



**Beyond Clinical Medical Physics:
Entrepreneurship and
Opportunities in Industry**

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Learning Objectives

- Understand how an entrepreneurial role differs from an employee role
- Explore different types of entrepreneurial roles
- Understand how to prepare to be an entrepreneur
- Be aware of key steps to success as an entrepreneur

Disclosures

- Founder and President, Upstate Medical Physics
- Sr. VP, Landauer Medical Physics
- Co-Founder, MedImage Video

Who is an entrepreneur?

en-tre-pre-neur noun \,ə-ˈtri-p(ɪ)-ˈnɑːr, -n (s)ur/
 : a person who starts a business and is willing to risk loss in order to make money

- Practical, working definition
- **Salaried employees** work for a company or organization, lower risk, predictable results (?)
- **Entrepreneurs** invest personal assets (time, money, etc.) and take risks beyond those of an employee – in exchange for potentially greater autonomy, flexibility and financial rewards

<http://www.merriam-webster.com/adfiles/III-Pop.html>

Outline

- Who is an entrepreneur?
- Bob's history
- How to succeed (entrepreneur vs. other roles)
- Building for a future entrepreneurial role
- Business aspects
- Communication Skills
- Personal Assessment
- Q&A

America's 12 Million Amateur Innovators

April 23, 2012 12:39 PM ET



Russell E. Oakes, an amateur American inventor wearing his problem-solving inventions.

<http://www.npr.org/blogs/money/2012/04/23/151204136/america-s-12-million-amateur-innovators>

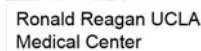
Traditional Medical Physics Employment Model

- FTE, University
- FTE, Hospital
- FTE, Government Agency

About Mayo Clinic



Saint Francis Medical Center



Ronald Reagan UCLA Medical Center



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Alternative Medical Physics Employment Models

- Entrepreneur (Owner or partner)
 - Service: Private practice MP group
 - Astarita, Carey, Goff, Barnes, Simmons, [Bushong, Dixon...](#)
 - Product: Business owner
 - John Cameron, RMI
 - Lescrenier, Gammex
 - Mackie (TomoTherapy)
 - Ning (Koning Breast CBCT)
- Industry
 - Balter (Philips)
 - Kalender (Siemens)
 - Sternick (NOMOS)
 - Gray (Lorad, Landauer, [RMI mini SBB Phantom](#))

Looking back...

- Father was engineer, became sales rep
- DABR Therapy, 1983 – consulting?
- Taught Diagnostic Radiology residents
- Began consulting in Imaging 1982 during vacations/weekends
 - Invested, incorporated, spaghetti squash
- 1989: after 10 years at hospital, took the leap
- Practice grew by word of mouth
 - Personal line of credit for payroll
- Never looked back, not once!
- 2009 National MP opportunity - LMP

Pathways to be an entrepreneur

- FTE (academic organization or other employer)
 - Create a solution to a common problem
 - Partner with employer to turn into a product (spin off)
 - Create something on your own time
 - Beware of employment restrictions on ownership
- FTE (Corporate employer, w bonus, \$incentives)
- Start a business, become your own boss
 - Find a niche, solve a problem (product or service)
 - Develop a business plan
 - Take a risk

Looking back...what helped?

- Commitment to professional quality, integrity
 - “How many CT's are they doing over there?”
- Finding, building and *trusting* the team
 - Listen, *especially* when we didn't agree
- Creating the right culture (C. Lescrenier)
 - Fairness, integrity, help others, work ethic
- Mentors through AAPM, ACMP
 - Far too many to mention
- Commitment to financial fairness
 - Employees, clients, vendors
- Timing (NYSDOH QC Requirements)

Looking back...what helped?

- Investment (best practices, relationships)
 - Excel for Mammo QC
 - Professional, regulatory involvement
 - NYSDOH, AAPM, MQSA, ACR, FDA
- Helping technologists (customers)
 - QC Forms, manuals, speaking at meetings
- Vendors as partners (remain objective)
 - Nuclear Assoc, RadCal, GE, Lorad, Kodak, MITA,
- Recognizing strengths and market (above)
- Thinking outside the box, being nimble, ACT!
- Not afraid to fail (just try again!) like a 1 yr-old

Regulatory Guidance for RT's and Radiology Directors



The precursor was
The HCFA Manual!

MEDICAL PHYSICIST'S MAMMOGRAPHY

Properties

Size: 590KB
 Title: Medical Physicist Annual Survey
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Related Dates

Last Modified: 11/11/2013 12:50 PM
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Author: Doug Pfeiffer/Roland Wong/Hui Wang
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Medical Physicist's QC

- 1. Mammographic Unit Assembly Evaluation**
- 2. Collimation Assessment**
 Collimation between X-ray field and light field is less than 2% of SID
 X-ray field does not extend beyond any side of the IR by more than 2%
 Check wall angle of compression paddle does not extend beyond IR by
- 3. Evaluation of Focal Spot Performance**
 Measured focal spot performance within acceptable limits for large foci
- 4. Automatic Exposure Control (AEC) System Performance**
 Exposure reproducibility is within acceptable limits
 AEC compensation for kVp, breast thickness and image mode is adequate
 AEC density control function is adequate
- 5. Uniformity of Screen Speed**
 Optical density range is less than or equal to 0.3
- 6. Artifact Evaluation**
 Artifacts were not apparent or not significant
- 7. Phantom Image Quality Evaluation**
 A target, fibers, 3 target speech groups and 3 target masses are visible
 Phantom image quality scores:
 Fibers: 4.5
 Speech: 3.0
 Masses: 4.0
- 8. kVp Accuracy and Reproducibility**
 Measured average kVp within 40% of nominal kVp
 kVp coefficient of variation is 0.02
- 9. Beam Quality (Half-Value Layer) Assessment**
 Half-value layer is within acceptable lower and upper limits at all kVp values tested
- 10. Breast Entrance Exposure, Average Glandular Dose and Radiation Output Rate**
 Average glandular dose for average breast is below 5 mSv (500 mrad)
 Average glandular dose to a 4.2 cm thick breast on your unit is:
 148 mrad
 Radiation output rate is greater than 800 mR/hr (ACR), 0.13 mR/sec (MQSA) 1273 mR/hr
- 11. Viewbox Luminance and Beam Illuminance**
 Mammographic viewbox is capable of a luminance of at least 3000 cd
 Screen illuminance (viewbox surface and beam) by observation is 50 lux or less

A good form really helped technologist w QC

UMP
 UMP Medical Physics Partner

QC Audit Calendar

Nuclear Medicine Equipment QC Planner

Includes software by subscription to the following equipment:

- Mammography
- PET
- PET/CT Systems
- Positron Emission Tomography
- Nuclear Medicine

www.ump.com

MedImage Video, Inc. (MIV)

- Physics/QC Lectures to Mammo techs
- What about those who can't travel?
- Created MIV with 5 expert Mammo techs
- Produced "How To" video, 11 QC tests
- 18 months later

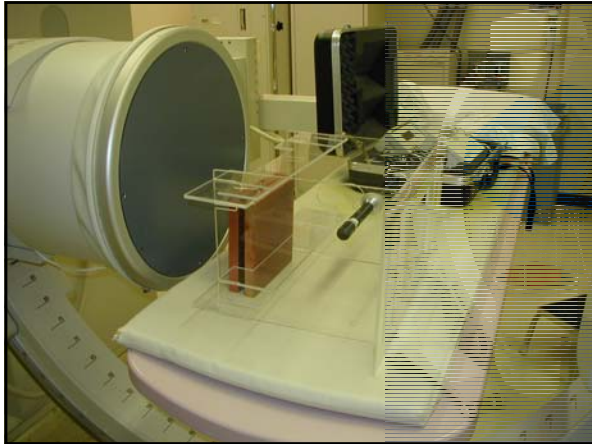
Lessons:

- Know your strengths
- Partner with experts
- Timing
- Nothing lasts forever (ROI)



RF test tool: Efficiency and standardization





What's different about an entrepreneur? Perhaps less than you thought...

- Basic professionalism
- Communication
- Hard work, Focus
- Partnership to fulfill a need
- Differentiation in the market
- Personal risk

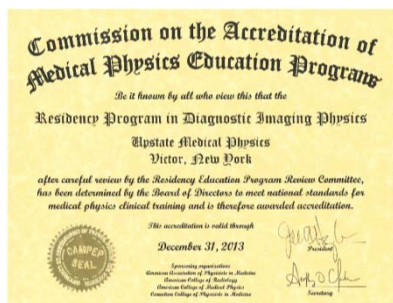
SF Mammo AEC test tool (13 exposures, 1 SFM cassette)



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Residency in a private practice?



Building for a future as an entrepreneur

- Solid understanding of Medical Physics
- Recognize, assess SWOT
- Fresh ideas
- Freedom from impediments
- Financial flexibility
 - Not paycheck to paycheck
 - Health Insurance
- Business understanding

Basic Business



- Define your goals, mission
- Income exceeds expenses (long run)
- Return on investment
- Find a good accountant
- Identify your market, competition
- Choose your partners
- Compensation models
- Cash flow (Dental inspections)
- Legal

Communication Skills



- Written and Oral
- Approach as you do ABR process
- Find a mentor; assess, goals, practice
- Professionally “sell” yourself, idea
 - Family, friends, AAPM chapter
 - Colleagues, potential clients, investors
- Effectively communicate **Value**
 - Elevator speech (15 seconds)
 - What makes this different?



Possible Goals

- Professional creative freedom
- Build a better mousetrap
- Geographic choice (lakes and small hospitals)
- Reduced organizational politics
- Diverse clientele
- Make a difference
- Get outside in fresh air!
- Build a top notch team
- Build a reputation
- Financial goals
- Exit strategy

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Compensation Models

- **Cost vs. Value Based**
- **Cost based** pricing (cost + profit)
 - Salary (FTE) or Hourly (consultant)
 - Include *all* expenses, including downtime
- **Value based** pricing of services
 - What would it cost to do it another way?
 - What additional benefits add value?
- FTE, salary + bonus (achieve goals)
- Royalty or percentage

Personal Assessment

Ask yourself these tough questions



1. Entrepreneur vs. FTE...
2. Willingness to
 - Take risks
 - Invest time and resources
3. What is my motivation?
4. What do I have to offer?
5. Is the timing right?
6. Do I have the right resources?
7. Am I ready to take the plunge?



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Thank you!



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