

# Listen to your heart- A physician's journey in self-diagnosis

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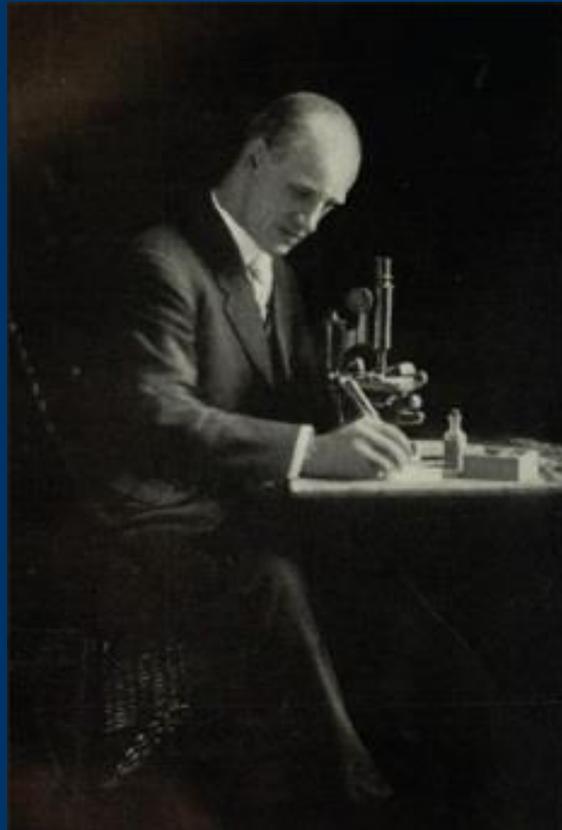
# Disclosures

- I have no disclosures

# The Clinicopathologic Conference

- Introduced in US at Harvard in early 1900s
- Arose from the use of case history in the teaching of law
- Walter Cannon wrote in 1900-“the study of case histories...arouses great enthusiasm and excitement among students”

# Dr. Richard Cabot



# Clinical Presentation

- 60 year old man developed
  - Acute left leg weakness and pain
  - Presented to ED within 1 hour of symptoms
  - Vital signs normal
  - Neurological exam—Oriented times 3, CNs normal, UE strength and sensation normal, left leg with mild distal weakness

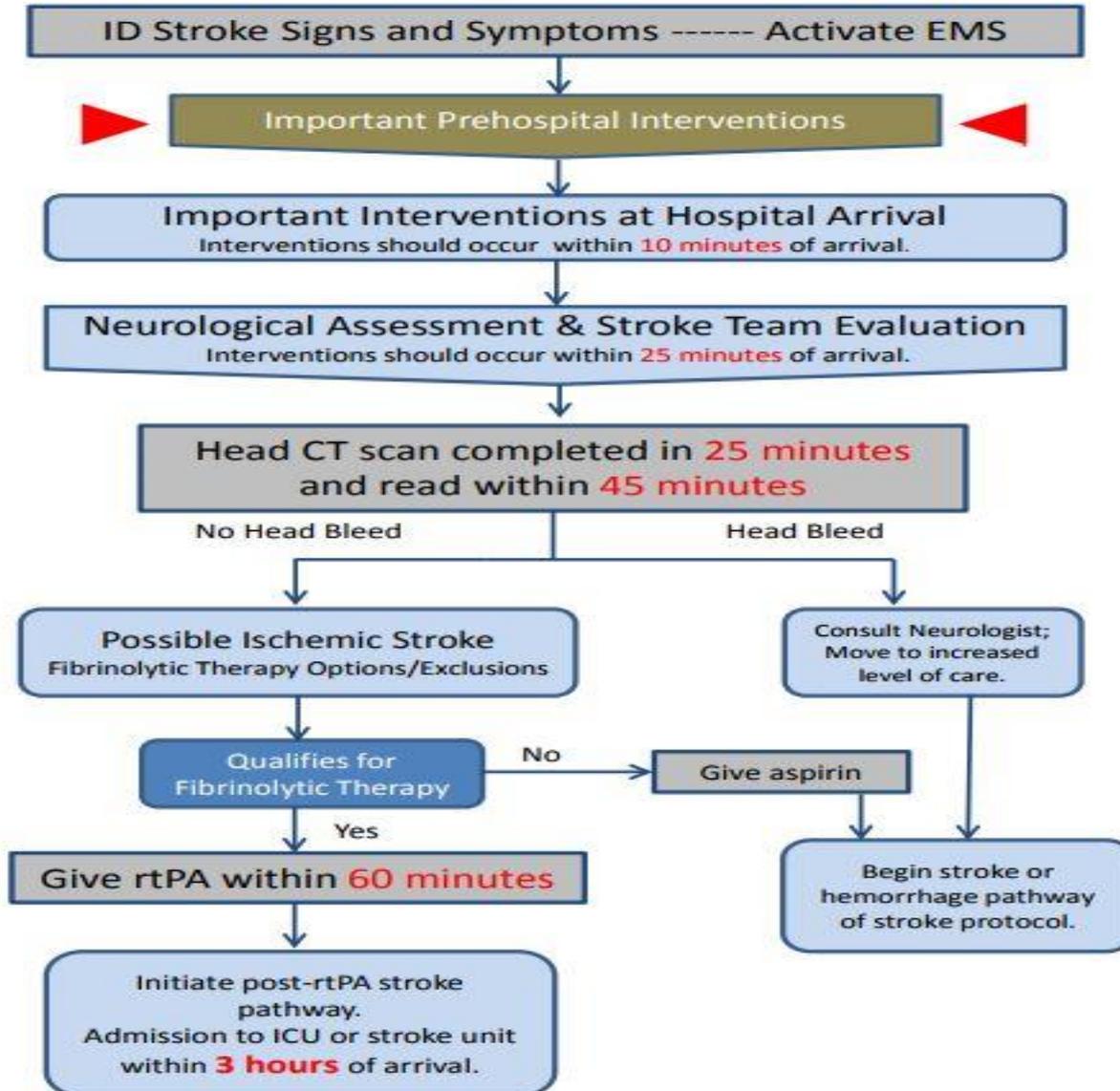
# Stroke protocol initiated

- Ct scan
- MRI
- Both showed no evidence of an acute ischemic event, but had evidence of a “possible left sided aneurysm in the parietal region”

# Diagnosis

- TIA
- Prescriptions for aspirin and high dose atorvastatin
- Recommended Neurology follow up and repeat MRI
- The following day a diagnostic test was performed

# AHA ACLS Adult Suspected Stroke Algorithm



# Goals for EMS Provider Care of Stroke Patients

1. Improve knowledge of identification of stroke signs and symptoms.
2. Develop a rapid assessment process.
3. Facilitate transfer of stroke victims to Primary Stroke Centers in the quickest and safest manner.
4. Pre-notify the Stroke Center, "Possible acute stroke in route."
5. Encourage family members familiar with the patient care to either ride with the transfer vehicle or drive to the stroke center ASAP to provide more patient information.

# Goals for EMS Provider Care of Stroke Patients

6. Obtain reliable list of meds taken or bring bag of all medications taken.
7. Obtain a set of vital signs and finger stick blood sugar at the site.
8. Reliably identify family's best estimation of when the patient was "last seen normal".
9. Administer the Cincinnati Pre-hospital Stroke Scale.
10. Provide the receiving facility with a quick, complete verbal report that incorporates the information obtained since arrival on scene.

# Goals for Treatment in the ED

- EMS rapid identification & pre-notification of the Emergency Dept.
- Quick evaluation in ED.
- Last seen normal < 3 hr.
- Door-to-CT scan < 25 minutes
- CT-to-Radiologist Reading < 20 minutes
- IV TPA administration < 15 minutes
- (Door-to-needle within 60 minutes.)

# Diagnostic Test

- Cardiac examination !
  - 4/6 holosystolic murmur radiating throughout the precordium
  - Echo-demonstrated mitral valve prolapse with a valvular vegetation and severe regurgitation

# The Role of Physical Examination

- Decline in physical examination skills
  - Improvements in technology
  - Time constraints
  - Lack of confidence in PE skills leading to uncertainty
  - Consequence—delayed or incorrect diagnosis

Asif T, et al, Cureus, 2017

# Decline in Examination Skills

- Trainees spending as little as 12% of time in direct contact with patients
- Less confidence in exam skills
- Perception that technology is better than exam
- Exam skills being taught as a list of maneuvers regardless of clinical context

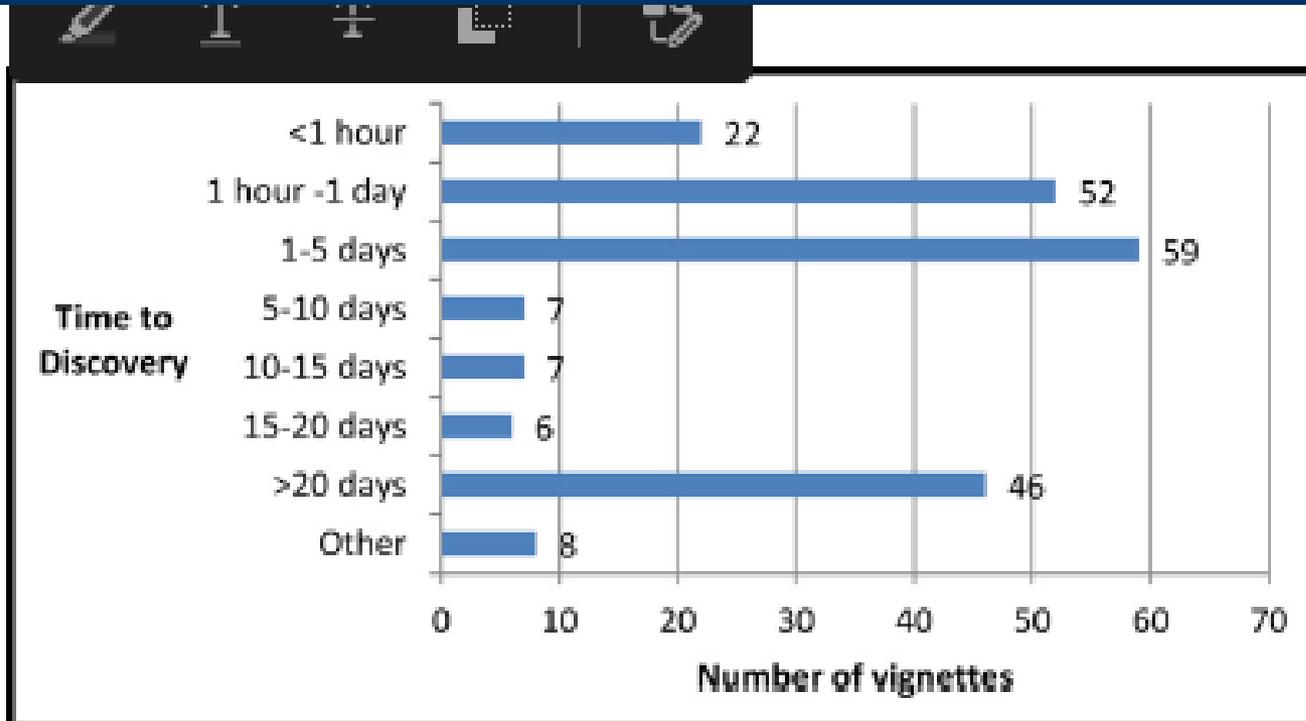
Allen S, et al, Clin Teach 2016, 14, 417

# Consequences of Inadequate Physical Examination

- Types of errors/oversights in physical examination
- Qualitative survey of case vignettes
- 208 completed vignettes
  - 63%- PE not performed
  - 14%- Misinterpretation of PE finding
  - 11%- PE finding was missed or not sought

Verghese A et al, Am J Med (2015) 128:1322

# Time to Discovery of PE oversights



**Figure 2** Distribution of time to discovery for 208 oversights in physical exam.

# Reinvigorating the physical exam

- Be present with the patient
- Practice an evidence-based approach to the exam
- Create opportunities for the intentional practice of the physical exam
- Recognize the power of the exam beyond diagnosis
- Use of point-of-care technology to aid in diagnosis
- Seek and provide specific feedback on physical examination skills

Society of Bedside Medicine (<https://bedsidemedicine.org/>)

# Specific interventions

- Hypothesis driven physical exam
  - The performance of specific PE maneuvers that may alter the likelihood of a disease in a particular patient
  - Teaching exam skills in a context specific manner rather than as head-to-toe

Garibaldi and Olson, Med Clin N Am 102 (2018)

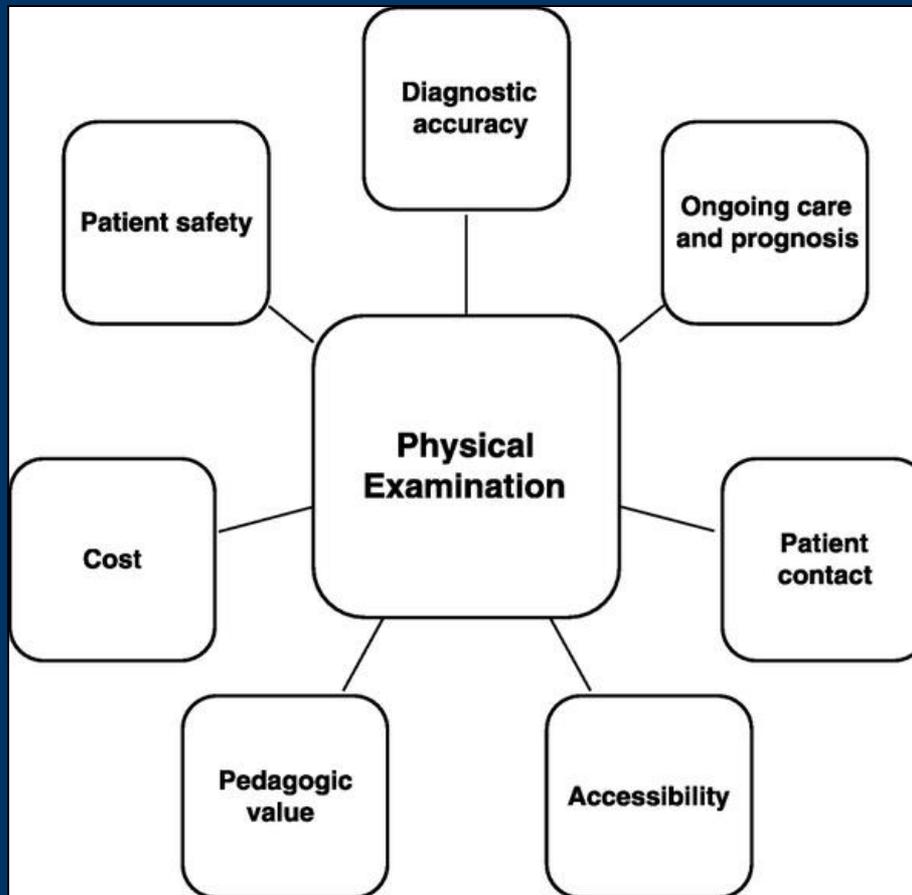
# Basics of the Hypothesis Driven PE

- Determination of pre-test probabilities
- Likelihood ratios for selecting particular maneuvers
- Arriving at a post test probability
- Multiple examination findings can be combined if they are physiologically independent (ie- splenomegaly and jaundice in considering a diagnosis of cirrhosis)

Garibaldi and Olson, Med Clin N Am, 2018

# Conceptual Framework for the Physical Exam

Zaman, Verghese, and Elder, Southern Medical J, 2016



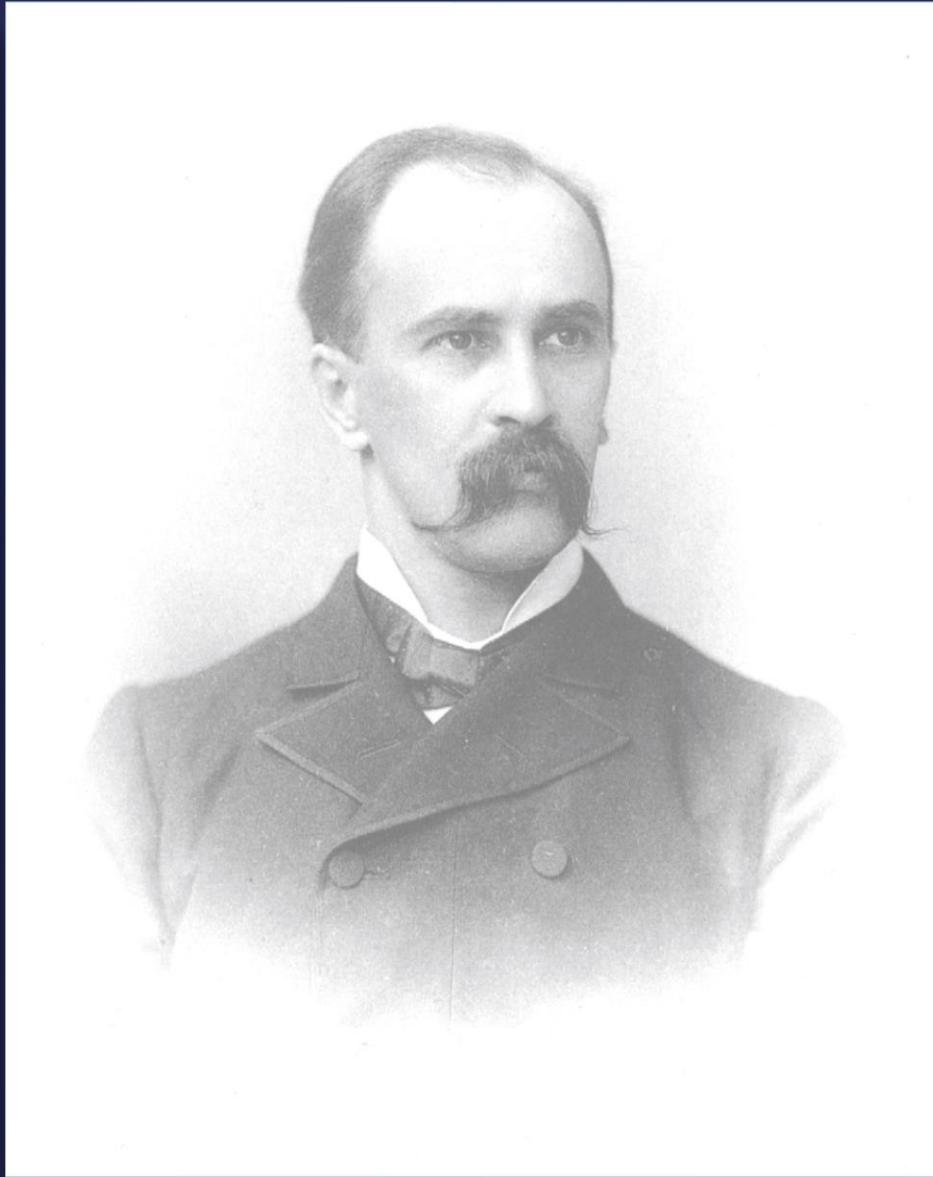
# A New Conceptual Framework for PE

- Diagnostic Accuracy- Pulsatile mass
- Ongoing care and prognosis—CVA
- Patient Contact—inherently patient centered
- Accessibility—requiring only hands, eyes, ears and mind
- Pedagogic value
- Cost
- Patient Safety

Zaman, Verghese and Elder, Southern Med J, 109,754

# Further Diagnostic Tests

- Blood cultures—all negative
- MRI of Leg—myositis
- Cath—clot in left leg
- Led to mitral valve repair



**“A small number of diseases present such serious difficulties of diagnosis than malignant endocarditis, difficulties that in many cases are insurmountable.”**

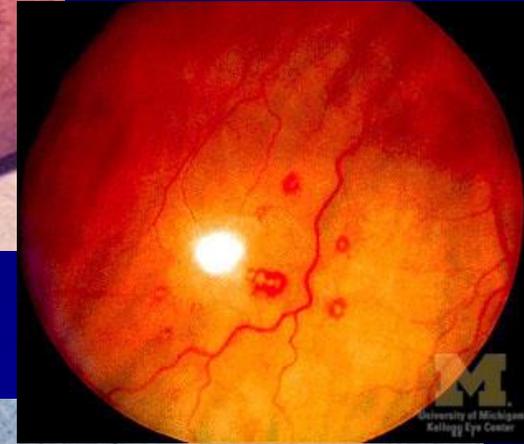
**“Gulstonian Lectures on Malignant Endocarditis”**

**W. Osler 1885**

# Clinical Signs and Symptoms

## Signs and Symptoms of Infective Endocarditis

Presenting Sign or Symptom	% of Cases
Fever	80 to 90
Heart murmur	85
Skin manifestations	18 to 50
Embolic phenomena	> 50
Splenomegaly	20 to 57
Clubbing of fingers	12 to 52
Chills	40
Weakness	40
Dyspnea	40
Sweats	25
Anorexia	25
Weight loss	25
Malaise	25
Cough	25
Nausea/vomiting	20
Headache	20
Myalgia/arthralgia	15
Chest pain	15
Abdominal pain	15
Retinal lesion	2 to 10



# Diagnosis

## Duke Criteria for Clinical Diagnosis of IE

### Major Criteria

- Positive blood cultures from at least two separate cultures drawn 12 hours apart
- Evidence of IE on echocardiogram (eg, a vegetation, abscesses or valve perforation)
- New regurgitant murmur

### Minor Criteria

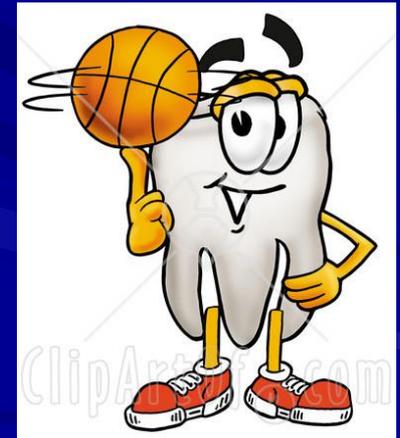
- Predisposing heart condition such as mitral valve prolapse, rheumatic or congenital heart disease, or intravenous drug abuse
- Temperature  $> 100.4^{\circ}\text{F}$  ( $38^{\circ}\text{C}$ )
- Presence of embolic disease or hemorrhage
- Presence of immunologic phenomena (eg, glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor)
- Positive blood cultures but major criteria are not met
- Echocardiogram is positive but major criteria are not met



A "definite" diagnosis of endocarditis can be made if two major criteria, one major and three minor criteria, or five minor criteria are met.

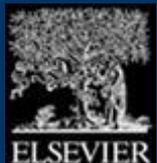
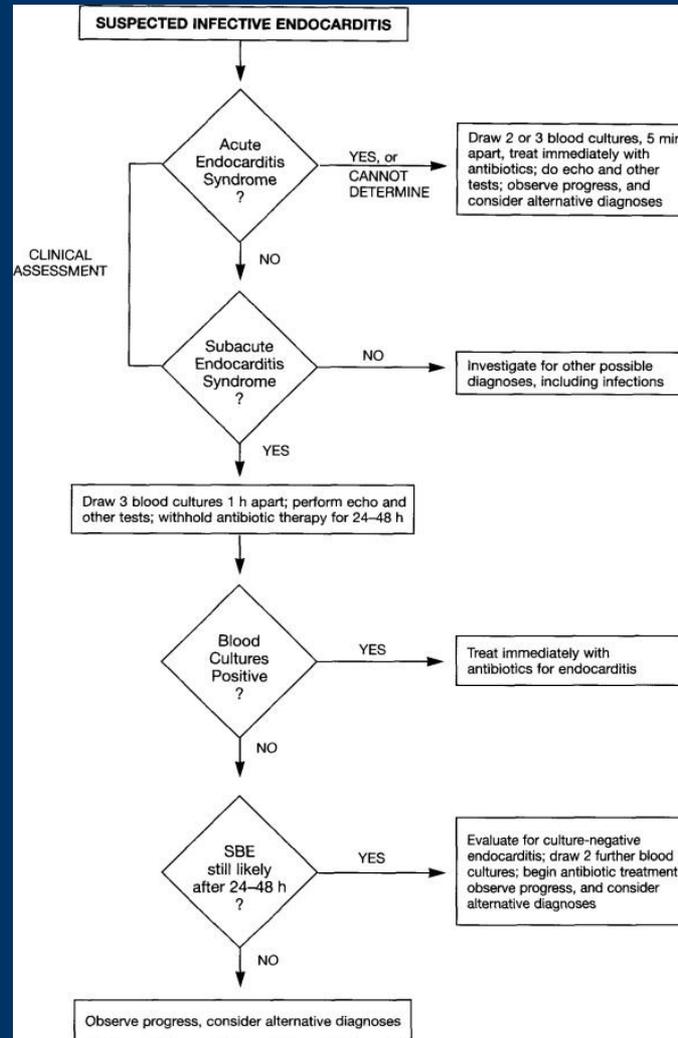
# Complications

- **Congestive heart failure** is only one aspect of IE that explains the high mortality rate.
- When the vegetations grow as the infection proceeds, small pieces may break off, travel through the blood, and become lodged in other locations throughout the body.
- **These locations include:**
  - The intestines
  - The lungs
  - The kidneys
  - The liver
  - The brain



Systemic embolization is found in 22-50% of cases of IE.

# Figure 1



# Investigations:

Blood culture - Minimum of 3 samples from 3 different sites (gap of 1 hour between first and last sample). For Atypical organisms – over 24 hours.

Complete blood count

Liver function, Renal function, Electrolytes

Inflammatory markers – ESR, CRP

Urine – hematuria

Immunoglobulins – increased

Complement level – decreased

ECG (MI or AV block), CXR, Echo – TTE, TOE

Culture negative endocarditis - occurs in 5 to 10%.

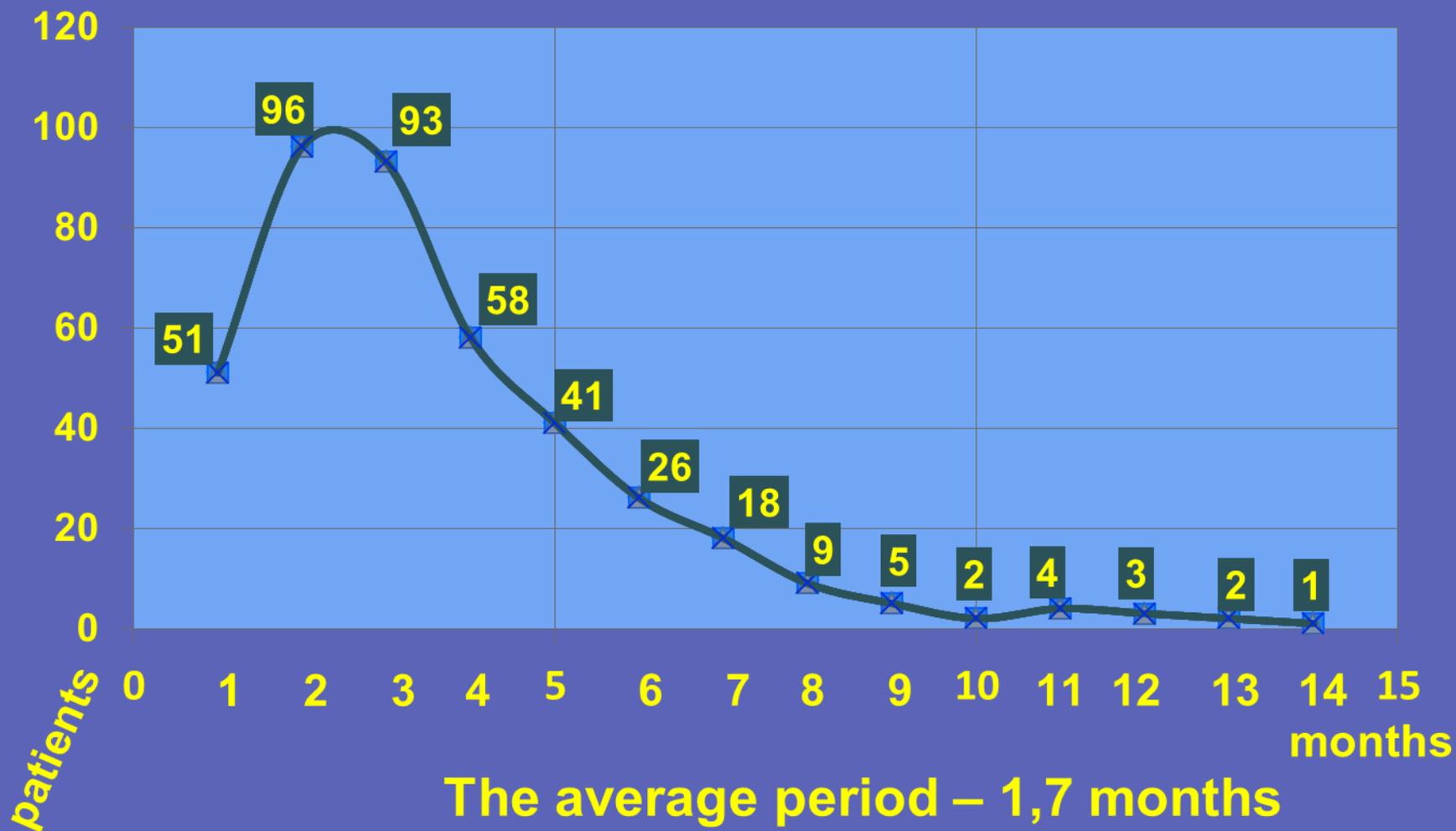
May be due to previous antibiotic therapy.

May be due to organisms failing to grow in normal cultures – *Coxiella burnetii*, *Chlamydia*, *Bartonella*, *Legionella*

# IE, predisposing cardiac conditions

<b>Rheumatic heart disease</b>	<b>197pt</b>	<b>48,3%</b>
<b>Congenital heart disease</b>	<b>31pt</b>	<b>7,6%</b>
<b>Degenerative heart disease</b>	<b>17pt</b>	<b>4,2%</b>
<b>Prosthetic valves</b>	<b>49pt</b>	<b>12,0%</b>
<b>Bulging (prolapse) of mitral v.</b>	<b>8pt</b>	<b>2,0%</b>
<b>Immanent pacemaker</b>	<b>2pt</b>	<b>0,5%</b>
<b>Intact valves</b>	<b>105pt</b>	<b>25,7%</b>

# IE, period of determining the diagnosis

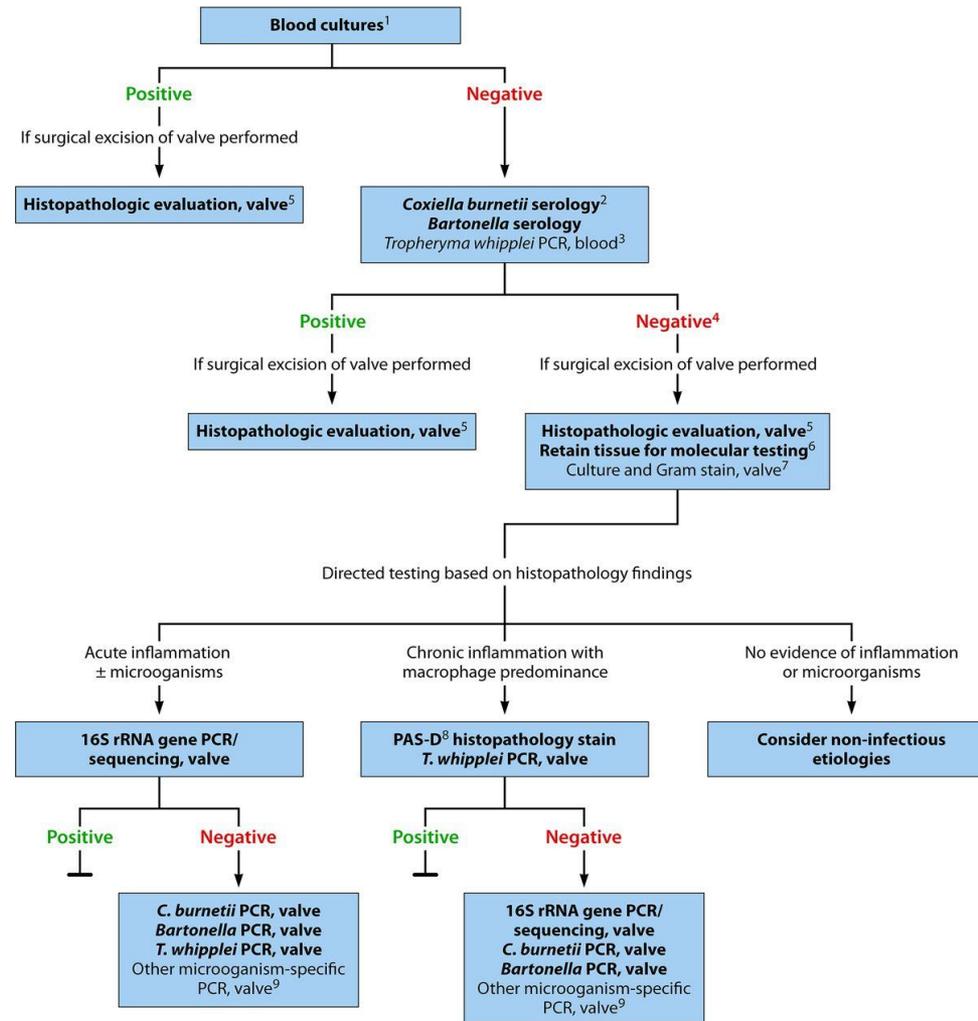


Stirbul A., Grejdieru A, Mazur M, et al. "Infective endocarditis: clinical profile, presentation and development (study on a group of 408 patients in the retrospective of 16 years - 1992-2007)," Bulletin of the Academy of Sciences , 4 (18), Chisinau 2008..

# Diagnosis

- Surgery—Prolapsed mitral valve with vegetation
- Microbiology—Cultures of blood and tissue negative

# Diagnostic testing for identification of the microbiological etiology of infective endocarditis.



Rachael M. Liesman et al. J. Clin. Microbiol. 2017;  
doi:10.1128/JCM.00635-17

# Illness in Providers

- Illness isn't appropriate in medical providers
- Disclosure of illness becomes an admission of weakness
- Providers will not seek support for health problems
- When the stigma of illness is not addressed, the opportunity to demonstrate the value of experiencing life as a patient is lost

# Effect of medical illness on providers

- Medical students facing personal illness perceived as being more empathetic, mature, and better learners overall
- Medical education doesn't currently create formal opportunities to acknowledge the value of that life experience
- Instead of viewing illness as a source of weakness, we first need to reframe it as a source of expertise

# Burnout

- What is happening to doctors?
- “Life is never made unbearable by circumstances, but only by lack of meaning and purpose.”
  - Viktor Frankl

# Burnout...

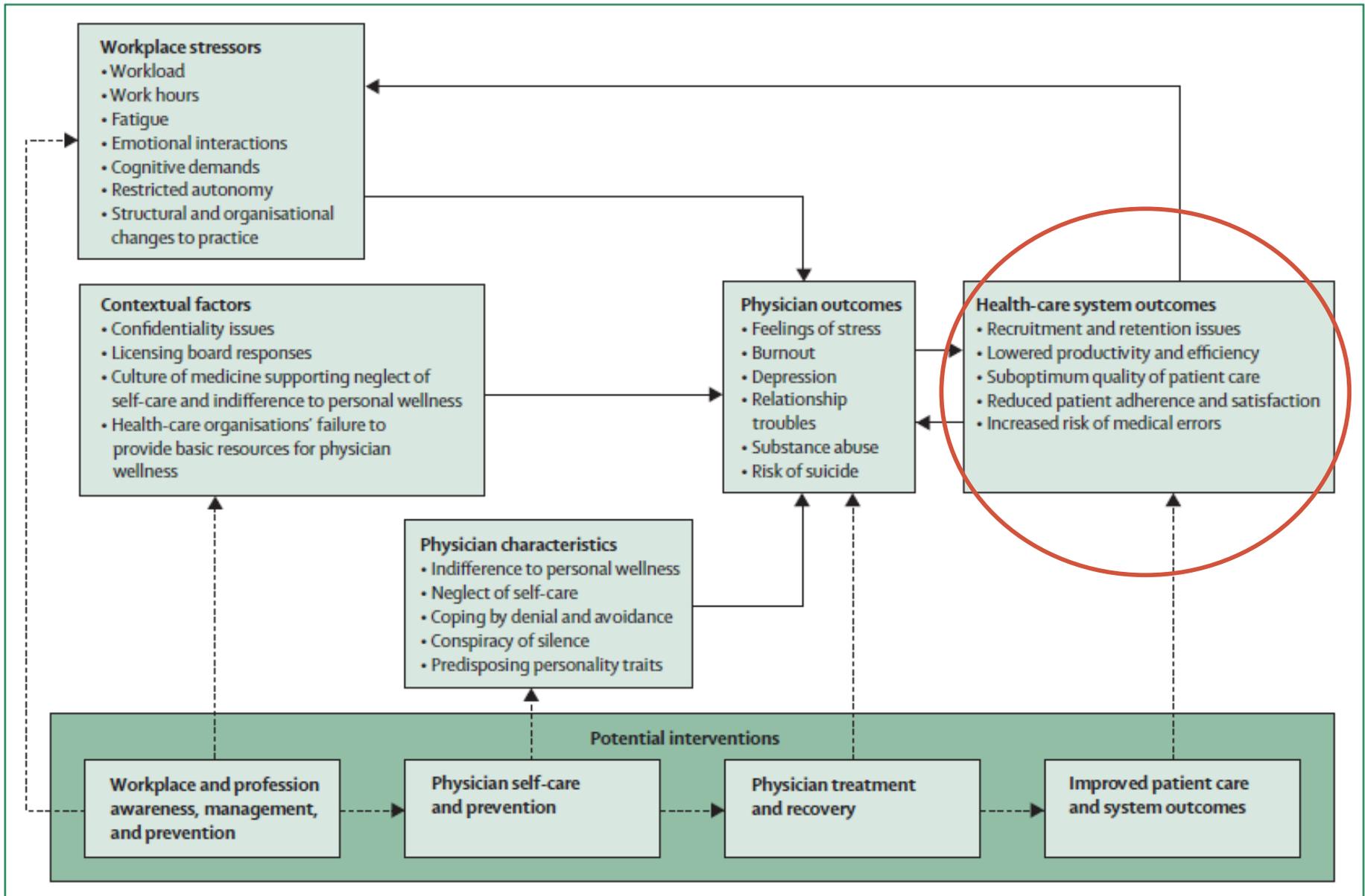
Physical,  
emotional and  
mental  
exhaustion  
caused by  
long term  
involvement in  
emotionally  
demanding  
situations



# Burnout



- Role Overload – expectations of others exceed one's ability to perform
- Role Conflict – forced to make a choice about which demand to satisfy
  - ex) child's soccer game vs. staying late to see patient or complete paperwork



**Figure:** A model of physician ill health and the links with health-care system outcomes, and potential interventions to improve physician and system outcomes. Solid lines are empirically supported; broken lines are potential links.

# The cost of a burned out doc

- Effect on patient care and safety
  - Patient medication adherence
  - Physician recommended evidence based screening and health counseling reduced when physicians have poor personal health
- Reduced workplace productivity and efficiency
- Cost of replacing a physician (150-300 K, maybe 1million)

# Burnout

- **Why is it happening to doctors?** To the people who choose to become doctors?
- “I swear by Apollo Physician and Asclepius and Hygieia and Panaceaia and all the gods and goddesses, making them my witnesses, that I will fulfil according to my ability and judgment this oath and this covenant:”

*Hippocratic Oath*

## FRAMEWORK FOR LINKING CULTURAL NORMS IN MEDICINE WITH BURNOUT FACTORS AND POTENTIAL INTERVENTIONS

Positive value	Negative potential	Burnout factor(s)	Potential mental training interventions
Service	Deprivation	Compassion fatigue Entitlement	Reframing Appreciation and gratitude
Excellence	Invincibility	Emotional exhaustion	Mindful self-compassion Inner critic awareness
Curative competence	Omnipotence	Ineffectiveness Cynicism	Self-awareness Generous listening
Compassion	Isolation	Depersonalization	Connection and community Silence as energizing

# Compassion Fatigue (CF)

## Definition

- State of exhaustion and dysfunction (biologically, psychologically, and socially) as a result of prolonged exposure to secondary trauma or a single intensive event

## Contributing Factors

- Helplessness
  - Feeling incapable of effecting successful patient outcomes
- Confusion
- Isolation
- Exhaustion
- Feeling of being overwhelmed by work

# Self care – Doctors are miserable at this

- Less doctor visits for themselves
  - Self-prescribe drugs (i.e. will not see a doctor)
  - Perceived (??) stigma around seeking help or support
- Willing to work when sick... and expect the same from colleagues (but not patients)
- Denial and avoidance – physician coping strategies
  - Poor record of mutual support and positive feedback in the field
  - Protecting the privacy of colleagues
  - Doctors are self-reliant, individually driven, achievers who are industrious and self-sacrificing

## Stress vs. Burnout

Stress	Burnout
Characterized by overengagement	Characterized by disengagement
Emotions are overreactive	Emotions are blunted
Produces urgency and hyperactivity	Produces helplessness and hopelessness
Loss of energy	Loss of motivation, ideals, and hope
Leads to anxiety disorders	Leads to detachment and depression
Primary damage is physical	Primary damage is emotional
May kill you prematurely	May make life seem not worth living
Source: <i>Stress and Burnout in Ministry</i>	

# Heading off the rails...



Emotional exhaustion	Fatigue, insomnia, impaired concentration, somatic symptoms, repeated illness, loss of appetite, anxiety, depression, anger
Feeling low personal accomplishment	Loss of enjoyment, pessimism, sarcasm (in excess), isolation, detachment
Depersonalization of the patient	Apathy, irritability (with staff, trainees, patients), lack of productivity

# 10 commandments of physician wellness

- I. Thou shall not expect someone else to reduce your stress.
- II. Though shall not resist change.
- III. Thou shall not take thyself in vain.
- IV. Remember what is holy to thee.
- V. Honor thy limits.
- VI. Thou shall not work alone.
- VII. Thou shall not kill or take it out on others.
- VIII. Thou shall not work harder. Thou shall work smarter.
- IX. Seek to find joy and mastery in thy work.
- X. Thou shall continue to learn.

# Choice...

- #1: Thou shall not expect someone else to reduce your stress.
- “Between stimulus and response, there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom.”
  - Viktor Frankl.
  - Man’s Search for Meaning

# Benefits of Meditation



- The primary health benefit from meditation practices appears to be a general shift in the autonomic nervous system that decreases sympathetic tone and increases parasympathetic tone.
- As the parasympathetic system is stimulated, heart rate and breathing slow, stress hormones decrease, blood vessels dilate, and digestion is facilitated.
- Depression
- Anxiety
- Sleep
- Immune Function
- Cortisol Levels
- Decision Making
- Coping

# Acknowledgments

- JBHC Team
- Philadelphia FIGHT Leadership
- My patients
- My family