

**The Latest in Imaging
Early Detection
& Prevention Diagnostics**

**& How to Incorporate them into
a Successful Anti-Aging Clinic**

Dr. Christopher Degn
Heather Bird of HB Health

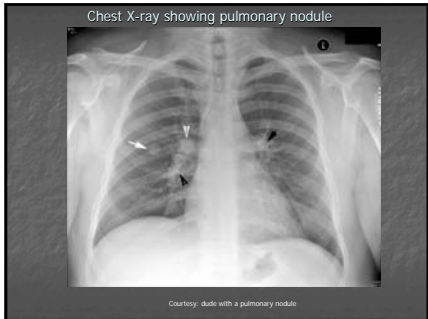
Everything You Ever Wondered
about Allopathic Radiology
in 15 Minutes or Less

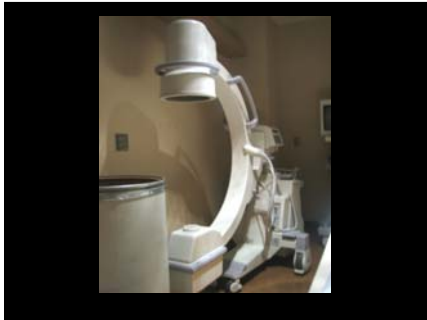
Translation

Just Bring on Heather Already!

- Basic Imaging Modalities**
- Radiography
 - Mammography
 - Angiography
 - Fluoroscopy*
 - Ultrasound
 - Computed Tomography (CT)
 - Magnetic Resonance (MRI)
 - Positron Emission Tomography (PET)
 - Nuclear Scintigraphy
 - Interventions (the cool stuff)
- *including cleaning evacuated barium off scrubs.

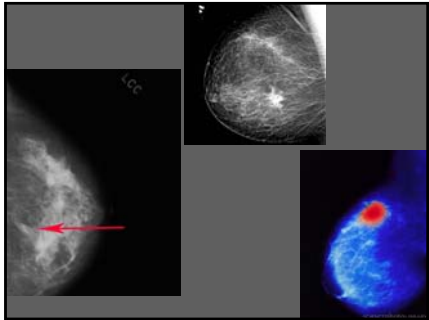
- Radiography (X-ray)**
- Low cost
 - Widely available
 - Starting point for imaging work-up in many cases
 - Detection of many basic pathologic entities –





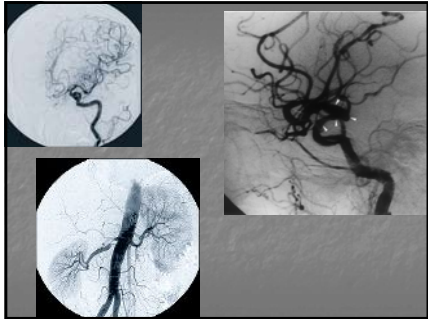
Screening Mammography

- ACS, ACR, and Society of Breast Imaging
 - Women in 40s and beyond, clinical breast exam and mammogram every year.
 - Higher risk (BRCA gene mutations)
 - Age 30
 - MRI annually
 - Breast ultrasound



Angiography

- Originally used to diagnose vasculopathy including plaque accumulation.
 - Replaced with CTA, MRA, ultrasound
- Generally reserved for therapy
- Problem solving



Fluoroscopy

- Real-time moving images of internal structures
- X-ray source, fluorescent screen, image intensifier, video camera to monitor

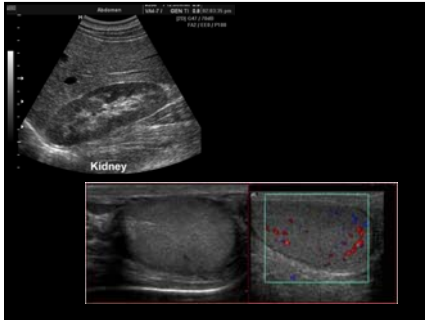


Screening barium enema



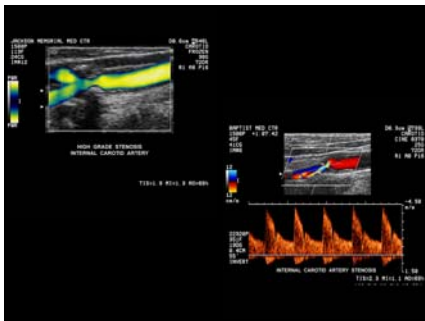
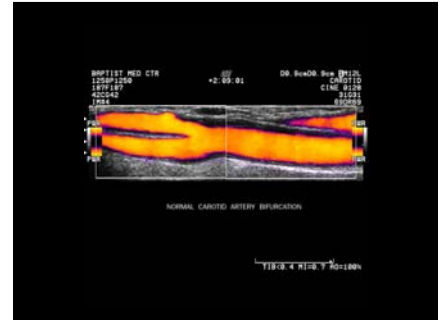

Ultrasound

- Sound pulses partially reflected from boundary between two tissue structures, based on difference in impedance.
- Advantages:
 - No ionizing radiation
 - Low cost
 - Widely available
 - Structure, movement, blood flow (with Doppler) in real time.
 - Soft tissues well characterized.
- Limitations:
 - bowel gas obscuring organs large patients
 - bone
 - operator dependent



Vascular screening

- Carotid duplex scan and blood pressure check for hypertension.
 - Detect significant carotid artery stenosis – most frequent causes of stroke
- Aortic scan
 - AAA
- PAD scan
 - Impairment to circulation to limbs
 - Screen in office. Interpreted by specialists through secure links online.



3-D Ultrasound

- Gimmick vs utility – “Keepsake ultrasound”, “Mall-rat ultrasound”
- Fetal skull, facial, and cardiac anomalies in hands of professional
- Amer Institute of Ultrasound in Medicine – strongly discourages non-medical use for psychosocial or entertainment purposes
- FDA – promotion, selling, or leasing of equipment as unapproved use of medical device illegal



Computed Tomography (CT)

- Wide variety of uses predominantly diagnostic, also therapeutic. Preferred modality for CA detection outside CNS.
- Multislice scanners with increased speed, resolution (detail), limitation of artifacts, reconstructions.
- High resolution CT scans (HRCT) – parenchymal detail and interstitial lung disease delineation.



EBT CT – (Electron Beam Tomography)

- Faster to capture movement of heart
- Open and non-claustrophobic
- 20% of radiation from conventional CT
- QCT – Ability to scan for bone density
 - Conflicting studies of accuracy vs DEXA studies.



Heart scan screening

- Assess calcium load in coronary arteries
- Follow progression
- High risk:
 - high cholesterol
 - High triglycerides
 - smoking
 - HTN
 - family history
 - diabetes
 - sedentary lifestyle

■ Calcium score –

- Volume and distribution of calcification in arteries of heart.
- Compared to database within same demographic.
- Identify those at risk, to encourage to alter lifestyle.
- Controversial benefit
 - Alteration of lifestyle due to abnormal result vs negative psychological impact, including stress, and referral to stress testing or coronary angiography.

Lung Scan

- High-risk groups:
 - Smoking more than 10 years
 - Family history
 - Exposure to occupational toxic inhalants
 - Over 60
 - Asbestos exposure

Full Body CT

- Primary organs for neoplasms
- Liver cirrhosis, splenomegaly
- Adenopathy (including lymphoma)
- Aorta for aneurysm
- Kidneys for stones
- IV contrast
 - Pro – increases accuracy, allows assessment of vessels
 - Con – physician on site for possible reactions, discomfort, cost
- Oral contrast optional
 - Pro – increases bowel and node accuracy
 - Con – tastes seriously nasty

Screening Scan Patient Types

- Risk for lung cancer
 - smoking, asbestos or certain chemical exposure
- Risk for colon CA or polyps
 - Family history, consumption of large quantities of meat
- Risk for CAD
 - Smoking, HTN, cholesterol, diabetes, obesity, poor diet, sedentary lifestyle, stress
- Personal or family history of stroke, heart disease, CA
- Desire

Coronary CT Angiogram

- Timed IV contrast bolus
- ECG electrodes to synchronize scanner to heart rate
- Takes only 20-25 seconds
- Selected patients:
 - Family history of heart disease
 - Elevated calcified plaque score from heart scan
 - Smoker, HTN, increased cholesterol, obesity, diabetes

- Can detect non-calcified plaque
- Severity of luminal stenosis
- Cardiac functional status
- Measure myocardial perfusion
- F/U after bypass or angioplasty
- Triage chest pain
- Congenital heart disorders
- Can assess pulmonary embolism



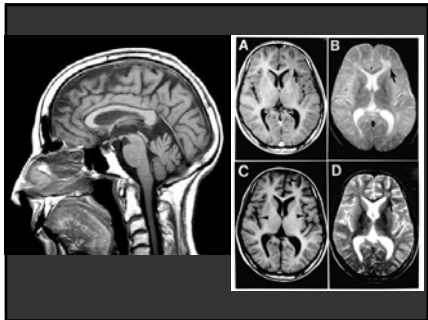
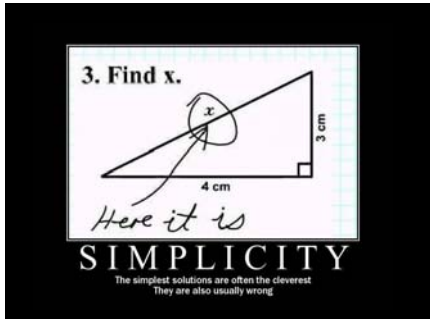
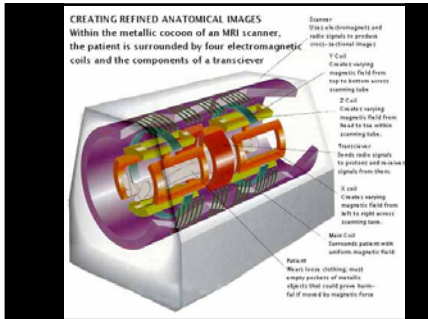
CT Colonography ("Virtual Colonoscopy")

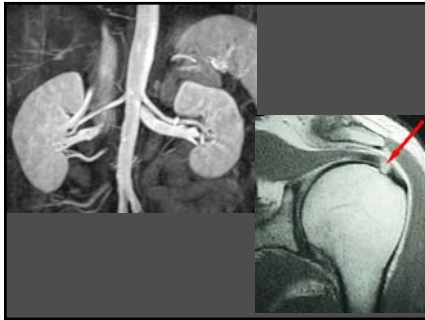
• Detects 95% of advanced cancers and 80% of early cancers

- #### Advantages c/w conventional colonoscopy
- No sedation needed
 - No colonoscope insertion through length of colon. Small tube only into rectum.
 - Avoids risk of perforation
 - More clear detailed image
 - Less time
 - Visualization of inflamed or narrowed colon
 - Detection of polyps behind folds missed by scope

- #### Disadvantages
- Also requires full bowel prep
 - Requires gas or liquid to expand bowel
 - Does not allow for biopsy or polypectomy (30-40% of patients have polyps)
 - Less availability
 - May not be covered by insurance
 - Cannot detect pre-cancerous polyps < 8-10 mm
 - Decreased accuracy for sessile lesions

- ### MRI
- Patient placed in powerful, highly uniform, static magnetic field.
 - Magnetized protons (hydrogen nuclei) align within field.
 - RF pulses create oscillating magnetic field perpendicular to main field, causing nuclei to absorb energy and misalign in state of excitation
 - As nuclei return to equilibrium, signal emitted to received coil like ripples – transformed by computer algorithms to images.
 - Detection of tissue locations and characteristics based on graphic representation of differing echoes or resultant ripples





MRI Advantages over CT

- Uses magnetic field instead of ionizing radiation.
- Increased soft tissue characterization – tendons, ligaments, spinal cord, heart.
- Intrinsic multiplanar capability as opposed to reconstruction algorithms.
- Non-iodinated contrast agents.
 - Recent awareness of Nephrogenic Systemic Fibrosis.
- Generally superior for tumor detection and characterization.

MRI Uses in Screening and Detection

- Breast Cancer
 - If BRCA genetic mutation
- Carotid atherosclerosis
- Cerebral arteriosclerosis
- Aneurysm
- Neoplasm
- Cerebral Atrophy
- Abdominopelvic pathology
- Back and joint pain

Contraindications

- ABSOLUTE:
 - Electronically, magnetically, and mechanically activated implants
 - Ferromagnetic or electronically operated active devices like automatic cardioverter defibrillators
 - Cardiac pacemakers
 - Metallic splinters in the eye
 - Ferromagnetic haemostatic clips in the central nervous system (CNS)


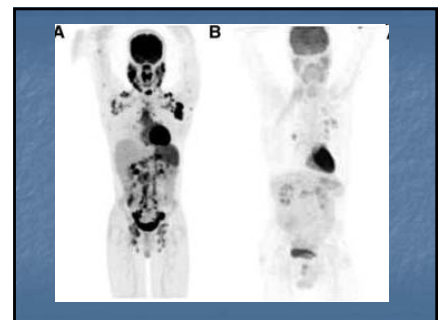
- RELATIVE:
 - Cochlear implants
 - Other pacemakers, e.g. for the carotid sinus
 - Insulin pumps and nerve stimulators
 - Lead wires
 - Prosthetic heart valves (in high fields, if dehiscence is suspected)
 - Haemostatic clips (body)
 - Non-ferromagnetic stapedial implants

CT Advantages over MRI

- Availability
- Cost
- Bone and lung imaging
- Acute closed head injury
- Claustrophobia
- Contraindications to MRI
- Scan time
- Scattered metal fragments

PET Scans

- Based on the metabolic activity and uptake function of the tissues
 - F18-fluorodeoxyglucose


 A photograph of a PET scanner machine in a clinical setting, showing the patient bed and the circular gantry.




- Pros
 - Detect disease before anatomic changes
 - Alternative to biopsy and exploratory surgery for mets
 - Better differentiation between malignant and benign processes, avoiding surgery
 - Early stages of epilepsy, Alzheimer's disease, and other dementias
- Cons
 - Radiation – pregnancy and breast-feeding
 - Limited number of repetitions due to radiation
 - Cost
 - Limited availability

- ### Alzheimer's Screening
- Alzheimer's disease detection and confirmation
 - Early drug therapy to slow loss of function.
 - Planning future before loss of mental capacity.
 - Diagnosing of other dementing processes*, chronic depression, and normal aging
 - Reassure fearful patients without disease
- *Red Sox fans

-
- Consistent pattern – decreased metabolism early in disease
 - Pattern recognizable often several years before physician able to confirm clinically

- ### Bone Density Scans
- Dual Energy X-ray Absorptiometry vs QCT.
 - Results can be distorted by scoliosis, high calcium content in blood (atherosclerosis), or multiple fractures.
 - Patients:
 - Family history
 - Asian or Caucasian
 - Thin, small frame
 - Females, especially post-menopausal
 - Males with low testosterone (or who play soccer for Barcelona)
 - Steroids, anti-epileptics, smoking, heavy caffeine or alcohol, insufficient exercise, calcium, or vitamin D

- QCT and DXA both measure spinal bone mass
 - 2D DXA
 - measures sum of both trabecular and cortical bone, and includes aortic calcification and osteophytes
 - Affects accuracy
 - 3D QCT
 - Isolates metabolically-active trabecular bone
-

- ### Ramifications of Imaging Screening in Low-Risk Population
- Interpreting a screening test requires:
 - Knowledge of pretest probability of target disorder
 - Sensitivity and specificity of test
 - Low prevalence of disease (primary care) = low predictive value of positive screening test, even if test highly sensitive and specific.

- ### U.S. Preventive Services Task Force
- Carotid artery screening not recommended
 - False-positive rate too high in low-risk patients.
 - Abnormal result – referred for MRA or some to carotid angiography (1% risk of stroke)
 - AAA screening once for men between 65-75 who have never smoked
 - Peripheral arterial disease screening not recommended
 - Osteoporosis screening women over 65 (or 60 with risk factors)

- ### Whole-Body CT
- Early detection may advance time of CA diagnosis without affection prognosis (lead-time bias)
 - Preferentially detect indolent less invasive disease, miss more lethal tumors (length bias)
 - CT screening for lung CA in 1000 low-risk pts would result in 213 positive scans, with 98% false-positives.

- Detecting abnormalities eventually determined to be non-malignant
 - Abnormalities in 20-60% of smokers
 - Invasive follow-up tests, unnecessary surgery, anxiety
- Incidentalomas
- Exposure to radiation

Ethical concerns

- Bioethical principle of distributive justice
- Health care resources distributed equitably
- Exacerbate maldistribution of resources
- Nonspecific screening tests can lead to further testing, costs of which insured and shared by community

National Lung Screening Trial

- Previous studies showed CT screening increases detection of early-stage lung cancer, but did not assess overall effect on mortality
- CT lowered risk of lung cancer deaths (20% when compared to screening with radiographs)
- Smokers between ages 55-74 with equivalent of 30 years of one pack a day
- ACS working through modifications on recommendations
- Illustrative of traditional criticisms of CT used for detection and screening

Responsibilities in Screening and Detection

- Dangers of marketing as "Virtual physical"
 - "H and P CT"
- Informed consent
- Appropriate risk factors
- Awareness of generalized population benefit implications

Odds of being killed by tornado:
1 in 2,000,000



(presumably higher if standing motionless while posing in front of one)

Advantages to Patient

- Peace of mind
- Baseline for future results

WTP PET scan study

- Two groups divided by info about PET
 1. high CA detection rate
 2. Possibility of false negative and false positive results and non-demonstration of PET screening to reduce mortality
- No difference in WTP
- Household annual income main determining factor
- Main evaluation criteria
 - High detection rate
 - Reassurance value of negative results

Mobile scanner trailers



Mobile MRI



Mobile mammography



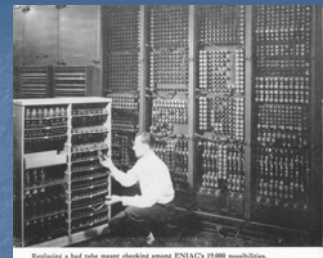
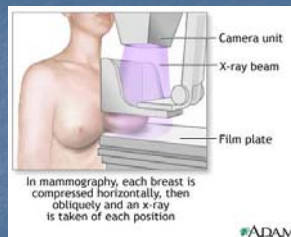
Mobile PET/CT

High Technology
Imaging used for Early
Detection & Prevention
is an Integral part of
21st Century Medicine –
Anti-aging

Do you want to be an
Early Adopter and to
Evolve in the
21st Century Medical
Evolution



Cutting Edge Medicine Circa 1880



Replacing a bad tube master checking among ENIAC's 18,000 possibilities.
Evolve the anti-aging movement

What is holding you back from the
Evolution?

3 Barriers to Entry

- Financial Investment
- Expertise & Training
- Unsure where the trend is going

Solutions
to Overcoming the
3 Barriers

Assumption / Premise: You already have
a location & infrastructure like Reception,
Booking System, IT Structure, Databases
and patient Base.

1st Barrier: Financial Options

- Buy New
- Buy Used
- Lease
- % Exchange
 - Search online for "Mobile" options.

Mobile MRI

Testing Facility Location	Test Type	Average Cost
Orlando, FL	MRI	\$2,229
Dallas, TX - MRI Testing Facility A	MRI	\$3,624
Dallas, TX - MRI Testing Facility B	MRI	\$2,172
San Diego, CA	MRI	\$2,826
Salt Lake City, UT	MRI	\$1,694
Detroit, MI	MRI	\$3,461
New York, NY - MRI Testing Facility A	MRI	\$1,785
New York, NY - MRI Testing Facility B	MRI	\$2,199
Raleigh, NC	MRI	\$3,001
Omaha, NE	MRI	\$2,502



1st Barrier: Financial Options

- Buy New
- Buy Used
- Lease
- % Exchange
 - Search online for "Mobile" options.
- Partnerships / Referrals
 - Example: www.MobileMRIctPET.com
 - Get legal counsel to conform with local laws.
 - Local Authorities on Registration, Training & Certification Requirements

2nd Barrier: Need Training or Expertise

- Hire the Expertise
 - Salary
 - Profit Share
- Train the Expertise
- Outsource

3rd Barrier: Unsure of Market Trends

- Attend Conferences
- Be Aware of Current Trends

Steps to Success

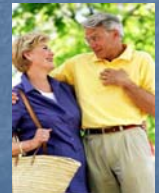
- See long-term trends in their early stages
- Invest enough time and/or money in that trend to become one of its early leaders



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Baby Boomers

1. In the U.K./Europe make up 29% of the population
2. In the U.S. make up 30% of the population
3. Similar numbers in other nations where a "post-war boom" took place
4. Baby boomer UK/Europe consumers have more money at their disposal than any other age group
5. In U.S. hold 55% of all discretionary spending
6. They have a need/want to fulfill



Looking Beyond the Boom

1. Life Expectancy continues to rise
2. Retirement ages will be pushed back
3. Government funds being stretched
4. NHS not interested but the demand exists

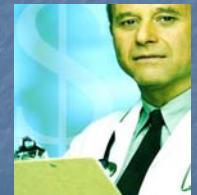


3rd Barrier: Unsure of Market Trends

- Attend Conferences
- Be Aware of Current Trends
- Research your Market
- Know your Local & Regional

Health Care Costs

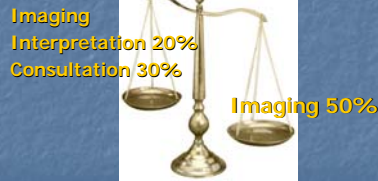
The SOLUTION
Preventive
Healthcare
&
Anti-Aging
Medicine!
Offered where?



If I have a General Practice Why Transition?

- You have existing Location (sunk costs)
- Small investment & small shift to have higher revenues per treatment = benefits in the bottom line = more Profit
- Ready made solutions to offer. Like Victus Life - low investment, Knowledge outsourced
- Many Medical Markets Saturated, Don't get left behind in Trend toward longevity.

A Business Model



Get the Balance Right

A Business Model



Get the Balance Right

An Example in London

HB Health Offerings

- Spa, Medi-Spa & Aesthetic services
- Bio-Identical Hormones, Thermography
- Genetic Testing & Immune System Storage
- Early Detection & Prevention Diagnostics MOTs
- Medical & Behavioral Services & Consultations
- Nutrition Consultations and Workshops – Urban Detox – Ozone therapy – Colonic Hydrotherapy
- Spiritual Pursuits – Yoga & Meditation
- Healthy Organic Juice Bar, Organic Café & Tea



HB Health's Latest Offerings

- Pain Free Laser Hair Removal
- CO2 Laser for Skin Rejuvenation
- Mesotherapy
- Derma Roller
- Dermelan Peel for Pigmentation
- Micro-Dermabrasion (Salt A Peel)
- Brain Rejuvenation – Balancing Neurotransmitters

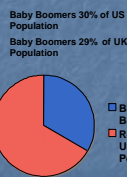


An Asian Example – Victus Life

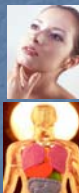
Custom Compounding Pharmacy <ul style="list-style-type: none"> Bio-Identical Hormones Nutraceuticals Cosmeceuticals Injectable Nutrients 	Age Diagnostics Laboratory <ul style="list-style-type: none"> Preventative Genetic Hormone Balance Metabolic, Toxicant, Nutritional Functional Fitness Skin Aging
Anti-Aging Clinical Solutions <ul style="list-style-type: none"> Men's Health Women's Health Aging & Sexual Wellbeing Obesity & Weight Management Cardiometabolic Syndrome Cancer Prevention Medical Fitness Program Neuromuscular Physical Therapy Cosmetic Dermatology & Aesthetic Medicine 	Continuing Professional Development <ul style="list-style-type: none"> Hormone Restoration Therapy Nutrition Medicine Exercise Medicine Aesthetic Medicine Laser Therapy Regenerative Stem Cell Therapy

Today's U.S. and U.K. Market for Anti-Aging

- 30% of population has tried or is using an anti-aging products or service
- In 2009, 54 billion EUR was spent worldwide on a whole range of skin creams as well as treatments such as Botox



Anti-Aging



- External Anti-Aging
 - Skin Quality, Body Shape, Appearance of Youth. Involves, Botox, Fillers, Cosmeceuticals
 - Britons are spending equivalent to 282m EUR a year on external anti-ageing procedures
- Internal Anti-Aging
 - Nutrition, Supplementation, Medical Fitness, Stress Management, Adequate Sleep, Bio-Identical HRT
 - Preventive Medicine & Biotechnologies

External & Internal Anti-Aging Spending

- External Anti-Aging spending will increase 8-10% in sales each year
- Internal Anti-Aging spending will increase 12.7% each year



Marketing with Integrity

- **Education:** teach from your perspective and attract the patients you feel you can help.
- Establishes your authority and lets you maintain professional credibility.

Word of Mouth



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Websites

- Simple Website Builders:
 - Weebly.com
 - Wordpress.com
 - Blogger.com

Search Engine Optimization (SEO)

- Use keywords related to your business across your site in *natural* ways.
- Include your city / state / province / country.
- Read more on [Weebly.com](#) under their Support Center.

Local Directories

- Get listed usually for free to help search engines more easily list you.
- **Google Places, Yahoo Local, Bing Local**
- Also: [Yelp.com](#), [Local.com](#), [MerchantCircle.com](#)

Press Releases

- Search online for "Press Release Format"
- Make sure you're sending NEWS and not a sales piece.
- Search for "press release service". Popular options include:
 - [PRWeb.com](#)
 - [Vocus.com](#)
 - [eReleases.com](#)

Articles / Blogs

- Popular Article Hosting Websites
 - [EzineArticles.com](#)
 - [HubPages.com](#)
 - [Squidoo.com](#)

Social Marketing

- Share Value. Be Consistent. Gain Followers.
- No "hard sells." Share first, then invite people to learn more about you through links to your site.
- **Facebook.com**
 - "Create a Page" for a Business
 - "Local Business or Place"
- [Twitter.com](#)
- [Facebook.com/twitter](#)

Conclusion

Evolve into the 21st Century Medical Evolution – Anti-Aging

Using the Latest High-technology Imaging for Early Detection and Prevention.

Thank You

[www.libhealth.com](#) • [www.heatherbird.com](#)

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