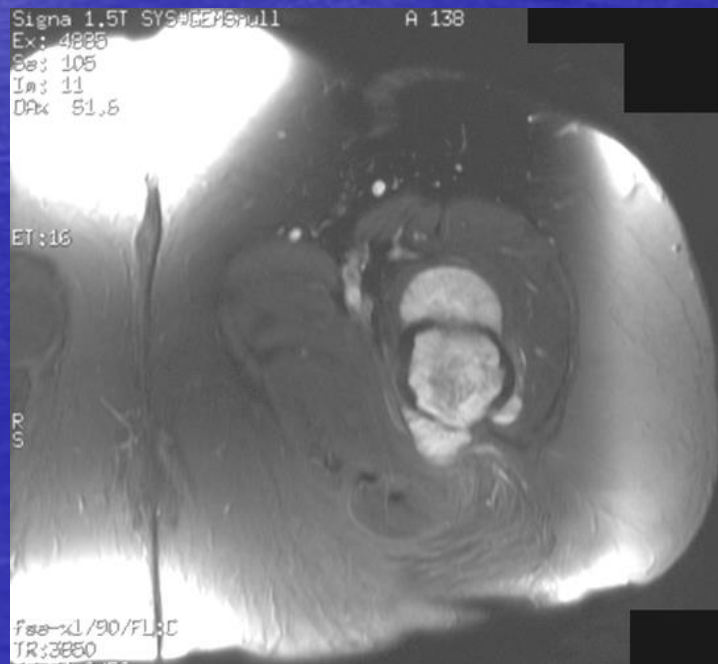
Danny Griffin, Charlie Yang &
WGW

PF Path FX CS – PFR/PFER



48 y o
Female

Path Fracture
12/23/2003



Christmas Present



Path Fracture
12/23/2003



Surgery 12/24/2003 --- 5 year f/u

July 2012
(8 1/2 years
later)

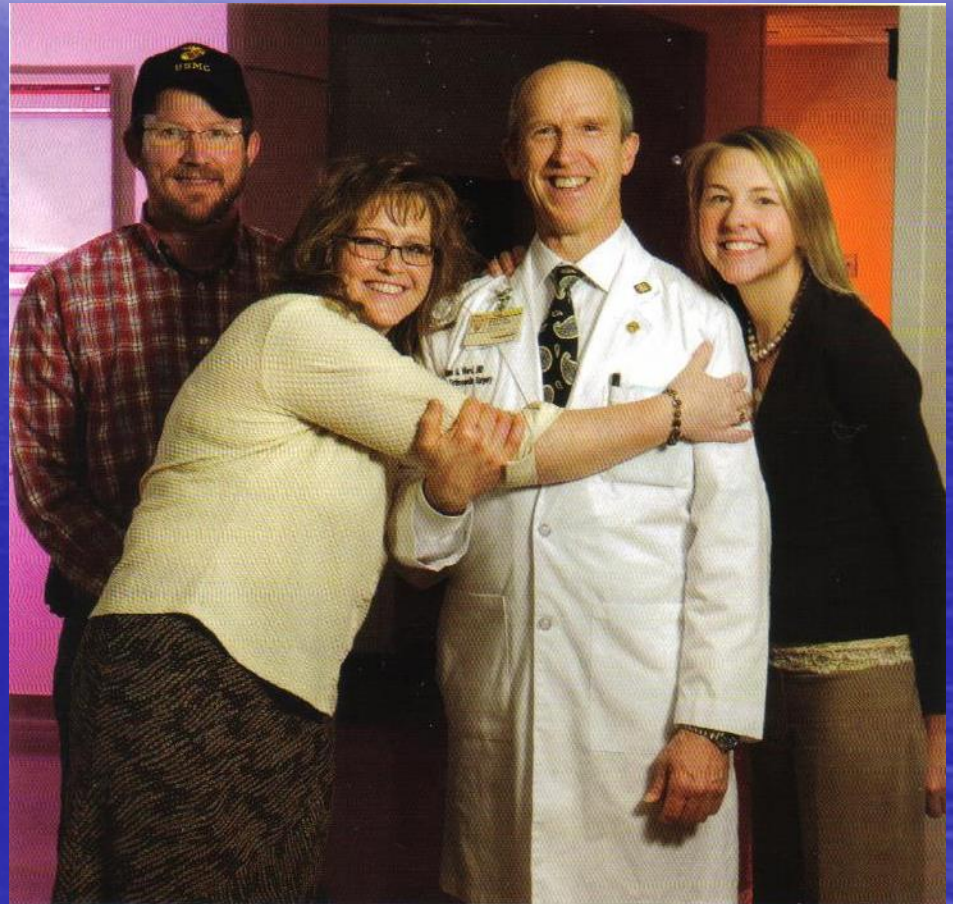


Orthopedic Surgery & Orthopaedic Oncology

very interesting field

Orthopaedic Oncology

Patients are
more
interesting, and
definitely far
more inspiring,
than their
diseases!



Pictured with Dr. Ward are three of his patients representing the major types of bone cancer surgery (L-R):

Orthopedic Healthcare

- Evolving role in integrated healthcare
- Largely episodic by nature
- Focus on quality & safety, outcomes, human experience, costs, prevention

Regardless of the business of medicine

- Huge role for patient-centered practice
- Incredible personal rewards cannot be taken away regardless of pay structure

Summary of Work Experience

25 Year Look-back

- Personal rewards + blessings far exceeded my expectations
- Each day – a new adventure
- When I look in the mirror, other than the wrinkles & aging, the view is ok
- The adventure continues (more vicarious experiences as my role evolves)

Personal Gratitude

- To each and every former resident who has participated in this adventure
- To all the referring physicians
- To all my partners & staff
- To all my patients

Adhere to your core values & principles

- Patient-centered care
- Meaningful healer

Eudaimonia





Thank You!

